LANDSCAPE SOUTH AUSTRALIA HILLS AND FLEURIEU

Using pasture weeds to read the landscape

Do you have certain weeds which infest your property year after year?

These plants have likely colonised your pasture due to an underlying soil characteristic.

Use this guide to identify these characteristics and learn how best to take action.

How to use this guide

This guide applies to infestations of weeds rather than to an individual or a few plants. Infestations are where weeds grow in large or dense enough patches that they affect how you can use your land.

Step 1

Identify your weed species using the list of common pasture weeds.

Step 2

Under the weed description, you'll see what soil characteristic this weed may indicate.

Step 3

Look up this soil characteristic in the soil characteristics and management approaches section. Each soil characteristic and it's impacts on production are described, along with recommended actions.

Common Pasture Weeds

Barley grass
Hordeum leporinum and H. glaucum

An annual grass with long, pale leaves covered in soft hairs, reaching up to 50cm in height. The seed heads are 10 cm long, forming a partially enclosed, two-row, barley-like spike. It germinates in autumn and thrives in bare patches.

Indicator of: High fertility, overgrazing.

Capeweed
Arctotheca calendula

An annual herb with serrated, hairy, and deeply lobed leaves that have white furry hairs underneath, forming a dense rosette up to 60cm wide. Yellow, daisy-like flowers with black centers appear in spring. Tiny seeds, covered in brown woolly hairs, spread easily by wind, water, animals, and in hay. This plant grows rapidly and often smothers other seedlings, making it a common pasture weed.

Indicator of: High fertility, overgrazing, saline fringes.

Cat's ear / Flat weed
Hypochaeris radicata

A perennial herb growing up to 80cm high, with toothed or lobed leaves forming a flat, basal rosette against the ground. Bright yellow daisy-like flowers appear on branched, hairless stems. While it prefers wetter environments, such as around swamps and dams, it also grows in a variety of habitats, including drier, stony hills and pastures that are repeatedly cut for hay.

Indicator of: Low fertility (low potassium).

Common storksbill/ Wild geranium
Erodium cicutarium and E. botrys

An annual to biennial herb, growing up to 40cm high, forming a rosette flat on the ground. The leaves are deeply lobed to the mid-vein, some with fine hairs, and the stems are also hairy. Pinkish-mauve flowers form fruits with a tapering beak, which split into pointed, corkscrew-like seeds. This plant can prevent the establishment of perennial grasses.

Indicator of: High fertility, overgrazing.

Dandelion
Taraxacum officinale

Short-lived perennial herb, typically growing up to 30cm high, with deeply lobed, jagged leaves forming a flat rosette up to 30 cm across. The leaves exude a white sap when cut. Yellow, daisy-like flowers form on single, hollow, leafless stems. While it prefers wetter areas, such as along creeks or dams, it is highly adaptable and can tolerate dry conditions.

Indicator of: Low fertility.

Dock
Rumex spp

Perennial herbs, growing up to 1-1.5m tall, with a taproot and a basal rosette of green to reddish, wavy-edged leaves. Small green to red flower heads are clustered along the upright stem and produce dark brown, angular seeds. They prefer damp soils and are commonly found in creek lines and areas with poor drainage. Some species of Rumex are native.

Indicator of: Waterlogging.

Fat hen
Chenopodium album

Fast-growing annual herb, reaching up to 1m in height. It has branched, angular stems that may be green or red-tinged. The leaves are diamond-shaped, grey-green, and have a powdery appearance. Green to white flowers form in clusters along branched spikes, typically at the ends of the branches. It prefers disturbed, highly organic, nitrate-rich soils and requires bare ground for establishment and persistence. Strongly allelopathic, it can reduce the germination and growth of other species.

Indicator of: High fertility, salinity.

Yorkshire Fog
Holcus lanatus

A soft, velvety, tufted perennial grass that typically grows to about 1m in height. It features red to purple stripes at the base of the stem and greyish-green, soft, and somewhat hairy leaves. Commonly found in a variety of habitats, including edges of swamps and wetlands, creeks, and grassy woodlands. It thrives in damp soils and can tolerate waterlogged conditions. Low palatability.

Indicator of: Waterlogging, mild salinity, acidity, low fertility (low nitrogen, but potentially also phosphorus, potassium and sulphur).

Guildford grass
Romulea rosea

Small, annual herb that typically grows to about 40cm in height. It grows from seeds and small, underground corms (bulb like). The plant has shiny green, grass-like leaves that are clustered together at the base in groups of up to 10 per plant. Pink to violet flowers with yellow throats form on single stems. Commonly found in pastures, lawns, and roadsides on a variety of soil types.

Indicator of: Low fertility (low phosphorus), low soil organic matter, acidity, poor stock health.

Hare's tail grass
Lagurus ovatus

Tufted, annual grass to 30cm high with soft, hairy leaves that are tufted at the base. Egg-shaped whitish seed heads are soft and feathery in appearance and persist for several months after flowering. Highly invasive and commonly found in disturbed coastal areas, saline and brackish swamp edges and drier inland grasslands.

Indicator of: Sandy, infertile and calcareous soils. Mild salinity.

Marshmallow
Malva parviflora

Annual to biennial herb that can grow up to 2m in height, with a sprawling habit and reddish woody stems. The leaves have 5 to 7 broadly toothed lobes and prominent veins. Pink to white flowers with 5 petals form small clusters at the base of the leaves. The fruit develops into button- or pumpkin-like capsules. Prefers bare, open ground and can thrive on a variety of soil types.

Indicator of: Compaction, waterlogging, low calcium, over grazing and poor stock health.

Onion weed
Asphodelus fistulosus

Annual or perennial, tufted herb to 40cm high with onion-like, hollow, cylindrical stems and semi-succulent leaves. White to pinkish flowers, with 6 petals, each with a brownish centre stripe, form in bunches of up 30 flowers on short stalks. Prefers drier, lighter textured soils and can grow quickly.

Indicator of: Sandy soils, calcareous soils, overgrazing.

Ribwort plantain
Plantago lanceolata

Perennial herb to 60cm tall forming a rosette of spear shaped leaves with strong parallel veins and long downy hairs. Small, green, egg-shaped spikes sit well above the leaves and consist of many smaller flowers. Common on overgrazed pastures and frequently mown areas, adopting a flat grown habit. Useful in a mix pasture providing some feed value, adapts well on low fertility soils.

Indicator of: Overgrazing, low nutrition.

Spear thistle
Cirsium vulgare

Annual to biennial thistle that grows up to 1.5m tall. It first forms a basal rosette of leaves, then develops upright, branched stems that are spiny, winged, and covered with woolly white hairs. Its deeply lobed leaves (up to 45cm long) have spiny margins. The purplish flower heads (3-5cm across) are surrounded by spiny bracts. This weed can cause significant production losses on productive farmland.

Indicator of: High fertility, overgrazing, soil disturbance.

Sea Barley grass
Hordeum marinum

Tufted annual grass to 50cm high with bluish-green, narrow leaves and stems branching at the base forming a spreading habit. Flower head is a dense, semi-flattened 2 row barley-like spike. Tends to colonise low-lying, disturbed areas on salt affected land.

Indicator of: Salinity, waterlogging.

Silver grass
Vulpia bromoides

Slender, annual grass with fine, hairless leaves that rapidly germinates after soil disturbance. Leaves are stiff and rolled, with predominately one-sided seed heads forming well above the upper leaf. Seeds to 6mm long are topped with awns up to twice the length of the seed.

Indicator of: Low fertility, overgrazing.

Sorrel
Rumex acetosella

Slender, perennial herb to 30cm with arrow-shaped leaves. Small, light green to deep red purple flowers form small clusters. Conspicuous reddish, triangular, nut-like fruit can remain viable for many years. Forms patches by spreading from shoots on lateral roots and often dominates weak pastures in high rainfall areas.

Indicator of: Acidity, low fertility (low potassium).

Spiny rush
Juncus acutus

A tussock-forming perennial rush that grows up to 1.6m tall, with sharp, spiny leaves. Flowers are clustered at the top of the stem, and each flower head contains thousands of brown seeds. This species should not be confused with smaller, softer native Juncus species. Prefers low-lying, moist areas or creeks, and coastal flats. Out competes pasture and native species. Serious environmental weed in SA.

Indicator of: Waterlogging, low fertility, salinity.

Stinging nettle
Urtica urens

Annual herb to 90cm high with deeply toothed or serrated green to dark-green oval leaves covered with stiff, stinging hairs. Small, greenish-white flowers form where the leaf joins the stem. Favours moist areas.

Indicator of: High fertility, overgrazing, high organic matter.

Winter grass
Poa annua

Soft, tufted annual grass to 30cm high, with a partially spreading habit from rooting at the stem nodes. Flower heads are white-green turning red-purple at maturity, with an open, branched head held just above the upper leaf. Brown tear-shaped seeds germinate readily in winter and spring in moist conditions.

Indicator of: Disturbed soil, wet soil, soil compaction, low fertility.

Soil characteristics and management approaches

Overgrazed or heavily disturbed soils

Causes: Overgrazing occurs when plants are extensively grazed for an extended period without a sufficient recovery period, resulting in the deterioration of the vegetation. Overgrazing reduces plant root depth leading to plant loss and reduced ground cover and plant diversity, and favours the spread of weeds.

Impacts on production: Soil erosion, compaction, and the loss of soil structure. It reduces water infiltration, soil fertility, and biological activity while increasing water runoff. Overgrazed watercourses contribute to further erosion, leading to higher levels of sediments, nutrients, and manure entering the water.

Action: Retain at least 70 percent ground cover at all times, fence to land type and manage pasture through rotational grazing, carry appropriate stock numbers, fertilise and lime to meet plant needs, and undertake containment feeding of livestock when necessary.

OVERGRAZED - Ribwort Plantain

Saline soils (salinity)

Causes: Saline soils occur where there is an excess of dissolved salts within the soil profile. Many South Australian soils are naturally saline, and changes in land use and management have further increased salinity. Water table-induced salinity is often the result of shallow rooted pastures replacing deeper rooted plant species or over irrigation relative to crop water use.

Impacts on production: Salinity alters soil structure, inhibiting beneficial microbial activity and reducing plant uptake of water and nutrients, resulting in stunted growth. If salt concentrations are high on the surface, bare patches may occur.

Action: Saline soils can be managed by incorporating deep-rooted perennial plants into pastures, including those higher in the catchment. Replanting saline areas with salt-tolerant, deep-rooted shrubs, restricting livestock access to these areas, growing salt-tolerant species, and maintaining high ground cover or mulching to reduce evaporation are also effective strategies.

MILD SALINITY - Yorkshire fog

Poor drainage or waterlogged soils

Causes: Waterlogging occurs when the soil contains so much water that there is insufficient oxygen in the pore space between soil particles for plant roots to adequately exchange gases.

Impacts on production: A lack of available oxygen in the root zone of plants inhibits the function of roots resulting in their decay, starting at the root tips. Short periods of waterlogging may lead to root pruning and decreased pasture productivity, while long-term waterlogging can kill plants. Waterlogging also creates favourable conditions for harmful microorganisms and root diseases. Grazing waterlogged land can heavily impact soil structure and lead to compaction.

Action: Manage by fencing the area to seasonally exclude livestock, use more tolerant pasture or crop species, manage fertiliser applications to avoid leaching and surface water run-off from up-slope.

WATERLOGGED - Dock

High fertility soils

Excess Nutrient Availability

Causes: Excess nutrients may be present around stock yards and camps or from over application of fertilisers.

Impacts on production: High fertility in soils, particularly nitrogen and phosphorus, can lead to nutrient imbalances and increased susceptibility to nutrient runoff, leaching, and pollution of waterways.

Action: Soil fertility can be managed by undertaking reliable soil testing, understanding plant requirements, choosing suitable fertiliser blends and applying the correct amounts at the right time of year.

HIGH FERTILITY - Barley Grass

Low fertility soils

Low or insufficient nutrient availability

Causes: Low fertility often means the soil lacks essential nutrients like nitrogen, phosphorus and potassium, which are crucial for plant growth and health. Soil deficiencies can result from nutrients leaching from the profile, continual grazing, or removal during hay production.

Impacts on production: Soils with low fertility are less resilient to environmental stresses such as drought, extreme temperatures, and pest and disease pressure. Low soil fertility can also contribute to nutrient deficiencies in grazing animals.

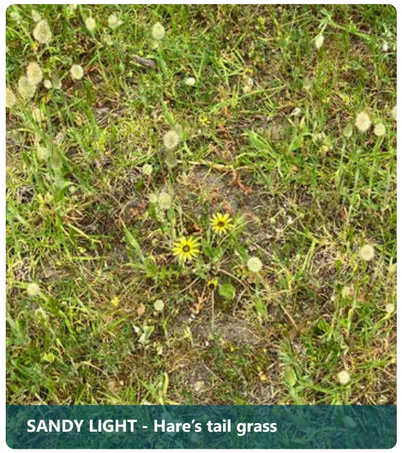
LOW FERTILITY - Guildford Grass

Light or sandy soils

Causes: Many areas of the Adelaide Hills and Fleurieu have areas of deep sands or sand over clay soils.

Impacts on production: Soils with a high sand and low clay content hold less nutrients and retain less moisture. Sandy soils are prone to nutrient leaching, limited microbial activity, low organic matter retention and are vulnerable to erosion.

Action: Sustainable land management of sandy soils includes building up soil organic matter by maintaining healthy plant growth, maintaining groundcover, avoiding over cultivation, monitoring grazing pressure, establishing native windbreaks, stabilising problematic areas with suitable plantings and undertaking erosion control measures.



SANDY LIGHT - Hare's tail grass

Compacted or hard pan soils

Causes: Compaction is most common in heavier soils and can be exacerbated by overgrazing and vehicle traffic, particularly on wet or waterlogged soils.

Impacts on production: Restricted root penetration, water infiltration, and air exchange, hindering plant growth and reducing pasture or crop yields. These soils exacerbate runoff and erosion, leading to nutrient loss and degraded soil health.

Action: Compacted soils can be improved by the addition of gypsum or organic matter, managing stock access, avoiding cultivation or vehicle movements when the soil is wet or conducting deep tillage where appropriate. Maintaining thick groundcover or deep-rooted perennials also reduces the potential for compaction to occur.

COMPACTED - Marshmallow

Acidic soils

Causes: Soils in high rainfall areas of the Adelaide Hills and Fleurieu often naturally become acidic due to leaching, removal of hay from paddocks, use of urea fertilisers, or from legume dominant pastures.

Impacts on production: Low pH can limit nutrient availability, hinder microbial activity, and increase the solubility of toxic elements like aluminium and manganese. Below pH 5.5, plants can become stunted, crop yields reduced, and soil structure degraded.

Action: Soil acidity can be improved by the addition of agricultural lime (calcium carbonate or dolomite lime) which neutralises the acid and raises pH. The amount of lime required will depend on soil type, existing soil pH and desired pH.

ACIDIC AND DISTURBED - Sorrel

Need more help?

Contact Landscapes Hills and Fleurieu our Stewardship Officers can help with advice about weed identification and soil health. Phone our Mount Barker office on 8391 7500.

Sign up to Stewardship News – our newsletter has helpful advice and resources to manage your soil, water and nature. Go to: landscape.sa.gov.au/hf/subscribe

Visit our website for land management advice landscape.sa.gov.au/hf/stewardship

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