

THE EFFECT OF APPLICATION OF BIOCHAR AND UREA FERTILIZER ON NITROGEN AND SOIL MICROORGANISM ACTIVITY AND GROWTH OF ONION PLANTS IN LATOSOL

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ABSTRACT

Biochar as a soil amendment is able to improve the chemical and microbiological properties of soil. The application of biochar to soil is expected to increase plant growth. This research aims to determine the effect of giving a combination of biochar and urea fertilizer on nitrogen and the activity of soil microorganisms and the growth of shallot plants in Latosol. The research was carried out from March to October 2023. The research was carried out using a Completely Randomized Design (CRD) method with one factor and six treatments in the form of providing biochar, fertilizer and their combination, namely B0 (0 ton/ha biochar + 100% urea fertilizer), B1 (biochar 10 t/ha + 100% urea fertilizer), B2 (biochar 10 t/ha + 75% urea fertilizer), B3 (biochar 10 t/ha + 50% urea fertilizer), B4 (biochar 10 t/ha + 25% urea fertilizer) and B5 (biochar 10 tons/ha + 0% urea fertilizer). The research was carried out using polybags, two sets. The first set is land without plants, while the next set is land planted with shallots. Soil parameters were observed in the form of total N, available N, number of soil microorganisms, CO₂ evolution , and organic matter. The growth parameters observed were plant height, number of leaves, number of tubers, dry weight of tubers, and wet weight of tubers at 60 days after planting. The research data were analyzed using ANOVA and continued with the Duncan's Mean Difference Test (DMRT) with a level of 5%. Data analysis model for completely randomized design. The results showed that the application of a combination of biochar and urea fertilizer had a significant effect on total N, available N, number of soil microorganisms, soil respiration but had no significant effect on organic C, plant height, number of leaves, number of tubers, tuber wet weight and weight. dry tubers. Treatment B1 gave the best results. B2 and B3 can be options to apply.

Keywords : Activity Microorganisms, Biochar, Latosol Nitrogen, Onions Red