



**CALIFORNIA SCIENCE & ENGINEERING FAIR  
2018 PROJECT SUMMARY**

<b>Name(s)</b> Noa R. Wallock	<b>Project Number</b>  38647
<b>Project Title</b> <b>Can Germinated Radish Seeds Grow in Different Gradients of Simulated Mars Soil, With or Without Fertilizer?</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> My objective was to see if Mars soil has enough nutrients to successfully grow and support plant life.</p> <p><b>Methods/Materials</b> My experiment used 4 different types of Mars soil simulant: super fine, fine, course, and unsorted grade (purchased through a N.A.S.A sponsored website). Regular potting soil was my control group. I constructed 5 miniature greenhouses containing 10 germinated radish seeds in each. Some plants were watered with distilled water and some were watered with distilled water mixed with synthetic fertilizer.</p> <p><b>Results</b> The results were based on both the average weight and singular mass of each radish plant after 4 weeks. The control group had the greatest average mass overall. However, plants also grew in the simulated Mars soil. The radishes in the very fine grade Mars soil simulant had the greatest average mass out of the soil simulants with and without the addition of fertilizer. Even though the regular potting soil had the greatest average mass after 4 weeks, some of the singular radish plants in the different gradients of simulated Mars soil outweighed the control group.</p> <p><b>Conclusions/Discussion</b> Food is a prime resource our bodies need to function. By the 2030s, N.A.S.A predicts they will start sending people to Mars. For humans to survive on this distant planet, we will need a food supply. My experiment not only proved that Mars soil can support plants, but also which gradient of Mars soil would produce the best plants. I hypothesized that the fine grade Mars soil simulant would have the greatest mass after 4 weeks. However, my experiment concluded that the very fine Mars soil simulant had the greatest mass after the allotted time of 4 weeks. Therefore, my hypothesis was disproved.</p>	
<b>Summary Statement</b> I demonstrated that plants can successfully grow in simulated Mars soil.	
<b>Help Received</b> I designed my experiment on my own. I had help with proofreading my work from my parents and a science teacher at my school, Ms. Joel. Another science teacher at my school, Ms. Carter oversaw my experiment to ensure my safety.	