

Comparison of crop residues for ruminant feed

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It is widely recognised that the major limitation to the utilization of fibrous crop residues as a feedstuff for ruminant animals is associated with their low digestibility, low intake and low content of essential nutrients such as nitrogen and minerals. The availability of energy in forages is dependent on the dry-matter digestibility (DMD)(1). The DMD of forages varies with the proportion of cell wall constituents especially, acid detergent fibre and acid detergent lignin.

This study was aimed at ranking roughages from their nutritional point of view. It also provides an overview of the significance of pea straw, on which little information is available, as ruminant feed.

Methods

The acid detergent method (2) and the Kjeldahl procedure for fibre (ADF) and lignin (ADL) were used to determine the fibre and crude protein contents respectively, for several crop residues (Table 1).

Results and discussion

Table 1. Chemical analysis of stubbles harvested on the Adelaide Plains, S.A.

Stubble	%DM	%CP	%ADF	%ADL
Oat	91.7	2.5b	61.1c	2.5d
Wheat	91.6	2.3b	64.0b	3.0c
Barley	91.9	2.6b	64.0b	3.7b
Triticale	92.4	3.0b	61.5c	0.9e
Pea	92.1	6.2a	70.0a	6.7a
LSD*		1.2	1.5	0.4

* LSD 0.1% level. Within each chemical component, values associated with same letters are not significantly different.

Among the cereal stubbles, there is no significant difference ($p < 0.001$) in their CP level. Though oat and triticale contained lower ADF levels than wheat and barley, triticale would be preferred among the cereal stubbles for ruminant feeding because it contained significantly lower ($p < 0.001$) ADL level. Pea stubble contained significantly higher ($p < 0.001$) cell wall material (70% ADF and 6.7% ADL) than any of the other feeds analysed implying lower digestible energy. The relatively higher level of crude protein (6.2%) observed in pea stubble in this report and similar levels in a previous study (3) suggests that, when supplemented for energy and minerals, pea straw could be utilized as a valuable feed component for ruminants.

References

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