Phyto-Engineering Constructed Wetlands to Control Nitrate Drainage from Agricultural Fields. (A02-lee215058-Oral)

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Abstract:

Recycled Soil Manufacturing Technology was evaluated to phyto-engineer constructed wetlands to treat and denitrify excessive nitrate in drainage water from swine lagoon irrigated agricultural fields. Dredged material was blended with phragmites compost and processed swine manure to engineer a wetland substrate that would denitrify nitrate. In addition, agricultural field site soil was blended with straw and processed swine manure to engineer a second wetland substrate for treating nitrate. Field mesocosms were established with varying amounts of organic matter in the engineered blended substrates. Wetland substrates with 10 % or more organic matter were extremely effective in the treatment and denitrification of nitrate in applied drainage water. Dredged material blends were immediately effective in treatment performance, while the site soil blends required approximately a twelve-month lag time to develop into a functioning treatment system.

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