

## **ABSTRACT**

### **CHANGES IN SOIL CHEMICAL PROPERTIES AND GROWTH OF MAIZE UNDER *BIOCHAR* TREATMENT ON ULTISOLS**

**By**

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Ultisols have poor characteristics. The utilization of biochars as a soil amendment is one of the technology which can be applied. Besides being used as a solution in waste management from agriculture activities and plantations, biochar is also known to improve the productivity of marginal soils through its physical, chemical, and biological properties. This research is was to study the effects of biochar on the changes in the chemical properties of soil and the growth of the maize plants; and also to find the combination and dosage of biochars which has positive influence to improve chemical properties of Ultisols and the growth of maize.

This research was conducted in Greenhouse and Laboratory of the Soil Science, Faculty of Agriculture, University of Lampung from June 2013 to March 2014. A Factorial experiment was arranged in a randomized block design with 3 factors and 3 replications. The results showed that (1) the application of biochar from cacao leather and palm coconut shell on Ultisols improved chemical properties such as CEC, organic-C, and exchangeable soil K, (2) the application of biochar from cacao leather and palm coconut shell on Ultisols increased the maize height, (3) the 20% of leather cacao biochar increased CEC, while the 30 % increased organic-C and exchangeable K, (4) 10 % palm coconut shell biochar increased maize height, (5) the interaction between soil layer, type of biochar, and dosages increased CEC, organic-C, and exchangeable K, and maize height, (6) the CEC, exchangeable K, and available P have positive correlation with pH, and exchangeable K has positive correlation with CEC, (7) the biomass, dry matter, height, and total number of leaves have positive correlation with N, P, and K nutrient uptake.

**Keywords:** *Biochar*, C-organik, K-dd, KTK, Ultisols.