

**KAJIAN C-ORGANIK DAN MAKRO FAUNA TANAH SAWAH
MINIMUM TILLAGE DI KELURAHAN KURAO PAGANG KOTA
PADANG**

SKRIPSI

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UNIVERSITAS ANDALAS
PADANG
2024**

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ABSTRAK

Pengelolaan lahan secara intensif menyebabkan hilangnya lapisan tanah subur dan penurunan kualitas tanah. *Minimum Tillage* atau pengolahan tanah minimum adalah teknik pertanian yang bertujuan untuk mengurangi gangguan pada struktur tanah dan mempertahankan kualitas lingkungan. Penelitian ini bertujuan untuk mengkaji pengaruh beberapa dosis kombinasi dari bahan organik dan pupuk sintetis pada tanah sawah *minimum tillage* terhadap C-Organik dan makro fauna tanah di Kelurahan Kurao Pagang Kota Padang. Penelitian dilakukan dari Januari sampai Juni 2024. Perlakuan yang diberikan yaitu kombinasi bahan organik dan pupuk sintetis, yang terdiri dari 5 perlakuan (A = Tanpa Input (Kontrol), B = Pupuk sintetis (150 g/petak), C = Jerami Padi (6 kg/petak) + Pupuk Kandang Ayam (3 kg/petak), D = Jerami Padi (6 kg/petak) + Pupuk Sintetis (150 g/petak), E = Jerami Padi (6 kg/petak) + Pupuk Kandang Ayam (1,5 kg/petak) + Pupuk Sintetis (75 g/petak)). Unit perlakuan dialokasikan di lapangan berdasarkan Rancangan Acak Kelompok (RAK). Parameter yang dianalisis adalah BV, pH, C-Organik, N-Total, Rasio C/N, Stok karbon, Populasi, Keragaman makro fauna, Frekuensi keberadaan jenis, dan Nilai kekayaan jenis. Hasil penelitian terbaik ditunjukkan oleh perlakuan C yang menunjukkan bahwa perlakuan *minimum tillage* dengan pengembalian jerami padi dalam bentuk mulsa dan pupuk kandang ayam secara signifikan menurunkan BV tanah senilai 0,73 g/cm³ dan meningkatkan kandungan C-Organik hingga 2,20%. Perlakuan kombinasi dengan penambahan pupuk kandang ayam pada perlakuan E menghasilkan populasi makro fauna, keragaman, frekuensi keberadaan jenis, dan nilai kekayaan jenis tertinggi. Hal ini menunjukkan pentingnya pengelolaan tanah yang berkelanjutan untuk meningkatkan kualitas tanah dan keanekaragaman hayati dalam tanah.

Kata kunci: C-organik, Makro fauna tanah, *Minimum tillage*

STUDY ON ORGANIC-C AND MACRO FAUNA AT MINIMUM TILLAGE RICE FIELD SOIL IN KURAO PAGANG, PADANG CITY

ABSTRACT

Intensive land management leads to loss of fertile soil layers and degradation of soil quality. Minimum tillage is an agricultural technique that aims to reduce disturbance of soil structure and maintain environmental quality. This study was aimed to examine the effect of several combined doses of organic matter and synthetic fertilizers on minimum tillage paddy soil on Organic-C and soil macro fauna in Kurao Pagang Village, Padang City. This research was conducted from January to June 2024. The treatment given was a combination of organic materials and synthetic fertilizer, consisting of 5 treatments (A = No Input (Control), B = Synthetic fertilizer (150 g/plot) + fertilizer (150 g/plot), C = Rice Straw (6 kg/plot) + Chicken Manure (3kg/plot), D = Rice Straw (6 kg/plot) + Synthetic Fertilizer (150 g/plot), E = Rice Straw (6 kg/plot) + Chicken Manure (3 g/plot) + Synthetic Fertilizer (75 g/plot)). The treatment units were allocated in the field site based on Randomized Block Design (RBD). The parameters analyzed were BD, pH, Organik-C, Total-N, C/N Ratio, Carbon stock, Population, Macro fauna diversity, Frequency of species occurrence, and Species richness value. The best research results were shown by treatment C (JP 6kg/plot + PKA 3 kg/plot) which showed that the minimum tillage treatment with the return of rice straw in the form of mulch and chicken manure significantly reduced the soil BD by 0.73 g/cm³ and increased the Organic-C content to 2.20%. In addition, the combination treatment with the addition of chicken manure, namely in treatments E (JP 6kg/plot + PKA 1.5 kg/plot + PS 75 g/plot) produced the highest macro fauna population, diversity, frequency of species presence, and species richness value. This showed the importance of sustainable soil management to improve soil quality and soil biodiversity.

Keywords: Minimum tillage, Organik-C, Soil macro fauna