# KAJIAN SIFAT FISIKA TANAH SAWAH PADA DATARAN ALUVIAL PASCA BANJIR BANDANG DI NAGARI DUKU UTARA KECAMATAN KOTO XI TARUSAN

**SKRIPSI**


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## ABSTRAK

Kajian mengenai perubahan karakteristik sifat fisika tanah sawah pada dataran aluvial pasca banjir bandang telah dilaksanakan di Nagari Duku Utara Kecamatan Koto XI Tarusan dari bulan Desember 2024 hingga Maret 2025. Penelitian dilakukan dengan metode survei, dan pengambilan sampel tanah dilakukan dengan metode *systematic random sampling (* 7 titik pada tanah sawah terdampak dan 2 titik pada sawah tidak terdampak banjir bandang ) masing-masing diambil pada 2 kedalaman yaitu 0-20 cm dan 20-40 cm. Analisis sifat fisika tanah telah dilakukan di Laboratorium Departemen Ilmu Tanah dan Sumber Daya Lahan, Fakultas Pertanian, meliputi pengamatan; BV, TRP, permeabilitas, tekstur, bahan organik, dan plastisitas tanah. Hasil penelitian menunjukkan banjir bandang mengakibatkan perubahan pada sifat fisika tanah. Tanah terdampak pada lokasi tegak lurus sungai (TS) dan sepanjang aliran sungai (SS) memiliki tekstur tanah lebih kasar, bahan organik tanah (2,20%–4,39%) memiliki kriteria rendah, berat volume tanah (1,10–1,31 g/cm³) berkriteria tinggi, total ruang pori tanah (58,17%-50,54%) berkriteria rendah, permeabilitas tanah (0,48–5,26 cm/jam) dan indeks plastisitas tanah (4,61-16,83) tergolong rendah-sedang. Kerusakan terparah terjadi di sepanjang aliran sungai (SS) karena posisinya berada langsung pada jalur utama aliran banjir. Pada lokasi yang tidak terdampak banjir bandang (TBB), sifat fisika tanah cenderung lebih baik dengan tekstur tanah lebih halus (lempung hingga lempung berliat), kandungan bahan organik (4,32%–4,62%) memiliki kriteria sedang, berat volume tanah (1,01–1,09 g/cm³) dan total ruang pori tanah (60,18%–61,69%) berkriteria sedang, permeabilitas tanah (5,68–6,31 cm/jam) tergolong sedang, serta indeks plastisitas (16,35-26,78) memiliki kriteria sedang-tinggi. Hal ini menunjukkan bahwa banjir bandang memberikan dampak negatif terhadap perubahan karakteristik sifat fisika tanah sawah.

Kata Kunci: banjir bandang, dataran aluvial, sawah, sifat fisika tanah

# STUDY ON SOIL PHYSICAL PROPERTIES OF PADDY SOIL AT ALLUVIAL PLAIN PASCA FLASH FLOOD IN NAGARI DUKU UTARA, KOTO XI TARUSAN DISTRICT

## ABSTRACT

A study on the changes of physical characteristics of paddy soil on alluvial plains after flash floods was conducted in Nagari Duku Utara, Koto XI Tarusan District, from December 2024 to March 2025. The research was conducted using a survey method, and soil sampling was carried out using a systematic random sampling method (7 points in the affected and 2 points in the unaffected paddy field by flash floods), each point was taken at 2 depths (0-20 cm and 20-40 cm). Several soil analyses conducted were bulk density, total soil pore, permeability, texture, organic matter, and plasticity. The research results showed that flash floods caused changes in the physical properties of the soil. The affected rice field perpendicular to the river (TS) and along the river flow (SS) had coarser soil texture, lower soil organic matter (2.20%-4.39%) content, hinger soil bulk density (1.10-1.31 g/cm³), lower total soil pore (58.17%-50.54%), low-medium soil permeability (0.48-5.26 cm/h) and soil plasticity index (4.61-16.83). The worst damage occurred along the river channel (SS). In locations which were not affected by flash floods (TBB), the physical properties of the soil tended to be better with finer soil texture (clay to clayey loam), medium organic matter content (4.32%–4.62%), bulk density (1.01–1.09 g/cm³), total soil pore (60.18%–61.69%), permeability (5.68–6.31 cm/h), and medium-high the plasticity index (16.35–26.78). This indicated that flash floods have a negative impact on changes in the characteristics of the physical properties of rice field soil.

Keywords: alluvial plain, flash floods, paddy field, soil physical properties