

It was desirable to evaluate the promising *Panicum maximum* lines at a wider range of sites, so in spring 2006 nursery row trials were established at three new sites; Mingenew (450mm), Muresk Agricultural College and at the Liebe Group long-term trial site near Buntine. These trials comprise 11 accessions of *Panicum maximum* plus controls (Gatton, Petrie-green panic). Each row consists of 6 spaced plants with 5 reps. The trials were established using seedlings to ensure uniform establishment. The number of treatments was increased to 15 to balance the spatial design, so in affect there are 6 reps of many treatments (75 rows/trial). The plants were watered two to three times post-planting to ensure successful establishment due to the very dry conditions in spring.

By early December the grasses had established well and the first dry matter assessments were made, but it is premature to report the results. We plan to continue to measure the persistence, production and feed quality over the next 24 months.

GRAIN & GRAZE, QUANTITY AND QUALITY PERENNIAL GRASS TRIAL, BUNTINE

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AIM

To measure the persistence and seasonal production in terms of both quantity and quality for a range of sub-tropical perennial grasses and legumes.

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.

The trial at west Buntine includes a range of sub-tropical species 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 (Dec) every year. In June 2005 monthly measurements of herbage biomass began to be recorded for the trial.

FARM DETAILS

Property	Ross Fitzsimons, West Buntine
Plot size & replication	12 treatments x 3 replications. Plots 7m x 3.6m
Soil type	Sand over gravel
Sowing date	26/8/04 all except lucerne autumn and veldt grass 25/5/05 lucerne autumn and veldt grass
Seeding rate	Varies with species and seed quality
Seeding Machinery	1.2m wide cone seeder Knife point followed by single disc opener and press wheel @ a depth of 5-10mm At sowing: super:potash 3:1 @ 200 kg/ha Post: 13/5/05 15 units of P, 20 units of N and 20 units of K using DAP and muriate of potash 20/6/06 120 kg/ha super:potash 3:1 29/8/06 30 units of urea on all C4 grasses and veldt grass 1/11/06 30 units of sulphate of ammonia on all C4 grasses and veldt grass
Fertiliser (kg/ha)	
Herbicides	Pre: Knockdown – Roundup @ 2 L/ha Post: 27/5/05 - Bromocide 200 (Bromoxynil @ 200 g/L) @ 1.5 L/ha - Lucerne and Siratro plots were covered

RAINFALL (MM): WEST BUNTINE, 2006

Jan	Feb	March	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Total
88.5	5.5	3.5	28.5	25.5	9	17	18	25.5	0.5	15	0	236.5

RESULTS

Table 1: Persistence, measured as plants/m² and frequency (% groundcover) of the sown species in the perennial trial at Buntine for 2004, 2005 and 2006.

	26/10/04	8/12/04		11/5/05		19/12/05		19/5/06		15/12/06	
	Est.	Plants	%	Plants	%	Plants	%	Plants	%	Plants	%
Bambatsi panic	10	3	2	25	22	6	5	16	42	15	27
Callide Rhodes grass	41	18	15	10	63	10	56	9	84	11	45
Green panic	50	0	0	14	35	3	3	12	61	9	15
Katambora Rhodes grass	38	12	8	13	72	11	87	7	65	8	44
Lucerne autumn	44	29	22	13	24	6	3	16	34	9	8
Lucerne spring						7	5	9	15	7	8
Premier Digit grass	33	12	10	8	20	3	3	11	46	9	20
Signal grass	23	9	7	9	30	2	2	2	42	3	14
Siratro	13	8	8	7	9	2	4	3	15	2	4
Splenda setaria	14	3	2	4	18	2	2	4	62	5	27
Veldt grass						9	6	21	45	25	36

Table 2: Average biomass production, measured as kg DM/ha of the sown species in the perennial trial at Buntine for 2005 and 2006.

	30/6/05	5/9/05	7/10/05	20/2/06	19/5/06	2/11/06	Total
Annual Volunteer	1294	2320	1057	460	358	916	6405
Bambatsi panic	19	15	21	696	1107	385	2243
Callide Rhodes grass	603	444	715	1011	1171	667	4611
Green panic	136	114	62	540	1077	389	2318
Katambora Rhodes grass	1285	678	531	1571	1124	1206	6395
Lucerne autumn			63	191	173	423	850
Lucerne spring	83	103	102	121	24	223	656
Premier Digit grass	9	22	12	174	469	261	947
Signal grass	30	7	7	40	188	33	305
Siratro	1	0	0	42	15	9	67
Splenda setaria	29	16	8	147	640	29	869
Veldt grass			33	154	354	1265	1806

COMMENTS

- In 2006 Buntine received 100mm less rainfall than the average rainfall for that area. The largest rainfall event for the year was in January and therefore would have greatly benefited the sub-tropical perennial grasses.
- This is shown in the Table 2 where there is a significant increase in biomass produced when recorded in February of 2006.
- After the sub-soil moisture was fully utilised the plants showed extreme drought stress for the remainder of the year.
- Both Rhodes species are the standout varieties for this region with Katambora being more productive than Callide. However due to the high plant density in the Rhodes trial plots the plants have begun to compete for moisture therefore limiting growth due to water stress. The plants have dried out the soil profile which puts them under pressure in times of low rainfall.
- As shown in Table 2, annual volunteer was able to produce more winter dry matter than Rhodes grass in 2005 (average rainfall). However in a poor rainfall season such as 2006, in winter, the Rhodes grass was able to produce over triple the production of the annual volunteer even though it is a summer active perennial.
- Veldt grass has proven to be productive and seems to be able to withstand the harsh conditions.

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