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Organic waste management: The case of açaí pits as nutrient substrate to plant production in the Brazilian Amazon

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Abstract

Açaí (*Euterpe oleracea*) is the main source of livelihood for over 1300 smallholders in State of Pará, in the Brazilian Amazon. Açaí is a tropical fruit composed of a fine pulp membrane, and the rest is a strong pit disposed after processing, which generates significant amounts of unmanaged organic waste in the State. This research aims to study use of disposed Açaí pits as a potential low-cost, sustainable and nutritious substrate to the cultivation of vegetables in the Amazon. A pot experiment was designed using Açaí pits in three distinct conditions: in natura, fermented, and carbonized and milled, to evaluate the morphological development of onions (*Allium cepa*) in terms of root, leaf, and stalk growth, and time for the development of new leaves. The experiment was carried out in the metropolitan region of Belém in the State of Pará from March to June 2021 with controlled physical and chemical conditions. Every treatment had 5 pots with three repetitions. The treatment control pots had solely "terra preta", while other treatments had a combination of "terra preta" with respective conditions of Açaí pits. Leaves initially grew on average 18 days after the experiment set up. Estimation results show that both treatments with Açaí pits in natura and fermented did not provide positive significant influences to onion morphological development. This might be explained by the high level of fiber in Açaí pits, acting as water retainers and, consequently, having a negative influence in plants development. Conversely, the treatment with carbonized milled Açaí pits showed significant positive effects in onion leaf, root, and stalk growth. Carbonized Açaí pits might represent a positive potential for pH neutralisation in Amazonian soils, for increasing nutrient availability. This work is an initial attempt to further design appropriate management for organic waste while offering sustainable opportunities to vegetable production in the Amazon.

Keywords: Amazon, açaí, organic waste, plant nutrition, substrate

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