



**CALIFORNIA STATE SCIENCE FAIR  
2007 PROJECT SUMMARY**

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<b>Project Title</b> <b>Power Plants</b>	
<b>Abstract</b> <b>Objectives/Goals</b> The original information that began the interest in radiated seeds was the discovery that seed companies often radiated their seeds to kill microorganisms that could be harmful to seed germination. From this information, we wanted to know what effects radiation has on seed development. <b>Methods/Materials</b> We hypothesized that as exposure to microwave radiation on seeds increased the germination rate of seeds would decrease. To test this hypothesis we had four seed types- watermelon, cantaloupe, bean, and pea. Each plant type had 6 groups with 6 seeds in each group. Each group was separated by microwave radiation exposure. The time increments were control (0 seconds), 5 seconds, 10 seconds, 15 seconds, 20 seconds, and 25 seconds. The radiated seeds were then planted and observed for 28 days. <b>Results</b> The results showed that the 10 second group grew the most, and the 20 second group had the second highest height average. The experiment proved that our hypothesis was correct and incorrect. While the 10 and 15 second groups grew the most, beyond 15 seconds, plant height decreased. <b>Conclusions/Discussion</b> We concluded from these results that a certain amount of radiation can, in fact, assist plant growth. After further discussion, we concluded that just as radiation can inhibit microorganism growth, it can also act as a kind of catalyst. The radiation from the microwave weaken some seed coat bonds making it possible for seeds to germinate faster as they can break through the seed coat easier. But too much radiation breaks the bonds and so hurts the seed which is why the 20 and 25 second groups had a decrease in average height. Furthermore, the bean and pea seeds reacted better to the radiation as their seed coats are not as thick and hard as the watermelon and cantaloupe seed coats. The radiation could more easily weaken the pea and bean seed coats and they were able to grow quicker and taller. While too much radiation can hurt weak seed coats, a certain amount of radiation can actually help seeds by giving a jump start to germination.	
<b>Summary Statement</b> We wanted to know whether microwave radiation would harm seed germination or benefit seed germination.	
<b>Help Received</b> none	