Phytoremediation of land contaminated by recalcitrant contaminants using Eastern gamagrass and Annual ryegrass. (S11-sung150704-Poster)

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Abstract:

Phytoremediation is a cost-effective alternative for remediation of soils contaminated by recalcitrant pollutants. The effectiveness of a warm season grass (Eastern gamagrass), a cool season grass (Annual ryegrass) and on a rotation of warm and cool season grasses on the remediation of soil freshly contaminated with TNT and PBBs was evaluated. A total of 96 columns were filled with a Weswood silt loam soil that was mixed with TNT and PBBs to a target concentration of 10 mg kg-1 of each contaminant. Six sample rounds were conducted over a two-year period where replicated samples of soil, shoots, roots and leachate were collected to determine chemical movement, microbial degradation, and plant uptake. The results showed that chemical losses during this two-year field lysimeter experiment were similar for all experimental treatments and at all depths. Enumeration of soil microorganisms revealed robust microbial populations in both the bulk soil and root rhizosphere soil. Then, the field data collected from the lysimeter experiment were used to calibrate a recently developed phytoremediation model. The model successfully

simulated TNT soil concentrations in the column lysimeters.

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