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## Effect of nitrogen fertilization and cutting management on the chemical composition of *Panicum maximum* Jacq in West Cameroon

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**Key words:** *Panicum maximum*, nitrogen fertilisation, cutting management, chemical composition

**Introduction** Ruminants' feeding in Cameroon is essentially based on the natural pasture. Nutrient content of grazing land forage varies as the growing season progress and can be influenced by soil qualities and the management strategies. In highly populated areas crop expansion reduce the extent of grassland, thereby jeopardizing the potential of ruminant to satisfy their need for maintenance and production (Pamo *et al.*, 2006). The only alternative left for livestock producer, is forage cropping and sound management strategies. The main objective of this study was to evaluate the effect of nitrogen fertilisation and the cutting management on the chemical composition of *Panicum maximum* in West Cameroon.

**Materials and methods** The study was carried out at the Animal Experimental Farm of Dschang University from March 2006 to January 2007. Rainfall in this zone varies between 1500 and 2000 mm. The soil is classified as ferralitic, relatively acidic (pH = 5.7) and rich in organic matter. A 3 × 3 factorial design with 3 doses (0, 60, 80 kg/ha) of nitrogen in the form of Ammonium Sulphate at 21% N and 3 cutting frequencies (F1=30 days, F2=45 days, F3=60 days) at a height of 20 cm in 3 replicates was used. Seventy (70) tillers of *P. maximum* bearing one to two tali were planted on each plot, on the 7<sup>th</sup> April 2006 at a depth of about 4 cm, with a spacing of 25 cm by 25 cm. A single dose (100 kg/ha) of simple super phosphate at 21% P was applied in all plots. The ammonium sulphate was fractioned in two parts. The first one-third was applied in equal quantity one month after planting. The remaining two-thirds were divided in function of the number of cuts to be done excluding the last one. Two months after planting, the plots were zero timed at 20 cm above the soil and the harvest of regrowths started one month later and varied according to cutting management. Five hundred grams (500 g) sample were taken and oven dried at 60°C till a constant weight was obtained and grinded for chemical composition using the A.O.A.C. (1990) procedure. Two factors analysis of variance was carried out on the data and significant differences among treatments were tested with Duncan's multiple range tests.

**Results and discussion** Nitrogen fertilization had no significant effect on CP, CF, Ash and OM content of *Panicum maximum* (Tables 1). Cutting management had significant effect on the chemical composition of *P. maximum*. Taye (*et al.*, 2007) obtained similar results, showing that cutting management significantly affects the nutritive value of forages. Nutritive value generally decreases as harvest interval increases (Maass *et al.*, 1996). The CP content particularly decreased as cutting management increased. These results tie with those of Crowder and Chheda (1982) which showed that the CP of *Panicum* decreased with the age of the plant.

**Table 1** Mean CP, CF, Ash and OM content of *Panicum maximum* at different cutting frequencies and levels of N fertilisation.

N (kg/ha)	Cutting management (days)	Chemical composition (% DM)			
		CP	CF	Ash	OM
0	F1 : 30	15.14 ± 2.22 <sup>a</sup>	33.25 ± 2.04 <sup>a</sup>	13.66 ± 0.98 <sup>a</sup>	86.34 ± 0.98 <sup>a</sup>
	F2 : 45	14.09 ± 1.65 <sup>a</sup>	34.41 ± 1.65 <sup>a</sup>	14.26 ± 0.80 <sup>a</sup>	85.74 ± 0.80 <sup>a</sup>
	F3 : 60	12.14 ± 2.51 <sup>a</sup>	33.91 ± 1.90 <sup>a</sup>	15.32 ± 2.03 <sup>a</sup>	84.68 ± 2.03 <sup>a</sup>
60	F1 : 30	15.20 ± 2.58 <sup>a</sup>	33.14 ± 1.23 <sup>a</sup>	13.81 ± 0.85 <sup>a</sup>	86.19 ± 0.85 <sup>a</sup>
	F2 : 45	13.46 ± 2.90 <sup>a</sup>	33.07 ± 0.89 <sup>a</sup>	13.88 ± 0.30 <sup>a</sup>	86.12 ± 0.30 <sup>a</sup>
	F3 : 60	11.58 ± 2.09 <sup>a</sup>	43.22 ± 14.10 <sup>a</sup>	13.21 ± 0.81 <sup>a</sup>	86.79 ± 0.81 <sup>a</sup>
80	F1 : 30	15.53 ± 3.01 <sup>a</sup>	32.99 ± 1.32 <sup>a</sup>	13.34 ± 0.91 <sup>a</sup>	86.66 ± 0.91 <sup>a</sup>
	F2 : 45	12.57 ± 3.36 <sup>a</sup>	32.94 ± 1.62 <sup>a</sup>	13.55 ± 0.41 <sup>a</sup>	86.45 ± 0.41 <sup>a</sup>
	F3 : 60	11.80 ± 2.41 <sup>a</sup>	34.51 ± 3.15 <sup>a</sup>	14.09 ± 1.85 <sup>a</sup>	85.91 ± 1.85 <sup>a</sup>

Means in the same line with the same letters are not significantly different  $p > 0.05$ .

**Conclusions** Nitrogen fertilization had no significant effect on the chemical composition of *P. maximum*. Cutting management significantly affected the chemical composition of *P. maximum*, with the 30 days cutting management giving the best chemical composition.

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