

**KAJIAN UNSUR HARA NPK PADA TANAH SAWAH
MINIMUM TILLAGE YANG DITAMBAHKAN BAHAN
ORGANIK DAN PUPUK SINTETIS YANG DIREKOMENDASI
DI KELURAHAN KURAO PAGANG KOTA PADANG**

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ABSTRAK

Pengelolaan lahan sawah secara intensif dengan olah tanah konvensional dan penggunaan pupuk sintetis berlebihan dalam jangka panjang berpotensi menurunkan kualitas dan kesuburan tanah, khususnya kandungan bahan organik serta keseimbangan unsur hara. Penelitian ini bertujuan untuk mengkaji status unsur hara nitrogen (N), fosfor (P), dan kalium (K) pada tanah sawah dengan sistem olah tanah minimum (*minimum tillage*) yang dikombinasikan dengan pengembalian jerami padi, pupuk kandang ayam, dan pupuk sintetis di Kelurahan Kurao Pagang, Kota Padang. Penelitian dilaksanakan pada Juni–Oktober 2024 menggunakan Rancangan Acak Kelompok (RAK) dengan lima perlakuan dan tiga ulangan. Parameter yang diamati meliputi berat volume tanah, pH tanah, C-organik, N-total, P-tersedia, dan K-dapat ditukar (K-dd). Hasil penelitian menunjukkan bahwa penerapan olah tanah minimum dengan pengembalian jerami dan pupuk kandang ayam mampu menurunkan berat volume tanah serta meningkatkan kandungan C-organik hingga 2,20%. Kombinasi jerami padi dan pupuk sintetis memberikan nilai N-total dan K-dd tertinggi masing-masing sebesar 0,30% dan 0,19 cmol/kg. Sementara itu, kombinasi jerami padi, pupuk kandang ayam, dan pupuk sintetis menghasilkan ketersediaan P tertinggi sebesar 57,55 ppm. Secara umum, sistem olah tanah minimum yang dikombinasikan dengan bahan organik dan pupuk sintetis terbukti mampu memperbaiki sifat fisik dan kimia tanah sawah serta meningkatkan ketersediaan unsur hara NPK.

Kata kunci: jerami padi, NPK, olah tanah minimum, pupuk kandang ayam, pupuk sintetis, tanah sawah.

STUDY OF NPK NUTRIENT ELEMENTS IN MINIMUM TILLAGE PADDY SOILS WITH THE ADDITION OF ORGANIC MATTER AND RECOMMENDED SYNTHETIC FERTILIZERS IN KURAO PAGANG SUBDISTRICT, PADANG CITY.

ABSTRACT

Intensive rice field management with conventional tillage and excessive use of synthetic fertilizers over long periods can lead to soil degradation, particularly through the decline of organic matter content and nutrient imbalance. This study was aimed to evaluate the status of nitrogen (N), phosphorus (P), and potassium (K) in paddy soils under a *minimum tillage* system combined with rice straw return, chicken manure, and synthetic fertilizers in Kurao Pagang Village, Padang City. The research was conducted from June to October 2024 using a Randomized Block Design (RBD) consisting of five treatments and three replications. Observed soil parameters included bulk density, soil pH, organic carbon, total nitrogen, available phosphorus, and exchangeable potassium. The results showed that minimum tillage combined with rice straw mulching and chicken manure significantly reduced soil bulk density and increased soil organic carbon up to 2.20%. The combination of rice straw and synthetic fertilizer resulted in the highest total nitrogen and exchangeable potassium values, reaching 0.30% and 0.19 cmol/kg, respectively. Meanwhile, the combined application of rice straw, chicken manure, and synthetic fertilizer produced the highest available phosphorus content at 57.55 ppm. Overall, the application of minimum tillage integrated with organic materials and synthetic fertilizers effectively improved the physical and chemical properties of paddy soils and enhanced NPK nutrient availability.

Keywords: *chicken manure, minimum tillage, NPK, paddy soil, rice straw, synthetic fertilizer.*