

Biochar and clinoptilolite zeolite on selected chemical properties of soil cultivated with maize (*Zea mays* L.)

ABSTRACT

Increase in cost of chemical fertilizers encourages the use of soil amendments such as biochar and zeolites to improve soil fertility. In this study, biochar produced from empty fruit bunch-palm oil mill effluent (EFB-POME) and clinoptilolite zeolite were used as soil amendments to improve soil fertility. The field experiment was carried out for two planting cycles to determine the effects of different rates of EFB POME biochar (0, 10, and 20 t ha⁻¹), clinoptilolite zeolite (0, 1.25, and 2.5 t ha⁻¹), and urea (60 and 120 kg ha⁻¹) on selected soil chemical properties of Tanjung Lipat (Typic Paleudults). Biochar produced from EFB-POME increase soil total N, P, K, Ca, and Mg. The higher soil total N, P, K, Ca, and Mg could be related to the increase in soil pH, cation exchange capacity, and total organic carbon in soil with EFB-POME biochar but not with clinoptilolite zeolite. Thus, EFB-POME biochar was more suitable to be used in a tropical soil (Typic Paleudults) compared to clinoptilolite zeolite for improving the selected soil pH, CEC, TOC and available P, K, Ca and Mg.