



**CALIFORNIA STATE SCIENCE FAIR
2007 PROJECT SUMMARY**

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Project Title Saltwater Intrusion in Agricultural Fields: The Effect of Saltwater on the Growth Rate of Radish Seeds	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals Saltwater intrusion is threatening agricultural land in California. The objectives were to determine how salinity affects the rate of radish seedling growth and also to investigate saltwater intrusion using a model.</p> <p>Methods/Materials We grew a total of two hundred radish seeds in various saltwater solutions. Saltwater media were prepared to 2.7ppt, 4.5ppt, and 9.0ppt concentrations. Freshwater was used as the control. For each treatment we placed ten radish seeds on moist filter paper in five plastic containers to germinate total of fifty seeds. We observed and measured in mm the length of roots and shoots of radish seedling for seven days. Materials: Five plastic containers, Early Globe radish seeds, Whatman filter paper, acetate sheets, a metric ruler, tweezers, weighing paper, 1 liter volumetric flask, 100mL graduated cylinder, a digital balance, a thermometer, a plastic pipet, and Balene sea salt.</p> <p>We built a model simulating the process of saltwater intrusion. Materials: two plastic containers that fit into each other, a soap dispenser, a small plastic container, a rubber band, freshwater, food color dyes, colorful gravel, sea shells, artificial moss, stickers, popsicles</p> <p>Results The growth rate of radish root decreased 1.85 times in 2.7ppt saltwater solution, 5.64 times in 4.5ppt saltwater solution and 17.92 times in 9.0ppt saltwater solution.</p> <p>The growth rate of radish shoot decreased 4.64 times in 2.7ppt saltwater solution, 14.61 times in 4.5ppt saltwater solution and 128.82 times in 9.0ppt saltwater solution.</p> <p>Conclusions/Discussion The growth rate of both the root and shoot decreased with increasing saltwater concentrations. Salinity has negative impact on the growth rate of radish seedlings.</p>	
Summary Statement Through our experiment and observations, we showed that saltwater significantly impacts the growth rate of radish seedlings. We also proved that the early Globe radish seeds can grow in low concentrations of saltwater.	
Help Received Dr. Jeff Hughey showed us how to press the Early Globe radish plants. Hartnell College provided the digital scale, graduated cylinder and volumetric flask. Our parents provided transportation.	