UTILIZATION OF ESOPHAGEAL FISTULATED BUFFALOES IN PASTURE EVALUATION

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INTRODUCTION

Buffaloes play an important role in animal husbandry in the Brasilian Amazon region, where environmental conditions are favourable for meat and milk production. Buffaloes farming is based exclusively in pastures, due to their lower costs for ruminant feeding. During grazing the animals select their diet according to plant species, morphological parts and stage of growth. Therefore one of the most valuable methods of colleting pasture sample representting the actual diet selected by the herd is the use of animals fitted with esophageal fistulas (1). In this paper the use of esophageal fistulated buffaloes for the evalution of cultivated pastures in the Brazilian Amazon is presented.

MATERIAL AND METHODS

The study was carried out at the Agroforestry Research Center for the Eastern Amazon (CPATU), in Belém, Pará, Brazil. The climate is an Afi (Köppen classification), with average annual rainfall of 2,800, temperature of 26 ^{o}C, humidity of 85% and insolation of 2,390 hour/year. The fistulation followed the same method used for bovines (2). The cannulae (3) were made out of PVC tubes and the bags for colleting the extrusa made out of canvas (4). Prior to sample colleting the animals had a fasting period of three hours, to avoid regurgitation. After that and without the cannulae the animals fitted with the canvas bags were put to graze a *Brachiaria humidicola* cultivated pasture, for 15 to 30 minutes. Then the canvas bags were taken out of the animals and the extrusa colleted and homogenized. Two samples were then taken, one for chemical and the other for botanical analysis. For botanical analysis of diet the samples were separated into leaf, stem, dead material and weeds (5,6).

RESULTS AND DISCUSSION

Number of individuals and days for diet sampling: The variability between animals and amongst pasture attributes (such as stages of growth, botanical and chemical composition; forage availability, stocking rate and grazing system) determine the frequency in which diet from oseophageal fistulated animals is sampled. In a trial carried out in Belém, Pará, Brazil, the variability of botanical and chemical composition of buffaloes diet on a *B. humidicola* based pasture under rotational grazing was determined.

Index terms: Amazon, *Brachiaria humidicola*, nutritive value, chemical composition.

It was conclued that a reliable evalation of diet sampling is obtained using four buffaloes in *B. humidicola* pasture (period of six days). Samples could be taken in days-first and fourth, first and sixth, third or fifth day of grazing (7). Effect of saliva in chemical composition of the extrusa: Results from studies using oesophageal fistulated sheep and cattle show a difference between chemical attribute of the available and the ingested forage. That difference may be an effect of saliva, mastication and sample handling. The effect of saliva on the chemical composition of the forage ingested was evaluated in Belém, Pará, Brazil, using four buffaloes fitted with esophageal fistula pen fed with forage cut from a B.humidicola pasture (8). No variation was found with respect to crude protein (CP) content. However, the contents of acid detergent fiber (ADF), ash (A) and "in vitro" digestibility of organic matter (IVDOM) of the ingested forage were 5%, 3%, e 4% higher, respectively ($P<0.01$). The ingested forage had 172 kcal/kg lower in relation to the available forage ($P<0.01$). It is possible that forage species with medium to high content of CP present similar values for available and ingested forage, because contamination with N from saliva may be equivalente to N loss due to matication. The increase in ADF content was a consequence of mastication, wich reduces celular contents, drained together with saliva, increasing cellular wall content of the forage (9). Higher values for A are due, to mineral contamination from saliva (9). Linear regressions to correct the effect of contamination by saliva were significant for ADF, A and IVDOM. Regression for ADF and A presented low precision. It was conclued that the effects of saliva in the chemical composition of ingested forrage should be represented by the equation $Y=-4.2483 + 1.0032X$ ($P<0.01$), $r^2=0.85$, where Y=correted IVDOM of ingested forage and X=IVDOM of ingested forage. For CP it was not necesary to corect the values found in diet samples. Forage intake by buffaloes grazing *B. humidicola* pasture: Forage intake of dairy buffaloes grazing *B. humidicola* pasture was evaluated under a rotational grazing system, stocking rate of 1.6 head/ha, average weight of 576 kg/head. Esophageal fistulated animals were used to sample the forage ingested. Cromic oxide was fed to heifers twice a day (8 A.M. and 4 P.M.), 10 g/head/day, during fourteen days. Faeces were samples from the rectum of the heifers, daily during the last seven days, at 8 A.M. and 4 P.M., to determine cromium content. Dry matter intake of *B. humidicola* was 2.41 and 1.95% of the liveweight, respectively for rainy and dry season (10).

REFERENCES

(1) Holechek, J.L., Vavra, M. & Piepe, R.D. Methods for determi- ning the nutritive quality of range ruminants: a review. J. Ani. Sc., v. 54, p. 363-376, 1982.

(2) Láu, H.D., Saueressi, M.G. & Costa, N.A.. Fístula esofagiana em búfalos. Pesq. Agrop. Bras., v. 20, p. 913-915, 1985.

(3) Camarão, A.P. Cânula para fístula esofagiana em bubalinos. Pesq. Agrop. Bras., v. 26, n. 8, p. 1305-1307, 1991
(4) Camarão, A.P. & Batista, H.A.M. Sacola para colheita da dieta de bubalinos fistulados no esôfago. Pesq. Agrop. Bras., v. 22, p. 447-449, 1987.
(5) Camarão, A.P. Avaliação de pastagem de *Brachiaria humidicola* (Rendle) Schweickckerdt, com bubalinos fistulados no esôfago. Jaboticabal, SP: UNESP, 1991. 111p. Tese Doutorado.
(6) Minson, D.J., Stobbs, T.H., Hegarty, M.P. & Playne, M.J. Measuring the nutritive value of pasture plants. In: SHAW, N.H.; BRIAN, W.W. Tropical pasture research, principles and methods. Hurley, 1976. p. 308-338.
(7) Camarão, A.P., Oliveira, R.P. & Dutra, S. Variabilidade na determinação da qualidade da dieta de bubalinos em pastagem de *Brachiaria humidicola*. Belém: EMBRAPA-CPATU, 1992. 19p. (EMBRAPA-CPATU. Boletim de Pesquisa, 130).
(8) Camarão, A.P. & Silva, E.D. Efeito da saliva na composição química da forragem ingerida por bubalinos fistulados no esôfago. Belém: EMBRAPA-CPATU, 1992. 17p. (EMBRAPA-CPATU. Boletim de Pesquisa, 129).
(9) Scales, G.H., Streeter, C.L., Denhan, A.H. & Ward, G.M. Effect of mastication, salivary contamination and leaching on the chemical composition of forage samples collected via esophageal fistulae. J. Ani. Sci., v. 38, p. 1278-1283, 1974.
(10) Camarão, A.P., Braga, E., Batista, H.A.M. & Lourenço Junior, J.B. Avaliação de pastagem de quicuio-da-amazônia (*Brachiaria humidicola*) sob pastejo de bubalinos. Belém: EMBRAPA-CPATU, 1988. 16p. (EMBRAPA-CPATU. Boletim de Pesquisa, 91).