ABSTRAK

PENGARUH OLAH TANAH DAN PEMUPUKAN N JANGKA PANJANG PADA TANAH ULTISOL TERHADAP KADAR N-TOTAL TANAH DAN SERAPAN N TANAMAN TEBU *PLANT CANE* MASA VEGETATIF MAKSIMUM

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Nitrogen memainkan peranan yang sangat penting dalam pertumbuhan vegetatif tanaman tebu. Penelitian ini bertujuan untuk mempelajari pengaruh sistem olah tanah dan pemupukan nitrogen (N) jangka panjang di tanah Ultisol terhadap kadar N-total tanah dan serapan nitrogen tanaman tebu (*plant cane*) pada fase vegetatif maksimum. Penelitian dilaksanakan di lahan Tanpa Olah Tanah (TOT) Politeknik Negeri Lampung dari Juli 2024 hingga Oktober 2025, dan analisis dilakukan di Laboratorium Kimia Tanah Universitas Lampung. Penelitian menggunakan rancangan acak kelompok (RAK) faktorial dengan dua faktor, yaitu sistem olah tanah yang terdiri dari olah tanah intensif (OTI), olah tanah minimum (OTM), dan tanpa olah tanah (TOT), serta pemupukan nitrogen yang terdiri dari tanpa pupuk (N_0), 150 kg urea ha^{-1} (N_1), dan 300 kg urea ha^{-1} (N_2). Hasil penelitian menunjukkan bahwa sistem olah tanah tidak berpengaruh nyata terhadap kandungan N-total tanah dan serapan nitrogen tanaman tebu, sedangkan perlakuan pemupukan berpengaruh sangat nyata terhadap N-total tanah, dan berpengaruh nyata terhadap serapan N brangkasan tebu. Perlakuan pemupukan 300 kg ha^{-1} menghasilkan N-total tanah tertinggi, sedangkan pemupukan 150 kg ha^{-1} menghasilkan serapan N brangkasan tebu tertinggi pada masa vegetatif maksimum. Tidak terdapat pengaruh interaksi antara perlakuan sistem olah tanah dan pemupukan nitrogen jangka terhadap kandungan N- total tanah dan serapan N tanaman tebu pada masa vegetatif maksimum. Nisbah C/N dipengaruhi secara sangat nyata oleh N-total tanah ($R^2 = 0,95$).

Kata Kunci: N-total tanah, serapan nitrogen, pemupukan nitrogen jangka panjang, sistem olah tanah, tebu.

ABSTRACT

THE EFFECT OF TILLAGE SYSTEMS AND LONG-TERM NITROGEN FERTILIZER IN ULTISOL SOIL ON TOTAL SOIL NITROGEN CONTENT AND NITROGEN ABSORPTION OF CANE PLANTS DURING THE MAXIMUM VEGETATIVE STAGE

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Nitrogen plays a crucial role in the vegetative growth of sugarcane. This study aimed to examine the effect of long-term tillage and nitrogen (N) fertilization systems in Ultisol soil on total soil nitrogen content and nitrogen uptake by sugarcane plants during the maximum vegetative phase. The study was conducted on the No-Tillage (TOT) land of the Lampung State Polytechnic from July 2024 to October 2025, and analyses were conducted at the Soil Chemistry Laboratory of the University of Lampung. The study used a factorial randomized block design (RBD) with two factors: the tillage system consisting of intensive tillage (OTI), minimum tillage (OTM), and no-tillage (TOT), and nitrogen fertilization consisting of no fertilizer (N_0), 150 kg urea ha^{-1} (N_1), and 300 kg urea ha^{-1} (N_2). The results showed that the tillage system had no significant effect on the total soil nitrogen content and nitrogen uptake of sugarcane plants, while the fertilization treatment had a very significant effect on the total soil nitrogen, and a significant effect on the nitrogen uptake of sugarcane stover. The fertilization treatment of 300 kg ha-1 produced the highest total soil nitrogen, while the fertilization treatment of 150 kg ha-1 produced the highest nitrogen uptake of sugarcane stover during the maximum vegetative stage. There was no interaction effect between the tillage system treatment and long-term nitrogen fertilization on the total soil nitrogen content and nitrogen uptake of sugarcane plants during the maximum vegetative stage. The C/N ratio was very significantly affected by total soil nitrogen (R^2 = 0.95).

Keywords: Soil total nitrogen, nitrogen uptake, long-term nitrogen fertilization, tillage system, sugarcane.