

Persistence and production of native and exotic warm-season perennial grasses at Walgett, North-West NSW

W.D. Bellotti

NSW Department of Agriculture, Walgett 2832

The area of dryland wheat in the Walgett Shire expanded by 241% over the ten years from 1974 to 1984. This expansion of dryland farming has preceded the development of stable farming systems. The soil is usually cropped continuously and no fertilisers are applied. Recent economic pressures have forced many north-west wheat growers to reconsider livestock enterprises. This paper presents preliminary results from the second stage of a three stage evaluation program to identify suitable perennial grasses to allow the return of marginal cropland to productive rangeland.

Methods

Ten grass species were sown into old wheat paddocks on two properties (Minnamurra and Ulah) near Walgett (474 mm rainfall p.a.) in November, 1985. Germination percentage and seed number per gram were determined and a sowing rate of 4 kg/ha of viable seed calculated for each grass. Seed was dropped onto a cultivated soil surface and lightly harrowed. Micro irrigation was used initially to ensure successful establishment (four weeks) after which the trial received rainfall only. No fertiliser was applied and grazing animals were excluded. Plots measured 2 by 3m and were replicated four times.

Results and Discussion

Sown grass densities ranged from 2 to 24 established plants/m² (Table 1). At both sites the native Mitchell grass (*Astrebla*) had the highest plant density. The highest dry matter yields, resulting from September/October rains of 56 and 187mm at Minnamurra and Ulah respectively, were achieved by Purple Pigeon grass (*Setaria*) at Minnamurra, and Mitchell grass at Ulah.

Table 1 Plant density and dry matter yield of perennial grasses sown in November, 1985.

Sown Species	Plant Density, Oct, 1986 (plants/m ²)		Dry Matter, Dec, 1986 (kg/ha)	
	Minnamurra	Ulah	Minnamurra	Ulah
<u>Native (north-west NSW)</u>				
<i>Astrebla lappacea</i>	24a	22a	270bc	1165a
<i>Digitaria divaricatissima</i>	14bc	19b	181cd	475bc
<i>Dichanthium sericeum</i>	8de	6d	165d	255cd
<i>Enteropogon acicularis</i>	5ef	5d	49e	103d
<i>Paspalidium constrictum</i>	5ef	2f	38e	24d
<u>Exotic (southern Africa)</u>				
<i>Panicum coloratum</i>	16b	12c	357ab	444bc
<i>Setaria incrassata</i>	12cd	5de	435a	162d
<i>Cenchrus ciliaris</i>	2f	13c	148d	642b
<i>Urochloa mosambicensis</i>	10cd	4def	30e	27d
<i>Bothriochloa insculpta</i>	6ef	2ef	21e	39d

+Means in columns followed by a common letter not sig.diff. (P>0.05)

The results demonstrate that in this environment some of our native grasses are equal or superior to the best exotic grasses which have been selected after intense evaluation. Mitchell grass has long been recognised as a valuable pastoral grass but attempts to sow the grass have been largely unsuccessful. Research on the domestication of this grass, including aspects of seed harvesting, seed cleaning, and sowing requirements is now receiving a high priority.