The Heavy Metal Movement Phase II: A Field and Laboratory Study of Panicum virgatum L. and Its Ability to Phytoremediate Soil from the Tar Creek Superfund Site

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The purpose of this project was to see if Kanlow Switchgrass plants growing at Tar Creek Superfund Site have adapted to deal with the toxic conditions at that site. There were two parts to this project. Firstly, seeds collected from plants at the field site were grown in lab alongside Kanlow seeds which came from plants not grown in toxic conditions. Lab groups were grown in Tar Creek soil and potting soil, they were grown for 15 weeks with plant and soil samples taken at 11, 13 & 15 weeks. Secondly, plant samples - roots and stems - were collected monthly for 5 months in order to determine the heavy metal content of those plants from active growth through dormancy. The hypotheses were that the 1) plants from seeds collected on site would phytoremediate soil better than regular seeds and 2) plant samples at tar creek would be higher in heavy metal content during active growth as compared to the heavy metal content during dormancy. Plant and soil analysis were conducted from all lab and field collections. All soil and plant material were digested with acid in open block and both soil and plant tissues were analyzed using an ICP-OES Spectro Arcos machine. The results support hypothesis 1, all metals analyzed in soils were lower over time in the groups grown with Tar Creek seeds. Hypothesis 2 was also supported; the heavy metal content was higher during active growth and was lower after dormancy.

Awards Won:

Serving Society Through Science: First Award of $500