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Proceeding Paper

Seasonal Variations of Intake in Male Camels on Sahara Range-Lands of Algeria †

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Abstract: The goal of this study was to determine the seasonal and age effects on male camels' intake. Over the two seasons (wet and dry season), follow-ups were conducted at El Alia Rangelands (southeast of Algeria). Eight males were selected to measure bite counts and dry matter intake (DMI) per season; they were distributed into two groups, adult males (AM) and young males (YM). The results showed that there was a significant difference ($p < 0.05$) in the number of bites according to the season and the age categories, with a maximum average of 80.33 ± 18.206 for AM in the dry season and a minimum average of 15.50 ± 9.955 for YM in the wet season. During the wet season, *Traganum nudatum* had the highest dry matter intake (DMI), with 2.01 kg DM for AM and 0.28 kg DM for YM, while *Salsola longifolia* and *Salsola tetragona* had the lowest, with 0.38 and 0.39 kg DM, respectively, during the dry season in YM. *Limoniastrum guyonianum* exhibited high amounts of dry matter intake (DMI) in the dry season, with 1.10 and 0.22 kg DM in AM and YM, respectively, but significantly decreased in AM and YM during the wet season (0.03 and 0.02 kg DM respectively). The season influences the feed intake of male camels, of course.

Keywords: camel; feed intake; sahara rangeland; season; vegetation

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1. Introduction

Under climate change, the dromedary is a vital animal for the Algerian population's food security. Camels are a source of meat and milk protein of great value. In particular, in arid areas, camel breeding contributes to food security related to livestock production, improving the living conditions of pastoralists, improving farmers' income, and maintaining biodiversity by fair use of spontaneous feed by camel herds [1]. Despite this position, the implemented research and development programs did not grant a fair evaluation, which is why one of the issues deemed urgent is being able to permanently determine all the indicators of camel breeding, particularly those relating to rangeland feeding. The food of camels seems unknown until this day; indeed, there are few studies of dromedary palatability in Algeria [2]. The dromedary diet remains one of the least-studied aspects of this species. In order to predict the dromedary's effect on the vegetation and its nutrient requirements, it is important to understand the dromedary's foraging behavior. Furthermore, managing and utilizing range plants in camel-feeding systems necessitates a thorough understanding of seasonal variation in intake. The aim of the study was to determine the impact of seasonal variation on adult camels' intake in order to satisfy their dry matter and nutrient requirements and to improve animal and housing management.

2. Materials & Methods

Thirty-two male camels were randomly selected, marked, and followed. During the wet and dry seasons, eight animals from each category (adult males (AM) and young males (YM)) were observed for two hours, one animal per day and category. The bite count

technique is used to quantify forage consumption [3]. Forage intake was estimated after cutting and weighing simulated bites that represent ingested bites by multiplying bite counts by the average mass per bite [4]. The intake of dry matter (DMI) is determined by the following formula: DMI = GT/R × Σ (TNBi × WBi).

3. Results and Discussion

The results obtained (Figure 1) showed that for AM, the number of bite counts ranged from 4 to 89 in the wet season and from 57 to 102 in the dry season. The bite weight ranged from 0.76 g for *Anabasis articulate* in the dry season to 3.77 g recorded for *Traganum nudatum* in the wet season. For YM, the number of bite counts in the wet season was 7 to 29 and 8 to 48 in the dry season, respectively. The bite weights ranged from 0.57 g for *Anabasis articulata* during the wet season and 1.61 g measured for *Traganum nudatum* in the dry season. Overall, there is a significant difference ($p < 0.05$) in the average number of bites between seasons, with the dry season having a higher average number of bites than the wet season (33.33 ± 3.572 and 15.50 ± 9.955, respectively) for both (AM) and (AM) (80.33 ± 18.206 and 30.83 ± 14.959, respectively). The preferred species by male camels display a variation in the number of bites ($p < 0.05$); it is obvious that, during the dry season, *Limoniastrum guyonianum*, which is neglected during the wet season, is preferred. According to Ref. [5], this variability can be justified by the smell of this species during winter; it is the sense of smell that guides the animal in its choice more than the taste and view, while *Traganum nudatum* in both seasons remains very grazed. The total number of bites is inversely proportional to the bite's weight [6]. The number of bites exhibits a significant difference between AM and YM ($p < 0.05$). Regarding the amount of dry matter intake (DMI) (Figure 2), for AM the highest quantity during the wet season is recorded for *Traganum nudatum* 2.01 kg DM, but *Limoniastrum guyonianum* recorded the highest amount with 1.1 kg MS during the dry season. For (YM), *Traganum nudatum* remains the highest daily intake of dry matter recorded in the wet and dry seasons, 0.28 and 0.36 kg DM, respectively. The study demonstrated a difference in the intake of dry matter between seasons ($p < 0.05$); this result is confirmed by Ref. [7]. Plant intake depends on their feeding behavior.

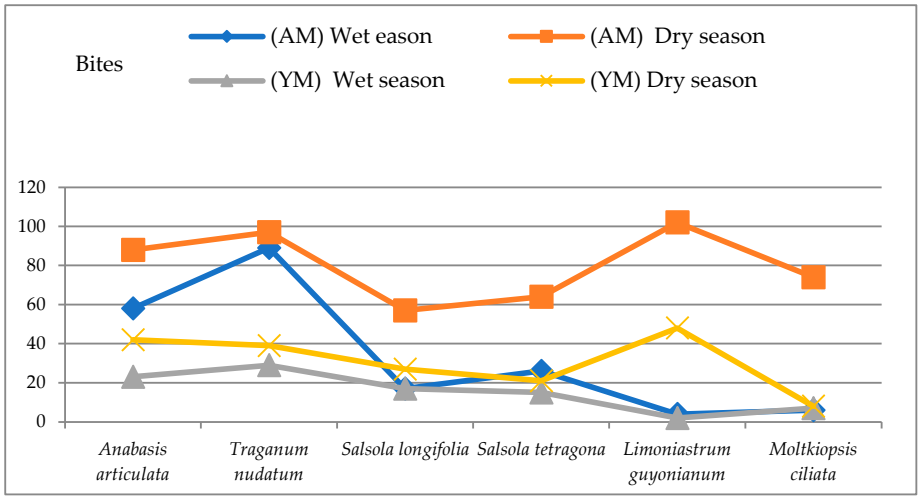

Figure 1. The number of bites by an adult and young males.

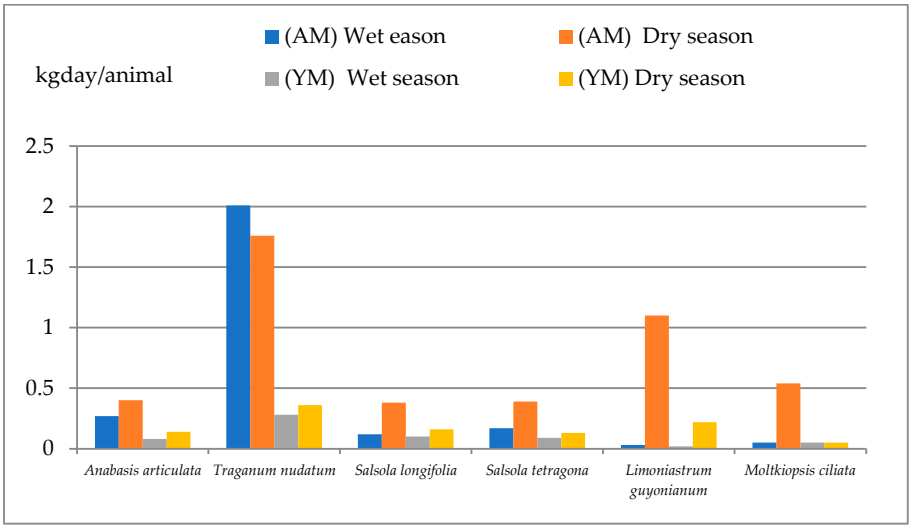

Figure 2. Dry matter intake by an adult and young males.

4. Conclusions

The use of each species by camels varies seasonally; this nutritional instinct has a positive ecological impact on the preservation of the vegetation cover of saharan rangelands.

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