



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.

three-corner jack (*Emex australis*)

Three-corner jack is found in all parts of the state although it causes most problems in the cereal zone, especially sandy areas, and in the Riverland. It is a crop and pasture competitor and also a contaminant of dry vine fruit, field peas and lucerne hay.

Management Plan for Three-Corner Jack

Outcomes

- Amenity value of ovals, parks and gardens not compromised by three-corner jack.
- No production loss to agriculture or horticulture outside areas where three-corner jack are already established.

Objectives

- Control high-priority infestations of three-corner jacks.
- Prevent introduction of three-corner jack into clean areas.
- Minimise further spread in generally infested areas.

Best Practice Implementation

- Regional landscape boards in the active control regions to ensure high-priority infestations, as determined by the authority, on public or private land are controlled.
- Regional landscape boards in the active control regions to control high-priority infestations on road reserves.
- Regional landscape boards in the active control regions to develop a control program to reduce the abundance of three-corner jack in other infestations if there is a risk of spread to adjoining uninfested areas.
- Regional landscape boards in the active control regions to ensure three-corner jack is controlled in stock sale yards, car parks, parking bays, roadhouses, camping areas and other areas with a high risk of contaminating vehicles or stock.

Regional Implementation

Refer to regional management plans for further details.

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

Declaration

To implement this policy, three-corner jack is declared under the *Landscape South Australia Act 2019* throughout the whole of the State of South Australia. Its entry to the State, movement or transport on a public road, by itself or as a contaminant, or sale by itself or as a contaminant are prohibited. The Alinytjara Wilurara, Eyre Peninsula, Kangaroo Island, Limestone Coast, and Murraylands and Riverland Landscape Boards may require land owners to control three-corner jack plants growing on their land. These five Landscape Boards are required to control plants on road reserves in their regions and may recover costs from the adjoining land owners.

Three-corner jack is declared in category 3 under the Act, for the purpose of setting maximum penalties and for other purposes. Any permit to allow its entry, road transport or sale can only be issued by the regional landscape board or 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 three-corner jack 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 three-corner jack. 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 three-corner jack 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	X	X			X	X	X		
194 Recovery of control costs on adjoining road reserves	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 three-corner jack.

Weed Risk

Invasiveness

Three-corner jack is a prolific seeder producing up to 1000 seeds per plant in favourable conditions. The seed is easily spread due to the spiny processes on the seed. Seeds attach easily to shoes, rubber tyres, the feet of animals, contaminated fodder and water. These mechanisms can transport seed over 200 metres.

The spiny fruits of three-corner jack are structured so that a spine is always pointing up, which aids in dispersal. The seeds may germinate at almost any time of year if soil moisture levels are adequate.

Impacts

In South Australia, three-corner jack infestations have been a serious problem in crop, pasture and horticultural situations, especially in cereals, vineyards and perennial horticulture. It competes with field crops in their early growth stages, causing significant reductions in eventual yield.

Three-corner jack contamination leads to rejection of grain at silos, also rejection of dried fruit, pulse grains, barley, peas, lupins and chickpeas.

Infestations of three-corner jack can reach high densities, with more than 900 plants per square metre. South Australian studies have shown that an infestation of approximately 11 plants per square metre can reduce wheat yields by almost 40%.

The growing plants contain oxalate at levels that are not acutely toxic but may poison sheep if eaten in large quantities.

The spiny fruits can injure animals and barefoot humans; they reduce the amenity value of recreational areas such as ovals, camping grounds and reserves.

Potential distribution

Three-corner jack grows on sandy and loamy soils. It has a wide climatic tolerance including sub-humid and semi-arid tropical, sub-tropical and temperate regions. Its deep tap root enables it to tolerate dry conditions.

It is well adapted to the agricultural zone of South Australia. However it is less competitive and does not cause agricultural problems in the higher rainfall environment of the Mount Lofty Ranges and lower Limestone Coast.

Feasibility of Containment

Control costs

Three-corner jack can produce seed at an early age and any control program must aim to kill all plants shortly after emergence. Cultivation will kill seedlings, but due to their staggered germination cultivation alone can be ineffective and is usually combined with chemical control. Three-corner jack can be controlled by spraying with commonly-used nonselective herbicides and some that allow grasses to survive.

Persistence

Only a small proportion of the seed bank of three-corner jack germinates in each growing season. Its persistence and ability to survive control measures is directly related to the dormancy and longevity of its seeds. Survival of up to eight years in field conditions has been reported, or longer in cooler climates. Consequently, although germination may vary markedly from year to year, the size of the seed bank remains relatively constant.

Current distribution

Three-corner jack is a widespread weed of grazing and cropping lands, saleyards, vineyards and neglected sites in South Australia, with infestations ranging from the northern pastoral areas through to the Adelaide plains, Eyre Peninsula and Mid North cropping district. It is common along the Murray River irrigation areas and in urban areas.

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
Crop-pasture rotation	high 135	high 30	contain spread
Irrigated pastures	medium 49	high 30	protect sites
Grazing-rangeland	medium 39	medium 51	manage sites
Perennial horticulture	medium 39	low 97	manage sites
Grazing - southern	low 15	very high 12	monitor
Vegetables	low 20	medium 35	limited action
Urban	low 34	medium 35	limited action

Considerations

Risk assessment at the State level indicates management actions of containing spread to protect rotational crop-pasture systems, protecting sites in irrigated pasture and managing

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infestations in the rangelands and perennial horticulture. In practice, these actions are implemented according to the levels of infestation and risk in each region.

Three-corner jack is sufficiently uncommon in the Kangaroo Island and Limestone Coast regions for strategies of containment and site protection, respectively, to be applied. The Alinytjara Wilurara region aims to manage the weed. Green Adelaide, Hills and Fleurieu, and the Murraylands and Riverland regions manage sites. The weed is monitored in the SA Arid Lands. Only limited action is required in the Northern and Yorke, and Eyre Peninsula, regions where three-corner jack is widespread and landholders manage it as needed on their properties.

Restrictions on movement are necessary to prevent spread between properties, and in particular contaminated hay and fodder must not be transported. Extension is an important component of control as buyers need to be aware of the risk of fodder and seed contamination.

In 1974 the weevil *Apion antiquum* was released to control three-corner jack. It has not had much effect, but has persisted in some irrigated blocks at Loxton.

In some areas, seed of three-corner jack has become a significant food resource for Major Mitchell cockatoos.

Synonymy

Emex australis Steinh., Ann. Sci. Nat. Sér.2, 9: 195 (1838)

Taxonomic synonym:

Emex centropodium Meisn., Linnaea 14: 490 (1841)

Other common names include Cape spinach, devil's face, doublegee, dubbeltjie, goat's head burr, jackie, prickly jack, spiny emex and three-cornered jack.

References

Gilbey, D.J., Weiss, P.W. & Shepherd, R.C.H. (1998) *Emex australis* Steinh. In Panetta, F.D. et al. *The Biology of Australian Weeds* 2: 89-106.

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