

**KARAKTERISASI MIKROPLASTIK SERTA
PENGARUHNYA TERHADAP SIFAT FISIKA INCEPTISOL
PADA KAWASAN HORTIKULTURA DI BERBAGAI
KEMIRINGAN LAHAN**

SKRIPSI

OLEH :

**SHERLY RAHMAWATI FITRIES
NIM. 2210232026**

Pembimbing:

- 1. Prof. Dr. Ir. Herviyanti, MS**
- 2. Prof. Ir. Adrinal, MS, PhD**



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**Sebagai salah satu syarat untuk memperoleh gelar
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ABSTRAK

Penggunaan bahan plastik dalam kegiatan pertanian hortikultura dan keberadaan mikroplastik berukuran <5 mm di tanah menjadi isu lingkungan yang perlu mendapat perhatian. Penelitian ini bertujuan untuk mengkaji karakterisasi mikroplastik serta pengaruhnya terhadap sifat fisika Inceptisol pada kawasan hortikultura di Kecamatan Canduang, Kabupaten Agam, Sumatera Barat di berbagai kemiringan lahan. Penelitian dilaksanakan dari Juni hingga Desember 2025 menggunakan metode survei dengan teknik pengambilan sampel yaitu *purposive sampling* pada lima kelas kemiringan lahan (0–8%, 8–15%, 15–25%, 25–45%, dan $>45\%$) serta lahan hutan sebagai kontrol dengan 3 ulangan. Sampel tanah diambil pada kedalaman 0–20 cm. Analisis pada tanah meliputi distribusi ukuran partikel, berat volume, total ruang pori, permeabilitas, C-Total, C-organik dan analisis mikroplastik. Hasil penelitian menunjukkan bahwa tekstur tanah didominasi kelas lempung hingga lempung berliat dan lempung berdebu. Nilai C-total berkisar antara 12,10%-15,54% dan C-organik 2,84%-4,51%. Nilai BV tanah berkisar antara 0,67-0,94 g/cm³ dan TRP berkisar 64,71%-74,54%. Nilai Permeabilitas berkisar antara 7,82 cm/jam-18,40 cm/jam. Jumlah mikroplastik tertinggi ditemukan pada ladang dengan kemiringan 25–45% sebesar 993 partikel kg⁻¹. Mikroplastik didominasi oleh bentuk fragmen sebanyak 2.551 partikel kg⁻¹ dengan warna dominan hitam sebanyak 3.313 partikel kg⁻¹. Berdasarkan ukuran, *small microplastic* (<1 mm) mendominasi sebesar 3.450 partikel kg⁻¹ dibandingkan *large microplastic* (1–5 mm). Jenis polimer yang teridentifikasi yaitu *polyvinyl chloride* (PVC) pada lahan ladang di berbagai kelas kemiringan, serta *polystyrene* (PS) pada lahan hutan.

Kata kunci: mikroplastik, Inceptisol, hortikultura, kemiringan lahan, sifat fisika tanah

CHARACTERIZATION OF MICROPLASTICS AND THEIR EFFECTS ON THE PHYSICAL PROPERTIES OF INCEPTISOLS IN HORTICULTURAL AREAS AT VARIOUS SLOPE CLASSES

ABSTRACT

Plastic use in horticultural agricultural activities and the presence of microplastics measuring <5 mm in soil have become environmental issues that need attention. This study aimed to examine the characterization of microplastics and their influence on the physical properties of Inceptisols in the horticultural production center area in Canduang District, Agam Regency, West Sumatera on different slope. The research was conducted from June to December 2025 using a survey method with a sampling technique of purposive sampling across five slope classes (0–8%, 8–15%, 15–25%, 25–45%, and >45%) and forest land as a control with three replications. Soil samples were taken at a depth of 0–20 cm. Soil analyses included particle size distribution, bulk density, total pore space, permeability, total carbon, organic carbon, and microplastic analysis. The results showed that the soil texture was dominated by clay to clay loam and silty clay loam classes. The total carbon value ranged from 12.10%–15.54% and organic carbon ranged from 2.84%–4.51%. Soil bulk density values ranged from 0.67–0.94 g cm⁻³ and total pore space ranged from 64.71%–74.54%. Permeability values ranged from 7.82 cm hour⁻¹–18.40 cm hour⁻¹. The highest number of microplastics was found in cultivated land with a slope of 25–45%, reaching 993 particles kg⁻¹. Microplastics were dominated by fragment shapes with 2,551 particles kg⁻¹, while black was the dominant color with 3,313 particles kg⁻¹. Based on size, small microplastics (<1 mm) dominated with 3,450 particles kg⁻¹ compared to large microplastics measuring 1–5 mm. The types of microplastic polymers identified were polyvinyl chloride (PVC) in cultivated land across slope classes of 0–8% to >45%, while the type of microplastic polymer found in forest land was polystyrene (PS).

Keywords: microplastics, Inceptisol, horticulture, slope classes, soil physical properties.