Nutritive characteristics of perennial ryegrass cultivars – have they changed over time?


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Abstract

Improvement in nutritive characteristics resulting from breeding perennial ryegrass (PRG) cultivars used in Australia from the 1970s to the present day was quantified in a grazed field experiment. The experiment was sown on a dryland dairy farm in south-west Victoria in May 2014 with measurements undertaken over three years. The experiment contained 36 PRG cultivar / endophyte combinations replicated 4 times with herbage nutritive characteristics measured at each grazing.

There were significant differences between treatments (cultivar / endophyte combinations) in estimated metabolisable energy (ME), crude protein (CP) and neutral detergent fibre (NDF) concentrations at each harvest date. The decade of cultivar release had little effect on ME or NDF concentration of the cultivars released from 1970s onwards. Early-season diploids had lower ME concentration than later maturing diploid cultivars (11.0 vs. 11.4 MJ/kg DM), predominantly due to a lower ME concentration in late spring and early summer (10.3 vs.
11.1 MJ/kg DM). Results suggest that there were benefits in nutritive characteristics from the
tetraploid cultivars, with higher ME (11.8 vs 11.4 MJ/kg DM) and lower NDF (48.0 vs 50.3
%DM) concentrations, compared with the mid- and late-season diploid cultivars. There was
no consistent effect of novel versus standard endophyte on nutritive characteristics.