



Soil Textural Contrast as a Geofactor in Soil Formation, Bogowonto Watershed, Indonesia

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Geological aspect is considered crucial among the other factors in soil formation. Weathered rock as a geofactor will contribute much in forming the soil. Weathered rock is able to affect the basic characteristics of soil. One of the basic soil characteristics that would be intensively discussed here is soil texture. The presence of textural contrast in a soil profile implicates that there is a weathering activity. Therefore, the aim of this paper is to analyze the function of different rocks (lithology) related to soil textural contrast as a geofactor in soil formation.

Jebol sub-catchment is one of water dividing in Bogowonto watershed. It is strongly influenced by 6 geological formations. They are old-andesitic formation, andesitic intrusion, halang formation, old Sumbing volcano formation, young Sumbing volcano formation, and alluvium. Different geological formation results different weathered rock. The focus in this research was on old-Sumbing volcano formation (Qsmo). Volcanic activities produced pyroclastic deposit. Multi-layer of old volcano materials provided specific parent material for soils.

The methods applied in this research are fieldwork and laboratory analysis. All of the analysis was based on the common traditional concept of vertical texture contrast (VTC) in pedology. Direct assessment of soil texture was conducted during the field. Laboratory analysis, then, was considered to verify the field results. Five soil samples were taken for investigating. Each soil sample was expected as a representative of each rock. They were developed from volcanic air fall deposition (ash & lapilli), laharic sediment, and andesitic intrusion. The results showed that: (1) the soil profile was strongly provided by typical parent material from weathered rock. In multiple layers of parent material, the most-upper deposition would become parent material for soil; (2) volcanic air fall deposition was dominated by silty soil; (3) laharic sediment formed sandy soil; (4) intrusion rock resulted loamy and clay soil; (5) the soil texture variability in a profile is mostly emphasized by operating downwards of water percolation. The relative texture contrast in various horizons of the profile increased with clay illuviation process.