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Domestication of Australian Grasses

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Due to geographic isolation and a short agricultural history, plant species from Australia have not been subject to domestication in the same way as species from other parts of the world. Over 1000 species or around 10% of the world's grasses are found in Australia.

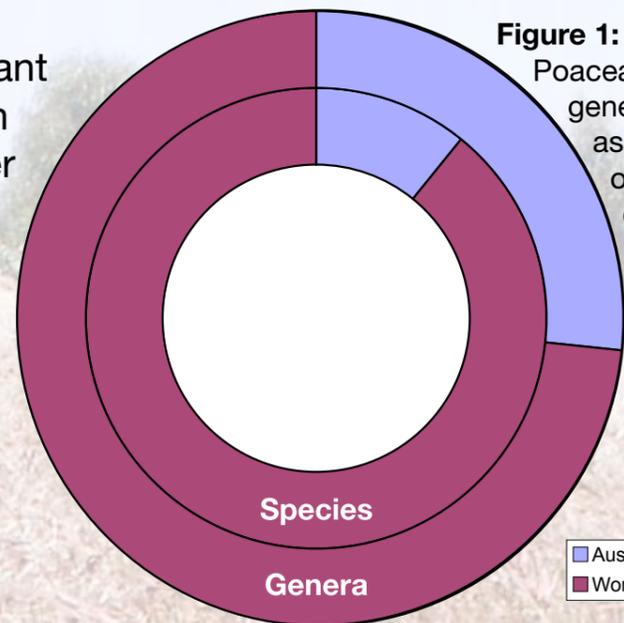


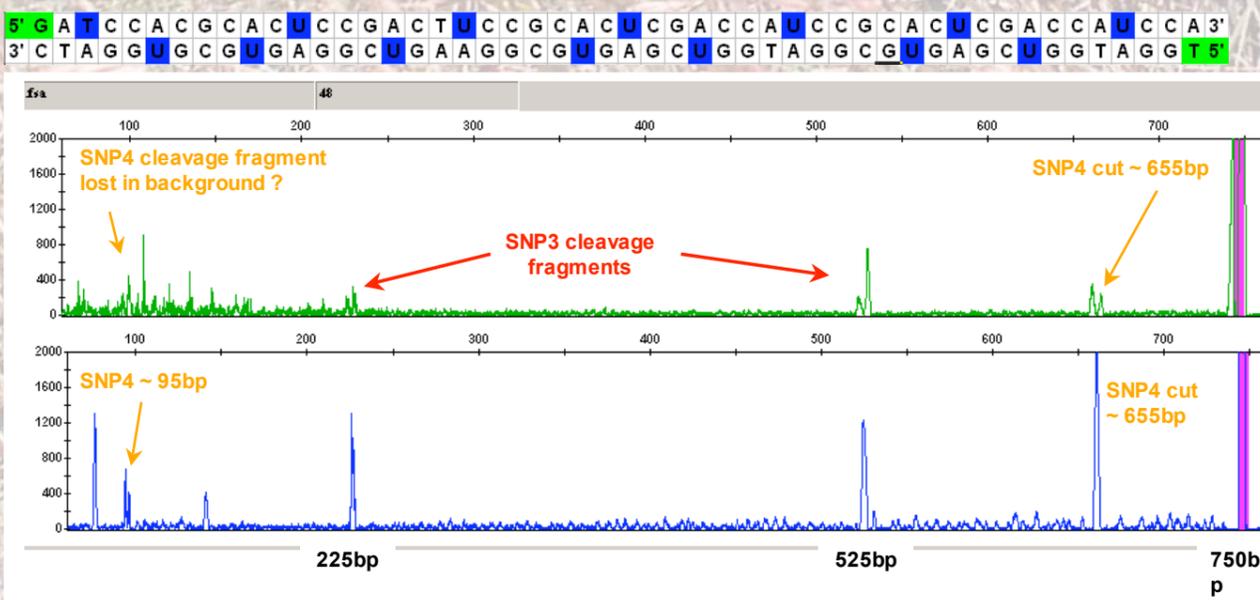
Figure 1: Australia's Poaceae species and genera diversity as a proportion of global diversity

Key genes targeted by the domestication of major cereal crops have now been defined and characterized. These loci are being targeted in an effort to accelerate the domestication of selected Australian grasses for a range of uses including pastures, food and energy. Biomass traits for energy production include some of the traditional domestication traits but also extend to other traits not selected in domestication for food or feed.

Variation in *Microlaena stipoides*



Microlaena stipoides, a distant relative of rice, is currently a key target for domestication. The rice genome sequences and genomics data for other *Oryza* are key genomics resources for this species. Natural variation and targeted mutagenesis are being explored as options for identifying desirable genotypes for domestication.



Endonucleolytic mutation analysis by internal labelling (EMAIL)* and large scale SNP analyses are being developed for application to this system. This model of accelerated domestication has the potential to be utilised across a broad range of useful wild species.

Figure 2: EMAIL's internal labelling provides increased signal and lower background for SNP detection

Reference: *Michael J. Cross, Daniel L. E. Waters, L. Slade Lee, and Robert J. Henry. Endonucleolytic mutation analysis by internal labeling (EMAIL). *Electrophoresis* 2008, 29, 1291–1301

