

TITLE: OCCURRENCE OF DIAZOTROPHIC BACTERIA ASSOCIATED WITH ARROWROOT (*Maranta arundinacea*) GENOTYPES FROM DIFFERENT REGIONS OF BRAZIL

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ABSTRACT:

Araruta (*Maranta arundinacea*) is an herbaceous plant that accumulates highly digestible starch in its rhizome. Although currently considered as an unconventional food plant (UFP), its nutritional potential is leading to an increasing demand for information related to its cultivation. Among soil microorganisms, diazotrophic bacteria are known as plant growth promoters mainly due to their biological nitrogen fixation (BNF) and plant hormone production capacity, especially indole acetic acid (IAA). The aim of this work was to evaluate the diazotrophic bacteria occurrence in the rhizosphere soil of araruta genotypes. Plant accesses were collected from different regions of Brazil to integrate an active germplasm bank at UFMT, Sinop campus. Samples of rhizosphere soil were collected in the cities of Colider - MT, São Francisco - PA and Colorado do Oeste - RO. From each sample one gram of soil was used and a serial dilution (10^{-1} to 10^{-5}) was performed. From each dilution, 0.1 ml was inoculated, in triplicate, into vials containing semi-solid medium (NFb, JNFb and JMV). The incubation was performed at $\pm 30^{\circ}\text{C}$ for 7 days, when the presence or absence of a characteristic pellicle in the semi-solid medium was evaluated. Regardless of the collection site, all the samples presented positive result, characterized by the formation of pellicle in the three different media inoculated. The semi-solid media used allow the development of different bacterial genera: NFb (*Azospirillum* spp.) JNFb (*Herbaspirillum* spp.), JMV (*Burkholderia* spp.), being indicative of diazotrophic bacteria presence, since they do not present any nitrogen source in composition. A purification process was performed from the positive vials. Only the isolates that maintained, after successive replications, the capacity to form pellicle in the semi-solid media, were preserved and stocked. These isolates were phenotypically characterized and evaluated in relation to the production capacity of indole acetic acid. In most isolates, the production of IAA was observed after 48 hours of incubation in culture medium supplemented with tryptophan. Thus, the association of diazotrophic bacteria to these araruta genotypes rhizosphere was verified, which might improve adaptability of these plants in their regions of origin and can be applied in the future development of the araruta culture.

KEYWORDS: Biological nitrogen fixation (BNF); *Azospirillum*; unconventional food plants (UFPs)