



**CALIFORNIA STATE SCIENCE FAIR
2007 PROJECT SUMMARY**

Name(s) Thomas D. Salinas	Project Number J1728
Project Title The Effects of Plant Overcrowding with Limited Resources	
Abstract Objectives/Goals The objective of this project is to show the effect of overcrowding on plant quality. Methods/Materials Radish plants were selected for this experiment because of their quick growth and maturation cycle. Four sets of seeds were set up in planters per seed manufacturer's recommendations for seed spacing as the control group. Four additional sets of seeds were set up in planters using 5 times the number of seeds per recommended spacing requirements as the variable group. All planters were exposed to identical growing conditions and received identical amounts of resources (light exposure, water) over the period of one month. Results Results showed the control group to have 100% germination versus 49% germination in the variable group. The control group produced 32 viable plants out of 32 and the variable group produced 78 viable plants out of 160. The variable group plants had an average of 6.00 cm for root length whereas the control group average root length was 5.14 cm. Visual comparisons showed the following: control plants had a larger root system (thicker, shorter and more substantial); variable plants had a thinner root mass and long thin roots. Control plants produced shorter but thicker stems while the variable plants produced tall, thin, fragile plants. Control plants produced several large flat leaves while the variable group produced more leaves but they were smaller in size and tended to be curled rather than flat; leaf color was also lighter than control group. Red maturation color was darker and more frequent on control plants versus variable plants with lighter color and less production. Conclusions/Discussion When necessary resources were in limited supply, the variable group plants were forced to compete for these resources more thereby lowering survival rate and plant quality whereas the control group exhibited complete germination and healthier, heartier plant production supporting my hypothesis. Further experiments regarding plant overcrowding could include providing additional resources to variable group and determining if given enough resources for survival, if sheer space constraints produce similar or very different results. Data of this sort could perhaps be applied to getting greater food production from smaller growing areas.	
Summary Statement Effects of plant overcrowding with limited resources.	
Help Received Assistance with production of graphs due to unfamiliarity with software program; Mother assisted with abstract composition and submission.	