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EVALUATION OF "FEEDING INTELLIGENCE" IN MURRAH WATER BUFFALOES GRAZING THREE DIFFERENT TROPICAL GRASSES

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Abstract

Acceptability and palatability are two terms of large utilization that help to understand animal selection for feed. "Feeding intelligence" is a new theory recently introduced to replace those terms mentioned before. According to most recent research works, the feeding intelligence is acquired and remains for a long period of time in the memory of some animals. The present experiment had the purpose of showing its occurence in water buffaloes aiming, at the same time, to better understand their feeding behaviour. Three tropical grasses were tested: *Brachiaria brizantha* cv Marandu, *Panicum maximum* cv Tanzania and *Setaria sphacelata* var. *sericeae* cv Kazungula. Twelve animals were sepparated into three groups of four individuals in each group remaining all the time grazing only one species. From time to time and on every month they were allowed into the cafeteria areas where they could select which grass they ate according to their own wish . These data confirmed the expected known pattern of acceptibility and/or palatability. The present paper did not allow to enhance statisticaly the occurence of a "feeding intelligence" in water buffaloes.

Keywords: animal behaviour, water buffaloes, tropical pastures, feeding behaviour

Introduction

Palatability is defined by Tribe & Gordon (1950) as the total sum of the factors that defines the level of atraction by feeds to animals. Acceptability is many times used as a synonym of the previous term (Williams, 1964; Ivins, 1955; Reid, 1951; Leigh, 1961). Ivins (1955) states that small differences between forage species do not lead to practical significances as far as production is concerned. Nevertheless, under the view point of ethology this behaviour assumes capital importance. Recentely, Forbes (1995) caused some comotion as he introduced the term "feeding intelligence" or "feeding memory" to explain the preference the animal shows for one feed rather than the other. This "intelligence" is learned, according to the author, directely: during the pre-ruminant fase of the life when the animal sees another grazing a particular grass; or indirectily: when he "learns" the flavour of the forage through the milk he gets from his mother.

Forbes (1995) states that this apprenticeship is quite persistent in some species. Sheeps, for instance, retain this infformation for up to three years. More data do exist for pigs, goats and rabbits. Informations are rare for beef cattle and inexistent for buffaloes. Present work aimed to put some light on this animals' behaviour relating to their preference on grazing three very distinctive grasses.

Material and Methods

Observations were made during a period of one year at Instituto de Zootecnia (Institute of Animal Science and Pastures, Nova Odessa, SP, Brazil (22º 47' Lat. S and 47º 18' Long. W).

The area was composed by three paddocks of 0.8 ha each sowed with *Panicum maximum* cv Tanzânia (high palatability); *Brachiaria brizantha* cv Marandu (medium palatability) and *Setaria sphacelata* cv Kazungula (low palatability).

Each paddock had adjacent a 2,400 m^2 area composed of 12 plots of 100 m^2 each covered by 3 species 4 times replicated known as “cafeteria”. The animals were 12 young females weighing from 220 to 230 kg of LW, born and weaned in a *Brachiaria brizantha* cv Marandu pasture.

Three groups of four animals were made and each one remained exclusively in one of the three paddocks available. Five days a month, from 8 to 10 a .m., the animals were taken to the adjacent cafeteria area and data were registered on frequency of visitations and time of effective grazing on of each plot (species). The observations were taken from a 2m high platform from October to November/97 and from January to September/98. Experimental design was in randomized blocks with 4 replications in a schem of split plots. The interactions of each grass during the months of the year were analised.

Results and Discussion

According to the expected pattern based on the palatability concept, our data showed that Tanzania was grazed for a longer period of time followed by Marandu and finaly Setaria species. The curves of Fourrier pointed out that more time was used grazing Tanzania grass followed by Marandu and Setaria. Minimum consumption occured on May (Tanzania) and on the end of May and begining of June (Marandu and Setaria). That is coincident to the shorteness of the days and the initiation of the reproductive fase turning the grasses less palatable. Following the same pattern, is the frequency of visitations on each species by the animals. The curves of Fourrier showed the same tendency of the previous variable. What did surprise us was that on the first two days of each month, when the cafeterias were available to the animals they did visit, at first, that species on which they were grazing during the hole month. For instance: animals that were on paddock of Setaria grass as entering the cafeteria, grazed at first Setaria grass during two days on

a row. During this period they did sample the other species and at last, on the third day, they changed their behaviour, grazing preferentialy Tanzania followed by Marandu grass, (see Tables 1, 2).

The so known “feeding intelligence” effect as related by Forbes (1995) appeared only when we analysed the variable “frequency of visitatons”. The effect was not observed with the variable “period of grazing”. Variation coeficient (VC %) was always less than 7.6% and R^2 showed values below the expected perhaps due to the nature of the observed data and to the individual characteristics of each animal envolved.

As far as “feeding intelligence” and “feeding memory” do exist, one cannot renounce the usage of the term “palatability”.

Between the two variables measured, “frequency of visitatons” was better to evidence the ocurrence of the “feeding memory” effect while “grazing period” was better to validate the concept of “palatability”.

The authors suggest, as an assurance, the use of “feeding intelligence” instead of “feeding memory” due to the addaptation capacity showed by the animals after sampling different grasses and optting for consuming one of them.

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Table 1 – Means of grazing periods' (min.) analysis of each grass inside the cafeterias.

	Species (cafeterias)		
Paddocks	Tanzania	Marandu	Setaria
Tanzania	3.85[1] (15.67) a	3.16 (10.56) a	2.29 (5.65) b
Marandu	3.81 (15.43) a	3.40 (12.13) a	2.40 (6.25) b
Setaria	3.71 (14.37) a	3.21 (10.89) a	2.89 (8.76) a
CV%	6.46	6.88	7.57
MSD (1%)	0.34	0.31	0.27

[1] $\sqrt{x}$ transformed data; original data, in parenthesis.
Means followed by the same letter, in columns, do not differ by the Tukey test at 5% of probability.

Table 2 – Means of frequency of visitations' (number of times) analysis of each grass inside the cafeterias.

	Species (cafeterias)		
Paddocks	Tanzania	Marandu	Setaria
Tanzania	1.63[1] (2.69) a	1.44 (2.11) b	1.27 (1.67) b
Marandu	1.61 (2.65) a	1.63 (2.69) a	1.36 (1.90) b
Setaria	1.51 (2.31) b	1.42 (2.04) b	1.51 (2.31) a
CV%	5.62	6.51	6.33
MSD (1%)	0.12	0.13	0.12

[1] $\sqrt{x}$ transformed data; original data, in parenthesis.
Means followed by the same letter, in columns, do not differ by the Tukey test at 5% of probability.