



Selection and assessment of alternative land use and management scenarios in a water-scarce area in the Mediterranean (Sardinia, Italy) to improve quality and quantity of available surface water resources.

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Water quality aspects are greatly relevant in areas experiencing water resources shortage since some uses can be impaired by excessive pollution levels. Several quantification approaches and tools have been developed to assess water and pollutants (mostly nutrients) balance at catchment scale to evaluate the impact of human activities (point and diffuse sources) on water re-sources quantity and quality.

Water stress is a world-wide problem with far-reaching economic and social implications. The adaptation and mitigation of this problem depends on technological solutions but also on the development of new integrated water management tools and decision-making practices. In the framework of the Integrated Project “AQUAS-TRESS” funded by the EC under the FP6, enhanced interdisciplinary methodologies enabling actors at different levels of involvement and at different stages of the planning process to mitigate water stress problems has been tested and adopted.

The IP adopts a Case Study stakeholder driven approach where a collaborative identification of preferred solution options and the testing of solutions according to stakeholder interests and expectations play a central role.

This approach has been applied in several test sites. This paper describes the objectives so far reached in the case study of the Rio Mannu, a small catchment in southern

Sardinia (Italy), characterized by a semiarid climate and by a rather sensible shortage in water resources available for an increasingly intensive agriculture.

In particular, (a) development of a “perceptual model” of the catchment’s functions/processes using the SWAT hydrological model; (b) identification of “hot spots” as sources of pollutants (focus on nutrients and sediment); (c) selection of a provisional list of BMPs and scenarios to be tested (simulated) in order to achieve the goals or to foresee the impacts of ongoing changes; (d) discussion of viable scenarios with stakeholders in order to select the optimum list to be implemented; (e) use of the SWAT model to assess the environmental efficiency of the selected scenarios.

The so far studied scenarios include: reduction in fertilization of the 20% on all crops in all the catchment, reuse of treated wastewater on olive trees, introduction of sugar beet in place of durum wheat, introduction of rapeseed and sunflower in place of durum wheat.

In the next future the definition of procedures to motivate farmers to adopt selected BMPs is the step to be still accomplished.