The Impact of Soluble Calcium on Phosphate Uptake Efficiency of Pistia stratiotes

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The increase of non-point source agricultural chemical runoff and inadequate waste disposal systems has made remedying eutrophication one of China's most pressing issues. Phytoremediation is being considered as a potential solution due to its minimized environmental damage and sustainability. However, a critical flaw of phytoremediation is the inefficiency of contaminant uptake. In an address to this problem, I propose the addition of soluble calcium into phosphate contaminated waters in order to increase the phosphate uptake efficiency of macrophyte Pistia stratiotes. Reasons for choosing the Pistia stratiotes include its hardiness, cheapness, and easiness to procure in the China region, firstly establishing economic feasibility for potential mass phytoremediation. Pistia stratiotes were first grown in normal conditions for two weeks, then grown in solutions of varying levels of calcium and 10mg/L of phosphate. Water systems with calcium incorporated demonstrated a significant difference when compared to the control. Next steps include isolating optimum calcium values for maximum uptake efficiencies and investigating the effects of Pistia stratiotes in bio-habitats.

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