Phytoremediation of a CCA-Contaminated Site Using Chinese Brake Fern. (S11-kertulis234249-Poster)

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Abstract:

Many soils are contaminated with As due to treatment and use of chromated copper arsenate (CCA) pressure-treated wood. A study was conducted to determine efficiency of Chinese brake fern (Pteris vittata L.), an As-hyperaccumulator, on removal of As from soil at a CCA-contaminated site. No fertilizer or amendments were used on the site. Surface and profile soil As were determined for 2000 and 2001. In 2001, dead fronds were removed three times, and a total harvest was performed. Plant biomass, As concentrations in fronds and amount of As removed was determined for each harvest. There were no significant differences in soil As concentrations between 2000 and 2001, primarily due to extreme variability in As concentrations at the site. However, mean soil As was reduced from 190 to 182 mg kg-1. Frond As concentration was not significantly different between the first three harvests. Approximately 15.7 g of As were removed from the soil by Chinese Brake. This fern is capable of accumulating As from a CCA-contaminated site. The slight decrease in soil As indicates a need for extended use of the fern at the site, and use of different harvesting methods for more effective remediation. Also, better agronomic practices are needed to enhance growth and As uptake for maximum soil As removal.

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