



CALIFORNIA STATE SCIENCE FAIR 2009 PROJECT SUMMARY

Name(s) Francesca A. Cerri	Project Number J2005
Project Title Who Needs Dirt? A Growth Comparison of Soil vs. Soilless Mediums	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals My project is to determine if plants grow better hydroponically or in soil as measured by plant height. While I believe that using Rockwool as my hydroponic substrate will show the best growth rate, it is not a biodegradable material. As such, my project also compares another hydroponic substrate, Coconut Coir, which is biodegradable.</p> <p>Methods/Materials Twenty-seven opaque plastic pots were used to conduct nine trials, labeled A-I, each containing three replications. Basil seeds were seeded into trays for germination using artificial light and heat. Seedlings were then transplanted into pots which had been prepared for with specific growing mediums and labeled. Trials consisted of Fertilized Soil watered with Distilled Water and Outdoor Water (Trials A & B); Rockwool watered with Flora Nova Plant Food "FN" and Distilled Water (Trials C & D); Coconut Coir watered with "FN" and Distilled Water (Trials E & F); and Paper Towels (control trial) watered with Outdoor Water, Distilled Water and "FN" (Trials G, H, & I). Water used in the hydroponic applications was pH balanced between 6.0 to 6.5. Adjustments were made using "pH Down" & "pH Up" products by "Grow More". Each pot was watered as required. The height and general observations of the basil plants were recorded in a log.</p> <p>Results Rockwool with the use of plant food was the better medium for plant growth. These plants measured greater heights and generally appeared more vigorous.</p> <p>Conclusions/Discussion Based on observations of plant growth and the review of my data it is my opinion that my hypothesis can be supported, with some reservations. As plants in soil did die, further experimental trialing is necessary to reach a definite conclusion. The problems with the soil were probably due to placement of dry fertilizer. The dry fertilizer is high in salt which can burn the seedling's roots. For future projects, I would consider using potting soil which is made for small containers and has the needed fertilizers pre-mixed in soil. However, even in potting soil some nutrients become attached to soil particles and are not available to the plant. Since the nutrients provided hydroponically are all soluble and readily available to the plants roots, I still believe my findings and original hypothesis will be confirmed.</p>	
Summary Statement A comparison of plant growth in soil versus soilless mediums.	
Help Received My father helped me with pH monitoring of the plant food and water; Scott Glass @ Urban Garden Hydroponic Supplies helped me select materials for project which were cost effective; and my teacher helped me by reviewing my project from start to finish.	