



**CALIFORNIA STATE SCIENCE FAIR
2007 PROJECT SUMMARY**

Name(s) Jennifer E. Fox	Project Number J0907
Project Title Using Plants to Remove Pesticides from Storm Water Run-Off, Year 3	
Abstract Objectives/Goals The purpose of my project is to create a natural filter that farmers can use to clean pesticides from their storm water runoff. I will use my findings from this year and my last two science projects to determine if a combination of plants, air and natural filter material can be an effective filter. All the parts of this filter are available to the average farmer at very little cost. Methods/Materials This year, I will use the plant that filtered the best in my previous experiments, Hardstem Bulrush and place it in a water contaminated with Malathion at 12 1/2 % of the recommend label strength per gallon of water. I will use an aquarium air pump to add air to the filter. I will then pour the water treated by the plants and air, through four different kinds of filter material to see if it will finally remove all of the contamination. The filter material I will use is Walnut Shells, Almond Shells, Sand and Activated Carbon. Activated Carbon is known to have the ability to remove pesticides from water, it will be the control I will compare my other samples to. I will crush the 2 types of nutshells, Almond and Walnut, screen them so that the size of their pieces is similar to that of Activated Carbon or .5-3.0mm in size. I will also screen sand through the same filter. I will fill four 18 in long, 1 1/4 dia PVC pipe with one type of filter material. Results There were many high and low results in my project. It was no surprise that the control had the worst results but my other results were surprising. Sand and Almond did better than the sample that was not ran through filters but only by 2 to 3 minutes. The Walnut was the most like activated carbon. Like the AC, the sample from the filter using Walnuts cleaned the water and the tadpole didn't die. The reason this happened is because walnut shell particles have many pores that work to break off the Malathion molecules from water like AC does. Conclusions/Discussion After completing my project I found my hypothesis was correct. My hypothesis stated that using a combination of plants, air, and natural filters, I will successfully clean pesticide contamination from storm water run off. My experiment proved that after filtering contaminated water through a pond of with Hardstem Bulrush plants, added air for 10 days and then a final filtration through a natural walnut filter, the tadpole didn't die and the sample was clean.	
Summary Statement using natural filters to remove pesticides from storm water un-off.	
Help Received	