RECOVERY OF PHOSPHORUS FROM WASTEWATER BY *Salvinia molesta.*

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One of a major threat to agriculture is the depletion of available phosphorus reserves. Inefficient and irresponsible use of phosphorus fertilizer and other phosphorus based products lead to contamination and qualitative degradation of water bodies. Certain aquatic plants have an ability to sequestrate phosphorus and thereby purify the eutrophic water bodies. Such aquatic plant biomass can be used as a possible source of phosphorous fertilizer for crops. In this study, the ability of an aquatic plant, *Salvinia molesta* to remove phosphorus from wastewater and recover the absorbed phosphorus through preparing a powdered fertilizer from the dried plants were investigated. A fresh weight of 2005 g of *S. molesta* was introduced into 3 L of 10 mgL^{-1} of phosphate solution. After 48 hrs of equilibrium time, *S. molesta* resulted 87% of phosphate removal efficiency. The phosphorus recovery process from plant tissue of dried and powdered *S. molesta* remained at 79% from recovery. A hydroponic experiment was conducted to test the growth and yield attributes of rice cultivar Bg 300, in a greenhouse, using a synthetic phosphorus source and *S. molesta* powder as phosphorus sources. The experiment was laid out in a complete randomized design with three treatments and five replicates. Three treatments were viz; T1-Hoagland solution without phosphorus, T2- Hoagland solution, T3- Hoagland solution without phosphorus + *S. molesta* powder. The results indicated no significant differences ($p>0.05$) between early growth of rice plants in both Hoagland solution (T2) and Hoagland solution without phosphorus + *S. molesta* powder (T3). Interestingly, the dry biomass at 28 days after transplanting was similar in both treatments. Hoagland solution and Hoagland solution without phosphorus + *S. molesta* powder resulted significantly higher growth with respective to plants treated with Hoagland solution without phosphorus (T1). This research has generated the first set of data to show the dual ability of *S. molesta* to clean P eutrophied water bodies and to use plant sequestrated P as a source of P fertilizer for rice in submerged condition.

Keywords: Phosphorous, Powdered fertilizer, Recovery, Removal efficiency, *Salvinia molesta*