

**BIOCHAR IMPLICATIONS ON THE GROWTH PERFORMANCE OF
WATER SPINACH (*Ipomoea reptans* Poir) TO SUPPORT
SUSTAINABILITY OF AGRICULTURE IN SOUTH EAST ASIA**

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ABSTRACT

The agriculture sector in South East Asia is supporting the industry to increase Gross Development Product (GDP) such as in Indonesia and Thailand. However, the agro-industry produces waste. This study was purposed to apply longan and mango branches (agricultural waste) as biochar material and to explore its impact on soil properties and growth performance of water spinach (*Ipomoea reptans* Poir). The randomized design has been used to create various treatments with 80 samples (2 types of soil, 2 types of biochar, 4 types of biochar dose, and 5 replications). Collected data were analyzed by logistic equation model and statistical analysis with ANOVA Two-way. Biochar application effect on the soil properties such as the soil EC and pH values were increased, besides the soil bulk density was decreased. Crop modeling applied to plant height and leaves number data. Using the logistic equation model, the rate growth of plant height resulted in 40 percentage of biochar addition with 0.567. Meanwhile, the rate growth of leaves number in 40 percentage of biochar addition was 0.1179. This rate growth was used to predict the growth performance and showed by regression value, which was a great result with 0.981 in plant height and a total of 0.968 in the leaves number. Furthermore, statistical analysis was showed that the variations treated were not significant in the growth performance of *Ipomoea reptans* Poir. This study proved that biochar could improve growth performance of *Ipomoea reptans* Poir to support sustainable agriculture.

Keywords: *Biochar, Sustainable agriculture, Water spinach (Ipomoea reptans Poir)*