

## Potential intake of tagasaste (*chaemecytisus palmensis*) as influenced by shrub structure

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Factors such as palatability and accessibility influence feed intake by grazing animals. The animal responds to change by varying its ingestive behaviour through alteration to bite size and frequency as well as to the duration of grazing (1). This work examined the bulk density of tagasaste to determine if it might contribute to the poor weight gains by sheep that have been observed on apparently abundant supplies of tagasaste.

### Methods

Six tagasaste shrubs were chosen from 5 year old plantation growing in rows 5m apart at a density of about 800 trees/ha. The site was part of the Martindale Research Project at New Norcia, where all trees are growing on deep infertile sands in a 450-500mm rainfall zone. In early to mid-summer each tree was divided into four 50cm layers, the first two layers being within the grazing height of sheep. Material from each layer was cut separately, weighed and sampled for total dry matter and leaf and stem fractions. Circumference measurements of each layer were used for volume calculations and each shrub was treated as a cone. This information was applied to a model sheep weighing 50kg, with a bite size of about 25cm<sup>3</sup> (2) and consuming about 35,000 bites of food each day (2).

### Results and discussion

A 50kg sheep will have a daily energy requirement of about 6MJ. Tagasaste is presumed to provide about 10.2MJ/kgDM of metabolisable energy. Therefore the animal will need to eat about 600g to meet its basal requirements. It is possible for the animal to achieve this intake if it eats actively from the material to a height of 1m with no wastage. If some of the foliage is of poorer quality than estimated, the animal could have difficulties in maintaining liveweight.

The morphology of tagasaste and the sheep's grazing habit mean that visual appraisal of the mass of the shrub is of limited use in determining intake. Cutting and shrub selection may improve the bulk density of material on offer and so make the material more accessible to grazing sheep.

**Table 1: Shrub profile description and animal intake**

	Shrub section (cm height)			
	0-50	50-100	100-150	150+
Edible mass in layer (g)	202	863	600	261
Bulk density (g/cm <sup>3</sup> × 10 <sup>-3</sup> )	0.71	0.95	0.50	0.23
Intake by 50kg sheep (g)	624	828	440	199

(1) Jamieson, W.S. & Hodgson, J. (1979) Grass For. Sc. 34, 261-71.

(2) Illius, A.W. & Gordon, I.J. (1987) J. Anim. Ecol. 56, 989-99.