

Frequency of *Apis mellifera* bees in Jacaranda plants from Bahia (*Dalbergia nigra* Vellozo) in the Sertão of Paraíba

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INTRODUCTION

The Jacaranda-da-Bahia (*Dalbergia nigra* Vellozo) is a plant belonging to the Fabaceae family, which can reach 25 meters in height and 15 to 25cm in diameter, sometimes has a crooked and irregular trunk. It is a common tree in the Atlantic Forest of the states of Bahia, Espírito Santo, Rio de Janeiro and São Paulo, but it can be found in reforestation areas of several states (Lorenzi, 1992).

This plant has a high commercial value due to its high quality wood, a high rate of regeneration and easy adaptation to less fertile land (Piña-Rodrigues; Piratelli, 1993; Oliveira-Filho, 1994). The flowers are yellowish-white in color with 0.5 to 1.0 cm in length, arranged in axillary clusters up to 6 cm in length, giving rise to panicles up to 20 cm in diameter. The main pollinators are bees and small insects (Carvalho, 2003).

Pollination is the result of a reciprocal relationship of exploitation between plant and pollinator. (Rech & Brito, 2012 cited by Passos; Gimenes, 2022). Approximately 80% of plants in forests are pollinated by bees. Thanks to their work of collecting pollen and nectar, flying from flower to flower, bees pollinate these flowers and favor fertilization. This will not only allow the plants to reproduce, but will also give you better quality fruits and a greater amount of seeds. This entire process constitutes the basis of the entire food chain (Brazilian Association for the Study of Bees, 2017).

The hybrid popularly known as Africanized bee comes from natural crosses between the populations of honeybees of the species *Apis mellifera* Linnaeus, 1758, brought to Brazil first from Europe in the nineteenth century and later from the African continent in 1956 (Clarke et al., 2002). In addition to the environmental importance, represented mainly by the ecosystem service of pollination performed by these bees, the breeding of these bees is an important socioeconomic activity for several Brazilian regions,

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including the Northeast Region, which ranks second in the amount of honey exported to other countries (IBGE, 2017). In view of the above, the objective of the research was to know the number of *Apis mellifera* workers in jacaranda flowers, as well as what type of trophic resource was collected and the times of greatest frequency of bee visits to flowers.

MATERIALS AND METHODS

The study was carried out in the Agroecology Sector of the Federal Institute of Education, Science and Technology (IFPB), Sousa-PB campus. Adult plants of jacaranda-da-Bahia with an age of approximately 10 years, in full flowering, had six branches marked, at a height of 1.5 to 2.0 m and observed in order to verify the frequency of visitation of bees of the species *Apis mellifera*.

The bee hives were at a distance of 500 m from the plants. The number of bees that visited each marked branch and reached the flowers was evaluated, as well as the type of trophic resource collected, pollen or nectar. 10 minutes of observation were clocked every 1 hour for the six branches and the temperature and humidity at the time of observation were recorded. The observations were carried out between 6:30 and 17:30 on three consecutive days.

To carry out the statistical analyses and generate the graphs, the statistical program R was used (R Core Team, 2024).

RESULTS

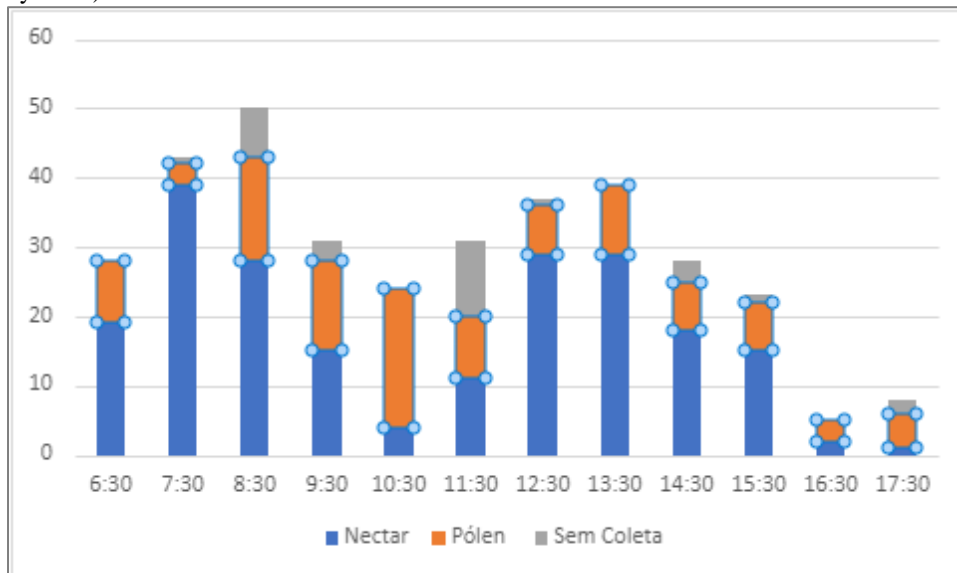
Table 01 summarizes the means of the data observed over the three days of observation in branches of jacaranda-da-Bahia (*D. nigra*). From the data it was possible to observe that nectar was the main trophic resource collected by *A. mellifera* bees in the flowers of Jacaranda-da-Bahia.

From the analysis of Figure 01, it is possible to observe two peaks of nectar collection, one between 7:30 and 8:30 in the morning and another peak in the afternoon, between 12:30 and 13:30, indicating that these time intervals may be the one with the longest period of nectar secretion and supply under the conditions observed in the present study. Pollen collection was higher in the morning between 8:30 and 10:30, indicating that this should be the period of highest pollen supply. The plants proved to be very attractive in their flowers, having been visited throughout the morning and afternoon in which they were monitored. The number of nectar collections, on average, was higher than that of pollen at practically all times observed.

Table 01: Average number of bees visiting Jacaranda flowers throughout the three collection periods, and the respective trophic resources collected by *Apis mellifera* L. bees.(Sousa, PB, February 2024).

Hour	No. of Bees per plant	No. of Nectar Collection	Number of Pólen pigtails	BORN (%)	Temperature (°C)
6:30	28	19	9	70,66	24,66
7:30	43	39	3	65,66	25,66
8:30	50	28	15	56,66	28,00
9:30	31	15	13	50,00	28,00
10:30	24	4	20	42,00	30,66
11:30	31	11	9	40,00	32,33
12:30	37	29	7	35,00	32,00
13:30	39	29	10	32,66	34,00
14:30	28	18	7	27,66	36,33
15:30	23	15	7	28,33	35,33
16:30	5	2	3	25,66	37,00
17:30	8	1	5	27,66	35,66
Average	28,91	17,5	9		
Total	342	210	108		

Figure 01: Average number of bees collecting nectar and pollen in jacaranda flowers throughout the day *Apis mellifera* L. (Sousa, PB, February 2024).



FINAL CONSIDERATIONS

The observation of the foraging activity of *A. mellifera* s fields in jacaranda flowers indicates that nectar is the main trophic resource exploited by bees. It was possible to observe that the interval between 08:30 and 10:30 was the period with the highest number of bees visiting the flowers, collecting nectar and pollen. In this sense, this time interval should be a key time to observe the effectiveness of pollination performed by bees in future studies under the environmental conditions observed in the present study.

Keywords: *Dalbergia nigra*, Africanized bees, Visits



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