



# CALIFORNIA SCIENCE & ENGINEERING FAIR 2019 PROJECT SUMMARY

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<b>Project Title</b>  <b>The Positive Effects of Arbuscular Mycorrhizal Fungi on Sodium Stressed Plants</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives</b> The objective of my experiment was to determine if using Arbuscular Mycorrhizal Fungi (AMF) would positively benefit and sustain plants grown in sodium-stressed soil as compared to those grown in non-stressed soil.</p> <p><b>Methods</b> I tested my question by inoculating 30 milkweed plants that I'd germinated from seed- half with positive AMF inoculum and half with negative. Then, I simulated a sodium-stressed environment in half of each of these plants by adding a salt solution. I then observed plant health and height. The materials I used were milkweed seeds, pots, trays, and AMF inoculum, all supplied by Dr. Ylva Lekberg. I also used a TDS meter, native soil, vermiculite, distilled water, and salt.</p> <p><b>Results</b> I found that the plants with AMF in the sodium-stressed soil had the most change in growth; they averaged at 5 cm of total change. The other averages were much smaller; 3 cm of change for the AMF in non-stressed soil, 2.6 cm for the non-AMF in the non-stressed soil, and 2.4 cm of growth for the non-AMF plants in sodium-stressed soil.</p> <p><b>Conclusions</b> My results apply to California today because as people use grey water irrigation to reduce water usage, they add sodium to their soil, which has negative impacts on plants and soil. AMF, I have found, increases these plants' health. By using AMF, you can positively benefit plant health and counteract the negative impacts of soil salinity. This fungus can potentially be useful in agriculture to increase the health of plants and soils that suffer from drought- and sodium-stressed environments.</p>	
<b>Summary Statement</b>  My project focuses on using Arbuscular Mycorrhizal Fungi to combat the negative effects of sodium in plants and soil due to grey water irrigation.	
<b>Help Received</b>  Through email, I consulted extensively with Dr. Ylva Lekberg, a professor at the University of Montana, and also borrowed equipment from her laboratory. Additionally, at the culmination of my experiment, I collected root samples from my plants and shipped them to Dr. Lekberg for analysis.	