

PUCCINELLIA

Dryland Salinity Information Sheet #5

Tim Herrmann, Saltland Agronomist PISA Mt Barker

What Is Puccinellia?

Puccinellia (*Puccinellia ciliata*) is a perennial grass that is very salt and waterlogging tolerant. The plant has long narrow leaves, grows mid autumn to spring and matures early summer. Puccinellia is excellent stock feed and is superior to tall wheat grass.

Where Does Puccinellia Grow?

Puccinellia is best suited to saline areas with a shallow watertable and where rainfall is more than 350mm. It will grow in areas covered by sea barley grass and where the soil has become bare.

Productivity

Typical pastures produce 2 to 3 tonnes of dry matter per hectare per year (3 to 4 DSE/ha equivalent). With appropriate management and application of fertiliser, yields up to 8 tonnes per ha have been produced.

Site Preparation

Fence the area to be sown. If waterlogging is a problem install shallow drains where practical to remove excess water. Diversion banks will reduce the movement of runoff water onto the area. Consideration should be given to the disposal of drainage water.

Weeds such as sea barley grass must be controlled. Best results are obtained by chemical topping the previous spring. Other options include burning, knockdown herbicide and cultivation. Use a combination of methods.

Cultivate in early autumn and leave as ridged or rough as possible particularly where soil salinity is high. The ridges allow better leaching of salt and provides young seedlings some protection from waterlogging.

Sowing

Drop seed on the soil surface. Avoid harrowing. A light rolling may benefit establishment in some soils but should be avoided where prolonged waterlogging is likely. See the chart 'Guidelines for sowing puccinellia'.

Sow in autumn after the opening rains. If the site is likely to become untrafficable after rains, dry sowing should be considered. In higher rainfall areas (above 475mm) sowing in late winter to early spring has given promising results.

Seed rate: 6-10kg/ha. Use the higher rate where salinity is more severe. *Cost:* \$4-5 per kg.

Pests

Monitor and control red legged earth mite during establishment.

Fertiliser

If the site has poor fertiliser history or has been eroded, apply 100-150kg/ha of superphosphate or equivalent at sowing. Nitrogen fertiliser in late winter will boost productivity. Apply 20 to 50 units of N per ha (about 40 to 100kg/ha of urea).

Grazing

Allow about 18 months for plants to establish before grazing. Most economic benefit is gained if puccinellia is used to fill the autumn feed gap reducing the reliance on supplementary feeding. Established puccinellia will tolerate hard grazing, but should be allowed to mature and set seed at least every two to three years.

Mixed Pastures

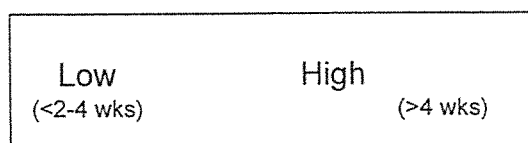
Tall wheat grass (8-10kg/ha) can be sown as a mixture with puccinellia. Puccinellia is an ideal complement for saltbush.

Puccinellia - the answer for saltland

For further information contact Tim Herrmann, Saltland Agronomist, Primary Industries SA, Phone (08) 391 7507, or your local Primary Industries SA office. Updated March 1996

Establishment Of Puccinellia

Risk of waterlogging or inundation (by stagnant or saline water)



Y

Install drains

Will diversion banks or shallow surface drains reduce risk and are they practical?

N

Soil type

Sand	Loam	Clay
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DO NOT SOW

Fence to protect from grazing and erosion

Soil salinity

Mild/ moderate (sea barley grass)	Severe (patchy-bare)
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Mild/ moderate (sea barley grass)	Severe (patchy-bare)	Extreme (bare-salt pan)
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Sowing method

Work up
Harrow
Drop seed on surface
Roll
4-6 kg/ha

Work up
Leave ridges
Drop seed on surface
6-8 kg/ha

Work up
Leave large ridges
Drop seed on surface
8-10 kg/ha

Seed rate

Figure 1. Guidelines for the establishment of puccinellia.

Note: Local experience should also be considered.

FERTILISER FOR PUCCINELLIA

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The application of fertiliser to puccinellia pastures is one of the key management strategies to increase productivity. There is little opportunity for pasture legumes to contribute nitrogen to the system because puccinellia is generally grown where legumes do not persist due to high soil salinity or waterlogging. For this reason, puccinellia dominant pastures will respond to nitrogen fertiliser.

NITROGEN

Benefits

The benefits of nitrogen application are numerous.

- Increased productivity through the promotion of tillering and improved growth per tiller.
- Improved long term survival of puccinellia in harsh conditions. The plant is stronger, and more vigorous and able to tolerate higher levels of salt, flooding or waterlogging.
- Increased development of dormant tiller buds. These become tillers in the following year and this 'sets' the plant up for higher productivity.
- Increased feed quality. Digestibility is often increased but there is little effect on protein unless nitrogen has been applied above the growth demand of the plant.
- Increased seed production. This has a major impact on returns if the pasture is harvested for seed.

Timing of application

The best rate and timing of nitrogen fertiliser application depends on annual rainfall, and seasonal feed requirements. There are a number of strategies that can be used.

1). *Mid - late autumn (May to early June).*

Fertiliser is applied on the opening rains (within a week or so). Puccinellia will respond rapidly to the nitrogen while temperatures are still relatively warm.

Advantages: A useful strategy to provide early feed or more grazing in winter. Allows other pastures to 'get away' while puccinellia is grazed.

Disadvantages: Nitrogen may be leached or lost if waterlogging occurs within 4 weeks of application.

2). *Mid winter (July to early August).*

This is the most appropriate strategy for drier areas (<400mm) that are unlikely to become excessively waterlogged and cause loss of nitrogen.

3). *Late winter/early spring (August to early Sept.).*

A sound strategy to promote rapid growth in spring following grazing in winter, and provide adequate ground cover or dry feed over summer/autumn. It is also useful to increase seed yield for harvesting.

4). *Split application in autumn and late winter.*

The best option for maximum productivity and where seed production is the primary objective. The extra cost and time required to apply the fertiliser limits the widespread adoption of this strategy.

Rates

Economical rates are related to rainfall and intended use of the pasture (Table 1). Higher rates are economical if the pasture is used for seed production.

Forms of nitrogen

The form of nitrogen applied (urea, ammonium nitrate, sulphate of ammonia, etc.) appears to have little effect on overall response. The cheapest form should therefore be used. To avoid losses by volatilisation, urea should be applied when the soil is damp or before rain. If this is not practical, apply urea late in the afternoon.

OTHER FERTILISERS

Little response is shown to phosphorus fertilisers except where soil has been eroded or has a limited history of phosphorus application. In long term pastures, a phosphorus application may be required every 10 years or so.

Table 1. Suggested rates of nitrogen fertiliser for puccinellia pastures.

Rainfall (mm)	350	400	450	500
Nitrogen (kg/ha)	15-25	20-30	25-40	30-50

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