



Quantitative analysis of soil erosion in vineyards of the Rhenish Slate Mountains

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Knowledge of erosion rates under real conditions is of great concern regarding sustainability of land-use and off-site effects. Long term observations showed that the vineyards of the Rhenish Slate Mountains are generally stable. But the soil erosion may increase in several orders of magnitude with the occurrence of extreme rainfall events or under the influence of soil and vineyard management. The test site was located in Hunsrueck in West Germany. Geologically, it is part of the Rhenish Slate Mountains and therefore it is composed of devonian shales. The v-shaped valley was created by the river called Ruwer. In 2008, an old vineyard was abandoned and exposed. For erosion control reasons he was terraced. After that, it lied fallow for two years, in spring 2012 it was reshaped. The slope was steepened and filled up again. In the autumn of 2012, the rows were attached and the slope was replanting with grapes. Since these slopes are cultivated with caterpillars, the line spacing is much higher than in traditional management.

For quantification of surface runoff and soil erosion in the comparison between an old and traditionally farmed vineyard and a new applied and with modern methods farmed vineyard, three test plots with application of sediment traps were installed on south-west exposed slope. Each test plot consists of two sediment traps, some of the traps are separated. In addition, a precipitation collector was established.

The maximum runoff values of the old vineyards reached 36.42 L in 2011 and 36.68 L in 2012. Highest soil erosion values were measured in the summer (248.04 g 2011 and 187.98 g 2012), while the highest sediment concentrations were reached in October (233.95 gL⁻¹ 2011 und 812.29 gL⁻¹ 2012).