



Forestations and erosion in semiarid environments (South-east of Spain)

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In semiarid areas since the ends of the XIXth century until today, numerous forestations have been realized, principally by protective soil purposes, with the aim to decrease the riverbeds torrential, avoid siltation of reservoirs, protect water erosion soils and more recently to combat the Desertification. Nevertheless, the aggressive technologies used for soil preparation, in many occasions, not only have not protected to the soil from erosion, but this has notably increased.

In the Region of Murcia, placed in the South-east of Spain, we have realized a study in three areas forested three decades ago and in three types of lithologies (marls, conglomerates and schists). The forestation was realized by terracing. These skill is recommended like the most effective for areas with slightly deep or evolved soils, with water lack and in active water erosion zones.

Our aim has been to study the erosion processes that have taken place in the forested areas, quantify the erosion rates and compare them with the erosion of natural areas that were left not forested. Also the soils and vegetation characteristics have been analyzed to know if they had improved their conditions 30 years after the forestations.

The methods used for the erosion quantification have been: geomorphological cross sections, topographic profiles and erosion–runoff plots. In terraces, banks and natural areas the physical and chemical properties have analyzed, and also have realized diverse studies of vegetable coverage.

The results have put of manifest a notable increase of the concentrated water erosion

processes in rills and channels, with a major frequency of 50 % in the majority of the banks. At present exists an important geomorphological activity in these hillsides that, undoubtedly, has seen increased by the terracing for the forestation implementation.

In forested areas, the erosion average rates calculated have been of 105 t/ha/year in marls, 63 in conglomerates and 29 in schists. On the contrary, in natural areas not forested, the rates for the same lithologies are of 2, 0.1 and 0.06 t/ha/year.

In conclusion, the forestation realized by terracing has been very harmful in the marls areas and conglomerates, due to a worsening of the soils characteristics, a reactivation of the geomorphological activity, an increase of the erosion processes, a very significant increase of the erosion rates, and a scanty development of the vegetation cover established, as well as a decrease of the protection of the soil for the elimination of the natural vegetation of preexisting bushes. Undoubtedly, the soils of these areas would have been better protected with the natural vegetation (though scanty), that with the proceedings that in them have been realized. In the areas of schists, the effects of the forestations have not been so negative.