Wastewater Reuse in Agriculture – Experience from the Northern Serbia

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Water is becoming an increasingly scarce resource and planners are forced to consider any sources of water which might be used economically, ecologically, and effectively to promote further development. At the same time, with population expanding at a high rate, the need for increased food production is apparent. The potential for irrigation to raise agricultural productivity has long been recognized. Whenever water is scarce treated wastewater will have to be considered for use in agriculture. Many countries have included wastewater reuse as an important dimension of water resources planning.

This paper deals with theoretical part of wastewater use in agriculture, where included: global water resource limits and water scarcity, sustainable development, sources of wastewater, health protection measures, monitoring and system assessment, sociocultural and environmental aspects, economic and financial considerations, and policy aspects.

At the same time, results from one case study of wastewater application in agriculture in northern part of Serbia (Vojvodina Province) are presented. The development of livestock breeding in Vojvodina Province is characterized by building up of large-capacity farms involving wet discharge technologies, and most often, by inappropriate solutions to the treatment and disposal of the originated wastewaters. In the majority of cases such wastewaters are temporarily collected in lagoons. The applicability of these waters is determined by their characteristics, amounts, the natural characteristics of the region, and the possibility of growing particular crops. The choice of crops depends upon the local pedological, climatic, and market conditions, and especially on the degree of sensitivity of crops to the contents of macro- and micro-nutrients, as well as to some hazardous components present in these wastewaters.

In the frame of a complex research project at the lizimeter station Rimski Sancevi the effect of irrigation with diluted wastewater from the pig-raising farm has been studied. The experiment encompassed investigation concerning the control of shallow groundwater quality, microbiological activity of the soil and shallow groundwater, chemical composition of the soil, as well as the observation of phenological stages of the crops. The obtained results point out to the possibility of wastewater use in agriculture under natural conditions of Vojvodina, without significant disadvantages.