

THE WATER REUSE PROJECT: OPTIMIZATION OF WATER USE EFFICIENCY AND USE OF TREATED WASTE WATER IN DIFFERENT EUROPEAN AGRICULTURAL SETTINGS

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Agriculture is the major water using sector in many countries, with a global average share of 63% in total fresh water use in 2010 compared to domestic, electricity and manufacturing. Irrigation water is massively wasted through inadequate water conservation, losses in distribution and inappropriate times and rates of irrigation. These losses can amount to 70-85% of the total volume of water applied. The EU financed project Water Reuse (2005-2011) focussed on the reduction of irrigation water loss by applying a number of strategies: irrigation scheduling, application of soil surfactants, application of claying amendments and mulching. Additionally, irrigation with treated wastewater was applied as a substitute to fresh water. Organic compounds in the treated waste water can induce the development of water repellency in the soil. This may induce preferential flow and uneven wetting in soils, thereby reducing water use efficiency dramatically. On the other hand they can serve as useful additional nutrients for the crops grown on the fields being irrigated. After evaluating the effects of the selected strategies using the SWAP model, the most appropriate strategies per test site were selected and subsequently installed and evaluated in the field in Russia, Ukraine, Spain and Greece. All five water saving strategies field tested, showed positive effects for direct or indirect water savings in at least one test site. Adjustment of irrigation practices to match real time agronomic conditions was considered the top ranking water saving strategy as it can, with minimal investment, be immediately applied wherever irrigation is presently practiced. Other solutions involve additional costs and are less likely to be adopted without policy elements. Also a socio-political-economic analysis was conducted to identify critical factors for and/or limitations to adoption of new strategies. The biggest obstacles to implementation of water saving strategies seem to be a lack of socio-political-economic structures and policies that encourage their adoption, and/or structures and policies that are counter to their adoption.