CALIFORNIA SCIENCE & ENGINEERING FAIR
2018 PROJECT SUMMARY

Name(s)
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Project Number
J2104

Project Title
Surface Temperatures of Turf Samples and Infills

Abstract

Objectives/Goals
The objective of this project was to determine what factor significantly causes turf to heat up. Finding the distinct factor will prevent turf installers from their turf reaching extreme temperatures. To further study this, the question of will the quality/type of turf or the type of infill affect how hot the turf gets, was raised. The questions helps clarify what exactly needed to get tested.

Methods/Materials
I placed pairs of 9X9 turf samples separately into two different wooden frames. The frames allowed the turf's infill to remain where it needed to be, and the wooden frames were built by a carpenter. After I placed each sample into its individual square, I evenly dispersed infill on top of them. One row of samples had one type of infill, while the second row of samples had another type of infill. Every half an hour, the surface temperatures of the turf samples wererecorded using an infrared laser thermometer.

Results
The brands didn't play a significant factor on the temperatures the brands reached. The highest difference between the hottest turf brand and the coolest turf brand was 6.755 degrees Fahrenheit. The most significant difference between the infills reached up to 6.5 degrees Fahrenheit. Although there were temperature differences, the turf brand or the type of infill did not play a significant roll. Even though the turf brand and infill type did not reveal discrepancies, the temperature of natural grass was recorded. At 83 degrees Fahrenheit outside, natural grass rose to 83 degrees Fahrenheit, while the turf rose up to 142 degrees Fahrenheit.

Conclusions/Discussion
Having all of the turf samples outside, with an equal amount of sun exposer, allowed each reading to be more accurate. Even though the samples were outside at the same time and location as each other, the infrared laser thermometer lacked accuracy. In order to receive results that were completely accurate, a more advanced infrared laser thermometer needed to be purchased.

Summary Statement
I determined that turf reaches extreme temperatures in comparision to natural grass, yet the brand of turf or the type of infill used in the turf does not play a significant factor on the temperature of the turf.

Help Received
My science teacher, Mrs. Armstrong, explained to me how to use the infrared laser thermometer. I also received assistance from my mom to understand how to analyze the data I collected the best way possible.