ABSTRACT

Experimental and control interception setups were designed, assembled and tested under a sweet gum tree anticipated for installation at Greenstreets in Queens, New York. The two setups were positioned adjacent to each other, without contact, on the roof of Drexel University's Main Building, Curtis Hall. The experiment measured catchment interception with and without the sweet gum tree from November 15th to November 17th (2010) to calculate canopy interception from the sweet gum tree. No rainfall events occurred on November 15th. The experimental setup included a stemflow-measuring setup, attached to the trunk beneath the canopy and connected to a rain gauge, and a catchment: a concave hexagonal platform (ranging from 6' to 6.93' in length) underneath the canopy, which drains rainwater to collection buckets through 3/8"-diameter pipes. The control setup included the same platform, which drained rainwater to collection buckets through a funnel. Water level sensors were used to measure volume in the buckets for both setups. Total rainfall was measured using a rain gauge. Temperature, humidity and wind speed data were obtained from the National Weather Service Climate Report. Canopy architecture characteristics and branch dimensions were not measured. The total quantity of canopy interception (including interception loss, and temporarily-intercepted stemflow and throughfall), leaks under the setup, and rainwater adherences to the platform surface were measured at approximately 20% of rainfall. Based on literature (Viessman and Lewis, 2002 and Xiao et al, 2000), interception loss can be approximated at 15% of total rainfall. Subtracting interception loss from the measured 20% of rainfall, the remaining 5% of rainfall can be attributed to leaks, platform adherences, and temporarily-intercepted stemflow and throughfall. No direct measurements of interception loss, leaks, and platform adherences were made. Canopy interception area was calculated to be 8 ft^2, covering 25.5% of the concave hexagonal platform.