

THE CHEMICAL COMPOSITION AND *IN VITRO* DIGESTIBILITY OF RICE STRAWS FOR RUMINANTS

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Rice straw is the major component of crop residues in many tropical countries, and is commonly used as a ruminant feed. The chemical composition and *in vitro* digestibility of rice straw is affected by variety (Ibrahim *et al.* 1989) and differences in the proportions of the botanical fractions (Walli *et al.* 1988). The lower part of the plant is thought to be of higher quality due to lower contents of silica and lignin in the stem internodes. Winugroho and Sutardi, (1986) however, reported the *ad libitum* intake of the upper part was higher than the lower part. The objective of this study was to investigate the variation in the nutritional quality of the upper and lower parts of rice straw varieties.

Straws from 4 varieties of rice (Doongara, Amaroo, Illabong and Millin) was divided equally by length into lower and upper parts. Nitrogen (N), neutral-detergent fibre (NDF), acid-detergent fibre (ADF), lignin and silica content was determined for each part. *In vitro* organic matter digestibility (IVOMD) was also determined. Rumen fluid for the IVOMD study was taken from sheep fed on 50% lucerne chaff and 50% oaten chaff. A 2 x 4 factorial design was used to analyse the data (Table 1).

Table 1. Chemical composition and IVOMD of rice straw varieties (g/kg)

		N	NDF	ADF	lignin	silica	IVOMD
Variety+	Doongara	8.8 ^a	645 ^a	509 ^c	54 ^a	120	428 ^a
	Amaroo	8.1 ^b	667 ^a	552 ^b	52 ^b	132	389 ^b
	Illabong	7.7 ^c	655 ^{ab}	592 ^a	81 ^a	136	428 ^a
	Millin	7.9 ^{bc}	662 ^a	564 ^b	60 ^b	132	391 ^b
	SEM	0.11	5.2	8.5	3.9	6.3	11.5
Part++	Upper	9.7 ^a	653	562	67 ^a	131	373 ^b
	Lower	6.6 ^b	662	548	57 ^b	129	441 ^a
	SEM	0.07	3.7	6.0	2.8	4.4	8.1
Interaction (var x Part)		*	*	*	n.s.	n.s.	*
SEM		0.15	7.4	12.0	5.6	8.8	16.2

Values in a column with different letters are significantly different (P<0.05).

+ mean values of 2 parts for each variety ; ++ mean values of 4 varieties for each part.

The N, NDF, ADF and lignin were significantly different (P<0.05) between varieties. No significant difference was detected in the silica content between varieties. There was a significant (P<0.05) difference between the N and lignin content of the upper and lower parts. There was a significant (P<0.05) interaction between variety and part for the N, NDF and ADF values. The IVOMD was significantly different between varieties. The mean IVOMD of the lower part was significantly higher than the upper.

These results support the finding of Ibrahim *et al.* (1989) who found that standard chemical composition could not fully explain the variations in the *in vitro* digestibility of rice straw varieties. From this study it can be concluded that the chemical composition is not an appropriate method to evaluate the nutritional quality of rice straw varieties.

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