

ABSTRACT

This research is entitled Effect of Biochar-Nano Rock Phosphate and Manure on Soil Chemical Properties and P Absorption of Sweet Corn In Inceptisol Berbah, Sleman. The aims of the study were to determine the type of biochar enriched with nano rock phosphate and the optimum dose of cow manure on the growth and P uptake of sweet corn in Inceptisol and to determine the interaction between the two treatments. The research design used was a factorial complete randomized block design (RBD) with 3 replications. The first factors were 3 types of biochar enriched with nano rock phosphate, namely biochar without nano rock phosphate, bamboo biochar enriched with nano rock phosphate, and rice husk biochar enriched with nano rock phosphate. The second factor was 3 doses of cow manure, namely 0 ton.ha⁻¹, 10 tonnes.ha⁻¹, and 20 tonnes.ha⁻¹. The results showed that bamboo biochar and rice husk biochar enriched with nano rock phosphate gave the best results compared to biochar without nano rock phosphate for all parameters: soil chemical properties (pH H₂O, organic-C, available-P, plant growth and productivity and P absorption of sweet corn plants. The best dose of manure is 20 tonnes.ha⁻¹ capable of giving the highest results compared to the treatment without cow manure and the dose of cow manure is 10 tonnes.ha⁻¹ for all parameters. The application of biochar enriched with nano rock phosphate and various doses of cow manure provided an interaction with the parameters of soil chemical properties, fresh tuber weight, cob weight, root P uptake, and tuber P uptake.

Keywords: inceptisol, bamboo biochar, rice husk biochar, nano rock phosphate, manure, sweet corn, P uptake.

INTISARI

Penelitian ini berjudul Pengaruh Biochar-Nano Batuan Fosfat dan Pupuk Kandang Sapi terhadap Sifat Kimia Tanah dan Serapan P Jagung Manis Di Inceptisol Berbah, Sleman. Tujuan penelitian ini yaitu untuk mengetahui pengaruh jenis biochar yang diperkaya *nano rock phosphate* dan dosis pupuk kandang sapi yang terbaik terhadap perubahan sifat kimia tanah dan serapan P tanaman jagung manis di Inceptisol serta mengetahui interaksi dua perlakuan tersebut. Rancangan penelitian yang digunakan adalah rancangan acak kelompok lengkap (RAKL) faktorial dengan 3 ulangan. Faktor pertama 3 jenis biochar yang diperkaya *nano rock phosphate* yaitu tanpa biochar tanpa *nano rock phosphate*, biochar bambu yang diperkaya *nano rock phosphate*, dan biochar sekam padi yang diperkaya *nano rock phosphate*. Faktor kedua 3 dosis pupuk kandang sapi yaitu 0 ton.ha⁻¹, 10 ton.ha⁻¹, dan 20 ton.ha⁻¹. Hasil penelitian menunjukkan biochar bambu dan biochar sekam padi yang diperkaya *nano rock phosphate* memberikan hasil yang terbaik dibandingkan tanpa biochar tanpa *nano rock phosphate* terhadap semua parameter: sifat kimia tanah (pH H₂O, C-organik, P-tersedia), pertumbuhan dan produktivitas tanaman serta serapan P tanaman jagung manis. Dosis terbaik pupuk kandang sapi adalah 20 ton.ha⁻¹ mampu memberikan hasil yang tertinggi dibandingkan perlakuan tanpa pupuk kandang sapi dan dosis pupuk kandang sapi 10 ton.ha⁻¹ terhadap semua parameter. Aplikasi jenis biochar yang diperkaya *nano rock phosphate* dan berbagai dosis pupuk kandang sapi memberikan interaksi terhadap parameter sifat kimia tanah, berat segar trubus, bobot tongkol dengan kelobot, bobot tongkol tanpa kelobot, kadar P-total akar, kadar P-total trubus, serapan P akar, dan serapan P trubus.

Kata kunci: Inceptisol, biochar bambu, biochar sekam padi, *nano rock phosphate*, pupuk kandang sapi, jagung manis, serapan P.