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# Using Standardized Evaluation Metrics to Demonstrate Collective Statewide Impacts of Diverse Water Conservation Programming

**Abstract**

Although the diversity of Florida Cooperative Extension landscape water conservation programs creates evaluation challenges, it is possible to measure their impacts as a whole. We conducted pilot testing of a statewide evaluation strategy and identified behavior changes resulting in an average monthly water savings of 3,257 gal and utility bill savings of $10.78 per participant. Here we explain the approach we used, providing details about underlying research on water conservation practices and technologies, standardized metrics for demonstrating environmental and economic impacts of behavior/technology adoption, and reporting tools. A focus on statewide impacts based on standardized metrics can be extremely valuable to U.S. Extension professionals.

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## Introduction

Water is one of the most valuable and limited resources in the United States, and population growth and climate change have intensified the pressure on water resources (Adams et al., 2013; U.S. Environmental Protection Agency, n.d.; Wolters, 2014). In Florida, a state well known for its pleasing landscapes, residents pump thousands of gallons of water into their landscapes daily in amounts that exceed what is required by turfgrass and other landscape plants, sometimes applying more than two thirds of their total household water use toward irrigation (Baum, Dukes, & Miller, 2005; Haley, Dukes, & Miller, 2007; Monaghan, Ott, Wilber, Gouldthorpe, & Racevskis, 2013). More efficient residential irrigation is considered a key to saving water, and

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| | | | only 60% of water, 40% will be saved: (0.40) (31,767) = 12,707 |
| Install soil moisture sensor or evapotranspiration controller | 11,118–22,872 | 500 | *Rationale:* Several studies have demonstrated the water savings potential of soil moisture sensor (SMS) or evapotranspiration (ET) controller. When using an ET controller and rain sensor, Rutland and Dukes (2012) observed a 41% irrigation reduction under wet conditions, and Davis et al. (2009) found a 43% reduction under dry conditions. In an SMS study in Gainesville, Florida, Cárdenas-Lailhacar et al. (2010) observed irrigation savings of 72% during wet conditions and of 35% (first half of 2006) to 54% (second half of 2006) during dry conditions. SMSs and ET controllers tend to reduce irrigation by 35%–72%. *Calculation:* (0.35) (31,767) = 11,118; (0.72) (31,767) = 22,872 |
| Convert turfgrass area to landscaped bed with micro irrigation | 15,569–31,767 | 750 | *Rationale:* Trenholm et al. (2002) recommends that ornamental plants be irrigated only as needed once established. This recommendation is based on studies of ornamentals grown in Florida (Scheiber et al. 2008; Wiese et al. 2009). Alternatively, Haley and Dukes (2007) reported that mixed turf and ornamental landscapes that used microirrigation in landscaped beds irrigated 74 mm/month over the entire landscape, which is equal to 55 mm/month (16,198 gal/1,000 sq ft/yr) for the ornamentals, as compared to 105 mm/month for irrigation with |