

## ABSTRACT

THE EFFECT OF PROVIDING PALM WASTE SLUDGE COMPOST IN IMPROVING pH AND P-AVAILABLE ULTISOL AND SWEET CORN GROWTH (*Zea Mays* L.)

Ultisols are a type of soil in Indonesia that has the potential to be used in agriculture, but its utilization is faced with constraints on the chemical properties of the soil, namely low pH values, organic C content, total N content and available P content and high Al-dd content. . Efforts that need to be made to improve the chemical properties of Ultisol are by adding organic matter in the form of sludge compost from palm oil mill waste. This research was conducted in Mendalo Indah Village, Jambi Outer District, Muaro Jambi Regency, Jambi Province starting from September 2022 to February 2023. The research was carried out using a Randomized Block Design (RBD) with 6 treatments and 5 replications so there were 30 experimental plots. The treatments given were P0 = no treatment, P1 = 6 tons/ha of palm oil mill waste sludge compost, P2 = 12 tons/ha of palm oil mill waste sludge compost, P3 = 18 tons/ha of palm oil mill waste sludge compost, P4 = 24 tons/ha of palm oil mill waste sludge compost, and P5 = 30 tons/ha of palm oil mill waste sludge compost. The soil parameters observed were pH, Al-dd, available-P, organic-C and total-N. The plant parameters observed were plant height and plant yield. Data analysis using variance was followed by a multiple range test (Duncan's Multiple Range Test) to see the effect of the difference between the two means. The results showed that applying palm oil sludge compost had a significant effect on increasing pH, available-P, organic-C, total-N and reducing Al-dd content as well as having a significant effect on plant height and sweet corn yields. Applying palm oil mill waste sludge compost at a dose of 12 tons/ha is the best treatment in increasing the height and yield of sweet corn plants.

**Key words** : *Ultisol, soil chemical properties, organic matter, palm oil mill waste sludge compost.*

## ABSTRAK

### PENGARUH PEMBERIAN KOMPOS SLUDGE LIMBAH KELAPA SAWIT DALAM MEMPERBAIKI pH DAN P-TERSEDIA ULTISOL SERTA PERTUMBUHAN JAGUNG MANIS (*Zea Mays* L.)

Ultisol merupakan jenis tanah di Indonesia yang memiliki potensi untuk dimanfaatkan dalam bidang pertanian, namun dalam pemanfaatannya dihadapkan dengan kendala pada sifat kimia tanahnya yaitu rendahnya nilai pH, kandungan C-organik, kandungan N-total dan kandungan P-tersedia serta tingginya kandungan Al-dd. Upaya yang perlu dilakukan untuk memperbaiki sifat kimia Ultisol yaitu dengan penambahan bahan organik berupa kompos sludge limbah pabrik kelapa sawit. Penelitian ini dilaksanakan di Desa Mendalo Indah Kecamatan Jambi Luar Kota Kabupaten Muaro Jambi Provinsi Jambi yang dimulai pada bulan September 2022 hingga Februari 2023. Penelitian dilaksanakan dengan menggunakan Rancangan Acak Kelompok (RAK) dengan 6 perlakuan dan 5 ulangan sehingga terdapat 30 petak percobaan. Perlakuan yang diberikan adalah P0 = tanpa perlakuan, P1 = 6 ton/ha kompos sludge limbah pabrik kelapa sawit, P2 = 12 ton/ha kompos sludge limbah pabrik kelapa sawit, P3 = 18 ton/ha kompos sludge limbah pabrik kelapa sawit, P4 = 24 ton/ha kompos sludge limbah pabrik kelapa sawit, dan P5 = 30 ton/ha kompos sludge limbah pabrik kelapa sawit. Parameter tanah yang diamati adalah pH, Al-dd, P-tersedia, C-organik dan N-total. Parameter tanaman yang diamati adalah tinggi tanaman dan hasil tanaman. Analisis data menggunakan sidik ragam dilanjutkan dengan uji jarak berganda (*Duncan Multiple Range Test*) untuk melihat pengaruh beda dua rata-rata. Hasil penelitian menunjukkan bahwa pemberian kompos sludge limbah kelapa sawit berpengaruh nyata meningkatkan pH, P-tersedia, C-organik, N-total dan menurunkan kandungan Al-dd serta berpengaruh nyata terhadap tinggi tanaman dan hasil tanaman jagung manis. Pemberian kompos sludge limbah pabrik kelapa sawit dengan dosis 12 ton/ha merupakan perlakuan terbaik dalam meningkatkan tinggi dan hasil tanaman jagung manis.

**Kata kunci :** *Ultisol, sifat kimia tanah, bahan organik, kompos sludge limbah pabrik kelapa sawit.*