



California Science Center
CALIFORNIA STATE SCIENCE FAIR
2001 PROJECT SUMMARY

Your Name (List all student names if multiple authors.)

Richard C.. Yun

Science Fair Use Only

S1617

Project Title (Limit: 120 characters. Those beyond 120 will be ignored. See pg. 9)

Plant Growth with Hydroponics vs. Plant Growth with Natural Soil

Division

_ Junior (6-8) X Senior (9-12)

Preferred Category (See page 5 for descriptions.)

16 - Plant Biology

Abstract (Include Objective, Methods, Results, Conclusion. See samples on page 14.)

Use no attachments. Only text inside these boxes will be used for category assignment or given to your judges.

The purpose of my project is to see whether a hydroponics system of growing plants without soil and only a water-nutrient solution would result in faster growth of plants compared to a natural soil culture.

My hypothesis was that the hydroponics system would result in faster and more efficient growth because of the highly oxygenated water and rich nutrients that are always in contact with the roots of the plants. I built a hydroponics system from PVC pipes and a powerful water pump to circulate the water throughout the system. I planted seeds of a sweet pea, lima bean, and tomato plant in two separate groups of fertilized soil. I planted the same plants in another group with un-fertilized soil as a control group. Once the seedlings were large enough to have stable root systems, I moved one of the fertilized groups into the hydroponics system and took weekly measurements from that point on.

After experimenting and recording the results for a period of 8 weeks, I found that the average height of plants in the hydroponics were taller than those of the fertilized soil system and the control group, or the unfertilized soil system. And so my hypothesis was proven correct. At first, the hydroponics system was slow to grow once moved into the actual PVC system and I found that it was because of an adaptation phase the plants went through, but soon after the plants grew extremely quickly. I also controlled all variables such as temperature, lighting, and feeding.

Summary Statement (In one sentence, state what your project is about.)

Comparing how plants grow by using hydroponics with the growth of plants by using soil.

Help Received in Doing Project (e.g. Mother helped type report; Neighbor helped wire board; Used lab equipment at university X under the supervision of Dr. Y; Participant in NSF Young Scholars Program) See Display Regulation #8 on page 4.

Parents helped buy materials.