

**Progress Report-Year One**  
Elvenia J. Slosson Endowment

**Evaluating Plant Water Use in the Urban Landscape**

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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<sub>o</sub>. 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'  
*Trachelospermum jasminoides*  
*Ligustrum japonicum* 'Texanum'  
*Raphiolepis indica* 'Ballerina'  
*Photinia* x *fraseri*  
*Rosa* x 'Flower Carpet'  
*Lantana montevidensis*  
*Juniperus chinensis* 'Sea Green'

Planting blocks

The size of the main plots is 1,000 ft<sup>2</sup>, each with one subplot per species, which is 100 ft<sup>2</sup>. The field assigned is too small to install the entire experiment together, therefore the experiment was split into two and designated as "North" field and "South" field. The experiment is designed as a split-plot in a randomized complete block with 4 blocks (replications). The main plot treatments will be the 4 irrigation levels and the subplots will be the 10 plant species. Both the main plot treatments and plants have been randomly assigned to the subplots within each main plot.

## Irrigation

The irrigation plan was prepared on September 1, 2004. Setup of the irrigation system began on September 18 with the completion date being October 10, 2004. (Figure 1.)



**Figure 1. Irrigation setup in the North field.**

The irrigation system is applied by using single fixed-spray, full-circle, shrub head nozzles fitted with a pressure-compensating screen. Within the subplots, water is distributed by a spray nozzle that covers a 5 ft radius.

## Planting

The 1 gallon plants and flats arrived on October 13, 2004. On October 21 and 22, Environmental Horticulture Department staff tilled the field with a tractor to reduce the amount of weeds in the field prior to planting. The actual planting of plots began on October 31 with the help of the UC Master Gardeners from Solano County. All plants were planted in the North field with the exception of *Aptenia* on October 31. The North field is still undergoing planting and will be completed as soon as weather permits. The next scheduled planting event was for the South field on November 6. All one gallon plants plus several of the flats were planted on that date. The planting of this field was completed on November 20 when the *Aptenia*, was placed in the ground.

## Weed Control

The control of weeds in both fields will be problematic. There are many annual weeds, but field bindweed (*Convolvulus arvensis*) in particular, presents a problem for future weed control. An approach will be to rely mostly on applications of glyphosate (post-emergent herbicide) and oryzalin (pre-emergent). The application of these herbicides will be enhanced with the flaming of weeds closer to the desired plants. Tilling will also be used for the larger areas of the fields such as walkways, the borders, and aisles. Finally, we will have to employ the old-fashioned method of hoeing by hand for precision weeding close to plants.

In conclusion, the project has been physically challenging, but educational. We are looking forward to seeing the plants grow and to test the different irrigation treatments on them. We are confident that our project will yield information to benefit all who are involved with landscape plants.