CALIFORNIA STATE SCIENCE FAIR
2011 PROJECT SUMMARY

Name(s)
Alexandra R. Nordyke

Project Number
J1119

Project Title
The Effect of Wildfires on Grass Regrowth

Abstract

Methods/Materials
- â#¢ About 2 kg of Brush Ash
- â#¢ About 2 kg of Wood Ash
- â#¢ One Fire pit to create ash
- â#¢ One Oven
- â#¢ 2 large Pyrex casserole pans
- â#¢ 27 ZiplocA# 500 mL containers
- â#¢ One packet of native California Fescue grass

Results

The 5 day rain in December 2010 washed out the first run of the experiment. The experiment was completely restarted. Results of experiment begin in Figure 1 which shows that grass seed that was baked did not germinate. These trials were therefore not included in the remaining analyses. The complete results for Ash Type and Baking Time are reported in Tables 1 and 2. These results are explored in detail in Figures 2 and 3.

Figure 2 compares growth characteristics of grass grown in the two ash types versus controls for the three weeks measured. The left panel shows that for all three weeks, the average grass height of both ash types was less than controls. There were no significant differences in the average height of the two ash types. The Right panel in Fig. 2 shows that there may have been better germination in the wood and brush ash trials.

Figure 3 compares growth characteristics of grass grown in soil that was baked for 10 and 30 minutes versus controls for the three weeks measured. The left panel shows that for all three weeks, the average grass height of both bake times was less than controls. There were no significant differences in the average height of the two bake times. The Right panel in Fig. 2 shows that there may have been better germination in the soil that was baked. Linear regression was used to determine whether, when considered together, the ash or the bake time had a greater effect on grass height. This showed that the ash had perhaps a greater effect on limiting grass height.

Conclusions/Discussion

The results showed clearly that simulated fire keeps grass seed from germinating. For unbaked seeds, germination seemed to be better in soil with ash. This may have been because the ash provided protection for the seeds and kept them more moist. However, the findings also suggest that grass growth was stunted by ash and if the soil was baked. The seeds grew the best with out any simulated fire effects.

Summary Statement

This experiment is testing how the characteristics of a fire; time duration, ash composition, and the effect of the heat on seeds, would effect the soil and how the grass regrows.

Help Received

Father supervised the burning of the wood and ash. Mother helped with STATA program.