

QUALITY AND QUANTITY WARM SEASON PERENNIAL PASTURE TRIAL

Brianna Peake, Liebe Group and Geoff Moore, Department of Agriculture WA



AIM

To investigate the production and quality of warm season perennial species in the north eastern wheatbelt.

BACKGROUND

The focus of the NAR Grain and Graze project is to increase the capacity of growers to change their rotations / systems to include perennials so that economic and environmental success is assured.

There is minimal information on the production of warm season grasses in different environments and on different soil types. This information is essential for producers to be able to make informed decisions on the expected production and quality from warm season grasses in different regions of south-western Australia. Seasonal production and quality data is also required for cost:benefit analysis and to run farming system models to optimize the mix of enterprises in a region.

To address this issue, a series of trials were established in spring 2004 across the agricultural area of WA to measure the seasonal production of warm season grasses both for quantity and quality in a collaborative arrangement between AWI-Evergreen Project and Grain and Graze in the northern agricultural region and DAWA (MLA project).

The trial at west Buntine includes varieties such as Green panic, Signal grass, Rhodes grass (Katambora and Callide), Bambatsi panic, Splenda setaria, Premier digit grass and Siratro (a perennial legume). These sub-tropical varieties are compared with Lucerne sown in Autumn and Spring, Veldt grass (a temperate perennial grass) and annual volunteer species.

The trials are to be monitored for the 4 year duration of the project. Initial establishment counts were recorded in 2004 and persistence counts have been recorded at the break of season and beginning of the summer period (Nov) every year. In June 2005 monthly measurements of herbage biomass began to be recorded for the trial.

TRIAL DETAILS

Property	Ross Fitzsimons, West Buntine
Plot size & replication	12 treatments x 3 replications. Plots 7 m x 3.6 m
Soil type	Sand over gravel
Sowing date	26/8/04
Seeding rate	Varies with species and seed quality
Fertiliser (kg/ha)	super:potash 3:1 @ 200 kg/ha at sowing, 15 units of P, 20 units of N and 20 units of K using DAP and Muriate of Potash on 13/5/05
Herbicides	Knockdown – Roundup @ 2 L/ha, Bromocide 200 (Bromoxynil @ 200g/L) @ 1.5 L/ha on 27/5/05 - Lucerne and Siratro plots were covered

Rainfall: West Buntine

Jan	Feb	March	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Total
5	3	49	8	61	71	17	68	31	8	0	0	321 mm

RESULTS

Table 1: The average biomass production for the sown species in the perennial trial at Buntine for 2005.

Species/variety	Biomass sown spp. (kg DM/ha)			Total biomass
	30/6/05	5/9/05	7/10/05	
Annual volunteer	1294	2320	1057	4670
Katambora Rhodes grass	1285	678	531	2490
Callide Rhodes grass	603	444	715	1760
Green panic	136	114	62	310
Lucerne - spring	83	103	102	290
Lucerne - Autumn	0	0	63	60
Bambatsi panic	19	15	21	55
Splenda setaria	29	16	8	50
Signal grass	30	7	7	40
Premier digit grass	9	22	12	40
Consol lovegrass	0	0	33	30
Siratro	1	0	0	1

COMMENTS

- This site experienced dry conditions in spring 2004 and over summer ('04/05) until rain in late March. Many plants died over the first summer, but there was a second germination following the rain in late March. Only a small proportion of these plants have persisted over winter through to the start of summer.
- There was modest production in autumn '05 following the early rain in late March-early April. The highest yielding perennial treatment in autumn was Katambora Rhodes grass with an average yield of 1285 kg DM/ha. Most lines had very low autumn production as the majority of the perennial plants in the plots had only germinated after the autumn rain, so they were still only seedlings (Table 1). The exception was the plots of Rhodes grass where the plants persisted over summer.
- There have been clear results in the first 15 months with Katambora and Callide Rhodes grass being the only two species that have survived with a good plant density, achieved good ground cover and moderate biomass production (Table 1). However, the yield of Katambora Rhodes grass for the 2005 growing season of 2490 kg DM/ha is much lower than the annual volunteer control which was predominantly annual ryegrass with an average yield of 4,670 kg DM/ha (Table 1).
- Bambatsi panic, Green panic, Lucerne (Spring) have survived with a low to fair plant density, but the individual plants have not grown to substantial size and produced little bulk. The grasses in particular appear to be marginal to unsuited to the soils and rainfall.
- Very few Siratro, Premier digit grass, Setaria and Signal grass plants have survived (1-5 plants/plot) and they appear to be unsuited to the soils and rainfall.
- Veldt grass and Lucerne (autumn) were sown into spare plots on the 25th of May and achieved good establishment with an average of 26.7 and 35.6 plants/m² respectively. However they have had limited growth since sowing and many plants have died.
- The trial will continue to be monitored. Sampling will be rationalised in 2005 to reflect the poor persistence of many treatments.

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