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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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Introduction

- 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 by 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 the use of disposed Açaí pits as a potential low-cost, sustainable and nutritious substrate for the cultivation of vegetables in the Amazon.



Methods

- 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.
- 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 made from pet bottle.
- The treatment control pots had solely "terra preta", while other treatments had a combination of "terra preta" with respective conditions of Açaí pits.

Description of treatments
Control: "Terra Preta"



Experiment 1: "Terra preta" + açaí in natura



Experiment 2: "Terra preta" + fermented açaí pits



Experiment 3: "Terra preta" + carbonized and crushed açaí seeds



Results

Table 1 - Onion growth monitoring

Day	Height (cm)			
	CONTROL	EXP. 1	EXP. 2	EXP. 3
8° day	0,9	1,1	0,4	1,0
10° day	0,9	1,4	0,4	1,4
12° day	1	1,4	0,4	1,5
14° day	1,1	1,4	0,4	1,6
16° day	1,2	1,4	0,4	1,7
18° day	1,2	1,4	0,4	1,8
20° day	1,3	1,4	0,4	2,0
22° day	1,3	1,4	0,4	2,2

Table 2 - Final length of sheets

CONTROL	EXP. 1	EXP. 2	EXP. 3
1,3	1,4	0,4	2,2

Table 3 - Final length of roots

CONTROLE	EXP. 1	EXP. 2	EXP. 3
12,0	6,6	9,0	12,6

- 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.
- The treatment where the carbonized and crushed açaí kernel was used showed water retention for a longer time.

Conclusoins

- It is assumed that with the germination of the açaí seed in experiments 1 and 2, there was nutrient competition for the species and consequently not promoting good development.
- 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.

Bibliograph

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