

ANALYSIS OF INFILTRATION RATE ON DIFFERENT LAND USES IN MANGUNAN VILLAGE, DLINGO SUB-DISTRICT, BANTUL REGENCY

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ABSTRACT

Infiltration can significantly affect the hydrological cycle within a region. This process is also essential for vegetation. Infiltration occurs across various land uses, which can influence the physical properties of the soil that correlate with the rate of infiltration. The objective of this study is to determine and establish the rate of infiltration across different land uses and to analyze the differences in infiltration rates in Kalurahan Mangunan, Dlingo District, Bantul Regency. This research was conducted using a descriptive research method and laboratory analysis. Field analysis utilized a double ring infiltrometer, with sample points determined using purposive sampling, followed by the determination of infiltration rates using the Horton method. Laboratory analyses included soil texture, bulk density, porosity, organic matter, and permeability. The study locations encompassed various land uses, including forest, plantations, shrubs, rice fields, dry fields, and residential areas. The results indicated that different land uses exhibited varying infiltration rates due to several factors such as slope gradient, soil physical properties, land use, and soil management intensity. The findings revealed that shrub land had the highest infiltration rate (9.72 cm/hour), followed by plantation land (7.16 cm/hour), dry fields (6.42 cm/hour), forest land (5.5 cm/hour), residential land (3.54 cm/hour), and paddy fields (1.5 cm/hour). The rapid infiltration rate in shrub land is attributed to its high organic matter content and minimal land management intensity. The study concluded that higher values of organic matter, porosity, and soil permeability correspond to faster infiltration rates in a given land area.

Keywords: Double Ring Infiltrimeter, Infiltration, Horton Method, Land Use