



Soil surface conditions: effect on runoff and erosion in agricultural areas of Galicia (NW Spain)

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In north of Spain although the erosion is less severe than in the Mediterranean region, carried out studies in last decade have revealed that this phenomenon has special importance in agricultural lands mainly. In this study are discussed under that soil surface conditions runoff and erosion are generated, in four agricultural zones in the region of Galicia (NW Spain) during a period between 1999 and 2006. The greater percentage of surfaces in which the concentrated erosion was observed presented three common characteristics: different surface crusting stages; low roughness generated by tillage operations and soil bare or with scarce vegetation cover. According to modality of concentrated flow three main types of ephemeral gullies were identified: gullies with a unique channel, discontinuous gullies with several points of soil incision and parallel gullies to the lines of sowing. The predominance of each gully type, the reappearance or not at the same position and the soil losses contribution presented high spatial and temporal variability as function to agricultural practices and rainfalls characteristics, in every year. In this region, the most critical period for the rills and gullies formation was the spring and the autumn-winter season. The highest erosive severity was registered during autumn-winter 2000/01 and the autumn of 2006, agreeing with unusually rainy years during those two times. In this period, two plots with similar area and slope presented high soil losses: $44,71\text{m}^3/\text{ha}$ (autumn-winter 2000/01) and $35,27\text{m}^3/\text{h}$ (autumn 2006). During these periods with high rainfall, soil loss to increase by an order of magnitude, with respect to the rest of the years of study, considered climatologically normal. Although in normal years and/or dry years the levels of soil losses are tolerable, would be advisable to take effective preventive measures, to avoid the soil degradation and hydric resources in this region.