Native Grasses Selected for Agriculture, Revegetation and Amenity Use in Tasmania, Australia

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Introduction The potential of Australian native grasses for use as domesticated species has been recognised since the 1980s (Oram and Lodge , 2003) . In Tasmania , *Austrodanthonia* spp . , *Microlaena stipoides* , *Elymus scaber* , *Poa* spp . and *Stipa* spp . still predominate in natural grassy vegetation used for sheep grazing (Garden et al . , 1996) , and native grasses have re-established in many pastures sown to introduced species . Ecotypes of these grasses offer the greatest potential to replace introduced pasture species that have failed to persist in the low-rainfall , extensive grazing areas of Tasmania , as well as for revegetation of degraded areas and for amenity or recreational use (Oram and Lodge , 2003) .

Materials and methods Vegetative plant material was collected from native grasses in grazed pastures in the low rainfall areas (400-700 mm) of eastern Tasmania in August 2000 , and established in pots before planting in a field nursery for evaluation . The 52 collection sites covered a range of soil types and fertility levels , topography , altitudes and climates . A total of 2 ,460 plants were collected , which included eight species of *Austrodanthonia* , four species of *Austrostipa* , two species of *Poa* , *Elymus scaber* and *Microlaena stipoides* . Observations on persistence , growth and development , incidence of disease , and a number of morphological characteristics were made on plants in the nursery over a three year period (2001-2003) in order to identify and characterise elite plants of each species . Elite plants had above average seed yield , average to above average dry weight , and high scores for a range of characters , including tiller density , leafiness , crown diameter , and regrowth after harvest . To ensure synchrony in the time to maturity , the harvest day (mature seed) of elite plants in each selection (species x form) lay within a date range of eight days at each of the three harvests .

Results and discussion Eight selections of elite plants were made (Table 1) . Two forms of *A . caespitosa* and *A . penicillata* were selected . The target use of the selections was based on their morphological characters . The pasture types were large leafy plants , while the revegetation types were considered to be less suitable for pastures due to their awns . However , all pasture types would be suitable for revegetation use . The amenity types were considered to have aesthetic appeal based on their leaf colour (*A . caespitosa*) or habit (*A . geniculata* , *A penicillata* , *P . labillardierei*) . Whereas the selections for pasture and revegetation included more than 20 plants from several collection sites , the amenity-only types included fewer plants all from one collection site . Seed multiplication of the *Austrodanthonia* selections has involved transplanting ramets of the selected plants into blocks to produce a synthetic cultivar . Seed multiplication has not yet been carried out for the other selections .

Table 1 *Elite native grass selections .*

Species	Form	No . collection sites	No . plants	Target use
Austrodanthonia caespitosa	Normal	11	30	Pasture
A . caespitosa	Blue-green	1	1	Amenity
A . geniculata	Normal	1	14	Amenity (turf)
A . penicillata	Normal	14	26	Pasture
A . penicillata	Weeping	1	7	Amenity
A . racemosa	Normal	10	27	Pasture
Austrostipa stuposa	Normal	6	31	Revegetation
Poa labillardierei	Normal	8	39	Pasture/amenity

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