Acta Scientific NUTRITIONAL HEALTH (ISSN:2582-1423)

Volume 9 Issue 3 March 2025

Research Article

Analysis of Food Parameters Influencing Goat Production in Mbuji Mayi Case of the Lukelenge Site

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Received: January 15, 2025

Published: February 05, 2025

Abstract

The objectives were to determine the frequency of palatable species in the natural pasture of Lukelenge in the Democratic Republic of Congo and to determine the robustness of promising local breeds. The methods used were those of an itinerant inventory following goat grazing, phytosociological survey, minimum area survey and goat weight sampling. The study identified a total of 15 plant species, and the monitoring of grazing animals identified nine species that are palatable, including seven that are more palatable and two that are sometimes palatable to goats. The different species were divided into six botanical families. Several species belonging to two important families (Poaceae and Malvaceae) and representing the bulk of the species consumed were identified. The average pairing of goats was 1.67 in free-range and 1.33 in paddocks. The average weight of 24-month-old goats was 47.15 ± 1.56 kg in the pen and 47.005 ± 5.36 kg in the field. The 6-month-old kids weighed 30.75 ± 1.32 kg penned and 32.25 ± 3.75 kg free-ranging. 6month-old castrates weighed 32.09 ± 1.84 kg penned and 34.1 ± 1.27 kg free-ranging.

Keywords: Food Parameters; Goat Production; Mbuji Mayi; Lukelenge Site

Introduction

The goat, considered the poor man's cow, has zootechnical qualities that make it easily suitable for breeding in third world countries. It is undoubtedly a source of animal protein accessible to the entire population [2]. Goat breeding is the most common in the different areas of developing countries. development pathways. This is explained by the great capacity of goats to adapt to very different climates and by the numerous functions and products resulting from their breeding [1].

In Africa in general and particularly in the DRC, there is a problem of scarcity of animal proteins following the increasingly galloping demography, unfortunately, goat production, one of the sources of animal proteins, is declining [4]. The least expensive way to feed domestic herbivores is to lead them into the natural vegetation; the animals move on the "path" or the pasture in search of the plants they like, ingesting if possible the fodder they need for maintenance and production [8]. To do this, the present work consists of finding answers concerning the availability of natural fodder, possibilities of improving pastures and the identification of promising local breeds by comparing two breeding methods (in enclosures and in freerange) in the Lukelenge site.

The natural vegetation in the Lukelenge site would consist of forage species least preferred in goat farming [3] and a more detailed knowledge of the existing forage species that can be used for feeding goats would allow us to consider strategies for exploitation and management of pasture. The objectives of this study were toto determine the frequency of palatable species in the natural pasture of Lukelenge in the Democratic Republic of Congo and to determine the robustness of promising local breeds.

Materials and Methods

The study was carried out on a site of Lukelenge covered by a grassy savannah; the geographical position places it between 6° 7' latitude South, 23° 41' latitude South and the altitude rises up to 660m. According to the Koppen-Geiger classification, the climate is of the AW3 type.An average rainfall of 1600mm of water, and the average annual temperature is 25.4°C with May being the hottest month of the year and July the coldest of the year.

Biological materials and non-organic Thirty goats of local breeds were selected from the lukelenge breeders, including 20 (17 females and 3 males) kept in enclosures and fed with leaves of *Gmelina arborea*and bamboo and oil palms. The other 10 goats (5

females and 5 males) were left on the range grazing on the grass. Of the five males, four were castrated and one was breeding. The Wei Heng Scale, the rope, the marker, the GPS and the stopwatch served as non-biological materials.

Methods

A local goat monitoring device was installed in order to observe the feeding behavior of the two groups of subjects (wandering and in enclosures). The observation allowed us to identify the different forage species palatable, by classifying them into three categories (frequently, sometimes and rarely), but also the time of distribution and the number of hours of travel in natural pastures [6].

A traveling inventory following the goats' grazing path was carried out, which allowed us to learn about the different plant species present and identify those consumed by the goats.

For greater precision, the minimum area method was used to determine the growth curve of the number of species as a function of surface area. The collection consisted of going around the study area during goat grazing with the participation of breeders on the grazing site.

Food resources were mainly forage plants (Gmelina arborea, Elais guinensis), forage herbs (Setaria sphacelata, Sida acuta, Commelina difusa, Eleusine indica, hyptis suaveolens, Urena lobata, Olda landia, boerhavia difusa, Chrysanthenum cineraria folium, Cajanus cajan, Ageratum conyzoides, Imperata cylindrica) A total of 12 food samples were collected.

The robustness of the subjects was done using the weight measurement. The measurements obtained were compared with the standard data of subjects of the same age group. It was also considered from the perspective of breeding females and feeding behavior.

The results were recorded in an Excel spreadsheet and processed using the same spreadsheet.

Results

Table 1 gives us an overview of the weights of barrows raised in enclosures and in straying. The average observed was 32.09 ± 1.84 in enclosures compared to 34.1 ± 1.27 in straying.

Castrate	Enclosure	Wandering
Castrato	32.8	35
Castrato	34.2	33.2
Castrate	29.94	-
castrato	31.4	-
Average	32.09	34.1
Standard deviation	1.84	1.27

Table 1: Comparison of average weights (kg) of castrates from 6 months in enclosed and wandering.

After monitoring the goats, the average weight of the wandering kids was 32.25 ± 3.75 compared to 30.75 ± 1.32 for the kids in the enclosure (Table 2).

Kid goat	Enclosure	Wandering
Goat	29.98	29.6
Goat	30	34.9
Goat	32.28	-
Average	30.75	32.25
Standard deviation	1.32	3.75

Table 2: Comparison of average weights of 6-month-old kids in enclosures and wandering.

The mean weight results of the goats are presented in table 3 and figure 1. It was observed that there were the same number of goats in both study conditions and that the weight varied from one individual to another depending on the physiological state (pregnant or not). The mean in the pen was 47.19 ± 1.56 while that in the stray was 47.005 ± 5.36.

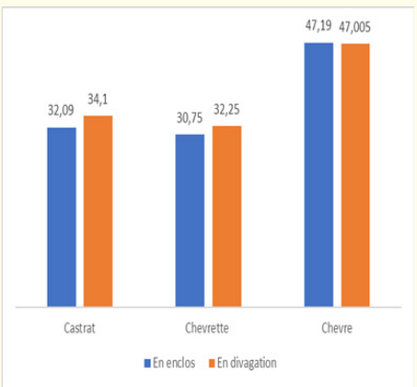

Figure 1: Average weight (kg) of subjects (castrates, kids) raised in enclosures and wandering.

The following observations emerge from this histogram

Considering age and sex, the results of the goats' weights show that the goats in enclosures were heavier (47.19 kg) than those in straying (47.005 kg). On the other hand, for the kids and the castrates, the animals in straying were heavier (32.25 and 34.1 kg) than those in enclosures (30.75 and 32.09 kg). This difference observed in the averages between the castrates and the kids is higher for those in straying than for those in enclosures, this is explained by the fact that those in straying grazed the grass that they appreciated the best; however for the goats the physiological state also depends on whether they were pregnant or not.

The results of this table lead us to say that the average twinning rate of wandering goats is higher, i.e. 1.67 ± 0.77, compared to that of goats in enclosures, 1.5 ± 0.70.

Goats	Enclosure	Wandering
Goat	48.3	43.21
Goat	46.09	50.8
Average	47.19	47,005
Standard deviation	1.56	5.36

Table 3: Comparison of average weights of 24-month-old goats in enclosures and wandering.

Pregnant goats	Number of young at birth	
	Wandering	Enclosure
Goat	1	2
Goat	2	1
Goat	2	-
Average	1.67	1.5
Standard deviation	0.77	0.70

Table 4: Comparison of robustness on the twinning rate of goats in enclosed and wandering.

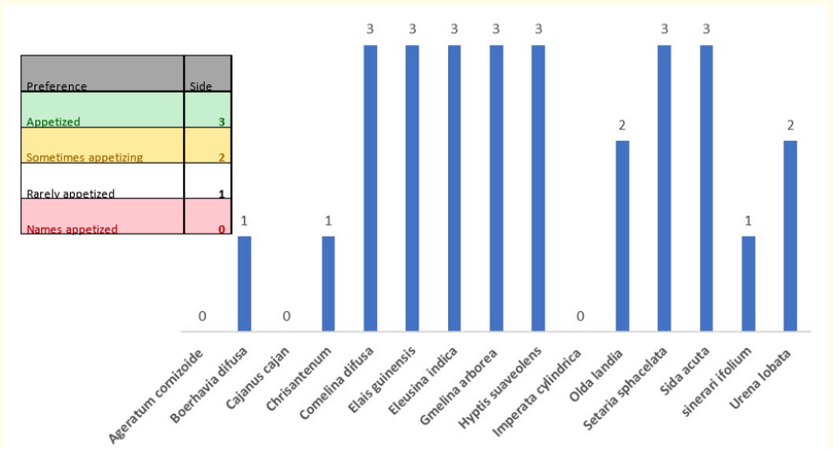

Figure 2: Level of preferences of plant species found in Lukelenge.

This figure shows the preference of plant species, the most popular of which are represented by the number 3, which are 7 in total, among which there are fodder trees and fodder grasses. Among the trees we have: Gmelina arborea and elais guinensis; among the fodder grasses we have: commelina diffusa, Eleusine indica, Hyptis suaveolens, setaria sphacelata and Sida acuta.

The species that are sometimes appreciated are designated by the number 2 and are 2 in number, including: urena lobata and olda landia, followed by those that are rarely appreciated, symbolized by the number 1 and are all 2 in number, which are as follows: boerhavia diffusa and chrisantenum cinerare folium.

The unpalatable species represented by the number 0 are: Ageratum cornyzoide, Cajanus cajan and Imperata cylindrica.

The results of this figure show that Imperata cylindrica is very common on natural pasture with 60% being unpalatable followed by Setaria sphacelata with 46.7% palatable, and 26.7% for two species including Sida acuta and Urena lobata sometimes palatable and 20% for two species including commelina Diffusa and Boerhavia diffusa rarely palatable, 13.3% for Eleusine indica palatable

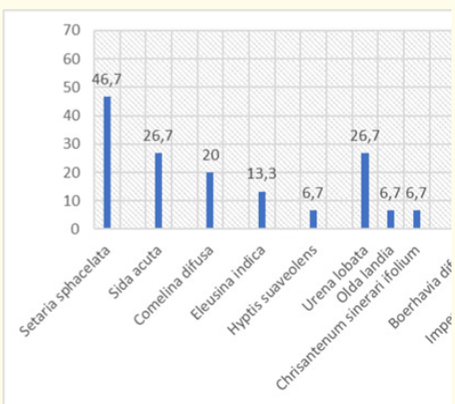

Figure 3: Frequencies of plant species found in the phytosociological surveys of the LUKELENGE site.

and 5 species having the same frequency of 6.7% including: Hyptis suaveolens, Olda landia, Chrisantenum cinerare folium, cajanus cajan and ageratum cornizoides unpalatable.

Discussion

The results of this study provide information on the state of the herbaceous vegetation of the pastures of the LUKELENGE site. The

itinerant floristic inventory and the surface surveys carried out in the pastures indicate that a total of 15 species were listed composed of 15 genera, this number is lower than that observed by [9] Who had a total of 90 species composed of 65 genera; also lower than that observed by [10] This is explained by the fact that our study did not take place in the same area where these authors carried out their studies and the number of surveys carried out by the latter is higher than ours.

In terms of floristic composition, it is observed that Imperata cylindrica, Setaria sphacelata, Eleusine indica and Olda landia all from the Poaceae family are the most represented, followed by Sida acuta and Urena lobata from the Malvaceae family, Ageratum conyzoides and chrysentenum cinerare folium from the Asteraceae family, Hyptius suaveolens from the Laminaceae family, Commelina diffusa from the Commelinaceae family, Boerhavia diffusa from the Nyctaginaceae family and finally Cajanus cajan from the Fabaceae family. The representativeness of all these species and their corresponding families is explained by the fact that the majority of African forests in general [4] are dominated by species from the first three families including Imperata cylindrica, Setaria sphacelata, Eleusine indica, olda landia, Sida acuta, Urena lobata, Ageratum conyzoide, Chrysentenum cinerare folium. These families alone represent a large proportion of occupation of natural pasture, unanimously in the order of importance found by [4] Poaceae and Malvaceae constitute the groups of species preferentially appetized by herbivores.

Several studies conducted in West Africa have noted a high number of Fabaceae in the inventories [8] including Fructiosa, Eriosema psoraleoides, Centrosema pubescens, Puerraria phaseoides and Tephrosia pedicella unlike the Fabaceae found here in our country such as Cajanus cajan not palatable to goats; this could be justified by the fact that the environment selects the species that adapt best to it. Unanimously for the palatable species that play an important role in livestock feed, for example: Boerhavia diffusa (Nyctaginaceae), Sida acuta and Urena lobata (Malvaceae), consumed by ruminants.

The most exploited resources consist of perennial and perennial herbaceous plants; the main fodder species identified in this study are contrary to those reported by [9]. The low availability of food resources appeared as the major constraint to goat production. This is evident from the statement of two breeders on whom goat monitoring was carried out, the reasons given are among others: the scarcity of fodder in the dry season, the strong land pressure on the grazing area by livestock and the poverty of crop residues. This is in agreement with the observation of several studies conducted in the Sahel by [7] The results of this study on the weight of 24-month-old goats or 2 years have an average of 47.005 in wandering is higher than that found by 3-year-old goats 42.98 [10-28].

Conclusion and Suggestions

At the end of this study, the floristic inventory carried out in the natural course of the LUKELENGE site made it possible to know the floristic diversity in forage species. The floristic inventory indicates that a total of 15 species were listed, the monitoring of the goats made it possible to collect seven palatable species represented by the number 3; two sometimes palatable species represented by the number 2; three rarely palatable species represented by the number 1 and three other non-palatable species represented by the number 0.

The Poaceae family was represented by the following species: Setaria sphaceleta, Imperata cylindrica, Eleusine indica, Olda landia and the Malvaceae family represented by: Sida acuta and Olda landia are the most representative.

Based on the first three tables giving the weight of goats in enclosures and wandering (6month-old barrows and kids, 24-month-old goats), the weight of wandering subjects is higher than that of those in enclosures.

In view of our results, we can suggest the introduction of improving forage species into the natural pasture of LUKELENGE, more precisely those of the Fabaceae family, for example Stylosenthes gracilus and Centrosema pubescens, to balance the diet of our local goats.

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