



**CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY**

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| Name(s) Kimberly K. Tenbergen | Project Number J1728 |
| Project Title Investigating the Growth of Duckweed using Nutrient Enriched Water | |
| <p style="text-align: center;">Abstract</p> <p>Objectives/Goals The purpose of my science project is to determine the different amount of nutrients in soil comparing potting soil and natural soil as determined by duckweed. The reason I have decided to do this project is because I wanted to determine the different amounts of nutrients in different soils to see how it can help out plant growth and our environment. I am using duckweed in my project only as a conductor to determine the nutrient effeteness' of the soils.</p> <p>Methods/Materials Duckweed; 400mls Water; 20g.Natural Soil; 20g.Potting Soil; 20g.Ash; 1200ml Containers; Metal Teaspoon; Metal Strainer; Cheese Cloth; Measuring Cup; Graph Paper; Balance; Ruler; Coffee Filters; Tooth picks. Gather 10 different soils; Then set up containers, water, soil, and scale; Next label each of the containers with proper labels; After, add 20 grams of soil into each appropriate containers; Then repeat step 4 for each container; Then measure out 400 mls of water into each of the soil and additives filled containers. Afterwards let the soil sit for 2 nights so the nutrients can absorb occasionally stirring. After the 2 day wait, gather the cheese cloth so you can drain out the debris out of each container. Then let the water sit for one more night so everything can settle at the bottom of the container. The following day, add one teaspoon of duckweed carefully into each water filled container. Now take one container and poke several small holes in the bottom so it will drain easily. After that put a coffee filter in the smaller container and pour all of the containers contents into the filter. Then with a toothpick very gently scrape the duckweed onto a piece of the graph paper. Now move the duckweed onto the graph paper units making sure that they spread out evenly into a square formation.</p> <p>Results Potting soil has more nutrients than natural soil does because they are specifically designed to do so. For the natural soils, clay based soils work better compared to sandy soil because they hold in the water nutrients obtaining growth.</p> <p>Conclusions/Discussion After completing my project on, investigating the effect of different soils using nutrient enriched water determined by duckweed, I came to realize that potting soil has more given nutrients than natural soil. When people want strong and healthy plants they should use potting soil to increase the rapid production and stunning color of the vegetation.</p> | |
| Summary Statement Determining whether natural soil or potting has more nutrients to grow plants, determined by duckweed. | |
| Help Received Dr. Balaji Sethuramasamyraja helped supervise the procedure; Sharon Joyner helped pick out the 5 potting soils from nursery; Mr. Carl Gong helped revise work | |