

THE VARIABILITY OF NUTRITIVE VALUE WITHIN WHITE CLOVER

John Ayres

NSW Agriculture & Fisheries, Glen Innes

The National White Clover Improvement Program commenced activities at Glen Innes in 1988 with the objective of developing improved white clover cultivars and extending white clover technology into marginal grazing lands. In addition to improving the classical agronomic characters adaptation, yield and predator/disease tolerance, the National Program seeks to increase grazing potential through a parallel emphasis on persistence under grazing and enhanced feeding value.

White clover (*Trifolium repens*) is widely accepted as a high quality pasture plant which has a favourable combination of high protein/low structural fibre with positive consequences for intake, digestion and utilization (Ulyatt 1980). The Australian Feeds Information Centre database (Ostrowski-Meissner 1987) showed 76 records for white clover that summarize as follows: digestibility (OMD): 76% (range 70-80), nitrogen (N): 33g/kg (9-57), neutral detergent fibre (NDF): 364g/kg (254-460), acid detergent fibre (ADF): 248g/kg (183-311), phosphorous (P): 3.4g/kg (1.3-25), Calcium (Ca): 8.9g/kg (2.4-14), Magnesium (Mg): 3.2g/kg (2.4-4.9) and potassium (K): 26.3g/kg (9-40). The database has values for only three specified cultivars (Haifa, Clarence and Huia) and two stages of maturity (vegetative, bloom) so provides only a preliminary indication of variation within *T. repens*. Also, no account is taken of differences in growing conditions. There is useful variation in nitrogen concentration and digestibility at common stages of maturity.

Table 1. The nitrogen concentration (g/kg DM) and digestibility (% OMD) of three white clover cultivars at two stages of maturity.

	Haifa		Clarence		Huia	
	N	OMD	N	OMD	N	OMD
Vegetative	27	75.0	37	76.3	37	80.5
Bloom	25	70.0	37	-	44	77.7

There is evidence of useful within-species variation in important nutritive value parameters for a number of other grasses and legumes (CSIRO-DSIR Workshop on Plant Breeding and Feeding Value of Pastures and Forages, Palmerston North NZ, 1984) but no data for *T. repens* is known to the author. Adequate genetic variation determines the potential for improvement.

We propose at the outset of the National Program to estimate the variation within *T. repens* by sampling plot culture of a large set of registered cultivars. This work will show the relationships between plant type characteristics and grazing potential and provide guidelines for selection and breeding.

1. Ostrowski-Meissner, H.T. (1987). Australian Feed Composition Tables, National Collection (1970-87), AFIC-CSIRO: Sydney.
2. Ulyatt, M.J. (1980). The feeding value of temperate pasture, In "Grazing Animals" Ed. F.H.W. Morley, Elsevier: Amsterdam.