

**Soil physico-chemical properties in a selectively logged forest at Gunung Rara  
Forest Reserve, Sabah, Malaysia**

**ABSTRACT**

The tropical rainforest has various lists of crucial functions in forest productivity. However, unsustainable logging method has led to the decline of soil fertility in the forest. This study aimed to investigate the impacts of different logging methods on the soil's physical and chemical properties at Gunung Rara Forest Reserve, Sabah, Malaysia. The logging treatments were supervised logging with climber cutting (SLCC) and conventional logging (CL), and a virgin forest (VF) was used as the control plot. The size for each plot was one hectare and each was replicated into four plots making the total plots 12. Soil sampling was done at four depths (0–10 cm, 10–20 cm, 20–50 cm, and 50–100 cm) for soil analysis and bulk density. The finding shows that the soil properties in the treatment plots were not significantly different from the untreated plot. The soil organic matter, total nitrogen, and total carbon decreased with soil depths. The soil in all study areas was found acidic, ranging from 4.12 to 4.46. The soil textures were clay, sandy clay loam, and sandy loam. The SLCC plot recorded a higher mean of soil organic matter (5.93–7.40%), total phosphorus (0.08–0.09 meq/100 g), and cation exchange capacity (5.69–7.05 meq/100 g) compared to other plots. This study highlights the importance of analysing the impact of different logging methods on the soil's physicochemical properties.