

Water Needs of Landscape Plants

Dennis Pittenger¹, Mike Henry², and David Shaw³
U.C. Cooperative Extension – Center for Landscape & Urban Horticulture

¹Central Coast & South Region/L.A. County/ U.C. Riverside
²Riverside County, ³San Diego County

Following years of below-average rainfall and very low snowmelt runoff in California, landscape managers, maintenance gardeners, and homeowners in most areas of California are now facing mandatory or voluntary water conservation targets. Water purveyors, local governments, landscape architects, and landscape management professionals are adopting the use of reference evapotranspiration (ET_o) estimates to determine precise landscape water budgets and irrigation schedules. Calculations that produce these budgets and schedules require multiplying ET_o estimates by a adjustment factor, known as a crop coefficient (K_c) or a plant factor (PF), that accounts for a particular plant's water need. These numbers are usually expressed as a percentage less than 100% or a decimal less than 1.0.

Urban landscapes are often blends of woody and herbaceous plants along with some type of turfgrass. Accurate and effective ET_o-based irrigation management of a given landscape requires reliable K_c or PF values for the plant species present. In order to maximize water conservation, an ET_o adjustment factor should represent the minimum amount of water a plant species needs to maintain its expected function and minimally acceptable aesthetic appearance (i.e. a PF) rather than the amount of water it needs for optimum growth and development (i.e. a K_c).

However, there is limited research-based data on non-turf landscape plants' water needs for achieving either optimum growth or minimally acceptable performance. Most of the available ET_o-based information provides estimates or general ranges of PFs that enable selected groups of landscape plants to maintain acceptable functional and aesthetic performance after they are established. Studies show common landscape groundcovers, shrubs, and trees vary widely and unpredictably in their minimum water needs and responses to drought, but generally maintain aesthetic and functional value when irrigated at between 20% and 80% of ET_o, typically nearer to 50% of ET_o. Currently, UC Cooperative Extension's Landscape Workgroup is conducting a field research project, coordinated among sites in Coachella Valley, Davis, Hopland, and Santa Paula, designed to expand the research-based information on water needs of landscape plant species commonly used across the state.

The following [table](#) provides PF estimates derived to date for landscape plants to provide acceptable performance after they are established.