CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY

Name(s)
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Project Number
S1712

Project Title
The Effect of Charcoal on the Germination and Growth of Corn

Abstract

Objectives/Goals
The objective of this project is to investigate the effect of charcoal mixed in soil on the germination and growth of corn. It is hypothesized that the set of corn plants growing in the soil with the addition of charcoal will grow bigger than the corn plants growing in the regular soil since the charcoal will improve the quality of the soil and will adsorb (not absorb) any harmful materials in the soil.

Methods/Materials
Two sets of 10 corn plants were grown in pots of the same size during winter. One set of plants grew in the soil with 25% charcoal and the other set grew in the soil without charcoal. Three corn seeds were planted in each pot. The pots were placed in a temperature-controlled sunroom. The plants were watered equally and regularly. The time to germination, plant height, and the number of leaves were recorded every week. The pH level of the soil was tested using a probe monitor after about two months to see if there was any difference in the quality of the soil.

Results
The results showed that the plants growing in the soil with the addition of charcoal had a higher (average 27% per seed) germination rate, had a greater number of leaves (average 0.2 more per plant), and grew to be taller (average 3-4.5cm per plant). The pH levels of the soil suggest, although inconclusive, that the soil with the addition of charcoal is more alkaline and thus more favorable for growth of corn.

Conclusions/Discussion
The experiment concluded that, when properly mixed with soil, charcoal can help corn germinate and grow faster in cold weather. These results are consistent with success stories of charcoal farming in agricultural communities, but are new in that the experiment was conducted in cold environment. Further research should be performed to repeat the experiment with a larger sample size, in warm, growing seasons, and also for plants other than corn.

Summary Statement
This project investigates the effect of charcoal mixed in soil for germinating and growing corn using two sets of pots and shows that charcoal helps corn germinate faster and grow bigger in cold weather.

Help Received
Father assisted in gathering experiment materials, designing the watering system, and constructing the board. School science teacher proofread the text.