

ABSTRACT

The increasing rate of land use change, particularly in the agricultural sector, has the potential to cause land degradation if it is not accompanied by the proper implementation of soil and water conservation practices. Soil erosion, as one form of land degradation, results in the loss of topsoil and a decline in soil fertility. Jagong Jeget District, Central Aceh Regency, is characterized by sloping topography and high rainfall, making it highly susceptible to erosion, with most areas classified as having moderate to very high levels of erosion hazard. This study aims to estimate soil erosion rates and provide appropriate conservation recommendations using the Universal Soil Loss Equation (USLE) method based on Land Mapping Units (LMU), which are derived from the overlay of soil type, slope, and land use maps.

The results indicate that soil erosion rates vary across LMU and generally range from low to high categories. The highest erosion rate was observed in LMU 12 at 2.384,14 tons/ha/year, caused by the conversion of secondary forest into cultivated land without the implementation of conservation practices, resulting in reduced soil surface protection. In contrast, the lowest erosion rate was recorded in LMU 8 at 11,65 tons/ha/year due to dense vegetation cover. Recommended conservation measures include ridge terraces, bench terraces, and a combination of mechanical and vegetative techniques. In areas with low erosion rates, conservation efforts focus on maintaining natural vegetation cover to preserve soil stability. The implementation of these measures is expected to reduce erosion rates and support sustainable land management.

Keywords: land degradation, soil erosion, soil conservation