

## AN ALTERNATIVE FEED WITH *Calotropis procera* AND *Opuntia ficus-indica*: A VIABLE SOLUTION FOR SMALL ANIMALS BREEDERS IN THE SEMIARID.

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### ABSTRACT:

The Northeast is a region that has drought periods that directly influence the survival adaptations of plants and animals. This research aims to develop a feed from the mixture of two plants adapted in the region, *Calotropis procera* and *Opuntia ficus-indica* for animal consumption. The study showed that, when together, the plants, in the form of ration, have a good digestibility and a considerable nutritional value between carbohydrates and proteins, characteristics necessary for the animal sustenance in the semiarid.

**Keywords:** Animal feed, *Calotropis procera*, *Opuntia ficus-indica*.

## UMA RAÇÃO ALTERNATIVA COM *Calotropis procera* E *Opuntia ficus-indica*: UMA SOLUÇÃO VIÁVEL PARA PEQUENOS CRIADORES DE ANIMAIS DO SEMIÁRIDO

### RESUMO:

O Nordeste é uma região que têm períodos de secas que influenciam diretamente nas adaptações de sobrevivência de plantas e animais. Esta pesquisa tem como objetivo desenvolver de uma ração a partir da mistura de duas plantas adaptadas na região, *Calotropis procera* e *Opuntia ficus-indica* para o consumo animal. O estudo comprovou que, quando juntas, as plantas, em forma de ração, apresentam uma boa digestibilidade e um considerável valor nutricional entre carboidratos e proteínas, características necessárias para o sustento do animal no semiárido.

**Palavras-chaves:** Ração animal, *Calotropis procera*, *Opuntia ficus-indica*

### INTRODUCTION

The Northeast is a region whose economy is directly linked to agricultural activity. The Caatinga is the main biome in this region, which has a climate that presents an irregular annual distribution of rainfall, resulting in long dry periods that directly influence the survival adaptations of plants and animals (BRANDÃO, 2019).

In this context, the availability of forage would be a limiting factor in animal husbandry throughout the year. A forage shortage scenario is perceived in the region, according to Neto, Filho and Araújo (2015).

An alternative solution would be the use of new plants typical of the region for animal consumption, as they can significantly contribute to the feeding of the Northeastern herds. Dantas and Souza (2019) point out that the Caatinga vegetation has a diversity of native

and adapted plants of high nutritional value that could be used as a forage resource, being an alternative considered more viable to complement the animal diet in view of the scarcity of animal foods. traditional use in the dry period in the biome.

### **MAIN GOAL:**

Develop a feed from a mixture of Ciumeira (*Calotropis procera*) and Forage Palm (*Opuntia ficus-indica*) plants for use by cattle and goats.

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### **Specific objectives**

- Identify the species of Ciumeira and Palma Forrageira in the region.
- Demonstrate the economic and environmental feasibility of growing the plants studied.
- Assess nutritional quality and animal acceptance of the feed produced from the mixture of two plants.

### **METHODOLOGY**

It is a case study of an applied nature with a qualitative approach. Its general objective is descriptive and as a technical procedure a feed was produced from the mixture of *Calotropis procera* with *Opuntia ficus-indica*.

The following research was carried out in the municipality of Itarema, located on the west coast of the state of Ceará, located at latitude 02° 55' 13" south and longitude 39° 54' 54" west, temperatures reach an average of 26°C and 28°C. °C which gives it a predominantly hot tropical mild semi-arid climate (SILVA, 2014).

The subjects participating in these studies were the small rural producers of the city, especially those located in the southern part of the municipality, as this region has climatic characteristics closer to the Caatinga. The animals that received the feed treatment were only bovines, composing an intentional sample.

In order to obtain data, bibliographic research was carried out on the plants, seeking to know their adaptation process in semi-arid and arid regions, with degraded soils and in places with low rainfall.

Then, a survey of the amount of plants in the region was carried out, after the quantitative survey was completed, the collection of some samples of silk flower and forage palm, for cultivation at the State School of Professional Education Professor Rosângela Albuquerque

de Couto, was carried out. located in the center of Itarema. Subsequently, the ration of the mixture of *Calotropis procera* with *Opuntia ficus-indica* was developed, in which there was a proportion of ten leaves of *C. procera* for one *Opuntia* palm. In addition, mineral salt was added for better feed durability and nutritional quality. The final test step was to monitor the acceptance of the animals in relation to the ration under study, and to compare it with other food present on the property.

For data analysis, botanical characteristics, feed production tests and animal acceptance results were tabulated and compared with the specific bibliography in order to evaluate the feasibility of this new forage to be used in the period of food shortage. .

## RESULTS

The bibliographic study proved that the Caatinga biome has a diversity of native or adapted plants, which can be used by the sertanejo to feed their herds. Among them, *Calotropis procera* stands out, figure 1, a species of plant of the Apocynaceae family, well adapted in the region and that was introduced in Brazil around 1900 and can currently be found in several regions of the country, but it is in the Northeast that large populations of this plant are established (FABRICANTE; OLIVEIRA; FILHO, 2013).

Field studies to identify the abundance of the Ciumeira species in the region showed that it is easily found and well adapted to climatic conditions. In addition, to prove this adaptability of *Calotropis procera* in Itarema, as the image was made at the educational institution where this project is being developed and in this environment this plant grows naturally on the school lawn.

Research has shown that the northeastern semi-arid region has a vegetative potential represented by rich native flora with potential for use in animal feed, but also adapted species such as *Calotropis procera*.

According to Lima et al (2005) this plant has great nutritional value, its leaves, figure 2, have a high protein content ranging from 13.61 to 19.4% and have a high digestibility, being an alternative in protein and carbohydrate supplementation. for animal feed in the Northeast.

**Figura 1** – Ciumeira (*Calotropis procera*).



**Source:** Authors (2019)

The main objective of this work is to produce a ration with a mixture of Ciameira plants with forage palm, aiming to benefit small rural producers in Itarema and region. But, for this it is necessary to demonstrate the economic and environmental viability of the cultivation of the studied species.

The study proved that *Calotropis procera* has a high availability and population frequency in the specific conditions of the semiarid region. In addition, it is a plant that is easy to grow in the region and the culture can be started by means of seed or cuttings, both methods were successful in the tests carried out in the biology laboratory of EEEP Professor Rosângela de Albuquerque de Couto. Emphasizing with very low financial costs, as this plant does not require fertilization and requires little irrigation during its development.

To complement the ration of *Calotropis procera*, the best plant is the forage cactus, figure 4, because according to Torres et al (2009) it is the staple food of the diet in the dairy basin of the state of Pernambuco and, consequently, it can be from the entire region. northeast. Santos et al (2006) emphasize that it is estimated that there are approximately 500 thousand cultivated hectares in the Northeast, constituting one of the main forages for dairy cattle in the dry season.

**Figura 2** – Palma (*Opuntia ficus-indica*) em crescimento natural em Itarema.



**Source:** Authors (2019)

The bibliographic studies on this species, figure 4, revealed that it has a low protein content, but the forage cactus stands out for having high levels of total carbohydrates, mineral matter and moisture, important characteristics in the diet and water supply of animals that live in regions with water scarcity. In addition, according to Frota et al (2015) this cactus, because of its high humidity and low protein content, should not be used exclusively in animal feed, it is provided together with other foods.

In this context, *Calotropis procera* has a high content of varying protein and is highly digestible. A ration with the two plants will be a good quality nutritional material for the use of animals throughout the year. In addition, it should be noted that Palma (*Opuntia ficus-indica*) can be cultivated through seed or through stem fragmentation, requiring low financial cost for its culture.

The durability results of the feed in the laboratory proved that the material is immune to fungi for up to a week, that is, the producer will be able to make daily use of this feed, which will be viable and cheaper, considering that the others tend to be very expensive and little viable for the small breeder. In addition, due to its nutritional value, it can be said that the producer will have a greater production of milk and better nutrition of the cattle, from the initial phase of the animal's life to adulthood, he can also make use of this ration other ruminant animals in his herd. animal.

The ration can use all plants, as it has abundant values of dry matter, crude protein, crude fat, crude fiber, crude energy, ash and organic matter, it can be said that it is a food of high nutritional potential for the animal diet in the semiarid region. northeast.

The study proved that the ration developed has nutritional viability and good animal acceptance for consumption of cattle and goats in Itarema and region. Emphasizing that small producers do not find it difficult to cultivate the two species used in the feed, as they are well adapted to different climatic conditions, grow in different soils and climates, and are an important food source, providing forage throughout the year.

### **SOCIAL DISCLAIMER OF THE PROPOSAL**

The plants *Calotropis procera* and *Opuntia ficus-indica* have high nutritional values that could be used as a forage resource, constituting an alternative considered more viable to complement the animal diet in view of the scarcity of foods of traditional use in the dry period in the biome. In addition, this work is concerned with helping the farmers' income, with cheaper forage, having a notable nutritional value, in addition to increasing the herd and the production of meat and milk in the region.

### **IMPACT ON THE DISSEMINATION OF KNOWLEDGE AT SCHOOL**

Research has shown that the northeastern semi-arid region has a vegetative potential represented by a rich native flora with potential for use in animal feed.

In this context, species such as *Calotropis procera* stand out, which have great nutritional value, their leaves, have a high protein content and are highly digestible. *Opuntia ficus-indica* has a low protein content, but stands out for having high levels of total carbohydrates, mineral matter and moisture, that is, a ration from these plants is an alternative in the supplementation of protein and carbohydrates for animal feed. in the Northeast

### **FINAL CONSIDERATIONS**

It is concluded that, for the best breeding and development of ruminants in the northeastern hinterland, not only in the dry season but throughout the year, it is the development of a ration from the mixture of the plants Ciumeira (*Calotropis procera*) and Palma Forrageira (*Opuntia ficus-indica*), since the palm has a large amount of carbohydrates, and the Ciumeira contains in its composition a significant value in fibers and proteins.

## REFERENCES

BENEDITO, Gilvanio; BATISTA, Juan. **UTILIZAÇÃO DO ALGODÃO DE SEDA (*Calotropis procera*) NA DIETA DE RUMINANTES**. Disponível em: <[http://www.ipa.br/pdf/seminario\\_extensao\\_2008/Trindade.pdf](http://www.ipa.br/pdf/seminario_extensao_2008/Trindade.pdf)> Acesso em: 07 mai. 2019.

BRANDÃO, Adriana. **Vegetação da caatinga tem potencial para alimentação de rebanhos**. Disponível em: <<https://www.embrapa.br/busca-de-noticias/-/noticia/10455882/vegetacao-da-caatinga-tem-potencial-para-alimentacao-de-rebanhos>> Acesso em: 07 mai. 2019.

DANTAS, Nayanne Lopes Batista; SOUZA, **Bonifácio Benício de. Potencialidades da caatinga: uso de plantas nativas na alimentação animal**. Disponível em: <<https://www.milkpoint.com.br/artigos/producao/potencialidades-da-caatinga-uso-de-plantas-nativas-na-alimentacao-animal-93668n.aspx>> Acesso em: 07 mai. 2019.

FABRICANTE, J.R.; OLIVEIRA, M.N.A.; FILHO, J.A.S. Aspectos da ecologia de *Calotropis procera* (*Apocynaceae*) em uma área de Caatinga alterada pelas obras do Projeto de Integração do Rio São Francisco em Mauriti, CE. **Rodriguésia**, v. 64, n. 3, p. 647-654. 2013.

GARCEZ, Bruno Spíndola; CÂMARA, Cauê Soares, VASCONCELOS, Vânia Rodrigues. **UTILIZAÇÃO DA FLOR DE SEDA (*Calotropis procera*) E DO MATA-PASTO (*Senna obtusifolia*) NA ALIMENTAÇÃO DE RUMINANTES. REVISTA ELETRÔNICA NUTRITIME**, v.11, n. 3, p. 3500-3507, mai./jun., 2014. Disponível em: <[http://www.nutritime.com.br/arquivos\\_internos/artigos/ARTIGO255.pdf](http://www.nutritime.com.br/arquivos_internos/artigos/ARTIGO255.pdf)> Acesso em: 25 mai. 2019.

NETO, José Adelson Santana; FILHO, Edivilson Silva Castro; ARAÚJO, Helber Rodrigues de. **Potencial das cactáceas como alternativa alimentar para ruminantes no semiárido. Nutritime Revista Eletrônica**, Viçosa, v.12, n.6, p.4426-4434, nov/dez, 2015. Disponível em: <[https://www.nutritime.com.br/arquivos\\_internos/artigos/344\\_-\\_4426-4434\\_-\\_NRE\\_12-6\\_nov-dez\\_2015.pdf](https://www.nutritime.com.br/arquivos_internos/artigos/344_-_4426-4434_-_NRE_12-6_nov-dez_2015.pdf)> Acesso em: 07 mai. 2019.

SILVA, Ana Alexandrina Gama da; OLIVEIRA, Francisco Tomaz de; SOUTO, Jacob Silva. **Zoneamento Agrícola de Risco Climático da Palma Forrageira (*Opuntia ficus-indica* (L.) Mill) para o Estado de Sergipe**. Disponível em: <<https://ainfo.cnptia.embrapa.br/digital/bitstream/item/129929/1/COT-152.pdf>> Acesso em: 07 mai. 2019.

SILVA, N, S. **Novos olhares para o litoral cearense: a produção de energia eólica e os impactos socioambientais decorrentes dos parques eólicos Volta do Rio (Acarau) e Cajucoco (Itarema) – CE**. 2014. 143f. Dissertação (Mestrado) – Universidade Estadual do Ceará, Centro de Pós-Graduação em Geografia, Fortaleza, 2014.