FEEDING PREFERENCE OF WHITE FULANI CATTLE (BUNAJI) FED *SACCIOLEPIS AFRICANA* LEAF MEAL

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ABSTRACT
Sacciolepis africana has been identified as water weed, which constitute a manace in rice and maize fields due to its aggressive growth. Utilization of Sacciolepis africana can help to mitigate the challenge and also serve as feed ruminant especially during the period of dry season. Hence, this experiment was conducted to determine the feeding preference and acceptability for Sacciolepis africana leaves by White Fulani Cattle (Bunaji). Sacciolepis africana leaves were harvested and processed into four treatments viz: Diet 1 (Freshly cut Sacciolepis africana), diet 2 (Air-dried Sacciolepis africana), diet 3 (Sun-dried Sacciolepis Africana) and diet 4 (Ensiled Sacciolepis africana). Proximate composition of the diets was carried out, and feeding preference of Bunaji cattle was observed. Results indicated that proximate composition of diets were influenced (P<0.05) by processing methods. Coefficient of Preference (CoP) of diets revealed that fresh Sacciolepis africana was most preferred with a CoP of 1.73, followed by the air-dried Sacciolepis africana with CoP values of 1.17. It is concluded that, processing Sacciolepis africana improved its nutritional composition and that the fresh Sacciolepis africana was most preferred by Bunaji cattle.
Keywords: *Sacciolepis africana,* acceptability, leaf meal, coefficient of preference Bunaji cattle.

INTRODUCTION

Ruminants are known as converters of human inedible materials to edible high-quality protein (milk and meat). Notwithstanding, the production and sustainability of ruminant livestock is challenged by limited year-round availability of green forages. This is due to the seasonal changes in climatic conditions affecting the quality and quantity of these forages. Leading to setback, loss and limitation to the expansion of ruminant livestock industry. Intensive efforts on innovative research are directed toward the discovery, identification and utilization of indigenous feed alternatives that would mitigate the challenge especially during the critical period of dry season (Abegunde *et al*., 2017). Some aquatic plants/weeds have been identified to be available and abundant throughout the year (Babayemi and Bamikole, 2006; Ekunseitan *et al*., 2013). Thus, it is necessary to determine their usefulness as forage for ruminant livestock. The behavioral grazing pattern of ruminants (Cattle) can be used to assess the nutritional value of feed as they tend to consume more of forages that are high in protein, low in lignin, toxins and other antinutritional factors (Babayemi and Bamikole, 2006). Cattle (Bunaji) are known as natural grazer and their behavioral grazing pattern can be used to predict their preference for a particular feedstuff or forage.

Aquatic plants are plants that grow around water bodies and are regarded as nuisance to the economy based on their ability to reduce the quality and quantity of water supply, obstructs water ways, reduces generation of hydropower, competes with crops like rice, maize and other crops that are grown along waterways (Brendonck, 2003; Alagbo *et al*., 2018). Thus, continuous efforts exerted towards the removal and utilization of these plants as biogas and animal fodder will help to open up the waterways, improving economic activities and ensuring sustainable livestock production (Odedire *et al*., 2022). Examples of aquatic plants that has been reported as feed resource for ruminants include Eichhornia crassipes (Abegunde and Akinropo, 2018; Mako *et al*., 2015). *Nephrolepis biserrata* and *Spirodela polyrhiza* (Babayemi and Bamikole, 2006), *Azolla pinnata* and *Azolla microphylla* (Ting, *et al*., 2022) Duckweed Halmemies-Beauchet-Filleau,; Yahaya *et al*.,2023).

The most prevalent type of Sacciolepis *spp* in Nigeria is *Sacciolepis africana* which is commonly called purple swamp or cupscale grass (Agboola *et al*., 2016, Timi *et al*., 2019). *Sacciolepis africana* is a vivacious, herbaceous perennial grass of flooded rice paddies with thick spongy culms or decumbent, rooting at lower nodes (Burkill, 1985, and has been reported as a threat due to its ability to compete with and drastically reduce the productivity of crops like rice, maize and other crops that are grown along waterways (Brendonck, 2003; Alagbo *et al*., 2018). Investigation on Its feeding

preference was assessed and reported for West African Dwarf (WAD) Goats and Sheep (Odedire *et al*., 2022). However, limited information exists on its use as forage for White Fulani Cattle Bunaj. Hence, the objective of this study, was to evaluate the feeding preference of Bunaji offered differently processed *Sacciolepis africana* leaf meal.

Material and Methods

Experimental Site and Diets

The experiment was conducted at the Teaching and Research Farm, Obafemi Awolowo University, Ile- Ife, Nigeria. *Sacciolepis africana* leaves (from apex to the third node) were harvested from the restoration pond at the Obafemi Awolowo University Religion Ground. The leaves were subjected to different processing methods namely, air-drying, sun-drying and ensiling following standard procedures.

Feeding Behaviour and Acceptability trial

Five (5) White Fulani Cattle (Bunaji) were used to evaluate feeding pattern and acceptability of differently processed *Sacciolepis africana* leaf meal, in a cafeteria experiment. The animals were housed in their stalk and they were acclimatized for a period of seven days after which the animals were offered the experimental diets for another seven days with six hours of observation period. Fresh water was offered to the animals *ad libitum* during the period of the free choice observation. Parameters measured include feed intake, number of bites per minute and number of visits to each diet. Coefficient of preference (CoP) was calculated as the ratio of individual diet intake to the average intake of all the diets. A diet was considered acceptable when the CoP value is greater than, or equal to, one (≥ 1) while ranking is based on percentage of preference.

Proximate Component

Samples of each diet were taken, and oven- dried at 65^0C until constant weight was obtained for the purpose of dry matter, ether extract, crude fibre, Crude protein, ash and Nitrogen Free Extract determination, using the procedure of AOAC (2000).

Statistical Analysis

Data obtained were subjected to Analysis of Variance using the General Linear Model procedures of SAS (2001). Significant differences between means were compared using the Duncan New Multiple Range test of the same package.

RESULTS AND DISCUSSION

Proximate composition of the diets is shown in Table 1. Dry matter (DM) contents of the diets were significantly ($P<0.05$) affected by the different processing methods. Diet 2 (Sun–dried *Sacciolepis africana* leaves) recorded the highest DM value of 90.00% while Diet 1 (fresh *Sacciolepis africana* leaves) expectedly recorded the least (18.00% DM). The differences observed in the DM content of the diets can be attributed to the elimination of the water content by the processing methods. The crude protein (CP) content of 25.59% for Diet 4 (ensiled *Sacciolepis africana* leaves) was significantly ($P<0.05$) higher than others but all the CP values obtained in the study exceeded the minimum level of 8% necessary for the maintenance of goats and sheep (NRC, 2007).

Table 1: Proximate Composition of the Different processed forms of *Sacciolepis africana* Leaf Meal

Parameters	Diet 1	Diet 2	Diet 3	Diet 4	SEM	P Value
Dry matter	18.00^{d}	90.00^{a}	84.00^{b}	77.00^{c}	8.68	<0.0001
Crude protein	24.50^{b}	23.72^{d}	24.06^{c}	25.59^{a}	0.22	<0.0001
Crude fiber	19.75^{c}	19.70^{d}	20.23^{b}	20.30^{a}	0.09	<0.0031
Ether Extract	9.90^{b}	9.75^{c}	8.96^{d}	10.00^{a}	0.12	<0.0001
Ash	12.26^{a}	10.17^{c}	9.13^{d}	11.53^{b}	0.37	<0.0001
Nitrogen Free Extract	33.59^{c}	36.67^{b}	37.61^{a}	32.57^{d}	0.63	<0.0001

a – d = Means in a row with different superscripts are significantly ($P<0.05$) different.
Diet 1: Fresh *Sacciolepis africana*; Diet 2: Sun-dried *Sacciolepis africana*; Diet 3: Air-dried *Sacciolepis africana*; Diet 4: Ensiled *Sacciolepis africana*; SEM: Standard Error of Mean.

Coefficient of Preference of Bunaji Cattle fed Different Processed Forms of *Sacciolepis africana* Leaf meal

Table 2 shows the Coefficient of Preference (CoP) of the experimental diets by Bunaji cattle. The forage preference on cafeteria basis revealed that fresh *Sacciolepis africana* was the most preferred with a CoP of 1.73, followed by 1.17 CoP value for air-dried form of *Sacciolepis africana*. The CoP values for other treatments fell below Unity (1.0) and as such they are regarded as unacceptable (Olorunnisomo and Fayomi, 2012).

Table 2: Coefficient of Preference of Bunaji Cattle fed Different processed Forms *Sacciolepis africana* Leaf meal

Diets	Dry matter intake	CoP	RANK
Air dried	2.14	1.17	2nd
Sun dried	1.49	0.81	3rd
Ensiled	0.51	0.28	4th
Fresh	3.15	1.73	1st
SEM	0.29	0.16	
P value	<0.0001	<0.0001	

Diets Coefficient of preference Rank 1st 1.73, 2nd 1.17, 3rd 0.81, 4th 4 0.28. SEM: Standard Error of Mean.

Behavioural Pattern of Bunaji Cattle fed Different Processed Forms of *Sacciolepis africana* Leaf meal

Presented in Figures 1 and 2 are the behavioural pattern of Bunaji in terms of Bite per minute of the diets and the number of visits to each diet, which revealed significant ($p<0.05$), variations among the diets. This implies that Bunaji cattle consumed more of fresh and air-dried *Sacciolepis africana* respectively than other diets. It can be inferred from this observation that the form of presentation of the fresh *Sacciolepis africana* influenced its acceptability by Bunaji cattle.

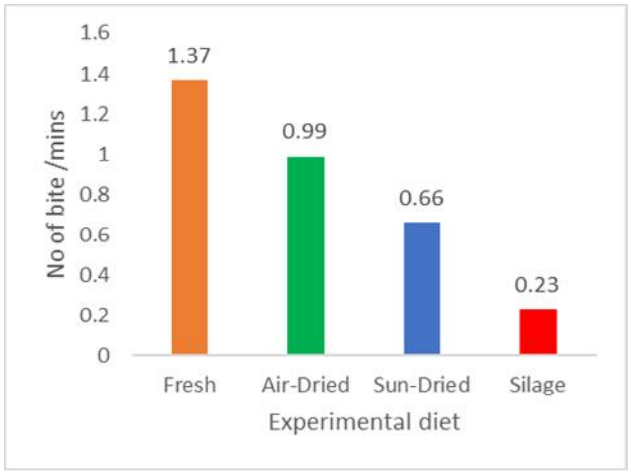

Figure 1: Bite Per minutes by Bunaji Cattle on Experimental Diets

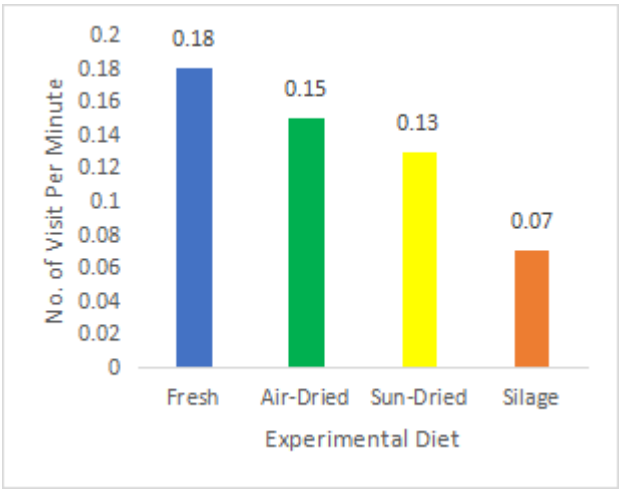

Figure 2: Visits per minutes by Bunaji Cattle on Experimental Diets

CONCLUSION

Processing *Sacciolepis africana* influenced and improved its nutritional composition of the differently processed forms, while the fresh *Sacciolepis africana* was most relished by White Fulani Cattle.

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