

**APLIKASI BIOCHAR BAMBU DENGAN BEBERAPA
METODE PIROLISIS TERHADAP SIFAT KIMIA ULTISOL
DAN PRODUKSI TANAMAN EDAMAME (*Glycine max* L.
Merr) PADA MUSIM TANAM KEDUA**

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Abstrak

Permasalahan pada Ultisol dapat diatasi dengan pemberian bahan amelioran yaitu biochar bambu. Biochar dapat dibuat dengan beberapa metode pirolisis dimana setiap metode akan menghasilkan biochar dengan karakteristik yang berbeda. Tujuan penelitian ini untuk mempelajari pengaruh penambahan 10 ton/ha biochar bambu dengan beberapa metode pirolisis terhadap sifat kimia Ultisol dan produksi tanaman edamame (*Glycine max* L. Merr). Penelitian telah dilakukan dari bulan Februari sampai Juni 2021 di Belimbing, Kecamatan Kuranji, Kota Padang dan Laboratorium Jurusan Tanah, Fakultas Pertanian, Universitas Andalas. Lahan yang digunakan pada penelitian ini telah diberikan perlakuan 10 ton/ha biochar bambu dengan tiga metode pirolisis yang ditanami dengan jagung pakan. Penelitian menggunakan Rancangan Acak Kelompok (RAK) dengan 4 perlakuan (kontrol, 10 ton/ha biochar bambu metode Kon-Tiki, 10 ton/ha biochar bambu metode drum dan 10 ton/ha biochar bambu metode soil-pit) dan 4 ulangan. Hasil penelitian menunjukkan residu biochar bambu 10 ton/ha dan penambahan 10 ton/ha biochar bambu metode Kon-Tiki merupakan perlakuan terbaik yang mampu memperbaiki sifat kimia Ultisol yaitu meningkatkan nilai pH Ultisol sebesar 0,97 unit; P-tersedia 3,33 ppm; C-organik 0,53%; K-dd 0,85 cmol/kg Ca-dd 2,01 cmol/kg; Mg-dd 1,60 cmol/kg; KTK 15,23 cmol/kg dan mampu menurunkan Al-dd hingga tidak terukur dibandingkan dengan kontrol. Perlakuan ini juga dapat meningkatkan tinggi tanaman edamame sebesar 9,31 cm; kadar P batang + daun 0,0017%; kadar P akar 0,0032%; kadar K batang + daun 0,28%, kadar K akar 0,24%; berat kering 100 biji 2,41 g dan produksi polong/petak 2,87 kg/petak jika dibandingkan dengan kontrol.

Kata kunci: biochar, edamame, Kon-Tiki, drum, soil-pit, metode pirolisis, Ultisol

APPLICATION OF BAMBOO BIOCHAR PRODUCED BY SEVERAL PYROLYSIS METHODS ON THE CHEMICAL PROPERTIES OF ULTISOLS AND THE PRODUCTION OF EDAMAME (*Glycine max* L. Merr) ON THE SECOND CROPPING SEASON

Abstract

Problems in Ultisol can be overcome by applying ameliorant materials, one of which is bamboo biochar. Biochar can be made by several pyrolysis methods on which each method will produce biochar with different characteristics. The purpose of this research was to study the effect of addition of 10 tons/ha bamboo biochar produced by several pyrolysis methods on the chemical properties of Ultisol and the production of edamame (*Glycine max* L. Merr) crops. The research was conducted from February to June 2021 in Belimbing, Kuranji District, Padang City and the Laboratory of Department of Soil, Faculty of Agriculture, Andalas University. The land used in this study was previously treated with 10 tons/ha of bamboo biochar produced by three pyrolysis methods. It was, then, added with 10 tons/ha bamboo biochar more for this cropping season. This experiment used a Randomized Block Design (RBD) with 4 treatments (control, 10 tons/ha bamboo biochar Kon-Tiki method, 10 tons/ha bamboo biochar drum method, and 10 tons/ha bamboo biochar soil-pit method) and 4 replications. The result showed that residue of 10 tons/ha and the addition of 10 tons/ha bamboo biochar Kon-Tiki method was the best treatment that was able to improve the chemical properties of Ultisol. It increased the pH value of Ultisol by 0.97 units; P-available by 3.33 ppm; organic-C by 0.53%, K-exch by 0.85 cmol/kg; Ca-exch by 2.01 cmol/kg; Mg-exch by 1.60 cmol/kg; CEC by 15.23 cmol/kg and was able to reduce Al-exch to unmeasured compared to the control. It could also increase edamame crop height by 9.31 cm; stem + leaf P content by 0.0017%; root P content by 0.0032%; stem + leaf K content by 0.28%, root K content by 0.24%; dry weight of 100 seeds by 2.41 g, and pod production/plot by 2.87 kg/plot compared to the control.

Keywords: biochar, edamame, Kon-Tiki, drum, soil-pit, pyrolysis method, Ultisol