NEW SUB-TROPICAL GRASSES FOR SOUTHERN AUSTRALIA

Geoff Moore, John Titterington and Brad Wintle
Department of Agriculture and Food, Pasture Science Group

Department of Agriculture and Food

AIM

To develop new sub-tropical grasses specifically for the soils and climate of southern Australia with improved persistence, out-of-season dry matter production and feed quality.
To test promising lines of *Panicum maximum* (panic grass) in a range of environments (Muresk, Buntine, Mingenew).

BACKGROUND

Summer-active, sub-tropical grasses are showing considerable promise in the northern agricultural region, especially where the rainfall is more than 450mm. One of the most promising commercial species across a range of sites are the panic grasses (*Panicum maximum*), often known by the common names 'green' panic and 'Gatton' panic. Panic grasses are leafy bunch grasses with good feed quality (65-70% dry matter digestibility) which respond rapidly to rainfall and are often preferentially grazed by stock.

A project in the CRC for Future Farm Industries commenced in December 2003 to develop new sub-tropical grasses for the soils and climate of southern Australia, given that all of the current commercial varieties were developed for very different environments, like sub-tropical and tropical Queensland. A wide range of germplasm has been evaluated at the main sites of Badgingarra Research Station, north Wellstead in WA and in northern NSW. From the initial evaluation trials, a number of promising accessions of *Panicum maximum* have been identified. These accessions show excellent persistence through both hot, dry summers and cold winters and have excellent biomass production. The promising accessions have superior dry matter production following summer rain and also in spring, than the control varieties (Gatton, green panic). There was a need to evaluate these promising accessions in a wider range of environments, so satellite trials were established at Muresk, Buntine and Mingenew in spring 2006.

TRIAL DETAILS

Property	Liebe Group Long Term Research Site, west Buntine
Plot size & replication	Row trial with 13 accessions x 5 replications with 0.5m spacing between rows
Soil type	Deep loamy sand
Establishment date	21/9/06
Fertiliser (kg/ha)	23/4/07: 150 kg/ha of super:potash 3:1 23/4/07: 100 kg/ha ammonium sulphate (20 units of N)
Herbicides	Nil applied in 2007
Annual rainfall	Sept - Dec 2006 30mm; Jan - mid-Dec. 2007 144mm

RESULTS

Only 174mm of rainfall has fallen in the 16 months since the trial was established in September 2006. The grasses have been regularly monitored for persistence, tolerance to moisture stress and low winter temperatures, seeding and biomass production (grasses are cut back to a height of 5-7cm after each measurement). There have been three biomass measurements at the Buntine site in the first 16 months compared with 5 biomass measurements at the Mingenew site over the same period. Results from the Mingenew site show the rapid recovery following the rain in mid-June after the extended dry period from late 2006 (Table 1).

Table 1: Winter, early spring biomass production at the Mingenew row nursery (please note: 50g/m of row ~1.0 t/ha, while 60g/m of row ~1.2 t/ha).

Accession	Biomass 10/7/2007 (g/m of row)	Biomass 30/8/2007 (g/m of row)
Panmax062	55.3	64.6
Panmax011	47.5	62.7
Panmax060	47.6	61.7
Petrie-Green	44.9	53.9
Panmax059	47.2	51.8
Panmax049	47.7	51.5
Panmax055	37.1	50.1
Panmax067	34.8	49.7
Panmax050	33.6	48.3
Gatton	47.8	47.8
Panmax057	28.5	45.7
Panmax045	40.1	44.0
Panmax010	49.0	39.1
LSD 5%	8.7	9.9

COMMENTS

Although the panic grasses at the Buntine site have shown excellent persistence (>99%), despite the extended dry conditions, there remains a question-mark over the role of sub-tropical grasses in the north-eastern wheatbelt. This is based on the results from this trial and the neighbouring Quantity and Quality variety trial (Ross Fitzsimons, west Buntine). With the cool conditions over winter and occasional frosts there is little or no growth from late June through to early September. This compares with areas to the west and north where the sub-tropical grasses continue to grow actively through most of the growing season and are producing similar biomass (in some seasons greater biomass) than the annual pastures, in addition to the production outside the growing season.

However, across a range of other sites the promising accessions of panic grass are showing considerable potential and in spring 2008 larger scale field trials will be established to evaluate their persistence and production under grazing. The plan is to release a new variety of *Panicum maximum* under Trademark following the grazing studies.

ACKNOWLEDGEMENTS

The authors would like to thank MLA and CRC for Future Farm Industries.

PAPER REVIEWED BY: PHIL NICHOLS.

CONTACT

Geoff Moore
Ph. 93683293
Email. gmoore@agric.wa.gov.au