

**PEMANFAATAN LIMBAH PERTANIAN UNTUK MENGHASILKAN  
JAGUNG MANIS ORGANIK (*Zea mays saccharata* Sturt L.)  
DI TANAH INSEPTISOL**

**ABSTRAK**

Atas dasar ini dilakukan penelitian tentang pemanfaatan limbah pertanian untuk menghasilkan jagung manis organik (*Zea mays saccharata* Sturt L.) di tanah inseptisol. Penelitian ini dilaksanakan di Lahan Percobaan Fakultas Pertanian Universitas Islam Sumatera Utara, Jln. Karya Wisata, Gedung Johor Kecamatan Medan Johor Kota Madya Medan, Provinsi Sumatera Utara dengan ketinggian Tempat  $\pm 25$  meter diatas permukaan laut (dpl), dengan topografi datar. Penelitian ini dimulai Bulan Januari 2023 sampai Bulan Maret 2023. Penelitian ini dibimbing oleh Ibu Prof. Dr. Ir. Nurhayati, M.P. sebagai Ketua Komisi Pembimbing dan Ibu Dr. Yayuk Purwaningrum, S.P., M.P. selaku Anggota Komisi Pembimbing.

Penelitian ini bertujuan untuk melihat pengaruh pemanfaatan limbah pertanian terhadap perbaikan sifat kimia di tanah inseptisol. Untuk melihat pengaruh pemanfaatan limbah pertanian terhadap pertumbuhan dan produksi tanaman jagung manis organik di tanah inseptisol. Untuk melihat keefektifan limbah pertanian dalam meningkatkan pertumbuhan dan produksi tanaman jagung manis organik di tanah inseptisol. Penelitian ini menggunakan Rancangan Acak Kelompok (RAK) Non faktorial yang terdiri dari 6 perlakuan yaitu:  $L_0 = 0$  ton/ha (tanpa perlakuan/kontrol),  $L_1$  kompos sayur-sayuran 10 ton/ha 2,25 kg/plot,  $L_2 =$  kompos jerami padi 10 ton/ha 2,25 kg/plot,  $L_3 =$  biochar 10 ton/ha 2,25 kg/plot,  $L_4 =$  pupuk kandang ayam 10 ton/ha 2,25 kg/plot,  $L_5 =$  pupuk kandang sapi 10 ton/ha 2,25 kg/plot. Parameter yang diamati adalah analisis tanah awal dan tanah akhir, tinggi tanaman, jumlah daun, diameter batang, luas daun, umur berbunga, kadar gula %, berat tongkol berklobot, berat tongkol tanpa berklobot, jumlah baris biji per tongkol, panjang tongkol, diameter tongkol, bobot basah brangkasan dan bobot kering brangkasan.

Hasil penelitian menunjukkan bahwa hasil analisis sifat kimia tanah inseptisol sebelum perlakuan yaitu kandungan C-Organik 1,56% (rendah), N-Total 0,16% tergolong (rendah), P-Bray 9,04 ppm tergolong (tinggi), K-dd 0,48 me/100 tergolong (sedang) dan pH 6,36 (agak masam). Setelah aplikasi pupuk organik limbah pertanian hasil analisis menunjukkan bahwa perlakuan terbaik terdapat pada  $L_4$  (kompos kandang ayam 10 ton/ha 2,25 kg/plot) kandungan C-Organik 1,68% (rendah), N-Total 0,20% tergolong (sedang), P-Bray 18,15 ppm tergolong (sangat tinggi), K-dd 3,89 me/100 tergolong (tinggi) dan pH 6,44 (netral). Pemanfaatan limbah pertanian sebagai pupuk organik dari kompos sayuran, jerami padi, biochar, pupuk kandang ayam dan pupuk kandang sapi efektif terhadap pertumbuhan tinggi tanaman, diameter batang, umur berbunga, dan produksi bobot tongkol berklobot dan tanpa klobot, kadar gula % brix, panjang tongkol, bobot basah brangkasan, dan bobot kering brangkasan. Perlakuan terbaik terdapat pada  $L_4$  (kompos kandang ayam 10 ton/ha 2,25 kg/plot) mempengaruhi pertumbuhan dan produksi tanaman jagung manis dan kadar gula mencapai 15,92% Brix.

## **USE OF AGRICULTURAL WASTE TO PRODUCE ORGANIC SWEET CORN (*Zea mays saccharata* Sturt L.) IN INSEPTISOL SOIL**

### **ABSTRACT**

*On this basis, research was carried out on the use of agricultural waste to produce organic sweet corn (*Zea mays saccharata* Sturt L.) in inceptisol soil. This research was carried out at the Experimental Field of the Faculty of Agriculture, Islamic University of North Sumatra, Jln. Karya Wisata, Johor Building, Medan Johor District, Medan Municipality, North Sumatra Province with a height of  $\pm$  25 meters above sea level (asl), with flat topography. This research begins in January 2023 until March 2023. This research is supervised by Mrs. Prof. Dr. Ir. Nurhayati, M.P. as Chair of the Advisory Commission and Mrs. Dr. Yayuk Purwaningrum, S.P., M.P. as Member of the Advisory Commission.*

*This research aims to see the effect of using agricultural waste on improving the chemical properties of inceptisol soil. To see the effect of using agricultural waste on the growth and production of organic sweet corn plants in inceptisol soil. To see the effectiveness of agricultural waste in increasing the growth and production of organic sweet corn plants in inceptisol soil. This research used a non-factorial randomized block design consisting of 6 treatments, namely:  $L_0 = 0$  tons/ha (no treatment/control),  $L_1$  vegetable compost 10 tons/ha 2.25 kg/plot,  $L_2 =$  compost rice straw 10 tonnes/ha 2.25 kg/plot,  $L_3 =$  biochar 10 tonnes/ha 2.25 kg/plot,  $L_4 =$  chicken manure 10 tonnes/ha 2.25 kg/plot,  $L_5 =$  cow manure 10 tonnes /ha 2.25 kg/plot. The parameters observed were initial soil and final soil analysis, plant height, number of leaves, stem diameter, leaf area, flowering age, % sugar content, weight of cobs with husks, weight of cobs without husks, number of rows of seeds per ear, ear length, ear diameter, wet weight of stover and dry weight of stover.*

*The results of the research showed that the results of the analysis of the chemical properties of the inceptisol soil before treatment were C-Organic content 1.56% (low), N-Total 0.16% classified as (low), P-Bray 9.04 ppm classified as (high), K -dd 0.48 me/100 is classified as (medium) and pH 6.36 (slightly acidic). After the application of organic fertilizer from agricultural waste, the analysis results showed that the best treatment was found in  $L_4$  (chicken coop compost 10 tons/ha 2.25 kg/plot) C-Organic content 1.68% (low), N-Total 0.20% classified as (medium), P-Bray 18.15 ppm is classified as (very high), K-dd 3.89 me/100 is classified as (high) and pH 6.44 (neutral). Utilization of agricultural waste as organic fertilizer from vegetable compost, rice straw, biochar, chicken manure and cow manure is effective in the growth of plant height, stem diameter, flowering time, and production of weight of cobs with husks and without husks, sugar content % Brix, length of cobs, wet weight of stover, and dry weight of stover. The best treatment was  $L_4$  (chicken coop compost 10 tons/ha 2.25 kg/plot) which affected the growth and production of sweet corn plants and the sugar content reached 15.92% Brix.*