

Evaluation of the WUCOLS Method for Estimating Water Requirements of Landscape Plants

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Abstract

Landscape is of great importance due to environmental values such as oxygen production, freshening air, carbon sequestration, protecting soil against erosion, and biodiversity conservation. Large volumes of urban water resources are used to irrigate water for landscape plant species, but due to lack of information about water needs of these plants, water is wasted. In this research, crop coefficient and water requirement of a shrub (Barberry), tree (Cypress), and a herbaceous species (Common couch) was estimated using water balance method and WUCOLS information. The research lasted for six months from 21 March 2018 to 22 September, 2018. To calculate evapotranspiration of landscape, six drainage type “micro-Lysimeters” were used in two different micro-climates and the calculations were done for ten-day intervals. Evapotranspiration was estimated for the whole period of the experiment as 682 mm for water balance method and 626 mm by WUCOLS method. Different evapo-transpiration values were found for both water balance method and the WUCOLS method in different micro-climates. Thus, WUCOLS method could be recommended as a precise, complete and yet practical method in order to estimate the water requirement of landscape plants and, for modeling of water requirement and crop coefficients to reduce water consumption efficiently.

Keywords: Evapotranspiration, Landscape irrigation, Lysimeter, Micro climates, Water balance

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