PENGARUH PEMBERIAN BIOCHAR AMPAS TEBU DAN PUPUK N TERHADAP SIFAT KIMIA INCEPTISOL DAN PERTUMBUHAN TANAMAN TEBU *(Saccharum officinarum L.)*

SKRIPSI

Oleh :

ANNISA ISLAMI
1510231017

Dibimbing oleh :
Dr. Ir. Sandra Prima, MSc
Dr. Gusmini, SP. MP

PROGRAM STUDI ILMU TANAH
FAKULTAS PERTANIAN
UNIVERSITAS ANDALAS
PADANG
2021

PENGARUH PEMBERIAN BIOCHAR AMPAS TEBU DAN PUPUK N TERHADAP SIFAT KIMIA INCEPTISOL DAN PERTUMBUHAN TANAMAN TEBU *(Saccharum officinarum L.)*

Oleh :

ANNISA ISLAMI
1510231017

SKRIPSI

Sebagai Salah Satu Syarat Untuk
Memperoleh Gelar Sarjana Pertanian

PROGRAM STUDI ILMU TANAH
FAKULTAS PERTANIAN
UNIVERISTAS ANDALAS
PADANG
2021

PENGARUH PEMBERIAN BIOCHAR AMPAS TEBU DAN PUPUK N TERHADAP SIFAT KIMIA INCEPTISOL DAN PER TUMBUHAN TANAMAN TEBU *(Saccharum officinarum L.)*

Abstrak

Penelitian ini telah dilakukan di Kecamatan Hiliran Gumanti Kabupaten Solok dan analisis kimia tanah dan biochar dilakukan di Laboratorium Kimia Tanah Fakultas Pertanian Universitas Andalas Padang pada bulan Juli 2019 sampai bulan Agustus 2021. Tujuan dari penelitian ini adalah untuk mempelajari pengaruh interaksi antara biochar ampas tebu dan pupuk N terhadap sifat kimia Inceptisol dan pertumbuhan tanaman tebu, dan mempelajari pengaruh utama dosis biochar ampas tebu dan pupuk N terhadap sifat kimia Inceptisol dan pertumbuhan tanaman tebu. Penelitian ini mengguanakan Rancangan Acak Kelompok Faktorial 4x3 dan 3 ulangan. Faktor pertama adalah biochar ampas tebu (0,15,30 dan 45 ton/ha) dean factor kedua adalah pupuk N (0%, 50%, dan 100% rekomendasi). Parameter yang dianalisis adalah pH, Al-dd, C-organik, N-total, NO_3^- dan NH_4^+, P-tersedia, KTK, Ca-dd, Mg-dd, jumlah daun dan lingkar batang tanaman tebu. Hasil Penelitian menunjukkan bahwa (1) Pemberian Biochar ampas tebu dan pupuk N berinteraksi dalam meningkatkan C-organik, P-tersedia, KTK, Ca-dd, Mg-dd, NO_3^- dan NH_4^+ dan meningkatkan pertumbuhan tanaman tebu, serta menurunkan nilai Al-dd menjadi tidak terukur. (2) Pengaruh utama pemberian biochar ampas tebu 45 ton/ha dapat memperbaiki sifat kimia Inceptisol dan meningkatkan pertumbuhan tanaman tebu seperti pH 0,67 unit, N-total 0,42%, K-dd 0,18 me/100g, Na-dd 0,27 me/100g, jumlah helaian daun 2,74 helai dan lingkar batang 1,76 cm. (3) Pengruh utama pemberian pupuk N 100% rekomendasi dapat memperbaiki sifat kimia Inceptisol dan meningkatkan pertumbuhan tanaman tebu seperti pH 0,73 unit, N-total 0,11%, K-dd 0,05 me/100g, Na-dd 0,08 me/100g, jumlah daun 1 helai, dan lingkar batang 0,47 cm.

Kata Kunci : ***Biochar, Inceptisol, pupuk N, Tanaman Tebu (Saccharum officinarum L)***

THE EFFECT OF BAGASSE BIOCHAR AND N FERTILIZER APPLCATION ON THE CHEMICAL PROPERTIES OF INCEPTISOL AND THE GROWTH OF SUGARCANE CROP (*Saccharum officinarum L.*)

Abstract

A research on chemical properties of Inceptisol and sugarcane growth as affected by bagasse biochar and N fertilizer was conducted in Hiliran Gumanti District, Solok Regency. The chemical analysis of soil and biochar was conducted at the Soil Chemistry Laboratory, Faculty of Agriculture, Andalas University Padang, from July 2019 to August 2021. The purpose of this study was to determine the interaction effect between bagasse biochar and N fertilizer on the chemical properties of Inceptisol and sugarcane growth, and to determine the main effect of the dose of bagasse biochar and N fertilizer on the chemical properties of Inceptisol and sugarcane growth. The experiment was designed in Randomized Block Design of 2 factors (bagasse biochar and N fertilizer) with 3 replications. The first factor was bagasse biochar (A1= 0, A2=15, A3=30 and A4=45 ton/ha) and the second factor was N fertilizer (B0=0%, B1=50%, and B3=100% recommendation). The parameters observed were soil pH, Al-exchangeable, organic-C , total-N, NO_3^- and NH_4^+, available-P, CEC, Ca-exchangeable, Mg-exchangeable, number of leaves and stem circumference of sugarcane crops.The results showed that (1) The application of bagasse biochar and N fertilizer interacted in increasing the organic-C, available-P, CEC, Ca-exchangeable, Mg-exchangeable, NO_3^-, and NH_4^+ as well as the growth of sugarcane crops, and in reducing the Al-exchangeable value to unmeasurable. (2) The main effect of application of bagasse biochar 45 ton/ha could improve the chemical properties of Inceptisol and increase the growth of sugarcane crops such as pH by 0.67 units, total-N by 0.42%, K-exchangeable by 0.18 cmol/kg, Na-exchangeable by 0.27 cmol/kg, the number of leaves by 2.74 and the stem circumference by 1.76 cm. (3) The main effect of giving N fertilizer 100% recomendation could improve the chemical properties of Inceptisol and increase the growth of sugarcane crops such as pH by 0.73 units, total-N by 0.11%, K-exchangeable by 0.05 cmol/kg, Na-exchangeable by 0.08 cmol/kg, number of leaves by 1 strand, and stem circumference by 0.47 cm.

Keywords: Biochar, N fertilizer, Inceptisol, Sugarcane (Saccharum officinarum L.)