

**The Infiltration Rate in Various Land Uses and Slope in Trimulyo Village Jetis  
Subdistrict Bantul Regency**

**By : Adelia Salsabila**

**Supervised by : Dyah Arbiwati**

**ABSTRACT**

Infiltration is an important parameter in the hydrological cycle that influences the percolation of water into the soil. Variations in land use and slope can result in differences in infiltration rates. This study aims to determine the soil infiltration rate across various land uses and slope, as well as the factors influencing it. The measurements were taken using a double-ring infiltrometer and calculated using the Horton method. Sampling points were determined through purposive sampling based on overlay maps of land use and slope gradient, resulting in 11 land systems and 17 sampling points. Parameters analyzed included soil texture, specific gravity, bulk density, porosity, permeability, and organic matter content. Data were analyzed using correlation tests. The results showed that the infiltration rate for dryland with a 0-8% slope is 19.42 cm/hour (fast), 15–25% slope ranges from 12.89 cm/hour to 13.36 cm/hour (fast), and >45% slope is 6.22 cm/hour (moderate). Residential areas with a 0–8% slope have infiltration rates ranging from 12.81 cm/hour to 14.75 cm/hour (fast). In rice fields with a 0–8% slope have infiltration rates between 1.84 cm/hour (slightly slow) and 4.9 cm/hour (moderate), while those with an 8–15% slope have an infiltration rate of 5.97 cm/hour (moderate). Plantation with a 0–8% slope have an infiltration rate of 13.65 cm/hour (fast), 15–25% slope is 7.23 cm/hour (moderately fast), and >45% slope ranges from 3.52 cm/hour to 5.11 cm/hour (moderate). Shrubland with a 0–8% slope has an infiltration rate of 15.83 cm/hour (fast). Correlation tests indicated that infiltration rate was influenced by porosity and permeability (moderate correlation). Efforts to increase infiltration rates include in dryland with >45% slope, planting ground cover plants, in rice fields with a 0-8% slope, reducing soil compaction caused by heavy machinery and adding organic matter to improve soil structure; in rice fields with an 8-15% slope, practicing crop rotation with non-rice crops and adding organic matter; and in plantations with slopes of 15-25%, 25-45%, and >45%, making terrace to enhance infiltration, as well as adding organic matter to maintain moisture and improve soil structure.

**Keywords:** *Horton, slope, infiltration rate, land use*