CALIFORNIA STATE SCIENCE FAIR
2003 PROJECT SUMMARY

Name(s)
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Project Number
S1614

Project Title
Nitrogen-Fixing Bacteria vs. Nitrogen Fertilizer

Abstract

Objectives/Goals
When using legumes which raises the nitrogen level in the soil more, nitrogen-fixing bacteria or nitrogen fertilizer?

Methods/Materials
I enoculated alfalfa plants with three different amounts of nitrogen-fixing bacteria and exposed the plants to three different solutions of nitrogen fertilizer. In the first experiment I measured plant growth. Then I realized that the height which the plants grew was not information applicable in everyday life. I realized that testing the soil for its nitrogen content would be more usefull information for future crops of farmers. So I conducted a similar experiment but instead of testing for plant growth I tested for the level nitrogen in the soil with nitrogen soil testers.

Results
The control's plant height average in the first experiment was 92.7mm. The nitrogen bateria's average, which was the highest average, was 97.1mm tall. The average height of the nitrgen fertilizer was 95.6mm. The results in the test were I focused on the nitrogen content of the soil showed me that nitrogen-fixing bacteria had the heighest nitrogen levels slowely progressing from two to three and then it stayed at three. The control's averages started from one to three and then it stayed at three for the last sample. The results for the nitrogen fertilizer started at 1.5 then progressed to 2.5, then to three.

Conclusions/Discussion
Results for the first experiment showed that the more nitrogen fertilizer of nitrogen bacteria you used the taller the plants would grow. The nitrogen-fixing bacteria had a taller plant height average than the nitrogen fertilizer. In the second experiment the results showed that the proscribed amount of nitrogen-fixing bacteria fixes the most nitrogen into the soil. The nitrogen fertilizer fixed the second most nitrogen to the soil.

Summary Statement
In this experiment my goal is to find the differences in the levels of nitrogen in the soil when using legumes enoculated with nitrogen-fixing bacteria and nitrogen ferilizer.

Help Received
My English/science teachers helped me chose my topic and the edited all my work.