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| [Abstract](http://docs.google.com/abstract.html)  [Introduction](http://docs.google.com/intro.html)  [Hypothesis/Prediction](http://docs.google.com/hypo.html)  [Materials](http://docs.google.com/material.html)  [Protocol](http://docs.google.com/protocol.html)  [Literature Review](http://docs.google.com/lit.html)  [Data](http://docs.google.com/data.html)  [Statistical Analysis](http://docs.google.com/stats.html)  [Graphs](http://docs.google.com/graphs.html)  [Images](http://docs.google.com/images.html)  [Conclusion](http://docs.google.com/conc.html)  [Works Cited](http://docs.google.com/works.html)  [Recommendations](http://docs.google.com/recc.html)  [Acknowledgements](http://docs.google.com/ack.html)  [Biology Updates](http://docs.google.com/updates.html)  [Home](http://docs.google.com/home.html) | **Conclusion**  In conclusion, this research project, Ryegrass�s ability to effectively decontaminate soil from strong pH levels of Acid Rain, has provided evidence that it is possible to use Ryegrass as an environmental retro-active solution of Acid Rain soil contamination. According to the results presented in the spread sheets, it is evident that both Ryegrass and Perennial Ryegrass assist in absorbing low pH levels of sulfuric and nitric acids out contaminated soil. The supporting evidence includes the change in the stem and root color in both types of Ryegrass, a change in the node fixture in Perennial Ryegrass, and most importantly a change a rise in the pH of the acid rain contaminated soil. These results were strongly apparent in both the sulfuric and nitric acids with pH�s of 2.0 and 2.5. The roots color would change from white, observed in the control group, to yellow, and in extreme cases an orange, in the experimental group. The stem color change was not as drastic as seen in the roots but it was evident in the Ryegrass that the low pH levels of acid were effecting the production of chlorophyll. Although, these surface observations merely suggest what the environment has already concluded, acid rain contaminates, the Ryegrass with closer observation proved otherwise. Despite the color change, the Ryegrass appeared healthy; the turgor pressure maintained a hyposmotic environment. It appears that the intake of the acid into the vascular tissue of the plant was not effecting the entire production of food, or photosynthesis. This statement is feasible because during the observations of these Ryegrass plants over a period of time the Ryegrass never died despite the color change.  Secondly, the node change was unexpected in the Perennial Ryegrass used in the further study. A comparison between a bent node and a straight node can be viewed on the web page found on the computer. A node is a joint. In the control group the nodes were joints lacking a severe directional change. In laymen�s terms they simply remained vertical. However, the Perennial Ryegrass that was grown in contaminated soil with a pH of 2.0 or 2.5 showed a severe directional change at the nodes. Originally there were various potential explanations, such as the plant was dying or change of direction to have the most contact with sunlight. Although, after evaluating the data and the various plants containing these node changes, these assumptions were proved invalid. The turgor pressure was maintained in all the plants, thus eliminating dehydration. When we re-evaluated a directional change for more direct contact with the sun the assumption became infeasible because all the plants were in the same location. Therefore, after more research two more assumptions have been made. The first suggests that at a pH level of 3.0 and below the secondary structure is lost and the chemical lignin is impeded. This means that the plant�s colenchema cells were being effected and this plant was no longer going to be as sophisticated as it had evolved to be. The second assumption is at these pH levels the lignin mutated and encouraged the secondary tissue to grow in untraditional manners. The idea of mutation suggests that overtime this plant has the potential to evolve or adapt to handle these environmental conditions.  Lastly, when testing the pH levels of the soil before the plant growth, all the pH�s were what the designated pH stated in the protocol. However, after each study was complete and the pH was measured in the soil again, the pH had been raised to a range surrounding that of neutral, 5-7. These results would allow other acid rain intolerant plants to reclaim the once contaminated soil. Although, this research project was unable to declare the extent of how effective the Ryegrass is as a decontaminate, it does however, suggest Ryegrass assists in the decontamination of soil inflicted with acid rain.  Therefore, with the closed system conditions and the concluding results it is a safe assumption to declare that Ryegrass can effectively decontaminate soil from strong pH levels of Acid Rain. |