



**CALIFORNIA STATE SCIENCE FAIR
2009 PROJECT SUMMARY**

Name(s) Sheena W. Song	Project Number S2018
Project Title The Effects of Recycled Water on the Growth and Germination of Leymus triticoides, Nassella cernua, and Poa secunda	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals With the growing demand on a limited water supply, the use of recycled water for irrigation offers both a possible long term sustainable approach as well as a cost effective plan. However, the effects of recycled water on the growth and germination of native plant species are virtually unknown and may therefore pose a risk to the well being of plants. It was hypothesized that those plants treated with recycled water would exhibit the most detrimental effects and low germination, while those treated with tap water would exhibit optimal growth and high germination.</p> <p>Methods/Materials In this experiment, three water treatments were used to evaluate the responses of the three native grass plant species, <i>Leymus triticoides</i>, <i>Nassella cernua</i>, and <i>Poa secunda</i>. These treatments included recycled water, tap water, and a 50/50 mixture of both. The plants were irrigated regularly and stem counts and height measurements were taken. At the end of an approximately 90 day period, wet and dry masses were obtained. Several analyses were then taken, which included net water absorption and stem: root ratio. In addition, separate germination seed tests were conducted in Petri dishes, and seed germination percentages were determined.</p> <p>Results It was concluded that though recycled water may have given all of the plants an initial boost in height and stem abundance, the gradual accumulation of heavy metals and salts may have ultimately proved detrimental to the plants' health. Recycled water caused the plants' shoot system to outgrow the root systems, hindering the plants' ability to absorb the necessary nutrients and to support itself. Seed germination tests provided that seeds treated with tap water showed optimal growth.</p> <p>Conclusions/Discussion The experiment provided useful information regarding the usage of recycled water on grass growth. Though recycled water may be a sustainable solution to the world's growing water crisis, it was determined that its usage on plants was harmful.</p>	
Summary Statement My project aims to determine the effects of recycled water on the germination and growth of native grass species.	
Help Received Mentor proofread report; Parents drove me to several locations	