Effect of Rice Husk Biochar and NPK Fertilizer Application on the Growth and Yield of Peanut (Arachis hypogaea* L.*)

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ABSTRACT

Peanuts (Arachis hypogeae L.*) are an important food commodity with high economic value, but their production in Indonesia tends to decline due to decreasing soil fertility and low availability of nutrients. One effort to increase soil fertility and peanut production is the use of rice husk biochar and NPK fertilizer. This study aims to analyze the effect of rice husk biochar and NPK fertilizer on the growth and production of peanut plants. This study was conducted from June to August 2025 in Slawu Village, Patrang District, Jember Regency. A two-factor randomized block design (RBD) with three replications was used. The first factor was the dose of rice husk biochar, consisting of control 0 tons/ha, 10 tons/ha, and 20 tons/ha. The second factor was the dose of NPK fertilizer, consisting of 300 kg/ha, 200 kg/ha, and 100 kg/ha. The parameters observed included plant height(2,4,6,8 weeks after planting) number of filled pods and number of empty pods, fresh pod weight, dry pod weight, dry seed weight, weight of 100 seeds, and dry biomass weight. Data analysis used ANOVA and was followed by the DMRT test. The results showed that the application of rice husk biochar had a significant effect on the number of pods, dry pod weight, and dry seed weight. Plant height at 6 weeks after planting, number of pods, fresh pod weight, and 100-seed weight. The interaction between rice husk biochar and NPK fertilizer had a significant effect on plant height and fresh pod weight. The best treatment was obtained from the combination of 20 tons/ha of biochar and 300 kg/ha of NPK fertilizer, which produced the highest values for plant height at 4 weeks after planting (8.23 cm), plant height at 6 weeks after planting (19.42 cm), and fresh pod weight (118.11 g).*

Keywords: *charcoal husks, inorganic fertilizer, legumes*