

Influence of edaphic conditions on aboveground biomass in areas post-mining in the Colombian pacific

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May 30, 2022

Abstract

Mining is one of the main drivers of deforestation of tropical forests. This activity affects the storage of aboveground biomass of these ecosystems; and, therefore, its ability to contribute to the mitigation of global climate change. The influence of soils on the aboveground biomass of areas post-mining in the Colombian Pacific was evaluated. For this, plots were established in areas post-mining and with different successional ages (12-15 years, 30-35 years and mature forest). The aboveground biomass and physicochemical parameters of the soil were measured. A aboveground biomass of 15.58 t ha⁻¹, 35.17 t ha⁻¹, and 178.32 t ha⁻¹ was recorded at 12-15 years, 30-35 years and mature forest, respectively. The aboveground biomass was positively correlated with organic matter (OM), calcium (Ca), magnesium (Mg), CICE, total nitrogen (N) and silt; whereas, with sand, aluminum (Al) and potassium (K) content the relationship was negative. It was evidenced that the relationship between aboveground biomass and soils was different in each successional age. When evaluating the changes of aboveground biomass and soils in the successional, it was observed that the aboveground biomass and total N increased with the recovery time; while the P and K decreased with succession. On the other hand, the contents of OM, Mg, Al, Ca and CICE, showed curvilinear tendencies, since they increased in the first stages, and then in the advanced successional stages they decreased. In summary, the results showed that the aboveground biomass of areas post-mining was limited by multiple soil nutrients.

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