

Green roofs act as an urban stormwater Best Management Practice (BMP) by reducing the volume of water leaving rooftops, however little information exists regarding the water quality benefits/impacts of vegetated roofs on stormwater. Additionally, there is a lack of information about the optimal growing media, depth and type and plant type for the sub-tropics. The objectives of this study are to 1) determine the optimal soil depth, soil medium and plant type for extensive green roofs in the subtropics, 2) characterize the runoff retention capabilities of green roofs in the subtropics and mid-Atlantic, and 3) determine whether green roofs act as a sink or source for nutrients and characterize the mechanisms by which this occurs. Objectives are being tested via i) monitoring the Charles R. Perry Yard Green Roof on the UF Campus, ii) a paired green roof/conventional roof study in Virginia, and iii) 39 green roof containers and 12 green roof platforms testing three soil media, three plant types and two soil depths. Hydrology data gathered in Virginia between May 2006-August 2007 indicate that the green roof retained 85% of runoff volume during small storm events (<1" precipitation) and increased the lag time of the peak of the storm hydrograph by 25 minutes for these storms, as well as increased the duration of rerelease of the stormwater by 6-8 hours. No significant differences were found in orthophosphate, nitrate/nitrite or metals between the conventional and green roof. Leachate collected from the container experiment in Florida shows that there are significant differences in TP, TKN and TSS concentrations and loads among the growing media types, but no significant differences between plant types, within the same growing media.

Key Words: green roofs, water quality, urban stormwater BMP, landuse hydrology