

New *Panicum* cultivars on the horizon for northern New South Wales

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Abstract. Elite lines of *Panicum maximum* and *Panicum coloratum* with excellent persistence, production and frost tolerance compared to cultivar controls under northern New South Wales conditions have been identified. These lines will require evaluation under grazing before commercial release.

Introduction

Temperate grasses such as phalaris (*Phalaris aquatica*) and tall fescue (*Festuca arundinacea*) frequently do not persist on the Northern Slopes of New South Wales (NSW). Despite a summer dominant rainfall pattern on the Northern Slopes, these grasses are not able to tolerate the hot and dry summers regularly experienced in this region. In an attempt to improve pasture persistence on the Northern Slopes, a range of tropical grasses has been trialled since the early 1990s by NSW Department of Primary Industries (NSW DPI).

Several grasses have exhibited both persistence and productivity over a period of 10 years. These include Katambora Rhodes grass (*Chloris gayana*), Premier digit grass (*Digitaria eriantha* ssp. *eriantha*), Bambatsi panic (*Panicum coloratum*) and Inverell purple pigeon grass (*Setaria incrassata*). Importantly, these trials have clarified the soil type and soil fertility conditions that best suit each individual grass species (McCormick *et al.* 1998).

To further examine the potential of these tropical grasses, 130 accessions and cultivars are being evaluated on the Northern Slopes between January 2004 and December 2010. The objective is to develop locally adapted cultivars of tropical grasses (for northern NSW) with increased productivity, persistence and cool season tolerance.

Methods

A drill-row evaluation nursery was established in early 2005 at Yetman and further nurseries were established at Warialda, Inverell and Barraba in early 2007. The tropical grass species being evaluated at the four sites are listed in Table 1.

The grasses will be assessed for seasonal yield production, frost tolerance, persistence, nutritive value, growth characteristics (viz. tiller number, habit), flowering characteristics and disease tolerance.

Results and discussion

Results to date from the Yetman nursery have identified a small group of promising lines of *Panicum maximum*

and *P. coloratum* (Table 2). Compared to the controls, these lines have shown excellent persistence under hot and dry conditions in summer–autumn as well as cool-season tolerance, comparable or higher annual biomass production and rapid spring growth. These lines also have favourable growth habit, tiller density, seed production and nutritive value. Preliminary data from the other nurseries support these results.

Commercial sowings of the panic grasses are often preferentially grazed which highlights their palatability. Preliminary feed quality analysis has shown the panic grasses to be on the upper-end for tropical grasses that suggests suitability for growing stock.

These promising lines of panic grasses will progress to the next stage of assessment, with testing of nutritive value, persistence under grazing and evaluation over a wider range of environments. It is anticipated that the best performing lines from this stage of assessment will be developed for commercial release from 2011.

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References

- McCormick LH, McGufficke BR, Harden S, Ross BA (1998) Subtropical grass evaluation for pastures in Northern NSW. In 'Proceedings of the 9th Australian Agronomy Conference, Wagga Wagga'. www.regional.org.au/au/asa/1998/1/028mccormick.htm

Table 1. Tropical grass species evaluated at nursery sites on the Northern Slopes of New South Wales

Botanical Name	Common name	Cultivars evaluated	No. lines evaluated
<i>Bothriochloa bladhii</i> ssp. <i>glabra</i>	Forest bluegrass	Swann	2
<i>Bothriochloa insculpta</i>	Creeping bluegrass	Bissett	7
<i>Bothriochloa pertusa</i>	Indian bluegrass	Medway and Keppel	10
<i>Chloris gayana</i>	Rhodes grass	Katambora and Finecut	15
<i>Dichanthium aristatum</i>	Angleton grass	Floren	6
<i>Digitaria eriantha</i> ssp. <i>eriantha</i>	Digit grass	Premier	3
<i>Digitaria milanjiana</i>	Digit grass	Strickland	4
<i>Eragrostis curvula</i>	Lovegrass	Consol	1
<i>Panicum coloratum</i>	Makarikari grass	Bambatsi	9
<i>Panicum maximum</i>	Guinea grass/green panic	Gatton	27
<i>Paspalum nicorae</i>	Brunswick grass	Blue Dawn	9
<i>Setaria incrassata</i>	Purple pigeon grass	Inverell	1
<i>Urochloa mosambicencs</i>	Sabi grass	Saraji, Nixon	9
<i>Bothriochloa ischaemum</i>	-		2
<i>Bothriochloa radicans</i>	-		1
<i>Dichanthium annulatum</i>	-		3
<i>Dichanthium caricosum</i>	-		3
<i>Eragrostis superba</i>	Wilman lovegrass		3
<i>Eustachys distichophylla</i>	-		2
<i>Eustachys paspaloides</i>	-		2
<i>Panicum antidotale</i>	Blue panic		1
<i>Paspalum guenororum</i>	Wintergreen paspalum		1
<i>Paspalum regnelli</i>	-		1
<i>Paspalum simplex</i>	-		2
<i>Urochloa brachyura</i>	-		3
<i>Urochloa nigropedata</i>	-		1
<i>Urochloa oligotricha</i>	Perennial signal grass		2

Table 2. Seasonal production and persistence of promising *P. maximum* (P.max) and *P. coloratum* (P.col) lines compared to controls Green panic, Bambatsi panic and Katambora Rhodes grass at Yetman in Northern NSW from February 2005 to February 2008. Table sorted according to persistence

	Spring	Seasonal production ^A			Green leaf over winter (%)	Persistence ^B (%)
		Summer	Autumn	Total		
P.max_023	4.00	6.13	6.20	6.3	30	72
P.max_427	4.00	4.90	5.10	5.7	34	71
P.col_396	3.63	5.42	5.00	4.5	38	71
P.max_037	3.21	5.00	4.83	5.2	36	70
P.max_421	3.30	5.00	5.39	4.5	34	70
P.col_397	3.13	5.00	4.20	3.9	39	70
Katambora control	5.21	6.75	5.39	6.0	42	70
Green Panic control	2.70	2.81	2.70	2.3	20	26
Bambatsi control	2.04	2.80	2.30	2.5	28	25

^AAverage visual yield score over each season and annual total (score scale is 1 to 9 where 1 is lowest and 9 is highest)

^BSurvival of established plants in drill row still alive at February 2008 (expressed as a percentage)