

**STUDY OF SOME CHEMICAL AND PHYSICAL PROPERTIES OF THREE  
PEDONS IN WONOSARI FORMATION, TRANSITION SITE AND  
NGLANGGRAN FORMATION IN KAPANEWON PURWOSARI AND  
PUNDONG, YOGYAKARTA**

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**ABSTRACT**

The process of soil formation is influenced by parent material, climate, topography, organisms, and time. The research site is located in Wonosari and Nglanggran Formations. The purpose of this study was to determine the chemical and physical properties of three pedons in the Wonosari Formation, transition location, and Nglanggran Formation as well as the similarity of soil properties in the top two layers of the three pedons. The research method used was survey method and laboratory analysis. Purposive soil sampling was conducted based on the land system obtained from the overlay of Geological Map, Land Cover Map and Slope Map. The parameters analyzed were chemical properties, including pH H<sub>2</sub>O, pH KCl, soil KPK, base saturation, P<sub>2</sub>O<sub>5</sub>, K<sub>2</sub>O, C-Organic, P-Available, N-Total, and physical properties, including texture, BV, BJ, soil porosity. The results of the chemical properties research obtained varying values in the top two layers in the three pedons. In the H<sub>2</sub>O pH parameter in the neutral to slightly alkaline category. KPK values vary with very low to low criteria. Base Saturation is in the low to high category. P<sub>2</sub>O<sub>5</sub> has very low to high criteria. K<sub>2</sub>O has very low to high criteria. C-organic has the same criteria in two layers in all three soil profiles which is very low. P-availability is very low to low. N-total has medium to high criteria. From these chemical properties, the highest level of fertility is found in the pedon in the Wonosari Formation and the lowest in the transition pedon. The physical properties of the top two layers in the Wonosari Formation pedon have silty clay texture, BV value 1.37-1.49 g/cm<sup>3</sup>, BJ 2.63-2.80 g/cm<sup>3</sup>, porosity is classified as poor. Transitional pedon has clay texture, BV 1.30-1.53 g/cm<sup>3</sup>, BJ 2.60-2.71 g/cm<sup>3</sup>, porosity has poor criteria. Nglanggran Formation pedon has clay texture, BV 1.36-1.47 g/cm<sup>3</sup>, BJ 2.62-2.74 g/cm<sup>3</sup>, and porosity is classified as poor. The similarity index of the three soil profiles is dominated by the values <50 and 50-70 with the marks of not similar and doubtful similarity.

*Keywords: soil physics, similarity index, soil chemistry, wonosari formation transition and nglanggran*