



Selected erosion parameters as influenced by tillage history

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Tillage influences surface soil physical conditions, and consequently factors related with water erosion. Although it is accepted that tillage history may influence erosion parameter, relatively few studies have addressed this issue. The objective of this work was to analyze the influence of an identical tillage operation on selected water erosion parameters after different tillage histories. A field experiment using simulated rainfall was conducted from June 2005 to March 2006 in the Santa Catarina highlands, southern Brazil, in order to evaluate the effect of previous soil tillage system on selected parameters related to water erosion. Before starting our experiment four different tillage treatments were installed in the study area during the five and half years antecedent period. Previous treatments (two replications) were: bare soil (BS), conventional tillage (CT), common no-tillage (NT) and no-tillage on burnt crop residues (NT-B). In the three cultivated treatments (CT, NT and CT-B the crop sequence included oats, soybean, vetch, maize and fodder radish. In June 2005 the experimental field was uniformly chisel-ploughed. Subsequently, five height energy rainfall (64 mm h^{-1}) events were applied using a rotating-boom rainfall simulator. In addition cumulative 108 mm natural rainfall was recorded among simulation events. The following parameters were assessed: soil moisture, time to start runoff and to reach runoff-peak runoff, rainfall water infiltration, runoff discharge, sediment concentration and soil losses. Tillage history influenced the water retention storage of the uniformly chiselled soil surface and this in turn generate differences in some of the study parameters, mainly in time to start runoff. Common no-tillage treatment (NT) was most efficient in decreasing runoff discharge, sediment concentration and soil losses.

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