



**PRODUCTION OF BIOCHAR COMPOSITE DERIVED FROM
RICE STRAW AS A GROWING MEDIA OF RADISH**

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ABSTRACT

Biochar composite refers to a material that combines biochar with other substances to enhance its properties and functionalities. When organic material, such plant matter, is pyrolyzed in a controlled environment with little or no oxygen, a carbon-rich substance known as biochar is produced. Specifically, rice straw biochar is composed mainly of silicates and has an amorphous porous structure with several functional groups. The components of the straw undergo thermal decomposition in an oxygen-limited environment during the pyrolysis process, turning it into carbon-rich biochar. The final properties and nutritional content of the biochar are greatly influenced by the specific pyrolysis conditions, which makes biochar an important soil additive for enhancing soil health and carbon sequestration. The use of rice-straw biochar has been proven effective, yet only a few farmers continue its practice. That is why, this study investigated the effectiveness of rice straw-derived biochar composite as a growing medium for radish, using four

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treatments with varying biochar amounts. Observation in a span of two weeks showed that the seed from Treatment B sprouted first, in three days, and grew approximately 1.3 cm. Treatment A sprouted after four days, growing 1 cm. Controlled group sprouted after five days, with growth of 0.4 cm. Treatment C sprouted last, after six days, and grew 0.5 cm in two weeks. Overall, Treatment A with 500g of soil and 20g of biochar demonstrated the most effective results for radish seed germination and growth. It shows that the amount of biochar combined with soil can positively affect the growth of radish. The study proved the effectiveness of biochar derived from rice straw as a growing media for radish, as the p-value result of the one-way analysis of variance was 0.044054055, supporting the rejection of the null hypothesis. However, adding too much biochar does not lead to a better result. It is suggested to put at least 2%-4% biochar to ensure the growth of radish. Based on this study, the researchers recommend examining the type of soil to see which soils benefit from the addition of biochar and which do not encourage plant growth. Farmers should learn how to use charcoal to grow their plants more quickly and under control, especially in radish. However, it is not recommended to use biochar as fertilizer. Instead, it must be mixed with soil to make a productive growing medium for radish.

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