TITLE: RESISTANCE OF SPORES OF MYCORRHIZAL FUNGI TO ENVIRONMENTAL DISTURBANCES IN THE AMAZON FOREST

AUTHORS: Maia, R.S.;

INSTITUITION: IFPA – INSTITUTO FEDERAL DO PARÁ (RUA PORTO COLOMBO, 12. TUCURUÍ, PA, CEP: 68.458-470, TUCURUÍ-PARÁ, BRAZIL)

ABSTRACT:

The Amazon practices of slash and burning in the forest primarily intended to establish pastures and agricultural crops account for about 90% of the total deforestation. The soil preparation through slash and burn has a negative impact on soil biodiversity, and contribute to emission of greenhouse gases into the atmosphere. Despite the agricultural practice of slash and burning to reduce the population of microorganisms in the soil, fungi resistant to environmental disturbances such as mycorrhizal fungi can withstand changes in the soil and contribute to the recovery of soil fertility and forest. The symbiosis with mycorrhizal fungi perform most plants, contributes to the increased absorption of nutrients to the plant. This research aimed to evaluate the resistance of Arbuscular Mycorrhizal Fungi (AMF) spores in a secondary forest area of the southeastern state of Pará, Brazil, who suffered slash and burn. The total extension area has 2000 m^2. A part of the area was about 1000 m^2 carried controlled burning and another part of 1000 m^2 was cut in the forest both for agricultural cultivation. The areas of slash and burning were divided into several portions to be collected at random samples of soil (0-10 cm depth) for analysis of mycorrhizal fungal spores density. The first collect was held two weeks after the slash and burn and the second two months later. The spores in the soil extraction was performed the technique of wet sieving. Analysis of variance was used to analyze the density of spores and the means were compared by Tukey test at 5% significance level. The results showed that two weeks after the slash and burning the spore density was significantly lower in the burning area as compared to the slash area ($p < 0.001$), indicating that the initial burning may affect survival of the spores. After two months, the results showed no significant difference between the spores density in slash area and burning area ($p = 0.174$), we found that the average of spores in the slash and burn did not vary compared the area without soil amendment. The results indicate the high resistance and adaptability of this group of fungi to adverse conditions caused by slash and burn agriculture that occurs frequently in the Amazon. Several studies in degraded areas showed that AMF spores are resistant to environmental disturbances and can increase its diversity in moderate interference conditions.

Keywords: mycorrhizal fungi, altered areas, spores resistance, Amazon.

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