

**KAJIAN UNSUR HARA MAKRO PADA LAHAN SAWAH
BEKAS BANJIR LAHAR DINGIN DI NAGARI PASIE LAWEH
KECAMATAN SUNGAI TARAB KABUPATEN TANAH DATAR**

SKRIPSI

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ABSTRAK

Banjir lahar dingin Gunung Marapi yang terjadi pada tahun 2024 menyebabkan kerusakan lahan sawah di Nagari Pasir Laweh, Kecamatan Sungai Tarab, Kabupaten Tanah Datar akibat tertimbun material vulkanik. Endapan material tersebut mengubah sifat kimia tanah sehingga memengaruhi ketersediaan unsur hara dan tingkat kesuburan tanah. Penelitian ini bertujuan untuk mengkaji kandungan unsur hara makro dan status kesuburan tanah pada lahan sawah bekas banjir lahar dingin. Penelitian menggunakan metode survei dengan teknik *purposive random sampling*. Sampel tanah terganggu diambil pada kedalaman 0–20 cm dari lima lokasi, yang terdiri atas satu lokasi tidak terdampak dan empat lokasi terdampak banjir lahar dingin. Analisis laboratorium meliputi pH, C-organik, N-total, P-tersedia, kapasitas tukar kation (KTK), kation dapat dipertukarkan (Ca, Mg, dan K), serta sulfur tersedia (S). Hasil penelitian menunjukkan bahwa lahan yang terdampak banjir lahar dingin memiliki pH tanah masam (5,31–5,48), kandungan C-organik sangat rendah (1,19–1,57%), N-total rendah hingga sedang (0,15–0,29%), P-tersedia sangat rendah (3,34–3,89 ppm), serta KTK rendah hingga sedang (14,21–22,15 me/100 g). Kandungan Ca-dd mengalami penurunan dibandingkan lahan yang tidak terdampak, sedangkan kandungan K-dd dan S-tersedia relatif lebih tinggi akibat pengaruh material vulkanik. Secara umum, endapan banjir lahar dingin menurunkan kesuburan tanah melalui penurunan bahan organik dan beberapa unsur hara esensial. Oleh karena itu, diperlukan upaya rehabilitasi lahan berupa penambahan bahan organik, pengapuran, dan pemupukan berimbang agar produktivitas lahan dapat dipulihkan.

Kata kunci: Banjir lahar dingin, unsur hara makro, kesuburan tanah, lahan sawah, Gunung Marapi.

STUDY OF MACRO NUTRIENTS IN RICE FIELDS AFTER COLD LAVA FLOODS IN PASIE LAWEH NAGARI, SUNGAI TARAB DISTRICT, TANAH DATAR REGENCY

ABSTRACT

The 2024 cold lahar flood of Mount Marapi caused severe damage to paddy fields in Pasir Laweh Village, Sungai Tarab District, Tanah Datar Regency, by depositing volcanic materials on agricultural land. These deposits altered the chemical properties of the soil, affecting nutrient availability and soil fertility. This study aimed to assess the macro nutrient content and soil fertility status of paddy fields affected by the cold lahar flood. The research employed a survey method using *purposive random sampling*. Disturbed soil samples were collected from a depth of 0–20 cm at five observation sites, consisting of one unaffected site and four affected sites. Soil chemical analyses included pH, organic carbon, total nitrogen, available phosphorus, cation exchange capacity (CEC), exchangeable cations (Ca, Mg, and K), and available sulfur. The results showed that soils affected by the cold lahar flood were acidic (pH 5.31–5.48), had very low organic carbon (1.19–1.57%), low to moderate total nitrogen (0.15–0.29%), very low available phosphorus (3.34–3.89 ppm), and low to moderate cation exchange capacity (14.21–22.15 cmol(+)/kg). Exchangeable calcium decreased compared to the unaffected site, whereas exchangeable potassium and available sulfur were relatively higher due to the contribution of volcanic materials. Overall, the cold lahar deposits reduced soil fertility by decreasing organic matter and several essential nutrients, although they increased potassium and sulfur contents. Therefore, soil rehabilitation through the application of organic amendments, liming, and balanced fertilization is recommended to restore soil productivity.

Keywords: Cold lahar flood, macro nutrients, soil fertility, paddy field, Mount Marapi.