

Progress Report-Year Three
Elvenia J. Slosson Endowment

Evaluating Plant Water Use in the Urban Landscape

Loren Oki & Jennifer Baumbach

Introduction

The goal of the project is to increase the research based understanding of the water needs of landscape plants to provide support to the landscape industry in managing irrigation as well as to regulatory agencies in policy making. The key components of this study were to determine how commonly used plants in urban landscapes would perform when subjected to four irrigation treatments, 80%, 60%, 40% or 20% ET_o. The information from this study will increase the understanding of the water needs of landscape plants. This will support the decisions that water regulators and managers make regarding water used for irrigating urban landscapes.

Initial funding for this project was received from the midyear call for proposals in 2004.

The UC ANR Landscape Workgroup selected the following plants to be studied:

Agapanthus orientalis
Aptenia cordifolia
Hemerocallis x 'Stella de Oro'
Ligustrum japonicum 'Texanum'
Raphiolepis indica 'Ballerina'
Photinia x *fraseri*
Rosa x 'Flower Carpet'
Lantana montevidensis
Juniperus chinensis 'Sea Green'

Data collection

Plant performance data was collected monthly. All species were rated on a scale from 1 being dead to 9 being optimal appearance. Photos were taken at several intervals to record the visual changes in the plants.

Growth measurements of shrubs were taken at the beginning of irrigation treatments and at the end of October. The measurements determined the plant width in two right-angle directions and then the height of each plant in the subplot. A growth index will be calculated from these measurements as follows:

$$[L1+L2+H]/3=\text{Growth index}$$

Shrub species were also pruned and weighed when the plants touched and covered the edges of the plots. This portion of the data collection was labor-intensive and required many bags for the collection of the clippings.

Irrigation

An irrigation controller had been set up in the field. It was attached to the weather station and is powered by the pump house located in the adjacent field. The irrigation system was linked to a computer located in the Plant Pathology field house, just to the north of the plots. To date, the scheduling of the system has not been implemented. Work on the irrigation system is on-going due to problems with the programming.

Due to the programming problems with the irrigation system, the irrigation treatments were applied this season (July 2006-October 2006) by monitoring the CIMIS station-Sacramento Valley Station #6 via the internet. When the CIMIS showed ET_o values reaching desired amounts, I went to the field and manually turned on the irrigation for the 2 hours at the site needing irrigation. The 80% treatment occurred the most frequently.

Landscape plants

There have been on-going fights with the vertebrates living in field B6. Many of the landscape plants have been lost to gophers or hares. They have either dug from below or dug from above and have even browsed back plants to nubs.

The lily-of-the-Nile has been all but annihilated with only a few plants surviving. Jasmine is also all eaten and the vertebrates are working on eating the *Rhaphiolepis*, especially if there is new growth on the branch tips.

There has also been a possible incident of crown gall with the *Photinia* plants. There have been about 4 mature *Photinia* killed due to these problems. These plants exhibited a knob-like structure at the base of the plant; however, without a culture of the tissues, this is only speculation. Another possibility might be poor nursery stock that is girdling this area of the plants.

Weed Control

The continued management of weeds within and around the plots is under very good control. I have been spraying a mixture of Roundup Fire Power and Surflan to kill unwanted weeds and prevent the emergence of new. The plots have been very clean and have been boasted to look the best seen in years (Figure 1).



Clean aisle ways and areas around the plots. (Figure 1.)

Over the summer and in to the fall, I enlisted the help of an undergrad to help with maintaining the *Aptenia cordifolia*. This plant was growing out of bounds (Figure 2.) and in to other plots. It was eventually cut back to a 10x10 foot square.



Figure2. *Aptenia cordifolia* gone awry.

Discussion

The future of the Landscape Workgroup project will continue on for the next several years.

Most plots in the state either have had setbacks due to plant death or just have not begun their irrigation treatments. Several irrigation treatments will start this coming season.

The plots at UC Davis will continue with irrigation treatments for a second season this summer.