

**AKTIVASI BUBUK BATUBARA MUDA *Subbituminus* DENGAN UREA,
KCl, NaOH DAN NaCl UNTUK MEMPERBAIKI SIFAT KIMIA ULTISOL
DAN MENINGKATKAN PRODUKSI TANAMAN JAGUNG
(*Zea mays* L.)**

Abstrak

Batubara sebagai alternatif sumber bahan humat yang memiliki potensi sebesar 973.92 juta ton (*Subbituminus* sebesar 673.70 juta ton) di Sumatera Barat. Tujuan dari penelitian ini adalah untuk mempelajari pengaruh interaksi bubuk batubara muda *Subbituminus* dengan jenis bahan pengaktif dalam memperbaiki sifat kimia Ultisol dan meningkatkan produksi tanaman jagung (*Zea mays* L.). Penelitian ini menggunakan Rancangan Acak Kelompok (RAK) dalam Faktorial 4 x 5 dengan 2 kali ulangan. Faktor pertama (bubuk batubara muda *Subbituminus*) yaitu $A_1 = 0,25\%$; $A_2 = 0,50\%$; $A_3 = 0,75\%$; $A_4 = 1,00\%$. Faktor kedua (jenis bahan pengaktif) yaitu $B_0 =$ Tanpa pengaktif; $B_1 =$ Urea 125% Rekomendasi; $B_2 =$ KCl 125% Rekomendasi; $B_3 =$ NaOH 0,25 N; $B_4 =$ NaCl 0,25 N. Data hasil analisis tanah dan tanaman diuji secara statistik berdasarkan uji F pada taraf 5%. Hasil penelitian menunjukkan bahwa : (1) Pemberian bubuk batubara muda *Subbituminus* berinteraksi dengan Urea, KCl, NaOH dan NaCl dalam meningkatkan kadar hara N dan K tanaman Jagung (*Zea mays* L.). Kadar hara tertinggi pada takaran 1,0% dengan Urea 125% rekomendasi untuk N dan K pada takaran 1,0% dengan KCl 125% rekomendasi; (2) Pemberian bubuk batubara muda *Subbituminus* pada takaran 1,0% dapat memperbaiki sifat kimia Ultisol sebesar 0,45% C-Organik; 0,06% N-total; 7,25 me/100g KTK; 0,17% K; 4,51 ppm P dan meningkatkan bobot biji tanaman jagung (*Zea mays* L.) sebesar 1,61 kg/petak, dibandingkan dengan takaran 0,25%; (3) Pemberian bahan pengaktif Urea 125% dapat memperbaiki sifat kimia Ultisol sebesar 1,03 unit pH; 1,03 me/100g Al; 0,71% C-organik; 0,13% N-total; 18,82 me/100g KTK; 6,39 ppm P dan meningkatkan bobot biji tanaman jagung (*Zea mays* L.) sebesar 3,37 kg/petak, dibandingkan dengan tanpa bahan pengaktif.

Kata kunci : *Ultisol, Bubuk batubara muda Subbituminus, Urea, KCl, NaOH dan NaCl*

ACTIVATION OF POWDER COAL *Sub-bituminous* WITH UREA, KCl, NaOH AND NaCl TO IMPROVE CHEMICAL PROPERTIES OF ULTISOLS AND TO INCREASE CORN (*Zea mays* L.) PRODUCTION

Abstract

Coal as an alternative source of humic material that has the potential of 973.92 million tons (*sub-bituminous* amounted to 673.70 million tons) in West Sumatera. The purpose of this research was to study interaction between powder coal *Sub-bituminous* and several types activator to improve chemical properties of Ultisols and to increase corn (*Zea mays* L.) production. The experiment was designed in randomized block (RBD) consisting of 2 factors (powder coal *Sub-bituminous* and types of activator) with 2 replications. The first factor (powder coal *Sub-bituminous*) consisted of 4 levels, those were $A_1 = 0.25\%$, $A_2 = 0.50\%$, $A_3 = 0.75\%$ and $A_4 = 1.00\%$. The second factor (types of activator) consisted of 5 types, those were $B_0 =$ without activators; $B_1 = 125\%$ of Urea recommendation; $B_2 = 125\%$ of KCl recommendation; $B_3 = 0.25$ N NaOH and $B_4 = 0.25$ N NaCl. The data were statistically analysed based on F-test at 5% level of significance. The results showed that: (1) Powder coal *Sub-bituminous* interacted with Urea, KCl, NaOH and NaCl in increasing levels of N and K Corn (*Zea mays* L.). The highest levels of N was found under application of 1.00 % powder coal *Sub-bituminous* with 125% of Urea recommendation and the highest levels of K was under 1.00% powder coal *Sub-bituminous* with 125% of KCl recommendation; (2) Application of 1.0% powder coal *Sub-bituminous* could improve chemical properties of Ultisols such as organic-C by 0.45%; N-total by 0.06%; CEC by 7.25 me/100g; K by 0.17%; available-P by 4.51 ppm and could increase corn (*Zea mays* L.) grain weight by 1.61 kg/plot, compared to a rate of 0.25%; (3) Application 125% of Urea recommendation improve chemical properties of Ultisols such as pH by 1.03 unit; Al by 1,03me/100g ; organic-C by 0.71%; N-total by 0.13%; CEC by 18.82 me/100g; available-P by 6.39 ppm and to increase corn (*Zea mays* L.) grain weight by 3.37 kg/plot, compared to without activators.

Keywords : *Ultisol, Powder Coal Sub-bituminous, Urea, KCl, NaOH and NaCl*