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EVALUATION OF ATTACHED PERIPHYTIC ALGAL COMMUNITIES FOR BIOFUEL FEEDSTOCK GENERATION

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ABSTRACT Algal biomass is a promising feedstock for biofuel production. With a high lipid content and high rate of production, algae can produce more oil on less land than traditional bioenergy crops. Algal communities can also be used to remove nutrients from wastewater. A variety of algal growth systems have been introduced, including enclosed photobioreactors and open pond systems. These systems can be highly productive, but also difficult to maintain. The purpose of this study was to demonstrate the ability of an algal turf scrubber (ATS)TM to facilitate the growth of attached periphytic algal communities for the production of biomass feedstock and the removal of nutrients from a local stream. A pilot scale ATS was implemented in Springdale, AR, and operated over the course of a nine month sampling period. System productivity over the nine month operating time averaged 26 g per m² per d. Total phosphorus and total nitrogen removal averaged 48% and 13%, respectively.

Keywords: Algae, Phosphorus, Biofuels, Wastewater Treatment.