



Agricultural terraces monitoring and modeling: a field survey in Chianti region, Firenze, Italy - First part

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The two abstracts present the design and set-up of an experimental field plant whose aim is the study and modeling of water circulation in a terraced slope together with its influence on the stability of the retaining dry stone walls. The pilot plant is located at “Fattoria di Lamole” (Greve in Chianti, Firenze, Italy) where both ancient and recently restored or rebuilt dry stone retaining walls are present. The intense vineyards cultivation makes it very representative in terms of range of external stresses that affect both hillslopes and walls.

The research is developed within a bigger framework of landscape preservation as a way to prevent hydrogeological instabilities and landslide risks.

First Part

A first/preliminary field survey was carried out in order to estimate the hydraulic and mechanical soil characteristics. Field saturated hydraulic conductivity measurements with the Simplified Falling Head (SFH) method on a terrace along an alignment were performed. Infiltrometer tests with a double ring device and soil texture determinations with both fine particle-size and skeleton fraction distributions were also performed.

The Direct shear test on undisturbed and reconstituted soil samples will offer an estimation of the Mohr-Coulomb failure envelope parameters (friction angle and cohesion). A reference portion of a dry stone wall will be also monitored. Lateral earth pressure at backfill-retaining wall interface (compared to temperature and air pressure measured values), backfill volumetric water content (both in saturated and unsaturated states) and ground-water level are measured.

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