



CALIFORNIA SCIENCE & ENGINEERING FAIR 2019 PROJECT SUMMARY

Name(s) Essey Afewerki	Project Number J0901
Project Title Effect of Fire on Soil	
<p style="text-align: center;">Abstract</p> <p>Objectives The goal of my project was to study the effect fires have on several of soils' characteristics. These are, organic matter content, water retention capabilities, and ability to support plant life.</p> <p>Methods To perform my experiment, I used all household materials. In my procedure, I began by drying and sieving the soil. For the first section, I calculated the average percent mass loss when put under 500 degrees C to represent a fire. Second, I compared the average mm of water lost per day in burned and control treatments(I consistently brought the weight back up to a set temperature each day). Finally, I grew corn in burned and control treatments of soil and compared the average height of plants in each treatment.</p> <p>Results I have found that fires cause soil loses an average of 6.7% of its' mass due to organic matter loss. Fires also cause soils' water retention capabilities to become greatly decreased. This all results in soil that cannot support healthy plants. This was judged by comparing the height of the corn in the control treatment versus the soil in the burned treatment. I found that the average height of the plants was significantly less in the burned treatments compared to the control.</p> <p>Conclusions In my study I have found that fires have several dramatic changes on soil characteristic that each have a significant effect. Fire causes soil to lose organic matter that includes essential nutrients. It also causes soil to be less able to retain water. This all results in unhealthier plants. With an unprecedented amount of fires raging across California, knowing what effect fires have on soils and the plants they grow would be of importance.</p>	
Summary Statement My project is studying the effect fires have on soils' organic matter content, water retention capabilities, and ability to support plant life.	
Help Received Troy Souther, Teamrat Afewerki, Asmeret Berhe, CIMIS (California Irrigation Management Information System)	