

**PEMANFAATAN BIOCHAR SEKAM PADI DAN PUPUK  
KANDANG SAPI UNTUK MENINGKATKAN SIFAT KIMIA  
ULTISOL DAN PERTUMBUHAN BIBIT TANAMAN KELAPA  
SAWIT**

*(Elaeis guineensis jacq.)*

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Abstrak

Ultisol memiliki permasalahan kesuburan tanah yang rendah karena telah mengalami tingkat pelapukan yang intensif, sehingga diperlukan bahan ameliorant untuk meningkatkan kesuburan tanahnya. Penelitian ini bertujuan untuk mengetahui pengaruh campuran *biochar* dan pupuk kandang (pukan) sapi terhadap beberapa sifat kimia Ultisol dan pertumbuhan bibit tanaman kelapa sawit serta mencari takaran terbaik dengan pemberian *biochar* dan pupuk kandang sapi terhadap perubahan sifat kimia tanah dan pertumbuhan tanaman kelapa sawit pada Ultisol. Penelitian dilaksanakan di Kebun Percobaan Fakultas Pertanian Universitas Andalas Padang menggunakan Rancangan Acak Lengkap (RAL) dengan 6 perlakuan dan 3 ulangan. Dosis perlakuan terdiri dari A= Kontrol, B= 100% *biochar* (0.5 kg/polybag), C= 75% *biochar* (0.375 kg/polybag) + 25% pukan (0.125 kg/polybag), D= 50% *biochar* (0.125 kg/polybag) + 50% pukan (0.125 kg/polybag), E= 25% *biochar* (0.125 kg/polybag) + 75% pukan (0.375 kg/polybag), F= 100% pukan (0.5 kg/polybag). Hasil penelitian ini menunjukkan pemberian perlakuan *biochar* dengan pukan sapi dengan kombinasi 25% *biochar* + 75% pukan merupakan perlakuan terbaik yang dapat meningkatkan sifat kimia dan kesuburan pada Ultisol yaitu meningkatkan nilai pH sebesar 1.02 unit dan menurunkan kandungan Al-dd hingga tidak terukur, N-total sebesar 0.16%, kandungan C-organik sebesar 1.67%, kandungan P-tersedia sebesar 20.55 ppm, KTK sebesar 40.62 cmol/kg, dan kation basa-basa seperti K-dd sebesar 0.53 cmol/kg, Ca-dd 1.23 cmol/kg, Mg-dd 0.22 cmol/kg dan Na-dd 0.46 cmol/kg dibandingkan dengan kontrol. Serta meningkatkan pertumbuhan tanaman optimum dengan peningkatan tinggi tanaman sebesar 18.67 cm, diameter batang 4.65 mm, dan jumlah helai daun sebanyak 2 helai dibandingkan dengan kontrol, dan meningkatkan angkutan hara optimum bibit tanaman seperti angkutan hara N sebesar 5.10 g/tanaman, P 0.45 g/tanaman dan K 1.35 g/tanaman dibandingkan dengan kontrol.

***Kata kunci : Biochar, Pupuk kandang sapi, Sawit, Sekam padi, Ultisol.***

**UTILIZATION OF RICE HUSK BIOCHAR AND COW MANURE  
TO INCREASING CHEMICAL PROPERTIES OF ULTISOLS  
AND GROWTH OF OIL PALM SEEDLING  
(*Elaeis guineensis* Jacq.).**

Abstract

Ultisols have low soil fertility because they have been intensively weathered, therefore, it is needed an ameliorant to increase the soil fertility. The purpose of this research was to determine the effect of rice husk biochar and cow manure application on some chemical properties of Ultisols and growth of oil palm seedlings, as well as to find the best level of rice husk biochar and cow manure to increase chemical properties of Ultisols and growth of oil palm in Ultisols. This research was conducted at Agriculture Experiment Station, Andalas University. This research consisted of six dossages of rice husk biochar and cow manure ( A= control; B= 100% biochar(0.5 kg.polybag<sup>-1</sup>); C= 75% biochar (0.375 kg.polybag<sup>-1</sup>) + 25% cow manure (0.125 kg.polybag<sup>-1</sup>); D= 50% biochar (0.25 kg.polybag<sup>-1</sup>) + 50% cow manure (0.25 kg.polybag<sup>-1</sup>); E= 25% biochar (0.125 kg.polybag<sup>-1</sup>) + 75% cow manure (0.125 kg.polybag<sup>-1</sup>); F = 100% cow manure (0.5 kg.polybag<sup>-1</sup>). The results showed that application of biochar and cow manure with (25% biochar + 75% cow manure) combination was the best combination to increase chemical properties of Ultisols, especially pH by 1.02 units, total N by 0.16%, Organic C by 1.67%, available P by 20.55 ppm, CEC by 1.23 cmolkg<sup>-1</sup>, exchangable K by 0.53 cmolkg<sup>-1</sup>, exchangable Ca by 1.23 cmolkg<sup>-1</sup>, exchangable Mg by 0.22 cmolkg<sup>-1</sup>, exchangable Na by 0.46 cmolkg<sup>-1</sup> and to decrease exchangable alumunium until unmeasurable compared to control, also to increase growth of oil palm seedling, such as crop height by 18.67 cm, stem diameter by 4.65 mm, total leaves by two compared to control, and increased nutrient absorbtion N by 5.10 gcrop<sup>-1</sup>, P by 0.45 gcrop<sup>-1</sup> and K by 1.35 gcrop<sup>-1</sup> compared to control.

**Keywords :** *Biochar, Cow manure, Oil palm, Rice Husk, Ultisols.*