

## Utilization of secondary treated and tertiary treated urban wastewater for irrigation

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The use of treated urban wastewater for irrigation in modern agricultural is steadily increasing world-wide and due to shortages of fresh water is common today in many regions throughout the world. The urban sewage water undergo several levels of treatment, which affect their chemical and microbiological composition, and thereby their classification as suitable for irrigation of numerous crop classes. Utilization of this water source for irrigation in the production fields is an environmentally sustainable approach, which incorporates the advantage of minimizing the disposal to the environment. Furthermore, irrigation with treated wastewater incorporate benefits to agricultural by reducing demands for fertilizers inputs as a result of the higher concentrations of macronutrients in this water. At the same time, inhibiting effects on the irrigated crops may source from the higher concentrations of salts, bicarbonate, boron, heavy metals, and pH level present in the treated wastewater. The use of treated wastewater for agricultural irrigation may result in environment and human exposure to microbial pathogens, creating potential environmental and health problems. Although the concentration of human pathogens decrease during the wastewater reclamation process, the secondary treated effluents most commonly used for irrigation today still contain bacterial human pathogens. National and global regulations were developed and are applied to facilitate optimal and safe production under irrigation with treated wastewater.

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