

Treated Wastewater Irrigation for Sustainable Switchgrass Production

Dr. Girisha Ganjigunte and John Clark, Texas AgriLife Research
Texas A&M University System

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Switchgrass grown using treated wastewater in greenhouse soil columns

BACKGROUND

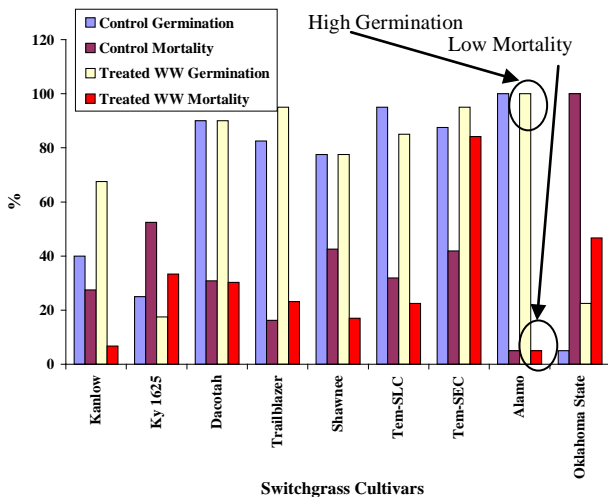
Water for irrigating agricultural crops including bioenergy crops is increasingly becoming limited in the far West Texas. Using treated urban wastewater for irrigation may be a productive and efficient method to manage this resource. The major concern associated with treated wastewater irrigation is its salinity. The U.S. Department of Energy has identified switchgrass (*Panicum virgatum* L.) as a promising non-food bioenergy crop. However, there is limited information on switchgrass salinity tolerance to know if it can be grown with the treated wastewater irrigation. This project evaluates the feasibility of using treated urban wastewater for switchgrass production and its effects on soil salinity through a long-term (3 year) greenhouse column study.

OBJECTIVES

- Evaluate quality of wastewater for irrigation in El Paso, TX.
- Determine germination and seedling mortality of different switchgrass cultivars
- Evaluate switchgrass biomass yield and bioenergy quality.
- Determine changes in soil salinity and potential for groundwater contamination.



Salinity tolerance of different cultivars under evaluation in the greenhouse



Salinity tolerance of different switchgrass cultivars

BENEFITS

Salinity tolerance study results indicated that among the cultivars evaluated Alamo cultivar had maximum germination and least seedling mortality under treated wastewater irrigation. Results of this research may help to utilize potentially large amounts of treated urban wastewater for irrigating bioenergy crops. Use of treated wastewater to irrigate bioenergy crops in the arid southwest has several potential benefits such as extending the existing freshwater supplies, increased bioenergy feedstock production and improved farm income. In water scarce areas such as El Paso, extending the use of existing water supplies is important for achieving the economic and environmental well being of the region.