

ABSTRACT

Carbon dioxide (CO₂) is one of the greenhouse gases that contributes to global warming, thus efforts are needed to reduce CO₂ levels in the atmosphere through vegetation absorption. Biomass in a land use system is also influenced by the type of vegetation. Differences in slope position and environmental conditions can determine the rate of litter decomposition. Increased aerobic decomposition activity can lead to increased emissions of carbon dioxide into the atmosphere. This research was conducted in the coffee cultivation areas of the highlands of Gayo in Bener Meriah Regency, at the Soil Science Laboratories of Malikussaleh University and Bengkulu University's Faculty of Agriculture. The study was conducted from September to November 2023. The research uses a survey method which consists of four stages: preparation, preliminary survey, main survey, data analysis, and presentation of results. The results of the study showed that the highest biomass is found in 11 year old coffee plants at the top of the slope with an elevation of 1600-1616 m above sea level (m asl). The highest litter decomposition rate in coffee cultivation areas is observed in 11 year old coffee plants. The highest nitrate (NO₃) content is found at an elevation of 1600-1616 m. a.s.l at the summit of the slope. And the highest carbon emission (CO₂) value is found at an elevation of 1600-1616 m.a.s.l at the foot of the slope.

Keywords: Elevation, slope position, nitrate, carbon dioxide