

Use furrows for sowing sub-tropical grasses

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Purpose: To determine whether successful establishment of sub-tropical grasses requires sowing into furrows.

Locations: Gillingarra and Eneabba

Soil Type: Deep sand

Soil Results: (ex CSBP Ltd)

Site	Ammonium N	Nitrate N	P Colwell	K Colwell	S	Organic C	Conductivity	pH (CaCl ₂)
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	%	dS/m	pH
Eneabba	3	13	9	43	55.30	1.45	0.089	5.40
Gillingarra	3	57	28	87	173.00	1.64	0.297	5.50

Rotation: Pasture for more than three years

GSR: Gillingarra 182 mm, Eneabba 158 mm

BACKGROUND SUMMARY

A range of methods have been used commercially to sow sub-tropical grasses, including drilling into furrows and surface sowing both with and without furrows. Previous small plot experiments have shown that currently used sub-tropical grasses require an optimum sowing depth of 5-10 mm, while the use of press wheels has been shown to be highly beneficial in providing good seed-soil contact. Experiments were conducted at Gillingarra and Eneabba to test these findings in larger plots, as part of a project to develop a best-practice method for reliable establishment of sub-tropical grasses.

TRIAL DESIGN

The following treatments were compared:

1. Seeding at 5-10 mm below the surface into furrows;
2. Dropping seed onto the surface into furrows; and
3. Dropping seed onto the surface with no furrows.

Press wheels were used in each treatment

The site was prepared using two herbicide knockdowns, glyphosate @ 2 L/ha 6 weeks before sowing, followed by glyphosate @ 1.5 L/ha 2 weeks before sowing. The Evergreen mix @ 5 kg/ha (40% germinability) was sown on August 26 at Eneabba and September 1 at Gillingarra using an experimental cone seeder with half wide point (8 inch) tynes spaced 550 mm apart, in which adjustments to sowing configuration were readily made. Plots were 1.25 m x 30 m and treatments were replicated three times in a randomised block design. Seedling counts along rows were conducted in eight random 1 m sections per plot after 29 days at Eneabba and after 42 days at Gillingarra.

RESULTS

Seedling densities were high at both sites, reflecting favourable conditions during spring. Sowing 5-10 mm below the surface into furrows resulted in a significantly higher density than the other treatments at both Gillingarra and Eneabba (Tables 1 and 2). Surface seeding into furrows gave a significantly higher

density than into no furrows at Gillingarra, although there were no statistical differences between the two treatments at Eneabba. Surface-sown plots with no furrows were also the most patchy.

Table 1 Establishment density of warm season perennial grass seedlings following sowing into three different seed placement treatments at Gillingarra. Press wheels were used for each treatment.

Seeding treatment	Seedling density (plants/m ²)
5-10 mm below the surface into furrows	55.2
Surface-sown into furrows	33.9
Surface-sown with no furrows	21.8
Probability of no difference	P < 0.01
I.s.d. (P = 0.05)	11.5

Table 2 Establishment density of warm season perennial grass seedlings following sowing into three different seed placement treatments at Eneabba. Press wheels were used for each treatment.

Seeding treatment	Seedling density (plants/m ²)
5-10 mm below the surface into furrows	47.9
Surface-sown into furrows	19.1
Surface-sown with no furrows	13.6
Seeding treatment difference	P < 0.05
I.s.d. (P = 0.05)	22.58

DISCUSSION

These trials confirmed sowing at a depth of 5-10 mm into furrows is the most reliable method of establishing sub-tropical grasses. Shallow sowing depth is critical for the small-seeded grasses, while furrows allow water harvesting to increase available soil moisture. The press wheels provided good contact with the soil surface to enable moisture uptake. The trials also confirmed poorer establishment from surface-sown seeds; these treatments were most likely enhanced by favourable spring conditions, in which the soil surface remained moist. In a drier spring it might be expected that the no furrow treatment would place seedlings at a greater disadvantage than treatments with furrows, due to a lack of water harvesting capability.

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