

## Soil erodibility in pasture and forest areas in the municipality of Porto Velho, Rondônia

Lucivânia Izidoro da Silva<sup>a</sup>, Hedinaldo Narciso Lima<sup>a</sup>, Álvaro Brasil Barbosa<sup>a</sup>

<sup>a</sup> UFAM/PPGATR, CEP.69080-900, Manaus-AM, Brasil

\*Corresponding author: lucy-vany@hotmail.com

**Abstract:** The study carried out in Porto Velho-Rondônia evaluated soil erodibility in forest and pasture (brachiaria) areas. A total of 130 soil samples were collected, 70 in the pasture and 60 in the forest, in 90 m x 60 m and 90 m x 50 m grids, respectively, at a depth of 0.00 - 0.20 m. The samples were analyzed for texture, organic matter (OM) and erodibility (K, Ki ppeh, Tcpeh factors). In the forest, there was a higher clay and OM content, which increased soil stability, while the pasture area had a higher sand content. The K factor was higher in the forest (0.03) than in the pasture (0.01), suggesting greater susceptibility to erosion in the forest, possibly due to the sand content. Spatial variability was low in both areas, with the greatest variability in the silt variable (33.27% in the forest and 30.07% in the pasture). Spatial dependence was strong in most variables for both areas, especially for the Tcpeh factor in the pasture (28.10). The spherical model adjusted better to the forest, while the exponential model was more suitable for the pasture. In the pasture area compared to the forest area, the measures of central tendency presented a symmetrical distribution, and both showed very close values, which justifies normal distributions of the analyzed data. In the k factor, it was lower in the brachiaria area (0.01), and a higher value was observed in the forest area (0.03). Therefore, the high value in the forest area may be related, in addition to the OM attribute, to the sand factor, which may also be influencing the forest, since the higher the sand content, the more difficult the bonding between the particles will be, making the soil less aggregated. Topography influenced erosion, especially in sloping pasture areas, where runoff transports fine particles such as clay and OM. In general, pasture presented greater heterogeneity and erodibility compared to forest, despite adequate management. These results reinforce the importance of considering soil structure in areas with different types of vegetation.

**Keywords:** Geostatistics, Brachiaria, Erosion, Management.

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