INFILTRATION CAPACITY IN GREEN-OPENED AREA IN YOGYAKARTA REGENCY (CASE STUDY AT KRKB GEMBIRA LOKA)

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ABSTRACT

The function of green-opened area in city, in infiltrating process of water into soil, supposedly causes differences of infiltration capacity for each area which involves varieties of close vegetations. Green-opened area constitutes a preserved district for water and soil arrangement. They function as a sustaining district for Yogyakarta city. This research is purposed to know the variety of trees which grow in arboretum zone and play zone, to know infiltration capacity in arboretum zone and play zone, to know correlation between bulk density soil, soil volume gravity, and soil porosity toward infiltration capacity in arboretum zone and play zone.

This research took place in arboretum zone and play zone in KRKB Gembira Loka Yogyakarta. The tool of measurement for infiltration capacity is *double ring infiltrometer*. Measuring research was performed for 60 research plots which are divided into 30 plot for arboterum zone and 30 plot for play zone, then analyzed by double-regression analysis.

The result indicates that varieties of arrangement trees in arboretum zone involves Melina (*Gmelina arborea*) 55,4 %, Mahoni (*Swietenia mahagoni*) 45,64%, Flamboyan (*Delonix regia*) 39,35 %, Johar (*Cassia siamea*) 20,61 %, and Pinus (*Pinus merkussi*) 19,73 %. In play zone, the dominance is Adiluwih (*Fillicum decipiens*) 47,46 %, Pinus (*Pinus mercussi*) 36,97%, Ketapang (*Terminalia cattappa*) 28,21 %, Flamboyan (*Delonix regia*) 20,64 %, Dadap (*Erythrina variegata*) 16,49 % and Beringin (*Ficus benjamina*) 15,64%. Bulk density Soil, soil volume gravity, and soil porosity significantly affected infiltration capacity. The rate of average infiltration capacity in arboretum is 28,12 mm/hour, while in play zone is 19,03 mm/hour. Regression similarity between bulk density soil (X_1), soil volume gravity (X_2), soil porosity (X_3), and infiltration capacity in arboretum zone and play zone (Y) is $\mathbf{Y = 20{,}638X_1 - 10{,}050\ X_2 + 0{,}702\ X_3}$. This regression similarity has determinant coefficient (R^2) of 0,734 or 74,3 %. Variable of X_1, X_2, and X_3 which were used simultaneously in model indicate varieties for infiltration capacity value (Y) wholly, while the rest of 26,6 % is as random variable. All regression similarities above cannot be used directly for accounting with the same type of zone in other places because infiltration capacity is also influenced by other variables alongside bulk density soil, soil volume gravity, and soil porosity.

Key words: infiltration capacity, bulk density soil, soil volume gravity, soil porosity.

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