

Alternative perennial grasses for acid, low phosphorus fertility soils in North-Eastern Victoria

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Pastoral soils in north-eastern Victoria are acid and low in phosphorus (fertility). Producers have markedly reduced fertiliser application since the price of superphosphate rose in the 1970's. Most improved pasture species have been evaluated under high fertility conditions and little information exists on persistence under conditions of declining soil phosphorus status, and increasing acidity (1). Persistence of *Phaeaniz aquatica* L. is under question on steeper hill country. Pasture productivity of sub. clover is decreasing as soil phosphorus concentrations decline. While it is economical to fertilise productive pastoral land and grow improved species, there is now also a need to identify and evaluate alternative species which can persist on acid, low phosphorus (fertility) soils. This preliminary study identifies commonly found naturalised grasses in north-eastern Victoria and describes the rainfall, topographic and grazing intensity situations in which the more common species persist.

Methods

Native and naturalised pasture species were collected from paddocks between January and February 1989. District agronomists assisted in the collection of grasses. At the time of collection the grazing and fertiliser history of paddocks (if known), rainfall, topography and soil parent material were recorded. Palatability comments were based on whether grasses had been grazed in paddocks.

Results and discussion

The main species collected were *A. Litzida namoza* R.Br. (cane wire grass), *Bothriochloa macra* (Steud) S.T. Blake (red leg grass), *Danthonia racemosa* R.Br., *D. caespitosa* Gaudich., *D. einhii* Kunth (wallaby grass), *Eragrostis bkownii* (Kunth) Nees, *E. cieiane4a* (All.) Link (love grass), *Microlaena stipoides* (Labill.) R.Br. (weeping grass), *Setaria glauca* (L.) Pal. Beauv. (pigeon grass), *Spa scabra* Lindl., *S. densiflora* Hughes (spear grass) and *Themeda triandra* Orssk. (kangaroo grass). The species to show most promise in terms of persistence and palatability are *Danthonia Themeda Microlaena* and *Setaria*.

Danthonia was found growing on mid to upper slopes on both sedimentary and granitic based soils, over a wide range of climatic zones. Wallaby grass appeared to be persistent under grazing. *Themeda* was found to persist under low to moderate grazing in both well and poorly drained soils, in a wide range of environments. It is an excellent fodder crop and very palatable to stock (2). Under heavy grazing *Microlaena* was found to persist well, especially on mid to lower slopes that had some history of superphosphate application. *Microlaena* is green all year, shade and acid tolerant (3). On mid to upper slopes in high rainfall areas *Setaria* persists well under grazing. The seed head of *Setaria* was also palatable.

Themeda triandra, *Danthonia*, *Microlaena stipoides* and *Setaria glauca* hold the most promise for low phosphorus fertility acid soils. All these species appear palatable and persist under low to moderate grazing.

1. Ridley, A.M., Helyar, K.R. and Slattery, W.J. (in prep.).
2. Leigh, J.H. and Mulham, W.E. (1965). Pastoral Plants of the Riverine Plain. Jacaranda Press, Melbourne.
3. Whalley, R. (pers. comm.).