



## I-INTERNATIONAL MEETING OF ANIMAL SCIENCE IN SEMI-ARID REGIONS

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Area of work: Pastures and forage farming

### Fresh matter production of elite genotypes of *Opuntia* spp. and *Nopalea* sp. and its relationship with the number of cladodes

Francisco Pereira Neto<sup>1\*</sup>, Alberício Pereira de Andrade<sup>1</sup>, Fernando dos Santos Araújo<sup>1</sup>, Miguel do Espírito Santo de Sá Antunes Dias<sup>1</sup>, Airon Aparecido Silva de Melo<sup>1</sup>, Djalma Cordeiro dos Santos<sup>2</sup>

<sup>1</sup>Federal University of Agreste of Pernambuco, Garanhuns/Pernambuco, Brazil; <sup>2</sup> IPA - Agronomic Institute of Pernambuco, Arcoverde/Pernambuco, Brazil \* franciscopereira23091999@gmail.com.br

The concern about global climate change and the increasing demand for food has driven studies focused on improving the efficiency of agricultural and livestock systems. However, the production systems of many traditional forage crops in arid and semi-arid areas, including forage cactus (*Opuntia* and *Nopalea*), still need improvement in terms of productivity and production efficiency. Thus, identifying superior forage cactus genotypes in terms of fresh matter production can help improve land and resource use efficiency in semi-arid agroecosystems. Therefore, the objective of this study was to evaluate the fresh matter production of elite genotypes of *Opuntia* spp. and *Nopalea* sp. from the germplasm bank of the Agronomic Institute of Pernambuco (IPA) under the agroclimatic conditions of the agreste region of Pernambuco, Brazil. To this end, a field competition trial was conducted in the municipality of Garanhuns-PE, containing six genotypes of *Opuntia* spp. (IPA-200016, IPA-200174, IPA-100661, IPA-100662, IPA-200149, and IPA-200008) and four genotypes of *Nopalea* sp. (IPA-200205, IPA-100004, IPA-200206, and IPA-100664) distributed in casualized blocks (DCB) with three replicates and 20 plants per plot. The evaluation of fresh matter production (FMP) and the count of the number of cladodes (NC) were carried out 420 days after planting (DAP). The data were analyzed using univariate statistics, including Analysis of Variance and the post-hoc Scott-Knott test at a 5% probability level. The relationship between variables was assessed using Pearson's linear correlation. Fresh matter production correlated positively and with high magnitude ( $r = 0.7143$ ;  $p < 0.001$ ) with the number of cladodes. FMP ranged from 354.2 to 1995.0 g plant<sup>-1</sup> and differed significantly among genotypes ( $p < 0.001$ ). The genotype IPA-200008 showed the highest FMP (1995.0 g plant<sup>-1</sup>) compared to the other genotypes. The second highest FMP value (1624.1 g plant<sup>-1</sup>) was observed in the genotype IPA-200205. The FMP of the genotypes IPA-200149, IPA-100004, IPA-200206, and IPA-100664 ranged from 851.3 to 999.3 g plant<sup>-1</sup>. The genotypes with the lowest FMP (354.2 to 618.7 g plant<sup>-1</sup>) were IPA-200016, IPA-200174, IPA-100661, and IPA-100662. The higher fresh matter production of the genotype IPA-200008 can be explained by the larger number of cladodes. This is because a greater number of cladodes results in higher water storage capacity and a larger photosynthetic area, which are directly related to the fresh weight of the plants. Overall, our results provide a comprehensive and detailed overview of the fresh matter production of the main elite forage cactus genotypes improved in Brazil. The genotype IPA-200008 exhibits the highest fresh matter production. Fresh matter production positively correlated with the number of cladodes. This information can be useful for aiding the selection of genotypes with higher biomass production under semi-arid conditions.

**Keywords:** Forage palm, biomass, animal feed, Cochonilha-do-Carmim, Semiarid, forage farming.

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