

Evaluating Storm Water Runoff of Green Roofs with Varying Growth Medium and Species Composition.

E. Hilligoss-Volkmann, V. Jost, K. Luckett, S. Morgan, S. Celik, and W. Retzlaff

Storm water runoff has become a significant environmental concern. Impervious surfaces that result from growing urbanization are rapidly replacing green spaces. This landscape of impervious surfaces can interfere with natural systems; storm water runoff in developed areas can be increased by as much as 90% (Mentens et al. 2005). Municipalities are struggling to keep up, especially with the fluctuation in runoff volumes. Green roof systems may pose a solution to the problem by retaining water in the pore spaces of the growth media and providing for increased evapotranspiration of storm water (Dzombak et al. 2005). Since roofs account for 40-50% of impervious surfaces in developed areas, green roofs can be installed on the existing roofs and no additional space would be affected (Mentens et al. 2005). I have analyzed plant growth and storm water retention of green roof systems containing Coal Bottom Ash, Hadite, Lava, Pumice, and Stalite growth media since October 25, 2008. Green roof coverage by *Sedums* growing in Coal Bottom Ash blends was only 6.48 and 2.32 percent after one year – indicating that organic content of the media blends was too low. Green roof systems with Coal Bottom Ash growth media blends (36.6 and 34.2%) retained more storm water than control roofs (17.9%). It remains to be seen whether Coal Bottom Ash is a viable growth media component for green roof systems.