Management of Nitrogen and Phosphorus Biogeochemical Cycles Through Harvest of Chlorella vulgaris and Elodea canadensis

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Biogeochemical cycles are series of processes that transfer compounds through an ecosystem. Can the geochemical cycles of phosphorus and nitrogen be managed effectively through harvest of Chlorella Vulgaris and Elodea Canadensis? Can the harvested bio-materials be used to recycle nitrogen and phosphorus into the growing cycle of crops such as rye? Can Chlorella Vulgaris algal balls be utilized for easier capture and application of nutrient rich algae? Can nitrogen and phosphorus used by Elodea Canadensis be recycled as a fertilizer? I hypothesize that Chlorella Vulgaris and Elodea Canadensis will be able to effectively lower nitrogen and phosphorus levels in closed pond systems. Further, I hypothesis that Chlorella Vulgaris and Elodea Canadensis can be incorporated into soils as fertilizer for use in grain crops such as rye. The biomass of the harvested rye grass after 10 and 17 days ranged from an average of 9.23/5.40 grams for Elodea Canadensis, 11.86/6.28 grams for Chlorella Vulgaris, 9.83/6.59 Chlorella Vulgaris algal balls, and Control average of 6.12/3.90 grams. Total biomass harvest ranged from an average of 14.63 grams for Elodea Canadensis, 18.14 grams for Chlorella Vulgaris, 16.42 Chlorella Vulgaris algal balls, and Control average of 10.02 grams. Results can not adequately support that Chlorella Vulgaris and Elodea Canadensis will be able to effectively lower nitrogen and phosphorus levels in closed pond systems. Further study over a longer period of time may track the levels of nutrients and the effectiveness of Chlorella Vulgaris and Elodea Canadensis. I accept my hypothesis that Chlorella Vulgaris and Elodea Canadensis can be incorporated as fertilizer for use in grain crops such as rye.

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