

GENE FINGERPRINTING OF NATURAL POPULATIONS OF KIKUYU IN AUSTRALIA

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Kikuyu (*Pennisetum clandestinum*) is an important grass for the dairy and beef industries of the subtropics of Australia, South Africa and New Zealand (Mears 1970). Mears reviewed the history of kikuyu and concluded that it would be difficult to recognise the original ecotypes introduced into Australia from Africa, even though Parker (1941) recognised clonal variation in Australian material in the 1930s. This screening of the genetic relatedness of natural populations selected from diverse regions within Australia was part of a study to evaluate their innate variation.

Leaf tissue was collected from plants grown in an experiment which evaluated the yield and quality of spaced plants of 11 ecotypes and 6 cultivars on a red ferrosol at Wollongbar. DNA was extracted from leaf samples of the different genotypes. Genetic fingerprints of each of the kikuyu cultivars and ecotypes were determined using a modified DAF analysis (Caetano-Anolles *et al.* 1991). Duplicate DNA samples were amplified using 4 different oligonucleotide primers and fragment sizes determined by denaturing polyacrylamide gel electrophoresis. DAF profiles were analysed by PHYLIP (Felsenstein 2005) to determine the genetic relatedness of each of the individuals.

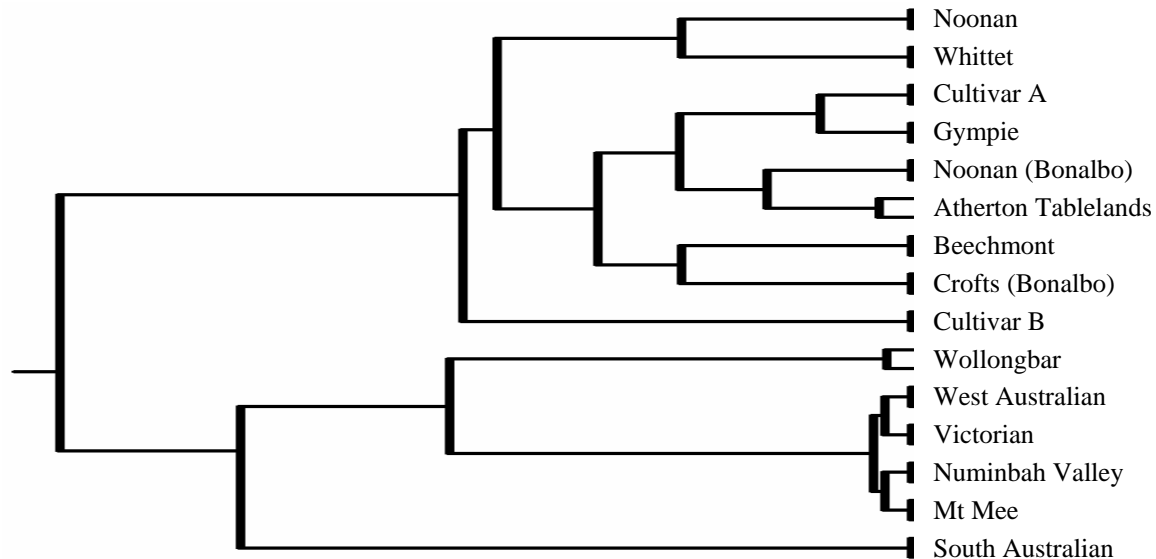


Figure 1. Genetic relationships between ecotypes and cultivars, determined by DAF profiling using 4 different oligonucleotide decamer primers. 'a' and 'b' indicate the results of duplicate samples

Kikuyu in Australia falls into at least 2 distinct types. In one group, the cultivars Whittet, Crofts and Noonan are closely related. The mutagenically-produced lines (Cultivars A and B) were in the same group as Whittet, suggesting that genetic mutations have not drastically changed their genetic makeup. The other group was generally sourced from commercial farms which had grown kikuyu for generations. The ecotypes from Beechmont, Gympie and Atherton Tablelands do not fit in this group. These ecotypes may be different from the other regional ecotypes, but it is possible that these areas may have been contaminated by Whittet some time in their history.

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