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Farmers’ and academia’s views”

Does biochar application increase growth parameters and biomass of Jambú (*Acmella oleracea*) in Belém - Brazil?

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Abstract

Jambú (*Acmella oleracea*) is a leafy vegetable of cultural and economic relevance in the Brazilian Amazon. With increasing demand, jambú cultivation represents an important source of income for small vegetable producers in the region of Belém. There is still a considerable lack of research about jambú cultivation and production potential in humid tropical conditions. In the region of Belém, soils are predominantly sandy and acidic. Daily heavy rainfalls lead to high leaching and nutrient losses, requiring constant fertiliser application. Fertiliser purchase is a significant cost in vegetable production and a limiting production factor for low-income smallholders. Alternatively, biochar is a soil amendment with the potential to retain nutrients and, increase the pH of soils. This study investigates the effects of biochar amendment on the growth parameters and development of Jambú in Belém. Two pot trials were executed in a randomised block design with six replicates for each treatment. Biochar was produced from coconut shell and bamboo (*Dendrocalamus giganteus*) in a conical earth pit. In the first pot trial, biochar treatment (3g per kg soil) was combined with different doses of chicken manure (0, 6, 12 g per kg soil). In the second experiment, doses of biochar (0g, 1g, 3g, and 5g per kg soil) were combined with the same amount of chicken manure (12g per kg soil) on two different soils (soil from fallow land and soil from a vegetable production area with intensive compost applications). Preliminary results of the first experiment show a slightly positive effect of the biochar treatments on plant growth and biomass of jambú compared to the treatments with only chicken manure. In the second trial, a slight increase in fresh and dry biomass could be observed for biochar treatments on soil from fallow land but no difference for biomass was observed for the farmland soil. This could be due to the fact that the farmland soil had a higher pH value (6.2) and was richer in nutrients than the soil from fallow land (4.1). Concluding biochar application might increase jambú production on marginal land but does not impact production on more fertile soils.

Keywords: *Acmella oleracea*, Amazon, Belém, biochar, jambu, Pará, smallholders, vegetable production