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## Monthly variation in crude protein, fibre fractions and mineral composition of paragrass (*Brachiaria mutica* (Forsk) Stapf) and stargrass (*Cynodon plectostachyus* Pilger)

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In the Philippines, some minerals in the forages are limiting during specific months of dry and wet seasons as observed by Fujihara *et al* (1992a, b, Asian-Aust J Anim Sci, 5, 383-395). However, data on the monthly variation of various nutrients in the forages are sparse in that country. Hence, this study was conducted with the purpose of determining the monthly variation in crude protein, fibre fractions and mineral composition of forages collected in the pastures grazed by goats.

Paragrass and stargrass showed persistency through out the year in the pastures of CLSU, Philippines (altitude of 76 m at 15° 43' N, 120° 54' E) were sampled monthly by hand plucking method. The samples were dried, ground and analysed for crude protein (CP), neutral detergent fibre (NDF), acid detergent fibre (ADF) and acid detergent lignin (ADL), following the standard procedures. Hemicellulose (HE) was calculated as the difference between NDF and ADF. Cellulose (CE) was estimated as the difference between ADF and ADL. The different samples were also prepared for mineral analysis by a wet ashing (nitric-perchloric acids) method, and mineral concentrations were measured by inductively coupled plasma spectroscopy. The data were

analysed using a completely randomized design, and means were compared using Duncan's multiple range test. Correlation analyses between the various nutrients and environmental climatic factors (rainfall, temperature, humidity and daylength) were computed.

Results showed that month differences ( $P<0.05$ ) in CP and different fibre fractions were observed for the two forage species. Both CP and HE were higher in the rainy months whereas NDF, ADF, ADL and CE were higher in the dry months. Specie effects ( $P<0.05$ ) were observed in various nutrient fractions including some minerals (Ca, P, Cu and Zn) as shown in table below. Month differences ( $P<0.05$ ) were also observed in mineral elements Ca, P, K, Cu and Zn but not in Mg. The majority of mineral elements (Ca, K, Cu and Zn) were higher in dry months and the reverse was found for P. Rainfall was positively correlated to CP, HE and P, and negatively correlated to other fibre fractions and mineral elements being studied.

This study concludes that month and specie differences exist in the nutrient contents of paragrass and stargrass.

Forage	CP	NDF	ADF	ADL	HE	CE
			(% DM)			
Paragrass	13.1 <sup>a</sup>	73.9 <sup>a</sup>	37.3 <sup>a</sup>	4.5 <sup>a</sup>	36.6 <sup>a</sup>	32.9 <sup>a</sup>
Stargrass	9.5 <sup>b</sup>	75.9 <sup>b</sup>	43.8 <sup>b</sup>	6.5 <sup>b</sup>	32.3 <sup>b</sup>	37.2 <sup>b</sup>

Forage	Ca	P	Mg	K	Cu	Zn
		(g/kg DM)			(mg/kg DM)	
Paragrass	3.9 <sup>a</sup>	1.9 <sup>a</sup>	2.4	10.7	9.8 <sup>a</sup>	58.3 <sup>a</sup>
Stargrass	4.0 <sup>b</sup>	2.7 <sup>b</sup>	2.5	10.2	10.8 <sup>b</sup>	38.6 <sup>b</sup>

a, b Means within column for each item having different superscripts differ ( $P<0.05$ ).