

Establishing Sub-tropical Perennial Grasses and Saltbush on a Site at Risk From Salinity

Aims:

1. To establish sub-tropical perennial grasses on a site at risk from salinity.
 2. Determine the productivity and profitability of the perennial grasses.
 3. Test the effectiveness of direct seeding of Saltbush, Bluebush and Acacia saligna across the site.
 4. Investigate the potential for over-cropping barley within 33 metre saltbush alleys into chemically suppressed perennial grasses.
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Location: Jibberding Hall Rd, Wubin



Background: The Liebe Group SGSL trial site was identified as a paddock highly at risk of encroaching salinity and the group applied for funding and technical support to trial sub-tropical perennial grasses in May 2002. The logic at the time was to establish deep-rooted summer-active perennials to use out of season moisture and provide some feed through the autumn feed gap.

The site was sown to the Evergreen Starter Kit (sub-tropical and temperate grasses and a herb) in 2001. From November 2001 until February 2003 there was only 130 mm of rain on the site. Remarkably, some of the Rhodes grass and Bambatsi Panic grass survived. Due to a low density (<1 plant/m²) the site was resown to the Evergreen Mix (Rhodes grass, Bambatsi Panic, Gatton Panic, Setaria and Signal Grass) in September '03. The density increased to 1-5 plants/m² across the site except for some bare saline areas. It was decided to sow more salt and drought tolerant perennials in these patches. A mixture of saltbush, bluebush and acacia saligna were niche seeded in alleys 33 metres apart across the site in July 2004.

In the future, the inter-row areas will either be left to sub-tropicals if density improves, over-cropped with a barley crop or sown with an annual legume such as scimitar burr medic.

Trial Details:

Plot size and replication	46 ha (no replication)
Soil type	Sandy duplex
Sowing date	Original sub-tropicals sown in September 2001 Sub-tropicals were re-sown in September 2003 Saltbush, Bluebush and Acacias were sown in July 2004
Conditions at sowing	Moist seedbed
Machinery	An airseeder with knifepoints and press wheels was used to sow the subtropical grasses. A niche seeder was used to sow the saltbush mix.
Seeding rate	Subtropicals: 4 kg/ha Saltbush Mix: 300 grams/km
Fertiliser	No significant fertiliser application to date. A fertiliser program will be devised once there is a sustainable density of perennial grasses.
Herbicides and Insecticides	January '03: 73 mL/ha 2,4-D Ester and 90 mL/ha Garlon with 0.5% spray oil to control roly-poly July '04: Saltbush alleys sprayed with knockdown herbicide
Paddock History	2001: Sub-tropical perennial grasses 2002: Sub-tropical perennial grasses 2003: Sub-tropical perennial grasses 2004: As above with alleys of a saltbush mix

Results:

Measurement	Range across the site		Comment
	Feb '03	Dec '04	
EM 38 – horizontal (mS/m)	70-160	60-260	Moderately to highly saline
EM 38 – vertical (mS/m)	90-170	90-280	As above
Soil EC _{1:5} :(2-5 cm depth)	20-160	20-260	As above
Plant density of perennial grasses (plants/m ²)	0-20	0-20	Density is highly variable
% Bare Ground	5-60%	15-80%	Highly variable over site
Feed on Offer (FOO) kg DM/ha	0-3500	700-5600	Creeping saltbush has increased over the site
Depth to watertable	No bores	2-3 metres	Water salinity exceeds seawater concentration

Summary:

- Bambatsi Panic and Rhodes grass have good drought tolerance but maintaining a high plant density has proved difficult
- Due to low rainfall seasons, more drought tolerant species are required on the site hence plantings the saltbush alleys.
- Salinity varies over the site and therefore so does the ground cover, species composition and FOO. The increase in creeping saltbush has suggested halophytes may be a desirable option for the site.
- Roly-poly control can be achieved by spraying with 2,4-D Ester and Garlon and rolling.

Technically reviewed by: Brianna Peake