



**CALIFORNIA STATE SCIENCE FAIR
2017 PROJECT SUMMARY**

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| Name(s) Lily C. Oglesby | Project Number J1917 |
| Project Title How Does Plant Growth Vary between Martian and Earth Soils? | |
| <p style="text-align: center;">Abstract</p> <p>Objectives/Goals The objective of the experiment was to see which type of soil (potting soil, topsoil, or martian simulant) would make plants grow the fastest and produce the most leaves.</p> <p>Methods/Materials</p> <ol style="list-style-type: none">1. 60 cups 8.89 by 8.89 centimeters by 8.89 centimeters2. 4 trays to hold cups3. 120 Cherry tomatoes (<i>Solanum lycopersicum</i>)4. 30 coffee filters5. 1.3 kg topsoil[1]6. 1.3 kg Martian regolith from orbital technology corporation[2]7. 1.3 kg Lowes Sta-growth potting mix[3]8. 2 sun lamps9. Spray bottle/tablespoon measure10. Milligram scale11. Distilled water <p>Put coffee filter in bottom of each cup. There were 20 cups for each soil type and 2 seeds in each cup. Plants were watered as needed, and sun lamps were provided. Each day, count the number of leaves, and at 50 days, measure total biomass across all cups of each soil type.</p> <p>Results</p> <p>The plants growing in the Martian simulant had the largest biomass and most leaves, followed by the plants in potting soil and topsoil. Two t-Tests were performed to determine if there was a significant difference between the different soil types in the number of leaves produced. The first t-Test compared the leaves per cup (across all cups on the last day of the experiment) in the Martian soil to the leaves per cup in the potting soil. The number of leaves per cup in the Martian soil was significantly greater than that of the potting soil. The second t-Test compared the difference in leaves per plant (across all cups) in Mars soil and Potting Soil. The number of leaves per plant was not significantly different. Thus, the number of leaves per cup in the two soil types was significantly different because more plants grew in the Martian soil cups, and thus affected the leaf count.</p> <p>Conclusions/Discussion</p> <p>In conclusion, the data partially supported the hypothesis, which was that plants would grow better overall in Martian Soil than in topsoil, but worse than if grown in potting soil. Plants grown in simulated Martian</p> | |
| Summary Statement Plant growth was tested in three soil types and found that Martian simulant grew plants the best, followed by potting soil, with topsoil performing the worst. | |
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