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| Conclusions:  When all the data is examined together it proves inconclusive. My prediction, "If intense forest fires decrease the fertility of soil by killing organisms beneficial to plants, then radishes or rye grass grown in soil heated to high temperatures should have inferior growth rates to those grown in normal soil" would have been supported by clear linear trends in graphed data, but none of the graphs were perfectly linear. Most were like [Figure 4](http://docs.google.com/graph4.html)--curved, showing no trend. Several of measurements were contradictory. [Figure 2](http://docs.google.com/graph2.html) shows radish diameter to be greater in the 10-minute box than the control box and the 30-minute box while [Figure 4](http://docs.google.com/graph4.html) shows a greater average root length in the control box and 30-minute box than in the 10-minute box. Because I was attempting to compare growth and the averages were reciprocal with different types of measurements (root length versus radish diameter for example), I cannot make any conclusions.  Another disturbing incongruity occurred in my t-tests. For the t-tests on the data for the second trial both the 20-minute and 30-minute boxes showed ìsignificantî differences from the control in average grass mass, however, the 30-minute box showed a greater mass than the control while the 20-minute box showed a lesser mass. Because one would expect the 30-minute box to have an average mass closer to the 20-minute box than to that of the control, I am suspicious of the data.  Due to the many errors in my experimental design (such as the small sample size) and other unexpected problems, such as the aphids and sudden death/maiming of certain radishes, my data has proven inconclusive. Some of the data ([Figures 1](http://docs.google.com/graph1.html) and [4](http://docs.google.com/graph4.html)) seems to suggest that fires may be beneficial to plant growth. This could be because the heat releases nutrients that are directly available to plants, providing immediate benefits. Perhaps any changes due to the deaths of the microorganisms in the soil would take longer to observe. The temperature I used to heat the soil may have been too low to cause a significant change. It is very possible that in natural burning, small fires that make organic material available to plants may not damage the microorganisms in the soils.  Recommendations:  If anyone wishes to repeat this experiment or attempt something like it I have many suggestions.   * Use a biodome of some kind to isolate the specimens from insects, spores, and other possibly disruptive variables. * Try using other taproots such as carrots, if time allows. Do not use fibrous roots! * Try using soil taken from a forest, if possible. Ask someone for help to be sure there are no dangerous chemicals that could be inhaled after heated. * Heat the soil itself to specific temperatures that differ significantly. In this experiment the soil itself reached temperatures much lower than the barbecue, this could have been a reason why the data was so confusing. * Use a different means to evaluate the quantity and variety of microorganisms in the soil. * Try to find a way to water regularly without over watering or drying out the plants. * Use something other than a barbecue to heat the soil, but make sure it will not heat the soil so much that the composition of elements within the soil could become a lurking variable and poison the plants. The temperature to use to simulate a forest fire is unknown, and it is difficult to emulate the top-down application of heat without industrial equipment.   Ideally, this experiment would be performed using samples of soil from areas following real forest fires.  [[Home](http://docs.google.com/home.html)][[Introduction](http://docs.google.com/introduction.html)][[Hypothesis](http://docs.google.com/hypothesis.html)][[Procedure](http://docs.google.com/procedure.html)][[Data](http://docs.google.com/data.html)][[Conclusions](http://docs.google.com/conclusions.html)][[Bilio/Links](http://docs.google.com/biblio.html)]  [[2001 Projects](http://docs.google.com/index.html)][[2000 Projects](http://docs.google.com/AP2000/index.html)][[1999 Projects](http://docs.google.com/AP99/index.html)][[1998 Projects](http://docs.google.com/AP98/index.html)] |