EFFECTS ON SOIL WATER RELATIONSHIPS AND PHYSICAL PROPERTIES OF SELECTED SOIL TYPES USING BIOCHAR AS SUBSTRATES

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ABSTRACT

MENDOZA, ROB REINER, P., Department of Agricultural and Biosystems Engineering, College of Engineering, Central Luzon State University, Science City of Munoz, Nueva Ecija, Philippines, **JANUARY 2023, EFFECTS ON SOIL WATER RELATIONSHIPS AND PHYSICAL PROPERTIES OF SELECTED SOIL TYPES USING BIOCHAR AS SUBSTRATES.**

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This study presents the result of locally produced biochar from rice husk and bamboo using the pyrolysis process and the effects of it in terms of Physical properties and soil water relationships of two types of soil such as clay loam soil and sandy clay loam soil.

The laboratory experiment results, however, demonstrate that biochar had no impact on the soil's texture because the soil's separates remained clay loam and sandy clay loam, and its soil structure remained blocky and granular. The soil porosity of clay loam soil with rice hull biochar increased to 28% from 24%, while sandy clay loam soil with bamboo biochar increased the soil porosity to 32% from 22% of the soil porosity. Clay loam soil with bamboo biochar increases to 37.33% from 24% soil porosity, and sandy clay loam soil with rice hull biochar increases to 33.33 from 22%.

The soil moisture of clay loam soil with rice hull biochar, increases to 4.58% from 2.04% of the soil moisture of soil without biochar. In comparison, sandy clay loam soil with bamboo biochar, increases the soil moisture to 3.84% from 1.01% of the soil moisture without biochar. Clay loam soil with bamboo biochar, increases to 4.99% from 2.04% soil moisture, sandy clay loam soil with rice hull biochar, increases to 3.12% from 1.01%.

Biochar amendment increase the water contents at field capacity and the permanent wilting point, but with a larger increase in field capacity, so the plant-available water overall also increases (Abel et al., 2013).

Keywords: Biochar; Rice Husk; Bamboo; Physical Properties; Soil Water Relationships

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