



CALIFORNIA STATE SCIENCE FAIR 2012 PROJECT SUMMARY

Name(s) Santino N. Valiulis	Project Number J1726
Project Title Natural vs. Chemical Herbicides	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The objective of this project was to find which of the herbicides (Roundup, cinnamon oil, lavender oil, or vinegar) was most effective at inhibiting the color, growth, and number of leaves of St. Augustine grass and Dichondra grass.</p> <p>Methods/Materials First prepare 5% solutions of cinnamon oil and lavender oil in water to match the 5% concentration of white distilled vinegar and 5% concentration of Roundup. Put the herbicides in spray bottles. Then prepare 50 pots, 25 of which have St. Augustine grass, and the other 25 have Dichondra grass. Once a week, spray 5 of each plant with one of the herbicides except for the control group, which is not sprayed. Every other day document the color, growth, and number of leaves of each plant.</p> <p>Results The results of the experiment show that Roundup is the most effective herbicide. The means show that after five weekly applications, Roundup had a mean of 0 in all areas (growth, color, and number of leaves) for both types of plants, which means that the plants were entirely dead. However, cinnamon oil was very quick at affecting the plants, and within the first two days there were visible results. Lavender and vinegar also inhibited the color, growth, and number of leaves of the plants, but did not kill them as thoroughly as Roundup.</p> <p>Conclusions/Discussion The objective was completed and Roundup was found to be the most effective herbicide. However, over a shorter period of time the cinnamon oil and vinegar were more effective than Roundup. As natural alternatives to chemical herbicides, vinegar or cinnamon oil could be used as potential substitutes to chemical herbicides. Vinegar and cinnamon oil would require repeated applications because the plants would come back over time. Home gardeners or farmers could investigate use of natural herbicides. Research has shown that Roundup can cause birth defects in livestock and may go into ground water and runoff. Further research could go into mixing the natural herbicides, for example a mix of cinnamon and lavender oil.</p>	
Summary Statement My project compares three natural/organic herbicides (cinnamon oil, lavender oil, and vinegar) and one chemical herbicide (Roundup) to determine the effectiveness of inhibiting color, growth, and number of leaves on certain grasses.	
Help Received My mother helped with assembling the poster board, proofreading, and preparing the pots. My teacher helped edit my report.	