Quality and selection of plant components of subterranean clover

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The production of grazing livestock is regulated by the quantity and quality of pasture. It is further modified by the effects of dietary selection and the proportion and quality of the plant components which are consumed. Mulholland and Scott (1992) reported substantial differences in the feeding value of several cultivars of subterranean clover, but were unable to provide an explanation. This paper provides results from a program aimed at determining factors responsible for differences in the quality of subterranean clover.

Three cultivars of subterranean clover, Trikkala, Larisa and Goulburn were grazed under *ad libitum* conditions by Border Leicester x Merino wether lambs. The pastures were sampled and separated into leaf, petiole and stem for analyses of chemical composition. At the same time dietary samples were collected per oesophageal fistula and the proportion of plant components determined by microscopic point technique, with adjustments for weight per unit area.

Results and Discussion

It is evident that subterranean clover differs from species such as lucerne, white clover and grasses in that petiole and stem fractions are more digestible than leaves, even though they contained higher levels of cell wall organic matter, and contain significantly higher levels of soluble carbohydrates (Table 1). Sheep also ingest more petiole than leaves (Table 2), with stems providing a minor portion of the diet. The significant contribution of petioles to dietary intake and diet quality, suggest that increasing the ratio of petioles to leaves may provide a better balance between energy and protein intake, thereby improving animal performance, and may be a sound objective for plant breeders.

Table 1. *In vitro* organic matter digestibility (OMD), soluble carbohydrate (SC) and cell wall organic matter content (CWOM) of leaf, petiole and stem of subterranean clover pre-flowering

Cultivar/plant part		OMD%	SC%	CWOM%
Trikkala	Leaf	74.6	5.3	22.6
	Petiole	83.8	14.8	28.6
	Stem	80.5	18.2	31.2
Larisa	Leaf	72.4	3.3	26.2
	Petiole	81.4	9.6	35.6
	Stem	81.9	10.3	35.9
Goulburn	Leaf	73.9	4.9	24.6
	Petiole	80.4	11.4	37.1

Table 2. Proportions of leaf, petiole and stem in fistula samples on a dry matter basis

	Trikkala	Larisa	Goulburn
Leaf	23	17	27
Petiole	72	80	69
Stem	5	3	3

Acknowledgments

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References

Mulholland, J.G. and Scott, G.B. (1992) Project DAN 10 - Final Report to the Wool Research and Development Corporation, pp. 41.