CALIFORNIA STATE SCIENCE FAIR
2009 PROJECT SUMMARY

Name(s)
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Project Number
29100

Project Title
Does Adding Polymers to Soil Prolong the Toxicity of Pesticide? Year 2 Study

Abstract

Objectives/Goals
The purpose of my science project is to determine if adding PAM (polyacrylamide) to topsoil will prolong the toxicity of pesticide. A second year study was needed to remove the possibility of cricket age being a factor in cricket death. I solved this problem by using special order healthy 5/8" crickets (approximately 3.5 weeks old). Also, my year 1 study did not have a control group which I added in my year 2 study.

Methods/Materials
To test my hypothesis I filled 30 plastic storage containers with 2 cups of untreated topsoil. Group A is containers 1-10, group B is 11-20, and group C is 21-30. Groups A and B then recieved 1 full spray of pesticide to each container. Group A also recieved 3/4 tsp. of PAM to each container. Group C was free of PAM and pesticide. I labeled and punched 10 holes in the lids of each container for air circulation. Then I added cricket food and 1 cricket to each container. I checked the containers 2 times a day for 51 days. If a cricket died I charted it in my data book and on the container lid then replaced the dead cricket with a live one.

Results
My results for test group A showed that adding PAM did not significantly prolong the toxicity of pesticide. It took an average of 6.5 days for the 10 test containers to kill 92 crickets in a 51 day test period. Results for Group B are similar to Group A. Group B took an average of 6.9 days to kill 87 crickets in a 51 day test period. Group C appeared to provide an environment that allowed the crickets to live close to a normal life span. On average it took the 10 test containers 13.3 days to kill 30 crickets in a 51 day testing period.

Conclusions/Discussion
After completing my science project I found my hypothesis was incorrect. My hypothesis stated that I believed adding PAM to topsoil would prolong the toxicity of pesticide. After studying the data I discovered that test group A and test group B had results so similar I could not claim a correct hypothesis. Also , when comparing the results of my year 2 study with those of my year 1 study I discovered significant differences in results. This leads me to believe that still even more testing is needed to acurately determine if adding PAM to soil prolongs the toxicity of pesticide.

Summary Statement
This project is about determing if adding PAM to farmland for water conservation and to prevent soil erosion is also prolonging the toxicity of pesticide.

Help Received
Dr. James Ayars, Agricultural Engineer USDA-ARS helped with guidance and research; Dan S. Munk M.S. U.C. Davis Coop Extension helped with guidance and research; Carl Gong helped with graphs; and my mom helped to type some of my written work and photograph the experiment.

Preliminary