

Plant Policy



Government
of South Australia

Onion weed (*Asphodelus fistulosus*)

Onion weed is an unpalatable annual that has become a very conspicuous pioneer plant on bare sandy soils and rapidly occupies paddocks where the pasture is sparse as well as mallee and rangelands regenerating after the removal of livestock.

Weed risk

Invasiveness

Onion weed has a high rate of seed production typical of opportunist plants that breed rapidly to occupy vacant ground. Seed is shed at the beginning of summer and remains dormant for a few months, but 95-100% is ready to germinate by the following autumn break. It normally falls close to the parent plant, but in drought years can be carried in wind-blown soil, and uprooted plants will roll along scattering seed. Long range dispersal depends on human influence, by movement in contaminated seed, fodder or machinery.

As the unimproved pastures of the savannah (grassy woodland) zone degenerated under grazing, onion weed was one of the weeds that replaced the native perennial tussock grasses. It is now the dominant plant in some areas of marginal crop land, wasteland and stony or sandy calcareous soils. It is a very conspicuous pioneer plant on bare sandy soils and rapidly occupies paddocks where the pasture has become sparse, leading to an assumption that it was a cause of the pasture's decline.

Impacts

Since onion weed is highly unpalatable, heavy grazing by stock and rabbits can remove the competing pasture plants and allow it to dominate in some areas of marginal crop land, wasteland and stony or sandy calcareous soils.

Onion weed does not invade undisturbed mallee vegetation due to the competition from the root systems of established trees and shrubs. On abandoned farmland in the Victorian mallee region it is one of the species that dominates at first but declines as the native vegetation regenerates and almost disappears after about 5 years. It does not compete effectively with vigorous pasture, and cannot dominate where sustainable farming systems are practised. Overcropping or overgrazing may allow it to dominate by lowering fertility and degrading natural pastures. Low soil nitrogen is a critical factor that prevent other plants growing on areas dominated by onion weed.

Potential Range

Onion weed is native to south-western Eurasia from the Mediterranean to northern India, generally on sands in climates comparable to the wheat belt of southern Australia.

It is now naturalised in all Australian States and Territories. It is found predominantly on sandy soils in the 250-400 mm winter-rainfall areas but extends north through the pastoral zone to about 22°S. Growth occurs over a wide range of temperatures. It is also naturalised in areas of North America and South Africa with similar climates.

Its range in South Australia includes areas with sandy soils in the agricultural zone, the southern part of the pastoral zone, and coastal areas.

Feasibility of Containment

Control costs

There is no selective herbicide treatment that is cost-effective against onion weed. A range of non-selective herbicides have been used to control onion weed on roadside reserves. These are all too expensive for broad-acre treatments on land of low value, which precludes their use in the pastoral zone where even a sustained reduction in grazing pressure may be ruled out by economic considerations.

Control in pasture depends on improved management, rabbit control, application of fertilisers and pasture seeding. These four actions will directly improve pasture productivity, with onion weed control as a side effect. Just as an increase in onion weed density was a symptom of pasture decline, pasture recovery will be indicated by its disappearance. Field trials have shown that it is controlled by competition from lucerne or by Wimmera ryegrass after nitrogen fertiliser is applied. In higher rainfall areas, a mixed pasture of phalaris, Wimmera ryegrass and subterranean clover is effective. However, pasture improvement requires a high capital outlay in relation to the present value of the land: for this reason it cannot be enforced by legislation.

Control on roadsides and in remnant vegetation is best achieved by management aimed at restoring the native species.

Persistence

Onion weed has a shallow fibrous root system without underground rhizomes or bulbs. It can store some reserves in the enlarged leaf bases and becomes a perennial when it can obtain sufficient water to persist over summer; but because it allocates a large proportion of its resources to seed production it survives as an annual in drier areas. Some seed remains viable in the soil for at least one year, but onion weed does not form a long-lived seed bank. It therefore changes in abundance much more rapidly than annual weeds with a large seed bank such as salvation Jane.

Current distribution

Onion weed is scattered throughout the agricultural zone, the southern part of the pastoral zone, and coastal areas wherever suitable soils occur. Its distribution and abundance is patchy according to local differences in land management.

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	low 38	negligible 129	Limited action
Grazing - rangeland	medium 45	negligible 127	Manage sites
Native vegetation	low 38	low 109	Limited action

Considerations

- Onion weed spread rapidly in southern Australia in the wake of the peak in sheep densities and the rabbit invasion in the late 19th century. For example, it was noticed spreading in parklands at Port Lincoln by 1889 and had spread 3 miles north. In 1890 the Port Lincoln Agriculture Bureau pressed for it to be proclaimed a noxious weed as it was all over the Port Lincoln township. When declared in 1897 it was present at One Tree Hill, Strathalbyn, Balaklava, Marree, Stockport, Auburn, Bremer and Port Lincoln. Its spread was facilitated by it being grown as an ornamental in gardens.
- Onion weed can stabilise sandy soils on lands that have been overgrazed to the point where few other species remain. As it is a pioneer species with high seed production but low competitive ability, in these situations it provides protection for the first stages of native regeneration but disappears once a dense perennial cover develops. This process of succession may be slow where native seedbank has been severely reduced by many years of overgrazing.
- Apiarists in some areas value onion weed as a source of pollen, and to a lesser extent nectar, to build up bee colonies in early spring before eucalypts begin flowering.
- Control of onion weed with non-selective herbicides continued on many roadsides in the late 20th century. This treatment often increased onion weed density by removing the remaining competition, or led to bare ground and erosion. For these reasons, after a survey the former Southern Eyre Animal and Plant Control Board stopped enforcing control of onion weed in 1986. Since then there have been almost no new outbreaks of onion weed in the area and its overall densities on properties have been reduced by pasture improvement and sulfonyleurea herbicides.
- A statewide review of proclaimed plant schedules in 1990 found some Boards still supported onion weed control in principle, but lacked clear objectives for their programs. Their overall goal appeared to be to maintain pasture production in areas where onion weed is not established; the local control programs were based on the misconception that good pastures will decline if onion weed seed is spread into it. Many other boards accepted pasture improvement and fertiliser application as the standard technique for handling large infestations. At that time onion weed was retained on the schedule for enforced control in certain local government areas pending a review in 1995.
- Onion weed is rarely an economic problem for primary production and sustainable land use in areas where it is established. The actual problems of these lands are low fertility and overgrazing. It has no serious effect on the preservation, use or enjoyment of the South Australian environment, or on particular ecological systems.

No NRM Board has a current management plan to enforce control of onion weed, or finds it necessary to use any of their powers under the Act to manage this plant in their region. Any control actions needed on properties are carried out at the discretion of land owners, who also check any purchased hay for onion weed contamination.

Therefore, onion weed is not declared under the *Natural Resources Management Act 2004* in South Australia.

Synonymy

Asphodelus fistulosus L., Sp. Pl. 309 (1753)

Nomenclatural synonyms:

Ophioprason fistulosum (L.) Salisb., Gen. Pl. 72 (1866).

Verinea fistulosa (L.) Pomel, Mat. Fl. Atl. 2 (1860).

Taxonomic synonyms:

Anthericum unilineatum Poelln., Revista Sudamer. Bot. 7: 160 (1943).

Asphodelus parviflorus Wight, Icon. Pl. Ind. Orient. 6: t. 2062 (1853).

Other common names include asphodel, hollow-stemmed asphodel, onion asphodel, pink asphodel and wild onion.

References

Davidson, T.R. (1968) Onion weed control on mallee soils. *Journal of Agriculture (South Australia)* 71: 290-293.

Onans, J. & Parsons, R.F. (1980) Regeneration of native plants on abandoned mallee farmland in south-eastern Australia. *Aust. J. Bot.* 28: 479-493.

Young, G.J. (1962) Pastures control onion weed on light soils on Eyre Peninsula. *J. Agric. S.A.* 65: 354-358.

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