Soil and Water Sciences Department
Graduate Student Exit Seminar

Speaker: Jay Capasso
M.S. Thesis Degree Candidate

Advisor: Dr. Jehangir Bhadha

Title: The Application of Aquatic Vegetation as Bio-Filter for Phosphorus Removal from Agricultural Drainage

Date: Monday, July 23rd

Time: 3:00 pm – 4:00 pm

Location: McCarty Hall A, Room G186

Phosphorous (P) loads from anthropogenic sources increase eutrophication and reduce water quality, especially in freshwater aquatic systems where P is generally the limiting nutrient. This project tested the management of two floating aquatic vegetation (FAV) species - water hyacinth (*Eichhoria crassipes*) and water lettuce (*Pistia stratiotes*) and introduced flow facilitated by hydraulic pumps in reducing P loads exiting agricultural drainage ditches. The experimental design consisted of four treatment ditches equipped with hydraulic pumps and aquatic vegetation. Two control ditches were managed without hydraulic pumps or introduced FAV. This study used laser diffraction methods to determine particle size of organic sediments and create a new method of indexing organic matter particle size. Water circulation through the ditches is believed to cause coarser particles to settle near the inflow and finer particles settle near the outflow, potentially affecting P-dynamics in sediments. Introduced flow was found to cause significant differences in total P, total dissolved P, and soluble reactive P (p<0.01) between inflow and outflow water. The treatment ditches reduced total P, total dissolved P, and soluble reactive P by 13%, 33%, and 39% respectively compared to the control ditches, which increase total P by 9% and total dissolved P by 8%, respectively. Sediment particle size distributions were coarser in the inflow sediments of the treatment ditches compared to the outflow. Average sediment particle size was not found to be significantly correlated with total P (p=0.59), however, was significantly correlated to sediment Ca/Mg P (p=0.016). This study investigated the circulation of farm canal water to improve water quality and scratched the surface on the use of laser diffraction methods to index the particle size of organic matter.

For our off-campus students, off-campus faculty, and on-campus students who cannot attend, this seminar can be viewed via live or watched at a later date via this link: Jay Capasso. In addition, all seminars are archived for viewing on our SWSD Seminar Page.