

ABSTRACT

The process of soil pedogenesis become an importance measurement of soil fertility levels that can be assessed through the soil body. The dynamics of differences in soil fertility occur due to the influence of various factors of soil genesis and intensive land management, then changes in soil characteristics which ultimately affect soil fertility. The information soil fertility status of coffee cultivation in Gayo highland is still limited. The objective of the study to determined soil fertility status by pedogenic approach (different horizons, elevations, and slope positions) on coffee cultivation land in the Gayo highlands. This research used a survey descriptive method and parameters are the cation exchange capacity (CEC), base saturation (BS), organic-C, P₂O₅, and K₂O were analyzed in laboratory. Twenty four soil samples were collected from each soil horizons at three slope positions consist are peak slope, middle slope, and foot slope by four elevations consist are 700-715, 1000-1090, 1300-1351, and 1600-1616 meters above sea level. The results showed that CEC value ranged from 8.45-31.49 me/100 g (low-high) at elevation 1300-1351 and 1000-1090 m.a.s.l, the base saturation (BS) value ranged from 4.89-26.91% (vey low-low) at elevation 1600-1616 and 1000-1090 m.a.s.l, P₂O₅ value ranged from 81.49-0.91 mg/100g (very high-very low) at elevation 1600-1616 and 1000-1090 m.a.s.l , K₂O value ranged from 34.50-10.50 mg/100g (medium to low) at elevation 700-715 and 1000-1090 m.a.s.l, and the organic-c value ranged from 2.78-0.33% (medium to low) at elevation 1600-1616 and 700-715 m.a.s.l. The value of the CEC, organic-C, P₂O₅ were higher at the foot slope position than middle slope and peak slope. The soil fertility status of the cultivated coffee land in the Gayo highlands, both in terms of soil horizons, elevations and slope position is generally classified as low.

Keywords : elevation, highland, slope, soil horizon, soil properties