Phytoremediation of Soil Phosphorous with Crabgrass

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Nutrient buildup in pastures from repeated animal manure application can result in water quality deterioration. The objective of this study was to evaluate the potential of using crabgrass (*Digitaria ciliaris*) to remove excess soil phosphorus (P) and minimize P loss from nutrient loaded soils. Red River Crabgrass was planted in boxes measuring 21x39” containing Dennis, Richfield, and Kirkland soils in a greenhouse. Ten years before this experiment, each soil received four different rates of P fertilizer. The experiment was a randomized block design with three replications. Soil test phosphorus (STP, Mehlich 3) ranged from 110-1700 lbs/acre. Crabgrass was harvested 4 times approximately monthly from May to August, 2010, dried at 85°C, and analyzed for concentration of P and other nutrients. The biomass yield of crabgrass ranged from 3.3 to 6.7 tons/acre with an average of 4.7 tons/acre. It contained on average about 0.45% P and 2.23% nitrogen (N). Therefore, the crabgrass removed an average of 42 lbs of P and 211 lbs of N per acre. In addition, the concentration of P and P removed increased as STP increased. Crabgrass can serve as a good quality hay and as an effective plant for removing nutrients from soils.