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The enrichments of organic matter and total nitrogen in sediment as affected by relavant factors

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Serious soil erosion has already resulted in degradation of the Loess Plateau of China. Soil erosion is commonly accompanied by extensive soil nutrient loss. Because of enrichment processes, sediment nutrient content is often higher than that of natural soil. The objective of this study is to determine the enrichments of organic matter and total nitrogen in sediment in hilly and gully loess areas on the Loess Plateau of China. Measurements of enrichment ratios (ER) of organic matter (EROM) and total nitrogen (ERTN) in sediment as affected by rainfall, slope gradient, tillage, and fertilization were made in the field under natural rainfall conditions. The results showed that the enrichment of clay in sediment resulted in the enrichment of organic matter (OM) and total nitrogen (TN) in sediment. The averages of sediment clay ER, EROM and ERTN for the various slope gradients were 1.77, 2.09 and 1.61, respectively. The soil erosive module was negatively correlated with EROM and ERTN. Our results indicate that measures to reduce soil erosion, i.e. reducing rainfall erosivity, decreasing soil slope gradient, decreasing fertilizer use, and using level trenches, may increase EROM and ERTN. Both quantity and quality of sediment yield should be considered when implementing erosion control measures.

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