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Land degradation in the Canyoles river watershed, Eastern Spain

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Human induced Land Degradation by actions that have a negative impact on the functioning of the environment (Imeson, 2012). Mediterranean arid lands have been intensely transformed by human activity through history, especially due to agricultural management. This intense use of the land resulted in a new man made landscape that is evolving as a consequence of the global change to a new situation that can trigger Land Degradation processes. Extensive areas of olive groves, fruit orchards and vineyards, many of them grown on marginal areas (e.g., terraced slopes) as well as non-sustainable land uses have induced different environmental problems in the Canyoles river watershed (Eastern Spain). The human and physical changes suffered by this region are being used as a representative area of the western Mediterranean basin to monitor how the responses to the Desertification and Land Degradation fit. The aim of this research is to evaluate socio-ecological systems as a part of the Land Ecosystem and Degradation Desertification Response Assessment (LEDDRA) project.

This presentation will show the main Land Degradation processes that has been identified: [1] soil erosion as a consequence of agriculture, [2] soil compaction due to herbicide and heavy machinery use, [3] soil sealing on croplands due to heavy vehicles and asphalt and concrete application on roads, [4] soil/water pollution due to agrochemicals, [5] reduction of biodiversity in croplands due to herbicides and substitution of the traditional irrigation system, [6] urbanization processes of rural areas due to the development of urban areas and agricultural infrastructures, [7] monoculture of citrus plantations in the lower part of the watershed, [8] roads and railway construction, [9] aquifer depletion, [10] abandonment of industrial activities, [11] abandonment of local traditional practices for food production and other resources and [12] the effect of land abandonment and wildfires in the nearby mountainous areas on soil erosion and degradation processes.

Special attention is being paid to the citrus plantations expansion at the Canyoles river watershed as it was found the increase in soil erosion is due to the chemically managed citrus orchards (Cerdà et al., 2009). The economic changes on the citrus orchards are also analized.

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