Watch your speed when sowing sub-tropical grasses

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Purpose: To determine whether successful establishment of sub-tropical grasses is affected by sowing speed

Locations: Gillingarra

Soil Type: Deep sand

Soil Results: (ex CSBP Ltd)

Ammonium N	Nitrate N	P Colwell	K Colwell	S	Organic C	Conductivity	pH (CaCl2)
mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	%	dS/m	pH
3	57	28	87	173.00	1.64	0.297	5.50

Rotation: Pasture for more than three years

GSR: 182 mm

BACKGROUND SUMMARY

Accurate seed placement appears critical for reliable establishment of sub-tropical grasses. A sowing depth of 5-10 mm is optimum for the sub-tropical species currently used, while use of press wheels provides good seed-soil contact. Sowing speed has an effect on distribution of soil behind the tynes; higher speed creating greater disturbance. This experiment was undertaken to determine the effect of different sowing speed on establishment density, as part of a project to develop a best-practice method for reliable establishment of sub-tropical grasses.

TRIAL DESIGN

A Massey Ferguson combine seeder that was modified for sowing warm season perennial grasses at a row spacing 615 mm was used. The seeder was designed with 8 inch scarifier points and soil rider components (incorporated press wheels) for depth control adjustments and was set up to sow precisely at 5-10 mm depth when towed by a tractor at 5 km/hr. Plant establishment following sowing at this speed was compared with that sown at 10 km/hr and 15 km/hr.

The Evergreen mix @ 5 kg/ha (40% germinability) was used and plots were 2.5 m x 48 m and treatments were replicated three times in a randomised block design. 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. Seedling counts were conducted 42 days after sowing in four random 1 m sections per plot, positioned along seeding rows.

RESULTS

Sowing at 5 km/hr gave significantly higher seedling establishment densities than sowing at 10 km/hr and 15 km/hr (Table 1). It was most noticeable that the 15 km/hr plots had the most soil disturbance.

Table 1 *Establishment density of warm season perennial grass seedlings following sowing at 5, 10 and 15 km/hr at Gillingarra*

Sowing speed	**Establishment (plants/m^2)**
5 km/hr	42.9
10 km/hr	23.4
15 km/hr	10.8
Probability of no difference	$P < 0.05$
l.s.d. ($P = 0.05$)	18.4

DISCUSSION

These results indicate the need to sow at a conservative speed and to check that seed is being consistently placed 5-10 mm below the surface. The machine was set up in this experiment to sow at this depth when speed was 5 km/hr. At faster sowing speeds greater soil disturbance indicates the machine no longer consistently sowed at this depth, resulting in less accurate seed placement and lower resultant plant densities. This may not mean that all sowing should be done at low speeds. However, if a faster sowing speed is to be used, it is important to set up the machine for sowing at that particular speed. This research also highlights the need to check seed placement before and during sowing warm season perennial grass paddocks.

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