



CALIFORNIA STATE SCIENCE FAIR 2015 PROJECT SUMMARY

Name(s) Haidyn N. Washburn	Project Number 35061
Project Title Evaluation of Wood Ash Amended Soil on the Toxicity and Longevity of a Pesticide	
Objectives/Goals The objective of this project is to determine if adding wood ash to top soil will adversely affect pesticide by making it more toxic or allowing it to last longer in the soil.	
Abstract Methods/Materials Control Group: 1 cup of soil per container; this was repeated for a total of 10 containers. Test Group 1: 10 cups of soil was mixed with 10 tsp. of wood ash and then 1 cup of the test soil was added to each of 10 containers. Test Group 2: 10 cups of soil was sprayed for 5 seconds with the #Ortho Bug B Gon# pesticide (as per pesticide instructions) and mixed. Then 1 cup of the test soil was added to each of 10 containers. Test Group 3: 10 cups of soil was sprayed for 5 seconds with the #Ortho Bug B Gon# pesticide and 10 tsp. of wood ash was added to the soil and mixed. Next, 1 cup of the test soil was added to each of 10 containers. In every container a cricket and a wax paper with cricket drink was placed for proper nutrition of the test cricket.	
Results After 51 days of testing the Control group had an overall average life span of 13.3 days per cricket. Test Group 1 had an overall average lifespan of 6.5 days per cricket. Test Group 2 had an overall average lifespan of 5.3 days per cricket. Test Group 3 had an overall average lifespan of 4.7 days per cricket.	
Conclusions/Discussion The results of this study determine that mixing wood ash into the soil does slightly increase the toxicity and longevity of the Ortho Bug B Gon pesticide. These findings were based on the average lifespan of a cricket in test group 3 (wood ash & pesticide exposure) being 4.7 days. Also, test group 3 had the highest cricket mortality rate with 99 deaths in the 51 day testing period. However, research suggests that a portion of the waste wood being chipped and used as biomass in the U.S. Department of Energys move towards green, renewable energy has been treated with CCA. Wood ash generated from burned CCA pressure-treated wood, has a high concentration of arsenic and other potentially toxic materials. Long term studies are necessary to evaluate the practice of amending soil with wood ash to determine environmental impact of wood ash with high arsenic content, wood ash with high carbon content, and the possible impact these will have on aquatic environment due to water runoff and soil erosion, as well as the possibility of hazardous chemicals leaching into food because of agricultural use.	
Summary Statement Pesticides are risky, but their benefits are proven in the abundance of food we grow. However, the possible health threat to humans and the environment makes it imperative to determine any risks involved with mixing wood ash and pesticide.	
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