

Variation in feeding value of senescent annual ryegrass

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During summer in southern Australia much of the pasture available for livestock is senescent. Fodder of this type has low feeding value and provides a submaintenance diet for livestock because it is deficient in digestible energy and protein (1, 2). Summer pasture thus constrains animal production. Little research has been conducted to assess the natural variation in feeding value that exists within or between grass species when dead. The feeding value of senescent annual ryegrass (*Lolium rigidum* Gaud.) was surveyed to assess the feasibility of genetic improvement.

Methods

From each of 12 sites in southern Australia, 40 lines (each from a single seed) were obtained, providing a total of 480 lines for screening. These plants were vegetatively propagated to create clones to be used as part of an extensive nursery located at the Mt Derrimut field station of The University of Melbourne. Whilst green, these plants were screened at regular intervals for agronomic traits such as vigour, susceptibility to rust and time to anthesis. The mature, dead plant material was harvested mid-summer and the stem portion analysed for *in vitro* dry matter digestibility (IVDMD)

Results and discussion

The IVDMD of the stems of the annual ryegrass population were distributed normally within the range of 18-35% (Fig. 1). Agronomic traits such as vigour, susceptibility to rust and time to anthesis were scored as the plants were growing. However, none of the traits were correlated with IVDMD of the senescent material. The highest digestibility (35%) would still constitute a very poor feed for livestock. However, the important question about the grass lines, which is yet to be ascertained, is whether lines which exhibit higher residual digestibility are more digestible for longer, as senescence proceeds. The range in digestibility values of 17% -units was large and indicated that sufficient variation existed within the population for divergent selection of this trait to be attempted. Lines that have extreme values of digestibility are being investigated to determine what contributes to expression of high or low digestibility during summer.

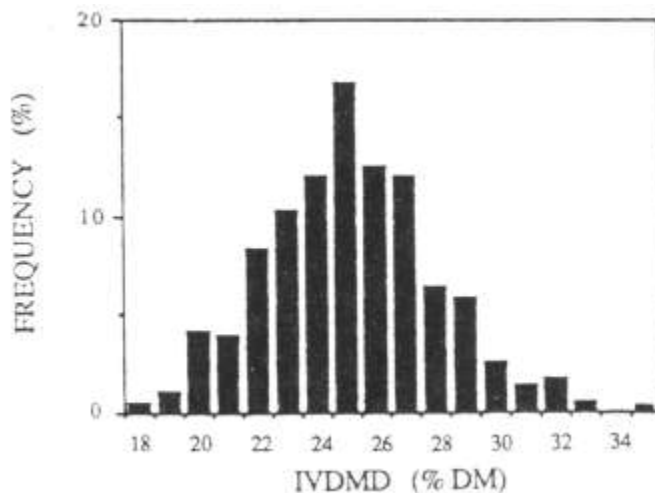


Figure 1. Variation of stem % IVDMD in a population of annual ryegrass from southern Australia
References

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