MANAGING STORMWATER WITH GREEN ROOFS: FINDINGS FROM NORTH AMERICAN RESEARCH

DVORAK, BRUCE
Texas A&M University, bdvorak@tamu.edu

ABSTRACT

Green roofs (vegetated rooftops) are well-known for ecosystem services including retention of stormwater draining from rooftops which helps reduce peak flows and flooding in urban watersheds. Much is known about the functions of green roofs in Europe, but less is known about their performance in North America. This review of literature assesses stormwater retention research from thirty-two extensive green roof field investigations published from 1998 through 2012. The data suggests that in North America, green roofs retain rooftop precipitation in all six geographic regions reported and they reduce peak flows in five reported regions. Across all regions, sixty-one percent was the average amount of precipitation retained. The highest average retention was in the Midwest region at seventy-four percent and the lowest average retention was the Pacific Northwest region at fifty-two percent. There were some regions, however, with large urban populations that were not represented, and some regions had conflicting or inconclusive findings. More research is needed to better understand ecosystem services in some regions and to begin research in regions not represented. Only a few of the studies had landscape architects directly involved with extensive green roof stormwater research. This marks an opportunity for landscape architects to better understand how green roofs function locally. These findings are important because those responsible for managing urban stormwater need to know that not all green roofs perform the same and design characteristics and maintenance practices are important. One should not assume that any green roof will effectively manage stormwater.