CALIFORNIA STATE SCIENCE FAIR
2017 PROJECT SUMMARY

Name(s)
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Project Number
J1210

Project Title
Flammability Properties of Native and Non-Native Landscape Plants

Abstract

Objectives/Goals
In May of 2014 in San Diego County, eight to fourteen fires were burning at the same time. One fire was less than two miles away from my home.The purpose of this project, was to see which outdoor plants might be least likely to ignite. Which plants should be planted around the perimeter of a house that might help prevent a wildfire from spreading? Based on my research, I believed that planting the right type of plants might help protect houses from wildfire or prevent a wildfire from spreading.

Methods/Materials
I tested three samples each of ten plants, five native and five non-native. I used a blowtorch to stimulate wildfire and I used my grill for a fire safe location. I used a GoPro to take videos. I set up the grill and wore goggles and welder's gloves. I placed the plant into the tongs. I tested the time to burn, char, disintegrate, and the time until the end of the experiment.

Results
According to my results, 50% of the plants I tested were unsuitable for protecting against wildfire, and I rated these plants as "C". 40% of the plants I tested seemed suitable to protect against wildfire and earned an "A" rating. Of the plants I tested, I rated 10% as "B" on my rating scale, indicating that they may be moderately protective. The plants that received a "C" rating were Laurel Sumac (Native), Ornamental Strawberry (Native), Rose (Non-Native), Toyon (Native), and French Lavender (Non-Native). The plant that earned a "B" rating was Chamise Sage (Native). The plants I gave an "A" rating were Aloe (Non-Native), Stonecrop (Native), Dragonfruit (Non-Native), and Jade (Non-Native). I noticed that all the succulents had acted like a barrier against the fire and did not ignite even with extended time.

Conclusions/Discussion
Every species of succulents I tested held up extremely well throughout prolonged testing. The succulents acted like a barrier against the fire and completely deflected it. The succulents seemed to be "sweating" and released much water that dripped from the bottom. I think all the succulents fared better because in their tissue they have a high moisture content and I saw that when the moisture was coming out of the succulent. These succulents could help save homes, schools, office buildings, libraries, the possibilities are endless, as long as you plant these plants you may have a higher chance of not losing your home to a wildfire.

Summary Statement
The purpose of this project is to see which plants might be least likely to ignite and would protect a home from wildfire and prevent the fire from spreading.

Help Received
I did everything myself except I had adult supervision while doing the flame induced experiments.