Abstract

Title: The Effect of Aquatic Vegetation on Water Quality in the Everglades Agricultural Area Canals

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The canals in the Everglades Agricultural Area contain an abundance of floating aquatic vegetation (FAV) and submerged aquatic vegetation (SAV). These FAV flourish in waters with high phosphorus (P) concentrations and prevent the co-precipitation of P with the limestone bedrock ($CaCO_3$). To test the effects of FAV and SAV and the presence of sediments on water quality in the canals, a lysimeter study was set up and stocked with FAV (water lettuce) and SAV (filamentous algae). There were four treatments with four replicates Treatment one contained limerock, sediment from the canals, and FAV. Treatment two contained limerock, sediment, and SAV. Treatment three contained limerock and FAV, while treatment four had limerock and SAV. After 7 days, the buckets were drained and replaced the water with new, high P canal water. Water samples were taken at 0, 0.25, 1, 3, and 7 days after each weekly water exchange. To test water quality soluble reactive P, total P, total dissolved P, Ca, and total organic carbon were analyzed. The impact of FAV and SAV and canal sediments on water quality will be discussed. We hypothesize water lettuce treatments will initially result in a reduction in P-concentration in all species, but will only serve as a short-term sink because of their high turn-over rate and production of labile high-P sediment (floc). In addition, we hypothesize the treatments with no sediment will have more P reduction because of the availability for P to co-precipitate with $CaCO_3$.

Abbrevations:

Floating aquatic vegetation (FAV)

Submerged aquatic vegetation (SAV)