CALIFORNIA STATE SCIENCE FAIR
2014 PROJECT SUMMARY

Name(s)
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Project Number
J1026

Project Title
Help Wanted: Green Filters for Sweet Corn. Seeking Solutions to America's Fertilizer Fixation

Abstract

Objectives/Goals
The purpose of this project was to see if sod can reduce the amount of nitrate and phosphate runoff from fertilizer application. This is a follow-up study of last year#s project where chemical runoff was measured from soil after adding inorganic and organic fertilizers. This year#s hypothesis states that the addition of sod will reduce the amount of chemical runoff in the water samples.

Methods/Materials
Sod was planted in five plastic troughs, which had been altered with PVC pipe to act as spouts for the collecting of samples. Then organic and inorganic fertilizers were added. Water was poured onto each trough at regular intervals and the runoff was tested with nitrate and phosphate test kits.

Results
This study found that the addition of sod resulted in reduced amounts of nitrates and phosphates compared to last year#s measurements. It was observed that turf could be used as a filter to absorb some of the nitrates and phosphates found in fertilizer to help reduce the toxic effects of chemical pollution.

Conclusions/Discussion
The extreme amount of pollutants entering waterways from fertilizer has had catastrophic effects on water quality, marine life, and human health. Seen as an answer to our renewable fuel problem, corn cultivation for ethanol is growing in popularity. Corn production requires relatively large amounts of nitrogen fertilizer per acre. Since sod can be used as a filter to absorb excess nitrates and phosphates, this means that farmers can plant sod around agricultural areas to help reduce the amount of toxic chemicals that could enter waterways causing environmental damage. While it was exciting to see how well plants can filter environmental toxins, it is important to remember that despite their effectiveness chemical runoff will always occur with fertilizer application.

Summary Statement
Comparing the data from 2013 with this year's results, it was found that planting sod around an agricultural area can reduce the amount of nitrate and phosphate runoff produced by organic and inorganic fertilizers.

Help Received
Father assisted with power tools to cut PVC pipe and drill holes in the troughs.