



**CALIFORNIA STATE SCIENCE FAIR  
2013 PROJECT SUMMARY**

<b>Name(s)</b> Megan A. Greenwood	<b>Project Number</b> <b>J1909</b>
<b>Project Title</b> <b>Investigating the Effectiveness of Aquatic Duckweed in Testing Agricultural Soils for Their Fertility Level</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> My project was to determine if aquatic duckweed is effective in testing agricultural soils fertility levels.</p> <p><b>Methods/Materials</b> Soil samples from five different agricultural crops were obtained (almond, orange, vineyard, strawberry, and vegetable crops). A solution was made using distilled water and 2 cups soil, and straining through cheese cloth. The solution was equally divided among 5 glass containers. This procedure was repeated for the other four soil samples. A control with 60 duckweed fronds and distilled water was set aside. 60 duckweed fronds were placed in each of the 25 glass containers. Every 7 days for 21 days the contents of each glass container was counted and compared to the control. Trial 2 was performed in the same manner.</p> <p><b>Results</b> Trial 1 indicated that almond was the most fertile when compared to the other soil/solution samples and the control sample. At the 21st day almond averaged 145.8 duckweed fronds per container compared with control at 101, vineyard at 106.6, vegetable at 105, orange at 107.6, and strawberry at 104 duckweed fronds per container. Trial 2 indicated that strawberry was the most fertile when compared to the other soil/solution samples and the control sample. At the 21st day strawberry averaged 114.2 duckweed fronds per container compared with control at 98.6, vineyard at 109, vegetable at 97.4, almond at 109.6, and orange at 110.6 duckweed fronds per container.</p> <p><b>Conclusions/Discussion</b> Duckweed was effective in determining agricultural soils fertility levels. In trial 1 the growth of duckweed in the almond soil solution was higher than the growth in the control and other soil solutions tested.  In trial 2, the growth of duckweed in the strawberry sample was higher than the growth in the control and other soil solutions tested.</p>	
<b>Summary Statement</b> My project determines that aquatic duckweed is effective in testing agricultural soils for its fertility level.	
<b>Help Received</b> Father helped put board together, mother typed report, neighbor helped obtain duckweed	