

ABSTRAK

PENGARUH OLAH TANAH DAN PEMUPUKAN N JANGKA PANJANG TERHADAP KADAR P TERSEDIA DAN SERAPAN P PADA BATANG TEBU *PLANT CANE* MASA VEGETATIF MAKSIMUM DI TANAH ULTISOL

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Tanah Ultisol umumnya memiliki kandungan Al dan Fe tinggi yang menyebabkan ketersediaan hara Fosfor (P) terikat didalam tanah, namun akumulasi hara dapat terjadi akibat residu pemupukan jangka panjang dan masa bera. Hal ini menyebabkan ketersediaan hara P masih menjadi kendala utama yang perlu di jaga ketersediaan haranya dengan upaya perlakuan sistem olah tanah dan pemupukan Nitrogen. Penelitian ini bertujuan mengetahui pengaruh perlakuan sistem olah tanah dan pemupukan nitrogen serta interaksinya terhadap P-tersedia dan serapan P batang pada tanaman tebu vegetatif maksimum. Selain itu, juga untuk mengetahui korelasi antara sistem olah tanah dan pemupukan terhadap P-tersedia dan Serapan P batang tanaman tebu. Penelitian ini menggunakan Rancangan Acak Kelompok yang terdiri dari dua faktor yaitu sistem olah tanah; Olah Tanah Intensif (T1), Olah Tanah Minimum (T2), dan Tanpa Olah Tanah (T3) serta dosis pemupukan nitrogen; tanpa pemupukan (N0), 150 kg ha⁻¹ (N1), dan 300 kg ha⁻¹ (N2). Hasil penelitian menunjukkan bahwa sistem olah tanah tidak berpengaruh nyata terhadap P-tersedia dan serapan P, sedangkan pemupukan N jangka panjang berpengaruh sangat nyata terhadap P-tersedia dan tidak berpengaruh nyata terhadap serapan P. Perlakuan pemupukan N dosis 150 kg ha⁻¹ menunjukkan hasil tertinggi dibandingkan tanpa dosis pemupukan N, tetapi tidak berbeda nyata dengan dosis 300 kg ha⁻¹. Tidak terdapat interaksi antara perlakuan sistem olah tanah dan pemupukan N jangka panjang terhadap P-tersedia dan serapan P batang tebu masa vegetatif maksimum. Perlakuan sistem olah tanah dan pemupukan N tidak berkorelasi nyata dengan P-tersedia maupun serapan P, tetapi terdapat korelasi positif antara C-organik dan P-tersedia tanah masa vegetatif maksimum.

Kata Kunci: tanah ultisol, tanpa olah tanah, pemupukan nitrogen jangka panjang, P-tersedia, serapan P dan tanaman tebu

ABSTRACT

THE EFFECT OF SOIL CULTIVATION AND LONG-TERM N FERTILIZATION ON AVAILABLE P LEVELS AND P UPTAKE IN MAXIMUM VEGETATIVE MAJOR SUGAR CANE STEMS IN ULTISOL SOILS

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Ultisol soil generally has high Al and Fe content which causes the availability of Phosphorus (P) nutrients to be bound in the soil, but nutrient accumulation can occur due to long-term fertilizer residues and fallow periods. This causes the availability of P nutrients to still be a major obstacle that needs to be maintained by means of soil tillage and Nitrogen fertilization treatment. This study aims to determine the effect of soil tillage and nitrogen fertilization treatment and their interactions on available P and stem P uptake in maximum vegetative sugarcane plants. In addition, it is also to determine the correlation between the soil tillage and fertilization systems on available P and P uptake of sugarcane stems. This study used a Randomized Block Design consisting of two factors, namely the soil tillage system; Intensive Tillage (T1), Minimum Tillage (T2), and No Tillage (T3) and the dose of nitrogen fertilization; without fertilization (N0), 150 kg ha⁻¹ (N1), and 300 kg ha⁻¹ (N2). The results showed that the tillage system had no significant effect on available P and P uptake, while long-term N fertilization had a very significant effect on available P and no significant effect on P uptake. The N fertilization treatment at a dose of 150 kg ha⁻¹ showed the highest yield compared to no N fertilization dose, but was not significantly different from the dose of 300 kg ha⁻¹. There was no interaction between the tillage system treatment and long-term N fertilization on available P and P uptake of sugarcane stalks during the maximum vegetative period. The tillage system treatment and N fertilization were not significantly correlated with available P or P uptake, but there was a positive correlation between organic C and available P in the soil during the maximum vegetative period.

Keywords: *ultisol soil, no tillage, long-term nitrogen fertilization, available phosphorus, phosphorus uptake, and sugarcane.*