CALIFORNIA STATE SCIENCE FAIR
2003 PROJECT SUMMARY

Name(s)

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Project Number

J0903

Project Title

Reuse It or Lose It: The Effect of Recycled Water on Grass and Flowering Plants

Abstract

Objectives/Goals

Water shortages are a worldwide problem. Using recycled water (reclaimed wastewater treated to the tertiary level) is one possible way to help preserve our natural water supply. According to one source, 80% of our water supply is used for agriculture and irrigation.

My objective was to determine if recycled water is as effective as tap water for the irrigation of grass and flowering plants. Recycled water contains nutrients, which may benefit plant growth, but a higher level of salt, which may be harmful to plants.

Methods/Materials

For my experiment, I chose three different types of plants: Marathon grass, French lavender (salt tolerant), and snapdragons (salt sensitive). 10 samples of each plant type were planted and maintained in identical circumstances. The experimental groups were watered with recycled water, and the control groups were watered with tap water. I watered the plants three times per week and measured growth weekly for eight weeks. I also collected water samples that were tested weekly for levels of nitrates, nitrites, and total dissolved solids (salt).

Results

My results showed that recycled water worked just as well as tap water. Grass growth (blade height) and quality were actually better with recycled water. Salt Tolerant Plant growth (height) as well as growth of new buds, flowers, and stalks were also better with recycled water. Salt Sensitive Plant growth was similar in both the experimental and control groups. The experimental samples displayed no visible signs of salt damage. Water tests consistently showed higher levels of nitrogen compounds and total dissolved solids (salt) in the recycled water.

Conclusions/Discussion

In conclusion, grass and flowering plants irrigated with recycled water grow just as well, and sometimes better, than those irrigated with tap water. I believe that the nutrients in recycled water act like a natural fertilizer, which helps to enhance plant growth. My experiment demonstrates that using recycled water for irrigation is an effective way to help preserve our natural water supply.

Summary Statement

My project studies the effect of recycled water on the growth of grass and flowering plants.

Help Received

The San Elijo Water Reclamation Facility provided me with recycled water and conducted water tests in their laboratory; Home Depot Nursery helped me select appropriate plants and soil for my experiment; my mom drove me to the water plant, proofread my paper, and helped organize my display board.