CALIFORNIA STATE SCIENCE FAIR
2009 PROJECT SUMMARY

Name(s)
Sophia C. Becker

Project Number
S2002

Project Title
The Effect of Soil Salinity on Hard Red Winter Wheat and Barley Crops

Abstract

Objectives/Goals
The objective was to determine whether the health of hard red winter wheat and barley crops is impaired by higher concentrations of salinity in the soil.

Methods/Materials
Five different groups of wheat and barley plants (three plants in each group) were exposed to one of five different levels of diluted seawater at equal intervals over the course of nine days (#salt shock#), in order to simulate a condition in which crops are exposed to seawater. The growth of wheat and barley plants in the five salinity conditions was then compared.

Results
Wheat plants exposed to the two highest levels of salinity (25% and 50% seawater) suffered decreased health and reduced growth as a result. Wheat plants exposed to the three lower levels (0%, 6.25%, and 12.5%) did not suffer much stunting at all. In comparison with wheat, barley plants showed more resistance to salinity. The most surprising finding was how severe the effects were from only three instances of watering with salt water.

Conclusions/Discussion
When soil salinity is increased, the health and growth of wheat and barley plants are impaired. In an era when rising sea levels are predicted, these findings suggest the importance of carefully planning coastal crops.

Summary Statement
This project examines the effect of seawater on coastal crops and the difference between salinity tolerance in winter wheat and barley crops

Help Received
Mother helped edit report and enter data; Father helped develop research idea; C.M. Grieve, an expert in this area, corresponded with me.