

## THE FEEDING VALUE OF MORPHOLOGICALLY DIFFERENT WHEAT STRAWS

W.J. WALES\*, P.T. DOYLE\*, and G.R. PEARCE\*

Wheat straws and stubbles are generally regarded as poor quality roughages as they are low in readily available energy and protein and may be lacking in other essential elements. Sheep grazing on stubbles are able to maintain body weight for several weeks only (Mulholland 1987) and if fed for extended periods may die (Franklin et.al. 1967). However, there is considerable variation in the physical and chemical characteristics of straws and stubbles. These result from genetic and environmental influences and the interactions between these. The magnitude of genetic and environmental effects are poorly defined. The aim of this study was to determine the extent to which differences in the characteristics of wheat straw from one cultivar could effect feeding value.

Wheat stubbles (cv. Millewa) were sampled from a range of environments within Victoria. Three straws (WS1, WS2 and WS3) which represented the middle and extremes in the range of in vitro organic matter digestibility (IVOMD) were selected, harvested and fed to crossbred Merino sheep (8 sheep per straw). The wheat straws were described in terms of the percentage of leaf and stem components and the IVOMD of these and their organic matter intake (OMI) and apparent digestibility (OMD) which were measured during a 33 day experiment (see Table 1).

Table I. Characteristics, intake and digestibility of the straws

Wheat straw	Leaf		Stem		Whole straw		
	%	IVOMD #	%	IVOMD	IVOMD	OMI (g/day)	OMD
WS1	41 <sup>a</sup>	0.54	46 <sup>c</sup>	0.36	0.47	618 <sup>a</sup>	0.43 <sup>a</sup>
WS2	38 <sup>b</sup>	0.48	54 <sup>b</sup>	0.30	0.37	484 <sup>a</sup>	0.42 <sup>a</sup>
WS3	20 <sup>c</sup>	0.45	71 <sup>a</sup>	0.25	0.30	304 <sup>b</sup>	0.40 <sup>a</sup>

Within columns, values with dissimilar superscript are significantly different ( $P < 0.05$ )

#Calculated from leaf sheath and leaf blade IVOMD value

The percentage of straw dry matter in leaf and stem fractions differed ( $P < 0.05$ ). The leaf fractions had higher IVOMD values than the stems for each straw. The higher percentage of leaf in WS1 and WS2 contributed to higher IVOMD values of these straws. OMI was higher ( $P < 0.05$ ) in WS1 and WS2 than WS3 and these straws had higher percentages of leaf components. Despite the differences ( $P < 0.05$ ) in the OMI between WS1 and WS3 there were no differences in the OMD of the straws.

Pronounced differences under the controlled laboratory conditions occurred between IVOMDs of the whole straw although these differences were not reflected in the OMDs under the conditions of the gastro-intestinal tract. Morphological composition of wheat straws can be an important determinant of OMI and thus may have a major influence on the feeding value.

FRANKLIN, M.C., McINNES, P. and BRIGGS, P.K. (1967) Aust. J. Exp. Agric. Anim.

Husb. 7: 206-212.

MULHOLLAND, J.G. (1987) Proc. 2nd International Symposium on the Nutrition of Herbivores (ASAP) pp. 25-26.

\*School of Agriculture and Forestry, University of Melbourne, Parkville, Vic.3052