



Application of Micro-scale Devices for the Study of Spontaneous Vegetation and Erosion in the National Park of Cilento, Vallo di Diano, Alburni. First Results.

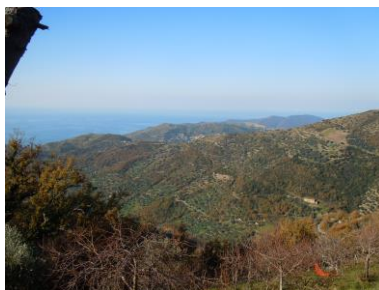
Enrica De Falco¹, Giovanni Salerno¹, Antonio Marmo¹, Domenico Ronga¹, Giuseppe Celano¹,
Dipartimento di Farmacia, Università di Salerno, Autore corrispondente: edefalco@unisa.it

Introduction

The appropriate management of the escarpments on farm can contribute to reduce erosion, one of the phenomena that afflicts the hilly areas of the Cilento, Vallo di Diano, Alburni National Park. The goal of this research consists in the preliminary study of the phenomenon of erosion on small scale within farm escarpments in a representative area (San Mauro Cilento, SA) with particular attention to the role of spontaneous vegetation. Another target was to verify the possibility to use digital tools that are sufficiently cheap and easy to use to carry out surveys and processing relating to vegetation cover, such as a camera, tablet, free access software.

Materials and Methods

The experimentation was conducted during the period January-June 2020. Two locations were identified on a representative escarpment within the farm De Gregorio, with different slope (89.6% and 57.1% respectively for A and B). A runoff collection channel was positioned for each station. The devices have been designed in order to easily allow the collection of water and eroded soil on limited surfaces and in the field condition of the farm. The meteorological data were acquired by a station (PCE-FWS 20). In the month of April, photographic surveys were carried out in the field on the two stations; through the use of free access programs (ImageJ and QGIS). It was possible to measure the vegetation cover; the identification of plant species present in the two locations was also made. The most suitable spontaneous aromatic species for interventions on the farm escarpment were also collected.



Results

The system developed for the collection of runoff water and eroded soil has proved to be useful for achieving the set goals. The data (Table 1) show greater runoff for the channel A and this may have been caused by the higher slope. On the opposite the greatest loss of eroded soil was found for channel B. These results can be justified with the examination of the vegetation, as determined in relation to both the species present and the degree of cover. In fact, the two escarpments have a different vegetation cover which can explain these results. Although with a greater slope, station A is characterized by the prevalence of *Dactylis glomerata* L., a species particularly effective in counteracting erosion. Furthermore, also the survey carried out on the vegetation cover by image analysis highlighted a greater area covered in station A (90%) compared to station B (50%).

Table 1. Total rainfall, runoff water and eroded soil

	Channel A	Channel B
Rainfall (mm)	334.8	
Rainy days (n.)	39	
Runoff (l m ⁻²)	25.3	21.6
Erosion (g m ⁻²)	9.6	12.6

Channel A

Channel B



The search for spontaneous aromatic plants useful for the consolidation of the slopes has led to the collection *Origanum vulgare* L., *Salvia officinalis* L., *Satureja* ssp., *T. serpyllum*. These plants can represent also a valid opportunity for the production of aromatic herbs and honey.

Conclusions

Generally data relating to erosion collected in natural conditions or really farm conditions are more limited and more difficult to find. Therefore the approach and devices adopted can be considered a simple but at the same time functional system for the study of these phenomena in business situations. The use of spontaneous aromatic species of which the Cilento Park is rich also represents a source of supplementary income for the farms but performs important ecosystem services which include the defense from erosion, the conservation of biodiversity, the increase of pollinators.

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