

ABSTRACT

Soil carbon stock serves as the largest carbon source in the terrestrial biosphere, is very important in improving soil structure, soil fertility, agricultural productivity, maintaining the sustainability of agroecosystems and the long-term global carbon cycle. The more carbon that is stored as soil organic carbon, the less carbon is released into the atmosphere, thereby reducing global warming and climate change. Central Aceh Regency has various types of soil, namely Aluvial, Grumusol, Andosol, Mediteran, Podsolic, Brown Podsolic, Red Yellow Podsolic which are estimated to have different soil carbon storage in these types of soil. The purpose of study was to determine the amount of soil carbon stock in various types of highland soil in Central Aceh Regency. This research was conducted in the highlands of Central Aceh Regency on various types of soil. This research used a survey method consisting of four stages, namely the preparation stage, preliminary survey, main survey, data analysis and presentation of results. Soil sampling were at of depths of 0-20cm and 20-40cm in each type of soil in the minipit. The results of the study showed the highest bulk density found in 20-40 cm Brown Podsolic soil $1,34 \text{ g cm}^{-3}$, and the lowest bulk density found in 0-20 cm Brown Podsolic soil with $0,63 \text{ g cm}^{-3}$. The highest soil organic carbon was found in 0-20 cm Podsolic soil 1,72%, and the lowest organic carbon was found in 20-40 cm Andosol soil 0,18%. And research showed that the highest soil carbon stock was found in 0-20 cm Brown Podsolic soil $33.57 \text{ ton ha}^{-1}$ and the lowest was found in 20-40 cm Andosol soil 2.66 ton ha^{-1} .

Keywords: Soil carbon, soil properties, soil dept, upland