Florida Extension Initiative 2: Enhancing and Protecting Water Quality, Quantity, and Supply

Statewide Educational Programs in Water Conservation: Guidelines for Measuring and Reporting Landscape Water Conservation Outcomes and Impacts

UF/IFAS Extension programs result in environmental benefits through reduced water use and financial impacts by decreasing attendees’ water bills. The Florida Water Savings Evaluation tools (FLoWs) were developed to capture the impact of UF/IFAS Initiative #2 urban landscape water conservation programs at the statewide level while allowing for flexible reporting at the local level. The standardized tools are housed in the UF/IFAS evaluation toolbox. The tools are based on known amounts of water saved as a result of adopting 14 specific landscape practices, based on the research Haley and Dukes and others. We collect the square footage of UF/IFAS clients’ irrigated landscape, which allows us to calculate estimated water savings based on practices clients adopt. This is then translated into dollar value of water saved for the consumer and the utility company.

How the process works

• Data are collected at two points in time: through a posttest given by the agent immediately after the completion of the program (behavioral intent) and a follow-up 6-12 months after the program (intermediate outcomes)
• Agents may download pdf versions of the tools in Qualtrics to print and administer as paper evaluations OR can distribute electronically to program participants using a web link accessed through Qualtrics
• Paper evaluations can be input by the agent or sent to campus for input by the state FFL office
• The follow-up survey will distributed from campus automatically to individuals who provided email addresses

To use the tools

• Please sign up for Qualtrics through UF (http://ufl.qualtrics.com).
• Once you have an account, please email Laura Warner (lsanagorski@ufl.edu) to be added to the UF/IFAS Water Conservation group.
• Distribute electronic surveys through the “distribute survey” tab.
• If you collect paper surveys you can either input the data electronically or mail into campus for inputting: State FFL Office, 112 Mehrhof Hall, PO Box 110675, Gainesville FL 32611-0675

Selecting a version of the tools

• There are four variations of the posttest in the UF/IFAS Evaluation Toolbox allow better alignment with specific programs. For our purposes, we only need the core (A) – the rest is based on agents’ requests.
  o UF/IFAS water conservation - core (A) - measures the basic behaviors (**If in doubt, use this one)**
  o UF/IFAS water conservation - core and quantity (A+B) - measures basic behaviors plus any changes in depth of irrigation and irrigation inspection/calibration
  o UF/IFAS water conservation - core and timing (A+C) - measures basic behaviors plus any changes in manual shut-off or skipping a week (by month)
  o UF/IFAS water conservation - core, quantity, and timing (A+B+C) - measures all of the above
Where data are saved

- All of the data go into a statewide database that will allow us to develop statewide water saving measures
- There are currently several reports that agents can access as needed which can be filtered by agent and county

Reporting

Extension agents who conduct programming in Initiative #2, Priority Work Group #1 may use the following worksheet to report water conservation outcomes from their programming. The following metrics can be used to assess the impact of extension programs using calculated gallons of water saved per year based on Estimated Water Savings Potential of Florida-Friendly Landscaping™ Activities from Boyer and Dukes (2015). Please note two recommendations in calculating gallons of water conserved per year:

- Cumulative water savings for multiple behavior changes are not currently available. As a conservative estimate, we recommend calculating savings based on the behavior that results in the greatest water savings.
- Additionally, several water savings estimates are presented in ranges. For consistency, we recommend using the mean of these ranges for reporting.

Financial savings by household per thousand gallons of water

Table 1. Unit prices for water, by Florida regions.

<table>
<thead>
<tr>
<th>Region</th>
<th>Price ($/1,000 gallons)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Southeast</td>
<td>$3.20</td>
</tr>
<tr>
<td>Southwest</td>
<td>$4.30</td>
</tr>
<tr>
<td>Central</td>
<td>$3.10</td>
</tr>
<tr>
<td>Northeast</td>
<td>$2.90</td>
</tr>
<tr>
<td>Northwest</td>
<td>$2.60</td>
</tr>
</tbody>
</table>

Water prices vary among water suppliers, and unit water prices increase with increase in water use. To simplify the task, we suggest using the following prices that are defined for five major regions in Florida (Table 1). Note that the geographical regions are defined based on the map on Figure 1. Prices are based on data from Raftelis Financial Consulting (2014), and they are estimated as the difference between water bills for 8,000 and 4,000 gallons, divided by 4.

*To calculate the financial savings among extension clients per year, divide total gallons of water saved (per year) by 1,000, and multiply by the appropriate region’s average cost per thousand gallons.

Reduction in water delivery costs

US EPA (2004) reported that on average, tap water delivery costs were approximately $2 per thousand gallons. This implies that, for example, the reduction in water use of 2,000 gallons per month per property in a community of 100 properties can result in savings of $4800 in utility costs.

*To calculate the reduced financial costs among utility companies per year, divide the total gallons of water saved (per year) by 1,000 and multiple this value by $2.00.

Note that this estimate can vary from utility to utility, and it does not account for possible increase in average water delivery cost with reduction in water delivered. Hence, this estimate should be used with caution.
Water supply for other properties in the neighborhood

Savings resulting from implementation of water conservation practices can be compared with the volume of water needed to supply a household. Note that Marella (2014) reports that average per capita domestic water use in Florida is 85 gallons per day. Given 2.61 persons per household, each household uses 222 gallons per day, or 6.75 thousand gallons of water per month on average (or 81.03 thousand gallons per year). Hence, if extension program results in water use reduction by, say, 2,400,000 gallons, this would be enough to supply nearly 30 households for a year.

*To calculate the increased water supply to other households, take the calculated water savings per year, in gallons, and divide by 81,030. The result you receive is the number of households that can be supplied with “conserved” water for one year.

Sample impact statement / success story (to be modified based on local programming)

Water is among Florida’s most valued resources. Despite having extensive water resources and high rainfall, water resources are stressed by the 19 million people who live here. By 2025, Florida’s population is expected to exceed 22 million residents. To meet the expected demand, Florida will need 9.1 billion gallons of fresh water per day, a 26.4 percent increase from today. As the demand continues to grow, water supply needs are already exceeding capacity in some areas of the state and forecasted growth and demand must be addressed by the development of additional water supplies. Conservation of existing water resources is considered an important solution. UF/IFAS Extension addresses the need to conserve water by conducting educational programming statewide, such as the Florida-Friendly Landscaping™ program, to help residents conserve water through promoting landscape water conservation practices and technologies.

In Sample County, the target audience is residents who use irrigation in the home landscape. The popular quarterly Micro-Irrigation Field Day and the Florida-Friendly Home Irrigation Lab reached 200 households in 2015. In 2015, 50% (n = 100) of Sample County landscape water conservation program participants (n = 200) adopted new best management practices for water conservation. These behavior changes will result in the conservation of 5,800,000 gallons of water annually. This is enough water to supply nearly 72 households with water per year, and this water savings is valued annually at $168.20 per participating household and $11,600 in water delivery costs for Sample County Regional Utilities.

*Detail may be added to the above based on local activities in accordance with the PDEC Guidelines for Writing Quality Impact Statements for Workload and the UF/IFAS Initiative #2 Water Conservation Workplan.

***Agents should include at least one FFL practice from the “Estimated Water Savings…” table in the annual POW.

References


