

ANALISIS SIFAT FISIK DAN INFILTRASI TANAH PADA DEMPLOT LAHAN PERTANIAN DAN AGROFORESTRY DI SUB DAS MERAWU INTISARI

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Tujuan penelitian ini adalah untuk mengetahui sifat fisik dan infiltrasi tanah dan keterkaitannya dengan manajemen lahan (*agroforestry* dan pertanian). Penelitian ini dilakukan di demplot lahan pertanian dan *agroforestry* yang terletak di sub DAS Merawu tepatnya Dusun Tamansari Kecamatan Karangobar Kabupaten Banjarnegara. Pada Masing-masing demplot lahan diambil 6 titik untuk pengambilan sampel tanah berdasarkan kelerengannya yaitu atas, tengah, dan bawah. Pengambilan sampel tanah tak terusik menggunakan *soil ring sampel* untuk analisis berat volume. Selain itu, dilakukan pengambilan sampel tanah terusik untuk analisis berat jenis, tekstur, dan struktur. Analisis kandungan PO_4^- dengan *Quantofix Phosphate*, NO_3^- dengan *Nitrate test*, konduktivitas listrik tanah dengan EC Meter, dan pH dengan pH meter. Pengukuran infiltrasi menggunakan *double ring infiltrometer*, kemudian dilakukan analisis menggunakan rumus Horton untuk mengetahui nilai kapasitas infiltrasi. Berdasarkan hasil penelitian, demplot *Agroforestry* mempunyai tekstur *sandy loam*, struktur granuler, berat volume $0,60 \text{ gr/cm}^3$, berat jenis $1,92 \text{ gr/cm}^3$, porositas 68,59 %, laju infiltrasi 244,91 mm/jam dan kapasitas infiltrasi 254,18 mm/jam. Demplot lahan pertanian mempunyai tekstur *sandy loam*, struktur granuler, berat volume $0,48 \text{ gr/cm}^3$, berat jenis $1,74 \text{ gr/cm}^3$, porositas 72,37 %, laju infiltrasi 328,09 mm/jam dan kapasitas infiltrasi 340,07 mm/jam. Berdasarkan uji-T bahwa hanya berat volume tanah yang berbeda nyata dan sifat lainnya tidak berbeda nyata.

Kata Kunci : Demplot, Pertanian, *Agroforestry*, Sifat Fisik Tanah, Infiltrasi, Sub DAS Merawu.

ANALYSIS OF SOIL PHYSIC AND INFILTRATION ON AGRICULTURAL DEMPLOTS AND AGROFORESTRY DEMPLOTS IN SUB REGION OF MERAWU WATERSHED

ABSTRACT

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The purpose of this research is to know the physical properties and infiltration of soils and its relation with land management (agroforestry and agriculture). This research was conducted in demonstration plots of agricultural and agroforestry fields located in the Merawu sub-watershed, precisely at Tamansari Hamlet, Karangobar Subdistrict, Banjarnegara District. At each land demonstration plot, 6 points were taken for soil sampling based on the slope of the upper, middle and lower slopes. Undisturbed soil sampling was taken with sample soil ring for bulk density analysis.. In addition, Disturbed soil samples was taken for analysis of particle density, soil texture, and soil structure. Analysis of PO_4 content with Quantofix Phosphate, NO_3^- with Nitrate test, soil electrical conductivity with EC Meter, and pH with pH meter. Infiltration measurements using double ring infiltrometer, then analyzed using Horton's formula to determine the value of infiltration capacity. Based on the results of the study, the Agroforestry demonstration plot had sandy loam texture, granular structure, bulk density 0,60 gr/cm³, particle density 1,92 gr/cm³, porosity 68,59%, infiltration rate 244,91 mm/hour and infiltration capacity 254,18 mm/hour. Agricultural land demonstration plot has sandy loam texture, granular structure, bulk density 0,48 gr/cm³, particle density 1,74 gr/cm³, porosity 72,37%, infiltration rate 328,09 mm/hour and infiltration capacity 340,07 mm/hour. Based on the T-test that only the bulk density is significantly different and the other properties are not significantly different.

Keywords: *Demonstration plot, Agriculture, Agroforestry, Soil physical properties, Infiltration, Merawu sub-watershed*