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The Water Reuse project: Sustainable waste water re-use technologies for irrigated land in NIS and southern European states; project overview and results.

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In irrigated areas in the New Independent States (NIS) and southern European States, inefficient use of conventional water resources occurs through incomplete wetting of soils, which causes accelerated runoff and preferential flow, and also through excessive evaporation associated with unhindered capillary rise. Furthermore, a largely unexploited potential exists to save conventional irrigation water by supplementation with organic-rich waste water, which, if used appropriately, can also lead to improvements to soil physical properties and soil nutrient and organic matter content. This project aims to (a) reduce irrigation water losses by developing, evaluating and promoting techniques that improve the wetting properties of soils, and (b) investigate the use of organic-rich waste water as a non-conventional water resource in irrigation and, in addition, as a tool in improving soil physical properties and soil nutrient and organic matter content. Key activities include (i) identifying, for the NIS and southern European partner countries, the soil type/land use combinations, for which the above approaches are expected to be most effective and their implementation most feasible, using physical and socio-economic research methods, and (ii) examining the water saving potential, physical, biological and chemical effects on soils of the above approaches, and also their impact on performance. Expected outputs include techniques for sustainable improvements in soil wettability management as a novel approach in water saving, detailed evaluation of the prospects and effects of using supplemental organic-rich waste waters in irrigation, an advanced process-based numerical hydrological model, fully adapted to quantify and upscale resulting water savings and nutrient and potential contaminant fluxes for irrigated areas, and identification of suitable areas in the NIS and Mediterranean (in soil, land use, legislative and socio-economic terms) for implementation.