INFORMATION NOTES

DEPARTMENT OF PRIMARY INDUSTRIES

Establishing Puccinellia

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Puccinellia ciliata was introduced to Australia in the 1950s by CSIRO as a pasture for saline and waterlogged areas in Western Australia.

It is the most salt tolerant of all the commercially available grasses and will grow in very high soil salinities without significant loss in production.

Puccinellia forms a tussock up to 40cm high with long, thin leaves. The plant's growing points are embedded into the base of the plant, allowing it to recover after grazing.

The plant grows from mid-autumn through to spring, maturing early in summer and responds well to some form of rotational (strategic) grazing. Puccinellia seed is very fine and does not contaminate wool or meat.

Site recommendations

Puccinellia grows in saline soils with EC values in the range of 10-40 dS/m and in areas exposed to long periods of water inundation. It is suited to bare scald areas caused by salinity.

It grows best in rainfall areas between 350 mm and 800 mm and is an ideal option for areas where saltbush and Tall Wheat Grass will not grow.

Site preparation

Soil should be tested six months before sowing to correct any fertility deficiencies. Puccinellia prefers alkaline soils and is not recommended for moderate to highly acidic soils.

It is important to make sure competition from weeds such as common sea barley grass does not depress Puccinellia growth and production. Heavy grazing before sowing will reduce weed seed set.

Lightly cultivate and spray with a knockdown herbicide after weed germination before sowing.

Sowing

The recommended sowing rate is 6–10 kg/ha. The higher sowing rate is recommended on more saline areas. Seed should be mixed with the fertiliser when sowing.

Direct seeding at a shallow depth of less than 2.5 cm is ideal. Light cultivation is best on bare scalds but rolling afterwards is not required.

Even though Puccinellia is a salt-tolerant plant, seed will rarely germinate where there is little moisture in dry scald areas with high salt concentrations.

The best time to sow is after the first autumn rains which will leach salts from the soil surface as well as contribute to sub-soil moisture (subsoil moisture preferably 20 cm deep). Sowing in early to mid winter is also good.

For bare areas within established pastures, roughly cultivate and top-dress with the seed during early autumn or late spring to help establishment.

Fertiliser

Puccinellia will benefit from phosphorus applications if P levels are below 12 mg/kg. (Colwell P) Nitrogen can be applied at seeding time. The timing and risk of water logging are critical as nitrogen may be lost if water logging occurs soon after application.

Apply urea, if needed, when the soil is damp or in late afternoon to avoid evaporation. Using MAP or DAP at seeding

provides both nitrogen and phosphorus.

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

Figure 1. West Wimmera Demonstration Site before sowing Puccinellia ciliate

Figure 2. West Wimmera Demonstration Site 1 year after sowing

Feed value

The grazing value of Puccinellia depends on its stage of growth. Green leaves from mid autumn to early spring have high protein content and high digestibility (Table 2), however this declines as the plant matures. It remains palatable in late summer and early autumn despite relatively low nutritive value (crude protein less than 5%, digestibility less than 50%). Puccinellia has a low salt content and makes good complementary feed for stock grazing high salt feed such as saltbush.

Pastures with reasonable fertility will produce up to five tonnes of dry matter per hectare per year (up to 5-6 DSE/ha/yr equivalent). Higher yields (up to eight tonnes) are possible with good management and nitrogen fertiliser or companion legumes.

Table 2: FeedTest Results from DPI West Wimmera Puccinellia ciliata Demonstration Site 07/10/2005 and comparison with some key nutritive values of some common pasture species in southwest Victoria

Test	Puccinellia	Phalaris	Tall Fescue	
Moisture (%)	75.4			
75.4Dry Matter (DM %)	24.6			
Crude Protein (% of DM)	16.7	14.3	20.0	19.3
Neutral Detergent Fibre (% of DM)	52.7			
Digestibility (DMD) (% of DM)	70.9	74.9	74.5	72.7
Digestibility (DOMD) (% of DM)	66.9			
Metabolisable Energy (MJ/kg DM)	10.6	11.0	11.2	10.6

Weed risk

Puccinellia has the potential of becoming an evasive weed in non-agriculture areas and the following buffer distances are recommended by the DPI:

* 100 metres from naturalised saline areas

* 50 metres from poorly drained areas

* 50 metres from waterways

* 25 metres from other non-agricultural areas, e.g. roads, reserves, public land

References and Further Information

'*Puccinellia cilata for the Wimmera'* (April 2004) Angela Smallacombe, Agriculture Notes (AG1161), Department of Primary Industries (ISSN 1329-8062)

Saltland Pastures for South Australia. A do-it-yourself manual for the selection, establishment, management and evaluation of saltland pasture systems (June 2007) C. Liddicoat and J. McFarlane - Rural Solutions SA. Government of South Australia publication.

'Table 2 FeedTest results for Puccinellia ciliata' (October 2005) Department of Primary Industries Saline Pastures Demonstration Site.

'*Saltland Pastures in Australia, A Practical Guide second edition* (September 2003).'E.G. Barret-Lennard with contribution from C.V. Malcolm and A. Bathgate. pp 6061.

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