



**CALIFORNIA STATE SCIENCE FAIR
2014 PROJECT SUMMARY**

Name(s) Cassidy M. McKee	Project Number J1725
Project Title How Does X-Ray Radiation Affect a Seed's Germination?	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The purpose of my project was to determine if x-ray radiation affected a seed's growth, or germination. The experiment involves x-raying a seed then watching it grow. I chose this topic because people like worried mothers who have a child going under an x-ray, curious farmers, and even doctors who specialize in diseases such as cancer that is caused by an x-ray, can use this information.</p> <p>Methods/Materials This experiment was done by taking three x-rays of six seeds, three x-rays of another six seeds, and nine x-rays of a different six seeds. Next, soaking the seed starters until they were raised and soaked through with water. Then planting the seeds, plus another six for no radiation, and labeling each number of times they were x-rayed. Next, watching them grow for ten days, and recording everything that happens. Materials were: one x-ray machine, twelve radish seeds, one bag of seed starters, one source of water, three sheets of white paper, one notebook, one ruler or measuring tape, one pen or pencil, and four plastic bags.</p> <p>Results The results showed that the seed that was not exposed to any radiation at all started growing first, and grew to be the tallest. In second place, were the seeds that had nine x-rays taken of them. The seeds that were x-rayed three times grew to become third place and started growing third fastest. Finally, the seed that was x-rayed six times started growing last and grew to be the shortest out of all the amounts of radiation exposure.</p> <p>Conclusions/Discussion As stated in my hypothesis, I believe that x-ray radiation would slow a seed's growth, and the more times a seed was x-rayed the slower it would grow and the shorter it would turn out to be. The experimental did not support my hypothesis indicating that my hypothesis should be both rejected and supported. I believe the reason I got these results is because it didn't really matter if the seeds were x-rayed or not. This is because, even though human and plant cells are similar, there are still differences in many cases. For a human cell it might take less radiation than a plant's before it starts breaking down because of its protective layers, so the actual cell might be more flimsy than those of a plant. Therefore, a plant's cell could take anywhere from thirty to one hundred x-rays before you could get any sort of reaction. However, for a human you could get ten x-rays and already start to get early cancer or a disease.</p>	
Summary Statement The purpose of my project is to determine if exposure to x-ray radiation affects a seed's growth, or germination.	
Help Received Auburn Animal Medical Center let me use equipment under supervision of Dr. Ashley	