Determining Water Use and Crop Coefficient of Landscape Plants

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BACKGROUND

Increasing competition among agriculture, industry and municipal water users in arid and semi-arid regions has brought attention to water conservation and the need to improve irrigation efficiency. As landscape irrigation accounts for 40 to 60% of total household water consumption in the Southwest, conserving and reducing the amount of water used for landscape irrigation is critically important. Irrigation efficiency can be improved by grouping plants with similar water requirements and by scheduling irrigation based on specific plant needs. However, limited information exists on actual water requirements of landscape plants.

Parallel experiments were conducted by growing the same species in lysimeters and containers. Their water use and crop coefficients were determined and compared.

OBJECTIVES

The water use of container-grown plants can be accurately obtained gravimetrically. The objectives of this study were to determine and compare the water use and crop coefficients of landscape plants growing in drainage lysimeters (simulation of landscape conditions) and in above-ground containers (nursery practices) simultaneously in the same field plot. These data will determine if the water use of the same plant species grown in the two culture systems is exchangeable.

RESULTS AND BENEFITS

- Plant water use, crop coefficient and overall growth parameters differed by species and culture system. However, the water use per unit leaf area of all species was not affected by the culture system. Therefore, by quantifying the leaf area, the plant water use in the two culture systems is exchangeable.
- Actual water use of plants will help the nursery industry, landscape professionals and homeowners to increase irrigation efficiency by scheduling irrigation timing and amount more accurately. Thus, irrigation water costs will be reduced and water will be conserved. In addition, runoff and groundwater pollution will be minimized.
- By grouping plants according to their relative drought tolerance and water use, landscape irrigation schedule and efficiency will be improved and water will be conserved.

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