



**CALIFORNIA STATE SCIENCE FAIR  
2006 PROJECT SUMMARY**

<b>Name(s)</b> <b>Kehly D. Kirk</b>	<b>Project Number</b> <b>S1610</b>
<b>Project Title</b> <b>Adding H(2)O(2) to the Mix: Effects of Hydrogen Peroxide on Germination and Plant Growth</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> Hydrogen peroxide can benefit plant growth in two major ways: 1) improved aeration; and 2) killing microorganisms that may be harmful to plant growth through its bactericidal/algaecidal/fungicidal qualities. This project was designed to test the effects of various concentrations of hydrogen peroxide on germination and plant growth.</p> <p><b>Methods/Materials</b> 20 Petri dishes, filter paper, 3 Jiffy Easy Grow Greenhouse Kits, potting soil, tap water, hydrogen peroxide solution, and seeds (cantaloupe, cucumber, radish, spinach, watermelon) were used. The Control Group was watered with tap water as needed and the Experimental Group was treated with one of three different concentrations (low, nominal and high) of hydrogen peroxide solution as needed. Petri dishes and greenhouses were checked for seeds that had germinated and data recorded daily. After most of the plants in the greenhouses had germinated, additional data including leaf color intensity, stem height, and overall appearance was collected weekly.</p> <p><b>Results</b> Data results indicated significantly better results in Experimental Group vs. Control Group in some areas. For cantaloupe: better germination in the Petri dish and greenhouse kit at nominal concentration. For radish: better greenhouse growth and color at low concentration and germination in the Petri dish at nominal and high concentrations. For watermelon: better germination in the Petri dish at nominal concentration. Other results (Experimental Group vs. Control) were essentially similar, significantly worse, or unable to determine due to small sample size. Therefore, data collected from the experiment only partially supports the hypothesis.</p> <p><b>Conclusions/Discussion</b> Application of hydrogen peroxide was found to have significant benefit for cantaloupe, radish, and watermelon. Depending on the plant, too little hydrogen peroxide was ineffective while too high a concentration proved to be toxic. Further research should be conducted to determine optimal concentrations for different plant types.</p>	
<b>Summary Statement</b> This project was designed to test the effects of various concentrations of hydrogen peroxide on germination and plant growth.	
<b>Help Received</b> Parents purchased the materials and provided oversight when I gathered my data to double-check for accuracy; Father assisted in preparation of charts and graphs.	