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Paper

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MANUSCRIPT III:

Nitrogen and phosphorus recovery by ornamental plants grown in a constructed wetland

ABSTRACT

Constructed wetlands may provide a effective, low-cost, and low technology method for reducing nutrient loading to comply with environmental standards for the discharge of nursery runoff. A part of the cost of the constructed wetland could be recovered from the sale of the plants to wholesale and retail markets. A constructed wedand was built at a commercial nursery in Middletown, Rhode Island, and used to evaluate the growth potential of 9 ornamental plant species and cattail. Plant biomass, tissue nitrogen (N) and phosphorus (P) concentration, N and P recovery, divisions produced, and N and P recovery per division were determined for each planting. N and P recovery of the taxa ranged between 49 to 125 g N»m'^ and 6 to 16 g P-m'l Typha latifoha. Canna x 'Aflame', and Phragmites communis 'Variegata' had the largest biomass and removed the largest amounts of N and P from the constructed wetland. Phragmites and Phalaris produced the most divisons per meter squared. While Iris and Pontederia produced the fewest divisons. Comparisons are made with previous research on wild type non-ornamental taxa.

Index words: non-point source pollution, constructed wetlands, plant production, nursery runoff

Species used in this study: Canna x 'Aflame', Colocasia esculenta. Glyceria maxima 'Variegata', Iris pseudacorus. Phalaris arundinacea 'Feecy', Phalaris arundinacea 'Picta', Pontederia cordata 'Alba', Phragmites austrahs 'Variegata', Spartina paniculata 'Aureo-marginata', Typha latifoha