

Ingestive behavior and feeding preference of goats reared in degraded caatinga

Comportamento ingestivo e preferência alimentar de caprinos criados em caatinga degradada

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Abstract

This study aimed to assess the ingestive behavior and feeding preference of goats reared in degraded Caatinga (dry tropical forest) during three seasons: transition (rainy-dry), dry, and rainy seasons. The experiment was carried out at the UFPB Experimental Station in São João do Cariri, PB, Brazil. Six male goats kept on pasture with an area of 3.2 hectares were used. The animals were assessed through continuous visual observation. The experimental design was completely randomized, with three treatments (rainy-dry, dry, and rainy seasons) and six replications (animals). Means were submitted to the Tukey test at a 5% level. The time spent by animals during the transition season (rainy-dry) had similarities for the selected grasses, herbaceous/sub-shrub plants, litter, and shrub/ tree plants, except for bromeliads and cacti. The animals spent longer grazing time consuming grasses at the rainy season. During this season, marmeleiro (*Croton hemiargyreus* Mill. Arg.) was the most selected species in relation to catingueira (*Caesalpinia pyramidalis* Tul.) and pereiro (*Aspidosperma pyrifolium* Mart.). The time spent for grazing activity during the transition season (rainy-dry) was longer than the rainy and dry season. Goats reared extensively in the Caatinga have high plasticity in their eating habits and can behave as grazing or browsing animals.

Keywords: idling; grazing; ruminant; selectivity; semiarid.

Resumo

Este estudo objetivou avaliar o comportamento ingestivo e a preferência alimentar de caprinos criados em Caatinga (Floresta Tropical Seca) degradada em três épocas do ano: transição (chuva-seca), seca e chuva. O experimento foi desenvolvido na Estação Experimental pertencente à UFPB em São João do Cariri-PB, Brasil. Foram utilizados seis caprinos machos mantidos em pastagem com área de 3,2 hectares. A avaliação dos animais foi feita por meio de observação visual e ininterrupta. O delineamento experimental utilizado foi o inteiramente casualizado, com três tratamentos (época de

chuva-seca, seco e chuvoso) e seis repetições (animais). As médias foram submetidas ao Teste de Tukey em nível de 5%. Na época de transição (chuva-seca), o tempo gasto pelos animais apresentou semelhanças para gramíneas, herbáceas/subarbustivas, serapilheira, arbustivos/arbóreos selecionados, com exceção das bromélias e cactáceas. Na estação chuvosa, os animais despenderam maior tempo de pastejo consumindo gramíneas. Nessa mesma época, o marmeleiro (*Croton hemiargyreus* Mill. Arg.) foi a espécie mais selecionada em relação à catingueira (*Caesalpinia pyramidalis*) e ao pereiro (*Aspidosperma pyriforme*). O tempo despendido para atividade de pastejo na época de transição (chuva-seca) foi superior à época chuvosa e seca. Os caprinos, em criação extensiva na Caatinga, apresentam alta plasticidade no hábito alimentar podendo comportar-se como animais pastejadores ou ramoneadores.

Palavras-chave: ócio; pastejo; ruminante; seletividade; semiárido.

Introduction

Food availability in the Brazilian semiarid region is highly variable in time and space. In the rainy season, the Caatinga enables high diversification of fresh food supply. However, litter becomes the main diet of goats during the dry season due to leaf abscission of forage species.⁽¹⁾ Thus, although little mentioned in the literature, litter intake by animals is a reality in the Brazilian semiarid, and it should be taken into account when assessing food availability. Considering the complexity of assessing forage availability in native pasture areas in the semiarid region, it is essential to conduct studies not only on their quantification but on how animals behave under grazing conditions.

Therefore, studies on Caatinga used for livestock purposes should take into account the high variability of forage availability and supply. The annual (herbaceous) forages are dominant during the rainy season, rapidly growing and differing from the others regarding the duration of their phenological cycle, resulting in abundant forage in quantity and quality. However, continuous stocking adoption, common in the semiarid region of Brazil, is not in sync with the increasing rate of forage supply, resulting in considerable quantitative and qualitative forage losses.⁽²⁾

Due to the seasonality of forage species production, studies on ingestive behavior have been an important way to assess the animal response, particularly goats, on how they feed in Caatinga areas during different seasons. The study on forage species and components selected by goats is essential for the adoption of management that culminates with the sustainability of the Caatinga. In this sense, goats can express high plasticity in the grazing activity due to the ease of adaptation to the environment according to the food supply. It is important to observe the behavior of these animals during grazing to know how they distribute the time spent for grazing, rumination, and idling during the day, besides the selected plant species and the most preferred food types according to each season. Behavior may change due to changes in the environment according to the season.

Animal behavior can be estimated by continuous monitoring, describing in detail the activities developed by grazing animals. This continued assessment generates accurate information on animal behavior, enabling a better understanding of animal actions and the implementation of more efficient production systems.

Knowledge of goat behavior in its environment is essential to obtain optimal conditions for the zotechnical development of herds.⁽³⁾ In this sense, this study aimed to assess the ingestive behavior and feeding preference of goats reared in the Caatinga during the rainy-dry transition, dry, and rainy seasons.

Material and methods

The experimental area was located at 3 km from the head office of the Experimental Farm of the Federal University of Paraíba, São João do Cariri, Cariri Oriental, state of Paraíba, Brazil, between the coordinates 7°23'36" and 7°19'48" S and 36°33'32" and 36°31'20" W. This area has a predominantly soft wavy relief, with an altitude ranging from a maximum of 510 m to a minimum of 480 m in relation to the sea level. The municipality is located in the physiographic area of the Borborema Plateau, part of the Cariri Oriental microregion.

According to the Köppen classification, the regional climate is BSh, i.e., a warm semiarid climate with summer rains and bioclimate 2b ranging from 9 to 11 months of droughts, called a warm, sub-desert tropical climate. It has a maximum and minimum monthly mean temperatures of 27.2 and 23.1 °C, mean precipitation of 400 mm/year, and a relative air humidity of 70%.

Soils are predominantly Entisols, which are shallow soils with a sandy texture and gravel. In the highest portions of the relief, with a high slope, there are sites where the soil practically does not exist, and rock outcrops can be observed.

The experimental area has 3.2 ha of Caatinga under secondary succession process and advanced degradation stage, delimited by a nine-wire barbed wire fence. For decades, until about 30 years ago, the area had been explored for extractive crops, especially cotton, being frequently burned, which caused a marked reduction in plant species diversity. The vegetation of the area is predominantly composed of sixweeks threeawn (*Aristida adscensionis* L.), with 97.91% of relative density.⁽⁴⁾ Sub-shrub and tree plants are predominantly composed of marmeleiro (*Croton hemiargyreus* Mull. Arg.), with 1002 individuals, catingueira (*Poincianella pyramidalis* Tul.), with 208 individuals, and pereiro (*Aspidosperma pyrifolium* Mart.), with 182 individuals.⁽⁴⁾

Thirteen adult intact male crossbred goats, with a mean body weight of 15 kg, remained in the area under continuous stocking to maintain a stocking rate of 1.5 AU/ha. The following dates were chosen within the experimental period for parameter assessments considering the transition (rainy-dry, September 17 and 18, 2011), between the end of the rainy season and the beginning of the dry season, dry (December 3 to 5, 2011) and rainy seasons (March 9 to 11, 2012). The animals were already used to the herding activity performed by the evaluators because experiments have been usually conducted

in the experimental area. All evaluators stayed away at a mean of 5 m from the animals not to interfere with their grazing activity. The assessed animals were identified and numbered with black ink in the side region following the numerical sequence from 1 to 6.

Each animal was individually monitored and assessed by direct and uninterrupted observation by a previously trained evaluator equipped with a digital clock to record the beginning and end of each activity for 12 continuous hours (from 5:30 to 17:30 h), totaling 720 minutes on each observation day. Twelve evaluators participated in the observations, being six for each six hours of observation. Another previously trained group replaced the evaluators after a six-hour shift. Also, on the assessment days, the evaluators positioned themselves in the area 30 minutes before the beginning of the assessments, i.e., at 5:00 h.

The ingestive behavior of grazing goats was divided into the following activities, according to Furtado and Crispim⁽³⁾: grazing, rumination, and idling, the last two being performed in the decubitus position, walking or standing. Rumination – when the animal does not graze and chew the bolus, which returns to the rumen, being observed its mandibular movements and considering the animal position in decubitus, walking, and standing. Idling – when the animal does not feed nor ruminate, being divided into three moments: decubitus – the animal remains lying down to rest or sleep; walking – the animal relates to other animals, influences the behavior of another animal, social interactions such as fighting, play or other behavior, and interaction with the drinking trough, in which the animal visits it but does not drink water and pushes it using the head or horns, and may also lick or bite it; and standing – the moments when the animal drinks water, i.e., the animal approaches the drinking trough, tilts its head and drinks the water, and self-cleaning, when the animal uses the teeth, horns, or other body part to scratch and may also lick or rub some part of its body. Grazing activity was the time when the animals spent the time to intake the food available in the area, standing out monocots (grasses), dicots (shrubs, trees, sub-shrubs, and herbaceous plants), litter, bromeliads, and cacti.

The experimental design was completely randomized, with three treatments (rainy-dry, dry, and rainy seasons) and six replications (animals). The duration of behaviors was submitted to the deviance analysis, obtained by the likelihood method, considering the lognormal distribution. The data were analyzed according to a generalized linear mixed model, considering a negative binomial distribution, which presented the best fit according to Pearson's chi-square test and the Akaike information criterion (AIC).

$$S_p = 2 \sum_{i=1}^n w_i \left[y_i \ln \left(\frac{y_i}{\hat{\mu}_i} \right) - (y_i + k) \ln \left(\frac{y_i + k}{\hat{\mu}_i + k} \right) \right] \quad (1)$$

The means of the dependent variable were submitted to the Tukey test at 5% probability level.

Results and discussion

Grazing activity was higher than other activities, regardless of the time of assessment (Figure 1). Costa et al.(5) worked with the behavior of goats grazing on a silvopastoral system and observed that grazing activity was performed all day, regardless of time.

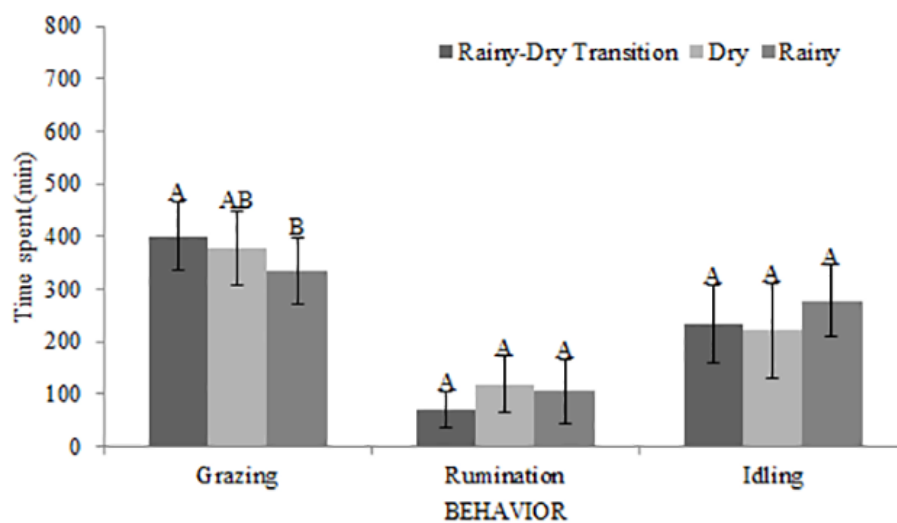


Figure 1. Duration of activities carried out by goats reared in the Caatinga between 5:30 and 17:30 h during three seasons (rainy-dry transition, dry, and rainy seasons).

Overall, regardless of the assessment time, animals spent more time grazing ($P < 0.05$). The time spent of 720 minutes for grazing activity in the transition season was, on average, 400 minutes or 56.84%, which is statistically longer than the rainy season (335 minutes or 46.59%), but similar to the dry season (380 minutes or 52.77%) (Figure 1). The shorter time spent in grazing during the rainy season is related to the quality or quantity of available forage. According to Araújo et al.⁽⁶⁾, grazing time is related to pasture quality, i.e., the higher the forage quality, the shorter the grazing time. The influence of several factors on grazing time, such as environmental conditions, availability, and quality of forage to which the animals are subjected, is notorious. The similarity in the time spent for grazing in the dry and transition seasons may be related to conditions of low forage supply. Similar behavior was observed by Basha et al.⁽⁷⁾, who observed that goats spent most of their time grazing during the rainy-dry transition period.

The time spent on rumination activity was similar ($P > 0.05$) for the three assessed seasons, with animals spending less time in this activity compared to the others. The rumination activity required the least time, which may represent an attempt to reduce the risk of predation⁽⁸⁾. For this reason, the time spent to ruminate was shorter than the time spent on grazing and idling (Figure 1).

Moreover, during the rainy season, the animals spent, on average, 75 minutes ruminating on the decubitus position, corresponding to 10.36% of the 720 minutes, not statistically different from the dry season (98 minutes), which corresponds to 13.69%, representing most of the time when compared to the other rumination positions (Figure 2). The second-longest activity was the idling, probably related to the time spent by the animals to walk in search of food (Figure 1).

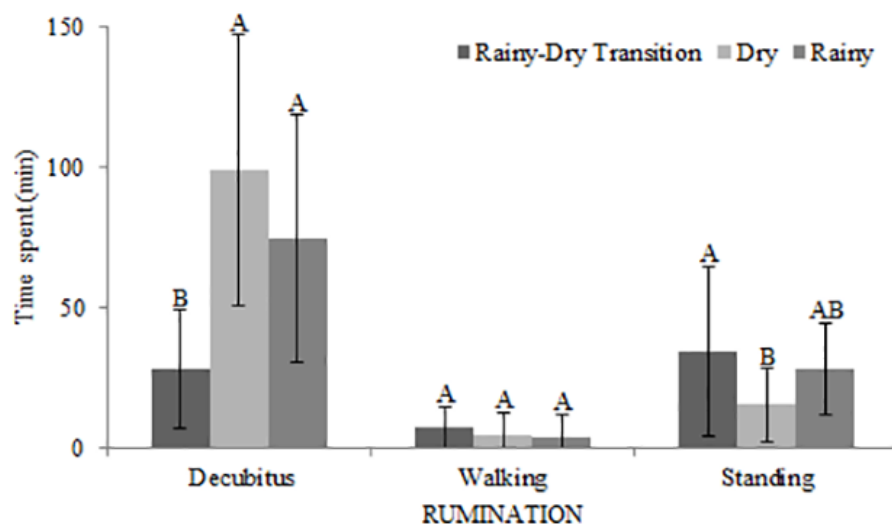


Figure 2. Duration of rumination activity on the decubitus position, walking, and standing performed by goats in degraded Caatinga during three seasons (rainy-dry transition, dry, and rainy seasons).

The transition season was statistically different from the rainy and dry seasons. The time spent for rumination on the decubitus position was, on average, 28 minutes, which corresponds to 3.97% of the 720 minutes (Figure 2). According to Barros et al.⁽⁹⁾, the long time spent for rumination on the decubitus position is mostly influenced by the time spent in grazing.

The activity rumination while walking did not present a difference ($P > 0.05$) between the assessed seasons. However, the activity rumination while standing was high in the transition season ($P < 0.05$), but similar to the rainy season, which, in turn, was similar to the dry season (Figure 2). Regarding the dry season, it may be related to energy reserve over good-quality forage, as the available vegetation may be highly lignified and, according to Van Soest⁽¹⁰⁾, the rumination time is influenced by the nature of the diet and is proportional to the cell wall content of roughages. Cavalcanti et al.⁽¹¹⁾ studied with the ingestive behavior of sheep and goats and found that they preferred to lie down during rumination, on average, 84% of the time. Also, Barros et al.⁽⁹⁾ observed that rumination is the second-longest activity for ruminants, ranging from 1.5 to 10 hours per day and being performed mainly with the animal on the decubitus position. The shortest time spent to ruminate while standing is related to an intense search for food, as this time is when the forage shortage occurs and with low nutritional quality

forage (Figure 2).

According to Barros et al.⁽⁹⁾, besides guaranteeing food, animals also need rest, which can be performed in the act of lying down, standing, and even walking.

In the present study, animals had a high idling time spent walking (169 minutes), corresponding to 23.48% of the 720 minutes in the rainy season and 150 minutes in the transitional season, which corresponds to 21.25% of the 720 minutes, not differing ($P>0.05$) between both seasons (Figure 3).

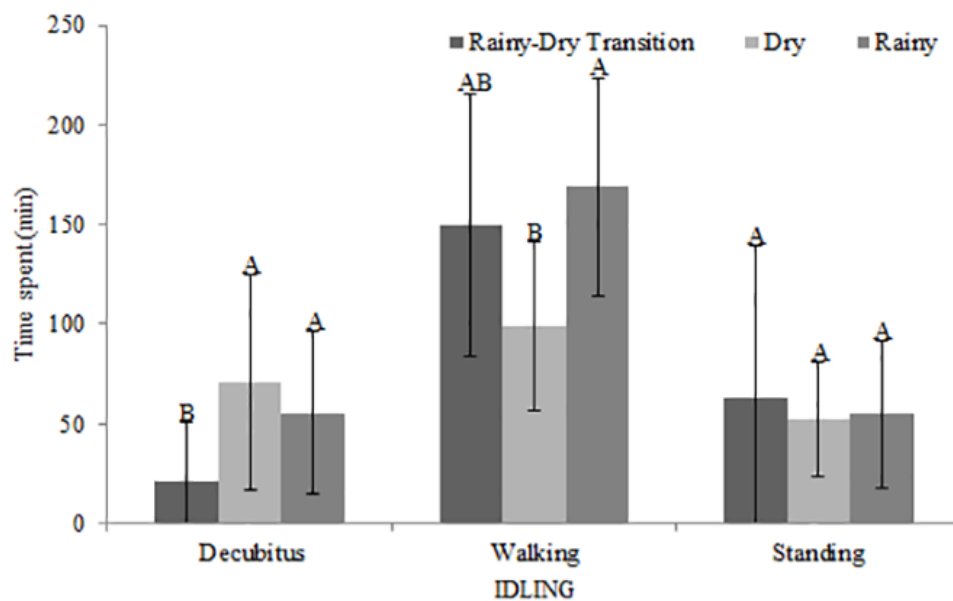


Figure 3. Time spent by goats for idling while on the decubitus position, walking, and standing in the Caatinga during three seasons (rainy-dry transition, dry, and rainy seasons).

According to Barros et al.⁽⁹⁾, the act of walking during the rainy and transition seasons is more associated with social facilitation, water and food search, and the search to meet its nutritional needs only with the native pasture of the Caatinga without supplementation. Also, depending on the amount of forage available in the area, animals strategically increase grazing time. According to Biezus et al.⁽¹²⁾, idling is more concentrated at night when animals stop grazing. However, the shortest time spent on idling while walking in the dry season is related to the search for food. Thus, animals spent more time grazing than doing other activities (Figure 3).

The time spent in idling on the decubitus position in the rainy and dry seasons did not differ ($P>0.05$) (Figure 3). The time spent in idling on the decubitus position in the rainy season is related to the higher food supply at this season. Thus, the animals obtained a high intake rate, and it reflected in fast satiety (short meal duration) and long satiety time (long duration of intervals)⁽¹³⁾, while in the dry season, the longer time spent on the decubitus position is related to high conservation of body energy. Because it is the warmest season, animals reduce the search for forage as a way to decrease the energy

expenditure spent on locomotion⁽¹⁴⁾.

The time spent in standing showed no difference ($P>0.05$) between the assessed seasons (Figure 3), which may be related to goat characteristics, as they are selective and walk a lot in search of the most nutritious parts of forages in the pasture⁽¹⁵⁾. Therefore, animals in search of food have an energy expenditure and if pasture structure is not within reach of their bite, animals will spend a lot on its maintenance energy⁽¹⁶⁾. Goats have higher activity related to food than other species and tend to have an extended length of the walk, which results in a higher exploration of the area in search of food⁽¹⁷⁾.

No difference ($P>0.05$) was observed in the time spent for grass intake between dry and rainy seasons, which were higher ($P<0.05$) than the time spent during the rainy-dry transition period. During the rainy season, goats spent, on average, 228 minutes ingesting grasses, which corresponds to 31.80% of the total observation time, exceeding the time spent to intake other available foods (Figure 4).

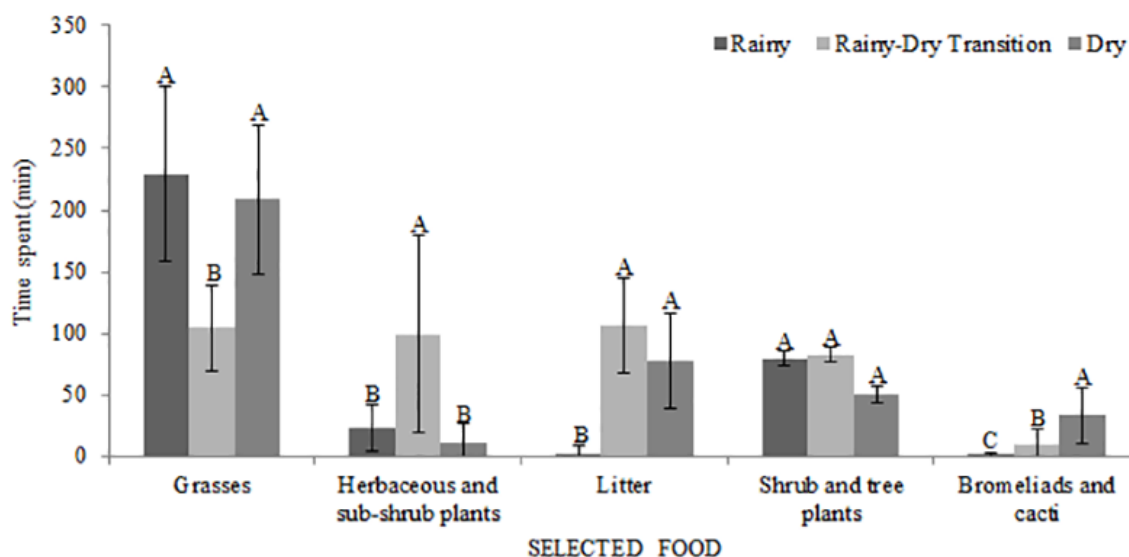


Figure 4. Time spent on grazing by goats according to the types of food available in the Caatinga during three seasons (rainy-dry transition, dry, and rainy seasons).

Goats showed a wide range in forage species selection as a function of the season of assessment, i.e., the availability of potentially consumable phytomass. Therefore, goats behaved as animals of high plasticity in the activity of herbivory, sometimes as browsing animals, sometimes as grazing animals. Similar behavior was observed by Andersen et al.⁽¹⁸⁾, who worked with the social dynamics of goats in a production environment and also observed high behavioral plasticity and that behavioral changes could occur rapidly depending on environmental conditions. According to Sanon et al.⁽¹⁹⁾, goats prefer to select and intake different types of foliage every day and will do so even if the nutritional quality of some foliage is not high⁽²⁰⁾.

Formiga et al.⁽¹³⁾ studied forage offer in a thinned Caatinga enriched with buffelgrass

(*Cenchrus ciliaris* L.) grazed by sheep and goats and found changes in the herbaceous stratum due to the disappearance of species of forage value and an increase in undesirable herbs, such as panasco grass (*Aristida setifolia* Kunth), which was present in all assessment periods. Parente et al.⁽¹⁾ evaluated the effect of goat grazing on vegetation in the same experimental area and observed a marked reduction in the frequency of monitored species. However, panasco grass was one of the most resistant species to drought. Also, Galindo et al.⁽²¹⁾ studied the desertification process in the state of Pernambuco and observed that panasco grass had 47.3% of its participation in a moderately degraded environment and 61.5% in a degraded environment, predominating the herbaceous stratum.

The area in which animals grazed is in a state of degradation. Thus, the longer time spent for the grasses in the rainy season is related to the low species diversity in the area, as found by Araujo et al.⁽²²⁾ when performing a phytosociological survey in the same experimental area, with a predominance of marmeleiro (*Croton sonderianus* Mull. Arg.), catingueira (*Poincianella pyramidalis* Tul.) and pinhão (*Jatropha mollissima* Mull. Arg. sp.). Parente et al.⁽¹⁾ stated that shrubby tree species in the area during this season, such as catingueira, may contain some antinutritional substances, such as tannins, which restrict intake and are tolerated to a certain extent (Figure 4).

In this context, when food quality is low, the time spent by animals depends on their ability to associate the nature and shape of food, organoleptic qualities, and repulsive or toxic antinutritional substances⁽²³⁾. Thus, animals did not develop the habit of feeding on shrub and tree species in the area but adapted to the available food. However, a high preference for grass in the rainy season is related to its high quality in the area, besides the easy reach by the animal. Kronberg & Malechek⁽²⁴⁾ obtained similar responses when performed comparative studies between goat and sheep diets under grazing in a Caatinga area in the Northeast of Brazil during the rainy and dry seasons. In this case, grasses were the primary source of the diet of goats and sheep in the rainy season.

The time spent by goats to choose herbaceous and sub-shrub plants was similar during dry and rainy seasons ($P > 0.05$) and different for the transition period ($P < 0.05$). On average, goats spent their time feeding on herbaceous and sub-shrub plants for 22 minutes, which corresponds to 3.17% of the 720 minutes in the rainy season. In general, even though there were no differences ($P > 0.05$) in the time spent during the dry and rainy seasons, herbaceous and sub-shrub plants were less selected in the dry season, with an average of 11 minutes, corresponding to 1.53% of the 720 minutes, which is due to the poor quality of this component in the area (Figure 4).

The longer time spent feeding on herbaceous and sub-shrub plants during the transition season, surpassing the other assessed periods, was also observed by Parente et al.⁽¹⁾, who studied the influence of grazing and precipitation on the phenology of four species in the same experimental area and found a reduction in the total of fruits and flowers of mallow in grazing paddocks under grazing in relation to those without it, i.e., the effect of goat herbivory. In addition, it is at this season that the highest leaf abscission occurs. They found that the highest leaf abscission has occurred during the transition season (rainy-dry). The appearance of dry leaves only occurs when the rainy season

reduces, with the onset of drought. Thus, litter becomes part of the goat diet as the dry season approaches significantly.

The similarity in the time spent feeding on herbaceous and sub-shrub plants during the dry and rainy seasons is related to goat adaptation in preferring spending time consuming other types of food, such as grasses. Also, the floristic composition of the area was predominantly composed by mallow, a species considered to be of low nutritional value and an indicator of degraded areas⁽²⁾.

Plants from the herbaceous stratum adopt an escape strategy of drought dormancy and fast cycle at times of low precipitation. However, the great importance of this species in the feeding of goats should be taken into account, as animals much consume them at the end of rainy season and beginning of the drought⁽¹⁾.

Overall, the animals provided two minutes for litter intake, corresponding to 0.34% of the 720 minutes, which was one of the least selected components by animals in the rainy season, differing from the transition and dry seasons ($P < 0.05$). The time spent feeding on litter during the dry (10.74%) and transition seasons (15.05%) did not differ from each other ($P > 0.05$) (Figure 4). Grazing time on shrub and tree plants in the rainy season was 79 minutes, corresponding to 10.98% of the total of 720 minutes. No difference ($P > 0.05$) was observed between assessment seasons (Figure 4). The longest time spent feeding on litter in the dry season is due to a decrease of herbs and shrubs in the vegetation. Similar results were obtained by Egea et al.⁽²⁵⁾, who assessed the selective behavior of Creole goats in the Monte Desert in Argentina and observed that the animals consumed litter from trees in the dry season.

The time spent feeding on shrubs and tree plants in the rainy season did not differ statistically from each other, probably due to the high production of green leaves of these components. In addition, some of these species can remain with their green leaves even during prolonged droughts, such as shrubs and trees (e.g., catingueira and pereiro) (Figure 4).

The shortest time of grazing by goats was observed for bromeliad and cactus intake in the three assessment seasons. Despite the short time spent by goats for these components, a difference ($P < 0.05$) was observed in the time spent for these components between the assessment seasons. The time spent feeding on bromeliads and cacti in the drought season was, on average, 33 minutes, which corresponds to 4.61% of the 720 minutes, differing from the rainy and transitional seasons (Figure 4), being related to the availability of better quality foods, regardless of the season (Figure 4). According to Piazzetta et al.⁽²⁶⁾, these grazing animals have demonstrated the ability to balance their diet by obtaining good quality food, i.e., they change their eating habits according to the food supply.

According to Pereira Filho et al.⁽²⁷⁾, as the scarcity period progresses, species of better nutritional value disappear due to the greater selection of these species by animals. In addition, goats have a high capacity to intake forages with high NDF content, but usually with a low lignocellulose concentration, which compensates for the fact that forages under tropical conditions have lower energy content, which causes the animal

to need high amounts of food to meet its requirements⁽²²⁾.

Moreover, as the dry season progresses and the availability of dry leaves from trees and shrubs increases, these species become increasingly important in the animal diet, especially of goats. Nogueira et al.⁽²⁸⁾ stated that in long periods of drought, macambira (*Bromelia laciniosa*) becomes an alternative food used by animals. Concomitantly, these authors stated that a reduction in phytomass availability from October to November has serious consequences for animal survival, leaving as a last alternative to the use of cacti, especially mandacaru (*Cereus giganteus* Engelm.).

Marmeleiro (*Croton hemiargyreus* Mill. Arg.) was the most selected species (55 minutes), which is equivalent to 7.71% of the 720 minutes in the rainy and transitional seasons (54 minutes), equivalent to 7.65% of the 720 minutes, not differing ($P>0.05$) from each other, but differing from the dry season. This species was less consumed by animals in the drought (8 minutes), corresponding to 1.21% of the 720 minutes (Figure 5).

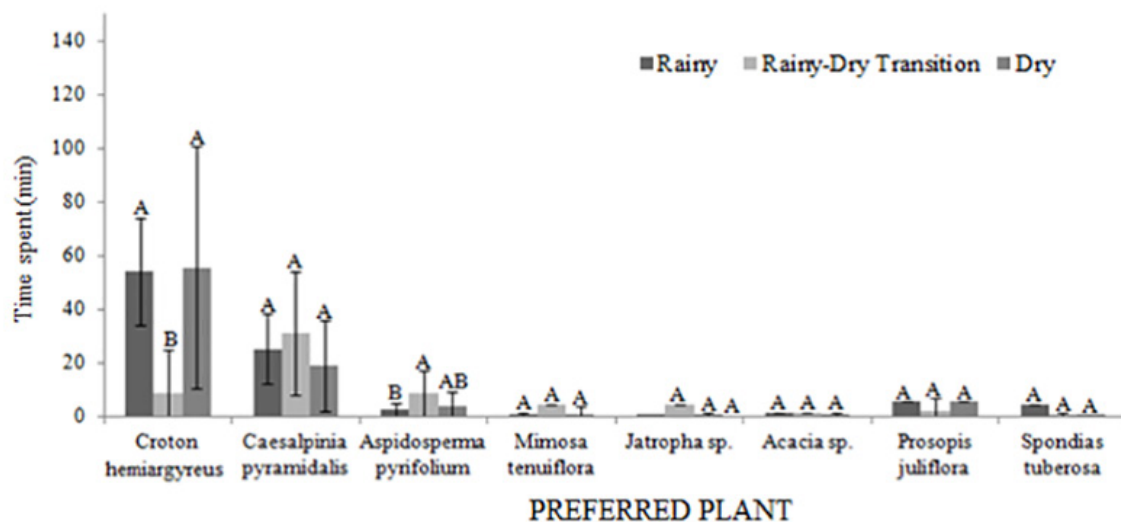


Figure 5. Time spent by goats feeding according to the most preferred species (shrub and tree species), available in the Caatinga during three seasons (rainy-dry transition, dry, and rainy seasons).

The long time spent feeding on marmeleiro in the rainy and transition seasons may be related to its deciduous habit. This species tended to lose its leaves as the dry season approached, becoming available as litter. Moreover, it was no longer as available in the area when the dry season started as it was in the rainy and transitional seasons, considered to be the seasons with its highest supply. Thus, goats required to spend time feeding on what was available in the area, such as catingueira. The time spent by goats feeding on this species did not differ statistically between the assessed seasons. Also, catingueira was in the area as one of the only forages available, becoming the main forage option for animals at the most critical time of the year, as this forage species is the slowest to get into dormancy, remaining green after the end of the rainy season much longer than other species (Figure 5). Similarly, Basha et al.⁽⁷⁾ observed that fed more on deciduous species during the rainy season.

An increase in the time spent feeding on pereiro (*Aspidosperma pyrifolium*) was observed, with an average of 8 minutes, corresponding to 1.16% of the 720 minutes in the dry season, being similar ($P>0.05$) to the rainy season (4 minutes), corresponding to 0.56% of the 720 minutes, which, in turn, was similar to the transition season (2 minutes), which corresponds to 0.33% of the 720 minutes (Figure 5).

Parente et al.⁽¹⁾ emphasized the importance of pereiro for goat feeding, being much consumed at the end of the rainy season and beginning of the drought. Correa⁽²⁹⁾ mentioned that, after a drought period, there is no more forage and pereiro remains green and it is as a food option.

Among the shrub and tree plants available in the area grazed by goats, marmeleiro, catingueira, and pereiro were the most preferred. Araujo⁽³⁰⁾ observed a low diversity of shrub and tree species, as the area had already been submitted to the anthropization process. Thus, goats had to adapt to the species present in the area to compose their diets. The time spent by goats feeding on the other observed species showed no statistical difference between the assessed seasons.

In general, regardless of the assessment season, the animals spent more time grazing, which is related to the search for food, as no type of supplement was offered in the trough. Parente et al.⁽¹⁵⁾ worked with the grazing habit of goats submitted to grazing and obtained similar results, in which the animals had much longer grazing time because they did not receive food supplementation. For this reason, animals increased grazing time and decreased idling time to meet their nutritional requirements.

Conclusion

Studying the ingestive behavior and feeding preference of goats reared in the Caatinga, it was concluded that:

The longest time for behavioral activity was spent with grazing, regardless of the season.

The activity of ruminating while on the decubitus position and idling while walking was the most practiced by goats.

Regarding the preference for the type of food available in the Caatinga, goats spent more time feeding on grasses between the dry and rainy seasons. Regarding the most preferred species (shrub and tree plants), marmeleiro was the most visited species between the rainy-dry transition and rainy seasons.

Therefore, goats extensively reared in the Caatinga have high plasticity regarding the ingestive behavior and may behave as grazing or browsing animals depending on the available forage species. Goat feeding preferences for each species vary depending on the availability of forage at each season.

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