



**CALIFORNIA STATE SCIENCE FAIR
2007 PROJECT SUMMARY**

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Project Title
Will the Land Application of Biosolids Have a Negative Impact on Ground Water?

Abstract

Objectives/Goals
There is a lot of concern by the farm community that applying class B biosolids to farm ground is putting their groundwater supplies in serious danger. Anywhere the biosolids are applied they must be irrigated in. The purpose of my project is to determine if groundwater is affected when biosolids are applied on top of irrigated land. For my project I will simulate a biosolids application to a soil profile and apply water to replicate an irrigation. I will collect the filtered water and test it for contamination.

Methods/Materials
I will collect soil from a location where they are going to spread class B biosolids on irrigated land. For each test I will have a 24 oz. cup that I've cut the bottom out of. I will place a coffee filter over the bottom and secure it with a rubber band. I will fill the cup with soil (400ml). I will have 30 trials. 10 trials will be a control where I have only soil in the cup. I will have 10 trials that will have soil and 206.50 mg of class EQ/A biosolids on top and 10 trials that will have soil and 206.5 mg of class B biosolids on top. The soil profiles with biosolids will be the equivalent of a 5 tons per acre of biosolids. I will set/rest the plastic cup on in a 250 ml beaker. I will then apply distilled water gradually until 400 mls is added. The water will filter through and collect in the beaker. I will test the water for E-coli, nitrates, nitrites, alkalinity, and pH.

Results
My results were inconclusive in answering my question #Will the disposal of biosolids on farmland have a negative impact on ground water?# There were very similar results in the control and the class EQ/A biosolids. The results of the class B biosolids was nearly the exact opposite if the EQ/A and control. The lab director at Dellavale Laboratory said that the results indicate that there is definitely biological activity going on in the class B biosolids but there is not enough information to determine exactly what is happening.

Conclusions/Discussion
I learned that disposing of biosolids is a very complex issue. There is not a lot of science on the long term impact that land application could have on our ground water. This is an issue that needs further investigation.

Summary Statement
I did an experiment to see if land application of class B biosolids would hurt the ground water.

Help Received
Dellavale Lab helped with the Ecoli test and interpreting results. My mom helped with the typing.