

## Diet selection and nutrient intake of differently supplemented Zebu cattle grazing Sahelian pasture

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Availability and quality of pasture biomass limit cattle productivity in the Sahel, especially in the dry season. Crop by-product feeding makes up for seasonal nutritional constraints but for a supplementation of grazing cattle according to nutrient requirements the qualitative and quantitative intake from pasture vegetation must be determined.

From 1990 to 1992, studies were conducted in the Sahelian zone of Mali. 12 Zebu oxen fitted with oesophageal fistulae were separated into 3 groups. The control (C) grazed natural pasture exclusively, while the moderately supplemented group (M) additionally received 0.8 to 1.5 kg/d crop by-products during the dry season (Nov - June) and the first month of the rainy season. The diet of the highly supplemented group (H) was complemented at levels of 1.2 to 2.7 kg/d in the dry season and 0.8 to 1.2 kg/d in the rainy season. The quality of the diet selected on pasture was determined from oesophageal extrusa. Samples were analysed for contents of organic matter (OM), crude protein (CP), digestible organic matter (DOM) and metabolizable energy (ME). Granulated polyamide was used as external marker to assess faecal OM excretion (Mahler *et al*, 1995, this issue). OM intake (IOM) was derived from faecal OM excretion and dietary DOM content and was used to calculate CP and ME intake.

The quality of the diet selected on pasture was not influenced by the level of supplementation. However, during the dry season, the diet selected by group C was constantly higher in CP, DOM and ME contents as compared to the diet selected by supplemented animals ( $P > 0.05$ ), a tendency not observed during the rainy season. Averaged over all groups, the contents of DOM and ME amounted to 636 g

DOM and 9.2 MJ ME/kg OM during the rainy season of 1990 and to 648 g DOM and 9.7 MJ ME/kg OM during the rainy season of 1991. In both years, the two parameters decreased to 550 g DOM and 8.0 MJ ME/kg OM at the end of the dry season. The CP content averaged 231 and 192 g/kg OM during the rainy season of 1990 and 1991, dropping to 83 and 93 g CP/kg OM at the end of the dry season of the first and second year, respectively. With the exception of the last three months of the dry season of 1990/91, IOM of group C varied between 86 and 89 g/d per kg of metabolic mass ( $\text{kg}^{0.75}$ ) during the dry season. The concomitant nutrient intake averaged 8 to 10 g CP/ $\text{kg}^{0.75}/\text{d}$  and 691 to 765 kJ ME/ $\text{kg}^{0.75}/\text{d}$ . IOM was lower during the rainy compared to the dry season, ranging from 77 to 81 g/ $\text{kg}^{0.75}/\text{d}$  for group C. Due to the higher quality of the diet, ME intake was slightly and CP intake was significantly higher during the rainy compared to the dry season, varying between 700 and 786 kJ ME  $\text{kg}^{0.75}/\text{d}$  and 15 and 18 g CP/ $\text{kg}^{0.75}/\text{d}$  for group C. The high level of supplementation always had a markedly negative impact on feed and nutrient intake from pasture vegetation, whereas the moderate supplementation level increased IOM from pasture vegetation *per se* by up to 9 % in the dry season of 1990/91. During the dry season of 1991/92, when quality and availability of pasture biomass were superior compared to the dry season of 1990/91, this positive effect of a moderate feeding level on intake from pasture was not observed.

It was concluded that on little degraded Sahelian pasture the nutrient supply of grazing cattle is hardly constrained by the quality of the selected diet but is mainly limited by biomass availability.