



## Cover crops effectiveness for soil erosion control in Sicilian vineyard

L Gristina, A. Novara, S. Saladino, and A. Santoro

Dipartimento di Agronomia Ambientale e Territoriale- viale delle Scienze - 90128, Palermo. gristina@unipa.it

In vineyards, which are very common in Mediterranean area, cover crops are becoming increasingly used to reduce soil erosion. Cover crops reduce runoff by increasing infiltration and increasing roughness and then reducing the overlandflow velocity. The aim of the present study was to quantify soil and water losses under different soil managements systems on vineyards. The study site was a Sauvignon blanc winegrape vineyard located in Southwestern Sicily. Vineyards were managed both traditionally (conventional tillage) and alternative management using cover crops: 1) Vicia faba ; 2) Vicia faba and Vicia sativa; 3) Trifolium subterraneum, Lolium perenne, Festuca rubra; 4)Trifolium subterraneum, Festuca rubra and Festuca ovina, 5) Triticum durum, 6) Triticum durum and Vicia sativa. To monitor water and sediment yield, a Gerlach trough was installed at each treatment on the vineyard inter-row, with the row vineyard used as a border (topographical border). Runoff was measured after each rainfall event (raingauge 0.2 mm accuracy) from November 2005 to April 2007. And sediments were measured after desiccation. The results show that runoff and erosion were reduced considerably under the treatments with Trifolium subterraneum, Lolium perenne, Festuca rubra and Trifolium subterraneum, Festuca rubra and Festuca ovina (treatments 3 and 4). The soil losses were reduced by 73% under treatment 4 compared to the tillage plot. Conventional tillage and alternative management using Vicia faba cover crop (treatment 1) result the most ineffective treatment to soil erosion. These results show that the use of a cover crop can be a simple soil and water conservation practice in Sicilian vineyards.

Key words: soil erosion, cover crops, vineyard, Mediterranean area.