CALIFORNIA STATE SCIENCE FAIR
2005 PROJECT SUMMARY

Name(s)
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Project Number
S1606

Project Title
Salt: Friend or Foe?

Abstract

Objectives/Goals
There are many countries in the world that suffer from infertile or salty soil. This can drastically affect the citizens ability to grow food crops. The basis for this project was to determine if plants would die when a saline solution slightly less than the oceans was watered into the soil. If they did, at what level of salinity would the plants cease to grow and die. Depending on the plants# salt toleration; it may be possible to grow certain plants in salty soil.

Methods/Materials
Nine beans, nine zucchini, and nine lettuce seeds were cultivated in indoor pots. Each type of plant was then watered at three different salinities: three of each type at 30g of salt per liter, three at 15g of salt per liter, and three of each type as controls with normal fresh water. After about ten days of testing, all the experimental plants were dead. Consequently, four beans, four lettuce, and four zucchini plants were re-grown, maintaining the regular watering of the healthy controls. Two of each plant were watered with 5g of salt per liter, and two at 10g of salt per liter; the plants# progress was observed every day.

Results
At 15g and 30g of salt per liter, the plants died relatively quickly. The lettuce were the less tolerant plants as they died first, followed by the zucchini and beans at 30g of salt per liter, and finally the zucchini and beans at 15g of salt per liter. The bean plants survived longer than both the zucchini and lettuce. In the second set of testing, though reaction time decreased drastically, all plants at 10g per liter of salt and 5g per liter of salt showed salt spots by one week and a half. They then continued to become floppy by the end of the second week.

Conclusions/Discussion
From the original test, the results showed that zucchini, beans, and lettuce plants could not tolerate a level of salinity greater than or equal to 15g of salt per liter of water. The second experiment showed that plants could not survive healthily when 5g of salt per liter was watered into the soil everyday. It would be difficult to effectively grow these plants, and probably others similar, in salty soil without them dying; however, some plants are more tolerant than others, as the bean plant seemed the hardiest towards salt in the first test.

Summary Statement
Salts affect on plant growth.

Help Received
N/A