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Forage yield and soil characterization in soils degraded by water erosion

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Abstract

The objective of this study was to carry out a soil diagnosis and evaluate the dry matter yield of rhodes grass (*Chloris gayana*), native grass (*Hilaria cenchroides*) and alfalfa (*Medicago sativa*) in a water erosion degraded soil. The work included a physical and chemical characterization of the soil, and measurement of dry matter yield in each specie during the rainy period (june-october) every 30 days for five months. A multivariate statistical analysis procedure was run to evaluate the degree of correlation among the variables studied. This study was carried out on the east side of the Coxcacoaco river basin in Mexico state on plots of 16 m² with 8-10% slopes. For analysis of yield data a random block design with four replicates was used. Results showed that soil was heterogeneous in its characteristics and properties with some restrictions for deep roots penetration and development due to hard soil layers. Yields of species were irregular over the evaluation period. Alfalfa had the highest yield (10667,1 Kg ha^{-1}) but not significantly different ($P>0.05$) when compared to Rhodes grass (10295,8 Kg ha^{-1}). Both species had significantly ($P<0.05$) higher yields than native grass (8241,7 Kg ha^{-1}). Alfalfa produced the highest economic benefits.

Key words: dry matter, *Chloris gayana, Hilaria cenchroides, Medicago sativa*, multivariate analysis

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