Reclaimed Water & Biosolids Garden

Research and Demonstration Project at King County's South Treatment Plant in Renton, Washington

Creating Resources from Wastewater

Our treatment plants are recycling centers where we create energy, biosolids compost and reclaimed water from the region's wastewater. Our Reclaimed Water and Biosolids Compost Demonstration Garden represents our commitment to answering questions about how these products work as a soil amendment and affect growth of edible and ornamental plants in the landscape.

Reclaimed Water Research & Monitoring Program

This program's goal is to use the best available science and applied research within certain budget parameters to demonstrate the safe and appropriate use of reclaimed water. The results are used to:

- answer customer/user's specific questions, and regulator and management questions
- collaborate with operations on process issues
- develop best management practices to protect users and the environment

We are accomplishing this work through field, greenhouse, and process studies.

The science behind the demonstration garden

"Growth and Physiology of Six Horticultural Crops Irrigated with Municipal Reclaimed Water"

Hannah Kinmonth-Schultz, Dana Devin Clarke, Sally L Brown, and Soo-Hyung Kim. University of Washington Botanic Gardens, School of Forest Resources, University of Washington, Seattle, Washington, USA.

"Research to Demonstrate the Safety of Reclaimed Water for Edible Food Crops"

Dana Devin Clarke, Sally L Brown, Soo-Hyung Kim, College of Forest Resources, University of Washington, Seattle, WA; Susan Kaufman-Una, King County Wastewater Treatment Division, Seattle, WA.

Visitors at the Reclaimed Water and Biosolids Compost Demonstration Garden, summer 2009

Research shows it's safe here too!

Local research collaborates studies that have been done around the world for the last several decades:

- **Melbourne 1982**
- **World Bank 1985**
- **Monterey Wastewater Reclamation Study for Agriculture 1987**
- **World Health Organization 1989**
- **National Research Council 1996**
- **Recycled Water Food Safety 1998**
- **Efficacy of Pathogen Removal 2003**

Our local farmers, nurseries and their customers can feel safe using reclaimed water.

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Vegetable Beds (one of each)

Sandy loam soil mix irrigated with tap water

Plant growth sparse and spindly. Produce quality and quantity the lowest of all the food crop research beds.

Sandy loam soil and biosolids compost soil mix irrigated with tap water.

Abundant plant growth, produce quality and yield high.

Sandy loam soil mix irrigated with reclaimed water

Produce quality high and yield moderate. Plant growth not as lush as beds amended with biosolids compost.

Sandy loam and biosolids compost soil mix irrigated with reclaimed water

Produce quality high, yield high and lush plant growth.

Ornamental Flower Beds (three of each)

Sandy loam soil mix irrigated with tap water.

Last to come up, lowest growth and flower yield.

Sandy loam soil mix irrigated with tap water and fertilizer

(Half-strength Hoagland solution is a standard fertilizer solution in the nursery industry.) Lush growth and flower yield.

Sandy loam soil mix irrigated with reclaimed water

Abundant growth and flower yield.

What we're looking for:

While scientific results are still being analyzed, these photographs taken on August 29, 2009 provide a visual comparison between the garden beds and the different sources of irrigation water and soil mixes used in each.

- Beds irrigated with reclaimed water
- Beds irrigated with tap water

What we're measuring:

Plant health, plant growth rate and leaf size; presence of trace metals or pathogens; soil ph; and nutrient and salt levels.

Food Crops – lettuce* carrot* strawberry*

Ornamental flowers – delphinium* amaranth* sunflower*

*Crops being analyzed. Additional food crops were planted to be used at a community luncheon in September, 2009

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