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INPUT IN NATURALLY ESTABLISHED ALGAROBA IN A FLUVIC NEOSOL IN THE MUNICIPALITY OF IBIMIRIM, SEMI-ARID PERNAMBUCO

Edilândia Farias Dantas^{*1}, Alesson Gabriel Xavier da Hora², Jéssica Rafaella de Sousa Oliveira², Leandro Reis Costa Santos², Everardo Valadares de Sá Barretto Sampaio¹, Ana Doloires Santiago de Freitas²

¹Universidade Federal de Pernambuco, Recife/Pernambuco, Brasil; ²Universidade Federal Rural de Pernambuco, Recife/Pernambuco, Brasil. * edilandiadantas@hotmail.com

In Brazil, Algaroba was introduced to the Northeast region about 70 years ago as a good forage plant. It has a deep root system that favors its competition with the native deciduous forest (Caatinga) in floodplain areas, where it has become the dominant species in many areas. About 20 years ago, it was estimated that there were more than 500,000 hectares of Algaroba in the Northeast region. One of the advantages of Algaroba is that it is a legume capable of benefiting from the process of biological nitrogen fixation (BNF) of atmospheric nitrogen in symbiosis with diazotrophic bacteria. BNF is one of the most important processes in the biogeochemical cycling of terrestrial ecosystems, directly related to the context of climate change. In this sense, the objective of this study was to quantify the biological nitrogen fixation in a naturally established Algaroba in Ibimirim-PE. The studied Algaroba area was previously mapped by the Association of Plants of the Northeast (APNE), comprising an area of 3 hectares, exclusively of Algaroba (*Prosopis juliflora*). Five plots, each measuring 20 m x 20 m, were randomly established. Within each plot, measurement parameters were taken for all trees to estimate biomass, and samples were collected from five Algaroba individuals to quantify BNF. Healthy leaves were collected from each individual, dried in an oven at 65°C, and ground. Subsamples were placed in capsules and inserted into a ThermoQuest-Finnigan Delta Plus mass spectrometer (Finnigan-MAT; CA, USA) interfaced with an Elemental Analyzer (Carlo Erba model 1110; Milan, Italy) at the Laboratory of Isotope Ecology (CENA-USP, Brazil) to obtain total concentrations (%) and isotopic ratios of N and C. The amounts of fixed N were estimated using the ¹⁵N abundance technique. The dry biomass of the above-ground part was 85.5 Mg ha⁻¹, and the dry leaf biomass was 4.27 Mg ha⁻¹. The percentage of nitrogen derived from the atmosphere in the Algaroba was 46.71%. The amount of nitrogen fixed by the naturally established Algaroba was 66.2 Kg ha⁻¹ in Ibimirim. This high N input is due to the large input of dry biomass from the above-ground part and leaves present in this Algaroba.

Keywords: biological N fixation, natural abundance, *Prosopis juliflora*, phytosociological study.

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