



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.

African rue (*Peganum harmala*)

African rue is an unpalatable herbaceous perennial that grows as a weed in semiarid pastoral areas and marginal agricultural lands of South Australia.

Management Plan for African Rue

Outcomes

- Prevent establishment in uninfested pastoral lands

Objectives

- Prevent the spread of African rue into uninfested areas.
- Prevent small African rue infestations from affecting present and future land management options.

Best Practice Implementation

- Regional landscape boards and Green Adelaide to ensure high priority infestations, as determined by the board, on public or private land are controlled.
- Regional landscape boards and Green Adelaide to control high priority infestations on road reserves in marginal farming or pastoral areas, and recover costs from adjoining landowners where possible.
- Regional landscape boards and Green Adelaide to control plants that grow on roadways, graded road verges and grader windrows.

Regional Implementation

Refer to regional management plans for further details.

African rue policy

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

Declaration

To implement this policy, African rue 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 are prohibited. Regional Landscape boards and Green Adelaide may require land owners to control African rue plants growing on their land. Regional landscape boards and Green Adelaide are required to control plants on road reserves and may recover costs from the adjoining land owners. In the Murraylands and Riverland, and SA Arid Lands, regions, land owners are required to notify the regional Landscape board of African rue infestations on their land.

African rue is declared in category 2 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 Chief Executive of the Department for Environment and Water (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 African rue 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 African rue. Note that certain produce or goods may be excluded from these general movement and sale exemptions by Gazettal Notice of the Chief Executive of DEW.

The following sections of the Act apply to African rue 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 | | | | | | | X | | X |
| 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 | X | X | X | X | X | X |
| 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 any regional management plan for African rue.

Weed Risk

Invasiveness

African rue spreads as seed, and sometimes by fragments of rootstock transported in soil. Seed dispersal is primarily by flowing water, and human-aided dispersal via vehicles and produce. Natural spread is often slow, as most seeds fall close to the parent plant. Local spread may result from water flowing over the soil surface. Spread of root fragments along roadsides by grading, and within paddocks by ploughing, may increase plant numbers. The seeds are not adapted to be carried in the fur or wool of animals, and as animals are most unlikely to eat the fruits of African rue, the risk of seed dispersal through stock is very low. Most primary infestations of African rue begin on roadsides that are graded.

African rue is slow growing and takes several years to form dense infestations. It is well adapted to the semi arid environment and grows best in open, disturbed areas receiving run off water. It does not establish easily in undisturbed sites, under shade or among dense vegetation.

Impacts

African rue is difficult to control or destroy. It has been present in the northeast quarter of the State for over half a century, where it is spread over an area of at least 20,000 hectares. In the western USA, it has been found to displace native chenopod shrubs and tussock grasses.

African rue is highly unpalatable to sheep and cattle, due to the presence of harmala alkaloids, which have a bitter taste. The seeds have a long history of use in folk medicine; they are potentially toxic to animals and humans if consumed in large quantities. The plant may lower pasture yields but stock poisoning is rare and is only possible when pastures are heavily grazed and there is little else left to eat. They also have an allelopathic effect, inhibiting both germination and growth of some plants.

African rue has not yet had major impacts on South Australia. It has been confined mostly to unmanaged sites and overgrazed areas and has not become a significant contaminant of livestock, hay, grain or other produce.

Potential distribution

African rue has a high potential for further spread in South Australia; it can grow in a large proportion of the State and become locally common at overgrazed sites, roadsides and disturbed but unmanaged sites. Land use, disturbance and soil movement are likely to be the major contributing factors to African rue establishment in South Australia. Favoured sites are disturbed soils with no competition.

Degraded marginal agricultural and pastoral lands are at risk from invasion by African rue, although it is unlikely to persist in areas that do not receive water run off. It can grow in regions that receive as high as 480 mm annual average rainfall but are most commonly found in arid and semi arid areas. The high temperature requirements of germinating seeds may exclude the plant from those habitats that are cooler than 20°C when moisture is available for seedling establishment. African rue grows in most soil types, excepting heavy clay.

Feasibility of Containment

Control costs

The root system of African rue is extensive, spreading both down and out, and can respond to light rains and deeply penetrating soil moisture. The taproot of African rue has been recorded to 2.5 m and lateral roots to more than three metres. When herbicides have been used as a means of control difficulties have arisen due to the plant's ability to regenerate from deep in the soil profile. There also seems to be a small level of translocation of commonly used phenoxy herbicides to the entire root system.

A knock-down herbicide, applied during early flowering, will control most growth above ground. If applied earlier than flowering, plants may be too small to absorb enough herbicide to kill the entire root system and many plants may still be emerging from winter senescence. If applied late in the flowering period there may not be sufficient translocation to kill the entire root system. As the herbicide has no residual properties, seedlings and roots that survived the treatment are subsequently able to emerge.

Spot spraying with nonselective soil-active herbicides provides useful control of African rue on roadsides, but damage to desirable plants will occur.

Established plants that have the surface 25 mm of soil removed by road works will re-establish from their subterranean stems. In farming areas with close crop-pasture rotations weed control during cropping years is likely to limit African rue. Control costs of the weed include the extra cost of the alternative management and lowered yield caused by alternative management.

Persistence

African rue is a prolific seed producer that releases seed over a long period each year. It is not known how long seeds will remain viable. The higher the available moisture, either through rainfall, run on or soil type, the higher the chance of plant establishment and survival. It grows densely around wells, dams and bores where soil is disturbed by the hooves of stock and competition from desirable pasture species is absent.

Current distribution

The largest infestations of African rue in South Australia occur northeast of Orroroo on floodplains at Minburra and Koonamore stations. Scattered patches occur further south and west through the South Australian Arid Lands region. It has been found in cultivated fields at Quorn, Taylorville and Parilla, and roadsides at Two Wells and Tintinara. It is also present in the riparian zone of the Broughton River gorge.

African rue is not known to be established on Kangaroo Island, or in the Eyre Peninsula, Limestone Coast or Alinytjara Wilurara regions.

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:

African rue policy

| Land use | Weed Risk | Feasibility of control | Response at State Level |
|---------------------|------------------|------------------------|-------------------------|
| Grazing – southern | Medium 39 | Very high 2 | Contain spread |
| Grazing - rangeland | Medium 59 | High 25 | Protect sites |
| Native vegetation | Negligible 10 | Medium 45 | No action |

Considerations

In South Australia African rue was first collected in January 1943 near Tintinara. Many reports of African rue were received in the mid 1970s following the construction of a gas pipeline through the area and two consecutive years of very high rainfall that favoured germination and establishment. It is not clear whether the widely separated infestations within South Australia are the all result of local spread from a single introduction, or began from several independent introductions.

Heavily grazed areas are more prone to invasion than lightly grazed areas. As infestations seldom become dense in well-managed pastures, a priority for managers in areas with African rue is to ensure that pastures are not generally overgrazed.

Risk assessment at State level indicates management actions of protecting sites in rangeland areas, and containing spread in southern grazing lands. Regional management plans vary according to regional habitats and presence of the weed.

In the South Australian Arid Lands region, management approaches include monitoring for most of the region, with higher priority actions of manage sites for Flinders bioregion and protect sites for the Gawler and Broken Hill complex bioregions. The Murraylands and Riverland region aims to contain spread, but also map and control all infestations in the rangelands land use where African rue is one of the highest priority weeds. African rue represents a high priority threat to the Alinytjara Wilurara region, and is therefore treated as an alert weed in this region. As it is also absent from the Eyre Peninsula, Limestone Coast and Kangaroo Island regions, these regions aim to prevent its establishment. Green Adelaide, Hills and Fleurieu, and the Northern and Yorke regions aim to protect sites as the weed is very localised in these regions.

Synonymy

Peganum harmala L., Sp. Pl. 1: 444 (1753)

Taxonomic synonyms:

Harmala multifida All., Fl. Pedem. 2: 101 (1785)

Harmala peganum Crantz, Inst. Rei Herb. 2: 463 (1766)

Harmala syriaca Bubani, Fl. Pyren. 3: 354 (1901)

Other common names include harmal, isband, peganum, Syrian rue and yüzerlik.

Hon David Speirs MP

Minister for Environment and Water

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