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Presenter Information

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Chemical composition of *Panicum maximum* planted with different manure sources

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Key words : pasture grasses, *Panicum maximum*, chemical composition, nitrogen fertilization

Introduction Factors such as species, season, spacing and fertilization among others have been identified as major factors affecting the nutrient content of forage grasses (Aken'Ova and Chedda, 1985). It is believed that careful manipulation of some of these factors could improve the nutritive quality of the grasses. Guinea grass (*Panicum maximum*) is a major feed resource for the Nomadic Fulani cattle during their migration in search of green feed to the southern part of Nigeria during the dry season. Adegbola (*et al.*, 1980) reported that ruminant animals showed good acceptance, high intake and good digestion of the grass.

Materials and methods *Panicum maximum* local (Pm Local) and *P. maximum* Ntchisi (Pm Ntchisi) were established through crown splits at a spacing of $1 \times 0.5 \text{ m}^2$ in June 2002 in a 1.5 ha paddock. The paddock was divided into six (0.25 ha each) plots and each was well fenced with sheep wire at the University of Agriculture, Abeokuta Teaching and Research farm. The six plots were divided into three sub-plots for the two grass species. Two plots for each species were fertilized with urea (150 kg/ha) and caged layer droppings (250 kg/ha) respectively and the third plot left as unfertilized control. Foliages were harvested from each of the six plots at 4 weeks after fertilization separately by cutting them back to 10 cm above ground level. Fresh samples were taken from each plot, weighed and transferred to drying cabinet at 65°C for drying over 3 days. This was used to calculate the DM content of the samples. The dried samples were milled in hammer mill with 1.0 mm sieve and used for proximate (A. O. A. C., 1995) and fibre (Goering and VanSoest, 1970) analysis.

Results and discussion As shown in Table 1, there were reductions in the DM content of fertilized than unfertilized *P. maximum* stands though, the differences were not significant ($P > 0.05$). However, manure and urea fertilization significantly increased the nitrogen content of the grass over the unfertilized control. There was no significant difference ($P > 0.05$) between the effects of urea and caged layer droppings treatment in EE, Ash and NFE contents. Fiber parameters were significantly reduced ($P < 0.05$) due to manure additions. The values of NDF ranged between 40.60%-43.08% in unfertilized PM to between 36.20%-39.40% in fertilized samples. Also ADF was reduced significantly ($P < 0.05$) from between 34.60%-36.05% to a range of 24.66%-30.40%. ADL content was not affected by manure additions. The crude protein content of *P. maximum* obtained in this study fell within the range of 4%-14% reported by Butterworth (1985) and a range of 14.4%-16.9% reported for NPK fertilized *P. maximum* (Olanite *et al.*, 2006). In contrary to most reports, CP content of both local and Ntchisi varieties of PM were similar. With CP content above 8.0%, fertilized PM could supply extra nutrients for optimum performance of ruminant animals. The fiber fractions viz NDF, ADF and lignin as reported in this study were lower than values reported elsewhere (Olanite *et al.*, 2006; Butterworth, 1985), this could be due to the age at which the grass was cut.

Table 1 Proximate and fibre composition of *Panicum maximum* under different manure fertilization.

Parameter	Unfertilized		Urea fertilized		Caged layer droppings fertilized	
	PM Local	PM Ntchisi	PM Local	PM Ntchisi	PM Local	PM Ntchisi
Dry matter	14.1±0.21	15.8±0.60	12.9±0.11	12.6±0.50	13.5±0.55	13.0±0.60
Crude protein	12.1±0.35b	12.4±1.02b	16.1±0.22a	15.6±1.02a	16.8±0.50a	16.3±1.02a
Ether Extract	2.4±0.18	1.6±0.25	2.8±0.20	3.1±0.60	2.5±0.44	2.8±0.25
Ash	14.6±0.10	13.2±0.30	12.9±1.10	14.2±0.30	12.6±0.87	13.9±0.60
NFE	28.4±0.25	25.9±0.14	27.7±1.20	25.6±0.66	26.5±0.45	26.1±0.64
NDF	43.1±1.62a	40.6±1.05ab	39.4±1.02b	36.2±1.05b	38.9±1.15b	38.4±1.41b
ADF	36.1±0.88a	34.6±1.04a	24.7±1.25c	30.4±0.86b	28.9±0.50b	29.6±1.05b
Lignin	14.8±0.41	14.5±1.25	11.5±0.50	14.1±0.20	14.3±0.55	14.2±0.30

Conclusion With adequate manuring and short cutting intervals of about 4 weeks, optimum nutrient contents with high crude protein and low fibre are expected from both local and Ntchisi varieties of *P. maximum*.

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