Phyto-Engineering to Solve Environmental Problems. (A02-lee211941-Oral)

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Abstract:

The U. S. Army Corps of Engineers has applied the principles of Phyto-Engineering since the early 1970s. After the Clean Water Act was passed, USACE-WES applied phyto-engineering to land application of wastewater, using plant-soil systems to accomplish engineering goals. Overlandflow treatment of municipal wastewater was developed on plant-soil systems functionally to remove pollutants from applied water. The use of vegetation to filter dredged material slurry, dewater dredged material and remove contaminants from dredged material was evaluated in the Dredged Material Research Program in 1977. Restoration of problem soil materials utilized specific vegetation for phyto-stabilization of erosive soils such as acid tolerant plants for acid soils. More recently, metal hyperaccumulator plants have been used to remove metals from contaminated soil. Innovative technologies such as Recycled Soil Manufacturing Technology (RSMT) has been used to modify contaminated dredged material so that plants could be grown to degrade organic contaminants or take up metals or arsenic. Wetlands have been constructed for treating nitrate laden drainage water from agricultural fields receiving swine effluent irrigation or to act as final polishing of suspended solids at abandoned coal mines.

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