Despite the technology advancement, degradation of stormwater quality continues to be a significant threat to the water bodies and ecosystems due to the exponential growth of industries and agricultural enterprises. These anthropogenic activities are the main sources of high nitrogen and phosphorus quantities in stormwater, which is responsible for most eutrophication phenomena and deterioration of public health. Floating Treatment Wetlands (FTWs) are an innovative variant and a possible solution to this problem. Both microcosm and mesocosm level studies were conducted for the effective removal of nutrients in stormwater wet detention ponds with different sorption media under varying nutrient and weather concentrations. Water depth, percent area coverage of the vegetation and littoral zone emergent plants were varied in order to determine optimum nutrient removal efficiency and best combination before implementing in an actual pond. Focus has also been placed on the observations of macrophyte-epiphyte-phytoplankton interactions in order to be conversant with temporal characteristics of ecological phenomena. Water quality parameters included Total Nitrogen, Total Phosphorus, Orthophosphate, Nitrate-Nitrogen, and Ammonia-Nitrogen in addition to in-situ parameters such as pH, Dissolved Oxygen, Temperature and Chlorophyll-a. Results clearly indicate that the microcosm filled with sorption media of 80% expanded clay and 20% tire crumb can significantly promote the biomass growth. Different level of nutrient concentrations did affect the plants‘ growth and cold temperature in late winter was detrimental. To make the system more viable irrespective of the seasonal weather conditions, the adoption of mixed vegetation is highly recommended in the floating wetland implementation. The authors also recommend the positioning of the floating wetlands should not be in the vicinity of the outlet of the pond as assimilated nutrient under the mat might again contaminate the discharged water. Finally, ANOVA statistical analysis is performed to test whether or not these grouped microcosms and mesocosms with differing experimental setup can be deemed ecologically distinctive.

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The public is welcome to attend.