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## Educating Large Landscape Water Users

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## Educating Large Landscape Water Users

### Abstract

A workshop series for large water users in the highly populated, urban areas of Utah was developed at the request of several water agencies. The series of full-day workshops covered irrigation maintenance and scheduling, managing plants during drought conditions, irrigation auditing, and a field exercise to determine irrigation uniformity. A written survey and evaluation was distributed at the end of each of the workshops and collected from each participant. Responses to the surveys in 2003 and 2005 were compared to determine program effectiveness.

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## Introduction

In Utah, residential water use comprises approximately 67% of per capita water consumption, and two-thirds of that goes toward the irrigation of landscapes containing significant areas of turfgrass. The rapid population growth that is now occurring in the state, and in the West, will precipitate a huge increase in water demand and economic costs for irrigated landscapes. For this reason, programs that help landscape managers conserve irrigation water will help meet water conservation goals and supply needs in the future.

Utah State University's (USU) Center for Water Efficient Landscaping's (CWEL) mission is to promote water conservation and quality through outreach education to the public, the green industry, and water purveyors. The Extension arm of CWEL disseminates this information to support public education efforts toward water efficient landscaping.

A workshop program was developed by USU Extension/CWEL to address the needs of landscape managers for irrigation education. An objective of the program has been to collect survey and evaluation information from participants and to adapt the program to lead to increased adoption of the irrigation recommendations and techniques taught in the workshops.

## Landscape Water Use Program Methodology

During the summer of 2002, USU Extension/CWEL developed a series of workshops for large water users along the Wasatch Front (the heavily populated areas of Utah between Ogden and Provo). The workshops, which targeted large institutions, public and government agencies, commercial

businesses, and homeowner's agencies, were developed at the request of several water agencies in the state and have been offered during every subsequent summer.

The 6-hour workshops are conducted from March through September and are subsidized by supporting water agencies. Workshop presentations focus on water conservation practices and are organized into four sections:

1. Turfgrass and ornamental plant water use and basic management factors that affect it, such as fertilization, mowing, mulching, weed control, hydrozoning, and soil test results;
2. Routine irrigation maintenance practices needed to keep an irrigation system operating efficiently;
3. Irrigation scheduling based on evapotranspiration data and irrigation schedule adjustments for soil type, wind, slope, and variable plant species; and,
4. Irrigation system auditing, a practice field exercise that allows participants to perform a landscape water check, and discussion on ways to improve irrigation water distribution in the field exercise.

Each participant receives a workbook that includes copies of the presentations, key concepts, review questions, and a glossary of terms. At the end of the workshop, 24 irrigation system evaluation cups and a soil probe are given to each of the participants to help them implement the techniques of the program.

Participants are also asked to complete detailed survey and evaluation forms to assess the effectiveness of the program. Following the workshop series each year, program evaluation information has been used to adjust the program for the following year. The results of program surveys and evaluations for 2003 (the first year of detailed evaluation) and 2005 program participants (the most recent year of evaluation) are presented to illustrate response changes over the longest period of time possible.

## **Program Survey and Evaluation Results**

To date, 578 landscape managers have attended the workshops. In 2003, there were 84 participants and in 2005, there were 111 participants. The participants have been employed by:

- Church facilities,
- Landscape architecture/maintenance companies,
- Water conservancy districts,
- Parks and recreation departments/cities,
- Schools districts, and
- Utah Division of Water Resources.

The landscaped area managed by workshop participants has ranged from less than 1 acre to several hundred acres, with an overall average of 280 acres. The total landscaped area affected by the program, therefore, has been approximately 162,000 acres.

The 2003, workshop participants were asked which parts of the program were the least useful and could be omitted. They were also asked to suggest ways to improve the program. Although most of the participants stated that nothing should be omitted and that nothing needed to be done to improve the program, some responses to the questions included:

- More outside work as opposed to the classroom,
- More practice using the calculations and schedules,
- More sprinkler maintenance information, and
- More "ornamental stuff."

As a result of these suggestions, a second field exercise and a second exercise involving the calculation of irrigation schedules were added to the program. Resources addressing sprinkler system maintenance and appropriate plant material choices were added to the workbook. Additional sections on weather and soil and water interactions have also been included in the

workshops. The responses of program participants to selected questions in 2003 and 2005 are presented in Tables 1-3.

**Table 1.**

Water Conservation Practices Employed by Workshop Participants Prior to Workshop Attendance (reported as a percentage of respondents in 2003 and 2005)

| <b>Conservation Practice</b>  | <b>(% of Respondents)</b> |             |
|---|---------------------------|-------------|
|   | <b>2003</b>               | <b>2005</b> |
| Mandatory City Restrictions on Irrigation   | 20                        | 6           |
| Cycling Irrigation to Allow Water to Soak Into Soil   | 0                         | 3           |
| Irrigation System Maintenance and Auditing  | 28                        | 25          |
| Installation of Low Water Use Plants  | 20                        | 17          |
| Irrigating at Night   | 11                        | 8           |
| Time Management (Changing Irrigation with Season)   | 0                         | 14          |
| Cutting Back on Irrigation/Less Frequent Irrigation   | 14                        | 0           |
| Weather Station-Based Irrigation System   | 0                         | 11          |
| Evapotranspiration-Based Scheduling   | 0                         | 14          |
| *Other practices included increased turfgrass mowing height, aerating turfgrass, using soil moisture sensors, and installing drip irrigation. The vast majority of workshop participants were employing some type of water conservation practices prior to their participation, while approximately 4% had no conservation practices in place prior to their participation. |                           |             |

**Table 2.**

Method of Irrigation Schedule Determination Used by Workshop Participants Prior to Workshop Attendance (reported as a percentage of respondents in 2003 and 2005)

| <b>Irrigation Scheduling Method</b>  | <b>(% of Respondents)</b> |             |
|--|---------------------------|-------------|
|  | <b>2003</b>               | <b>2005</b> |
| Already in Place   | 14                        | 7           |
| City Order   | 22                        | 0           |
| Visual Inspection  | 28                        | 20          |
| Trial and Error  | 11                        | 15          |
| USU Extension Information  | 8                         | 10          |
| Irrigation Association Information   | 6                         | 0           |
| Evapotranspiration-Based Scheduling  | 0                         | 13          |
| Irrigation System Evaluation and Auditing  | 0                         | 13          |
| Soil Factors   | 0                         | 13          |
| Variable   | 4                         | 0           |
| *Other respondents were new in their positions and had not had a chance to determine an irrigation schedule at the time of their participation in the workshops. |                           |             |

**Table 3.**

Conservation Practices That Workshop Participants Planned to Implement Following Workshop Attendance (reported as a percentage of respondents in 2003 and 2005)

| <b>Conservation Practice</b>              | <b>(% of Respondents)</b> |             |
|---|---------------------------|-------------|
|   | <b>2003</b>               | <b>2005</b> |
| Irrigation System Maintenance             | 10                        | 15          |
| Soil Testing                              | 7                         | 0           |
| Irrigation System Evaluation and Auditing | 60                        | 15          |
| Irrigating Less Frequently                | 0                         | 11          |
| Educating Employees and Clients           | 10                        | 6           |

|  |    |    |
|--|----|----|
| All Topics Covered   | 13 | 35 |
| *Other practices reported included returning grass clippings, adjusting turfgrass mowing height, using less fertilizer, and using more mulch in the landscape. |    |    |

When comparing survey responses of 2003 participants to those of 2005 participants, we found that:

- More 2005 participants were using the water conservation practices taught in the program even prior to workshop attendance (Table 1),
- More 2005 participants were using the recommendations for irrigation scheduling that are taught in the program prior to workshop attendance (Table 2), and
- More 2005 participants would implement "all topics covered" to conserve water following workshop attendance (Table 3).

These findings indicate that the educational message of the workshop series is reaching our target audience of large institutions, public and government agencies, commercial businesses, and homeowner's agencies.

The workshop participants were asked to give an overall evaluation of the program each year by strongly agreeing, agreeing, disagreeing, or strongly disagreeing with several statements. The vast majority of respondents (98-100%) in both 2003 and 2005 "strongly agreed" or "agreed" that the:

- Program was beneficial,
- Information presented was understandable,
- Workbook was a helpful addition to the program, and
- Information would be helpful in their work.

Despite the strong positive response to the program from its inception, we have paid close attention to the survey and evaluation responses each year. Participant suggestions have allowed us to continue making adjustments and improvements to both the instruction and educational materials. This approach has allowed us to be responsive to participant requests and to keep the program materials current and has encouraged repeat attendance from several program participants.

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