

# ROOT-ZONE EVALUATION

## FESSLER NURSERY

Woodburn, Oregon

May 24, 2007

### Background

Root-zone is an anti-transpirant category product that is effective at reducing transpiration in properly treated plants. This product is diluted with water and then applied as if watering the plant or crop with the proper solution. It is typical to see a plant express a water-stress related symptom of a slight wilt following proper treatment. If the proper dilution occurs, the plant will recover from that initial wilt condition, then will not require an irrigation for an extended period of time.

Root-zone stimulates a plant response that results in the stomates closing, much like would occur in a condition of drought. It is very important to bench test specific crops to identify the proper rates. Not enough Root-zone will have no effect and too much could result in a permanent wilt condition.

### Evaluation

Dale Fessler, of Fessler Nursery agreed to place a product trial, which occurred May 17. In this trial we used two annual crops, Bidens ferulifolia ‘Solaire Yellow’ and Impatiens Super Elfin, both in a 4” pot. We divided the plants into four treatments, with four of each annual variety each. These were positioned in available greenhouse space at the nursery. The treatments were as follows:

Treatment	Fluid Oz per 64 oz	% Rootzone	Comments 1 DAT- Impatiens	Comments 1 DAT- Bidens
Control	0	0.0%	Zero wilt on any plants	0 wilt
Solution 1	1	1.6%	Zero wilt on any plants	0 wilt
Solution 2	3	4.7%	75% showing considerable wilt	0 wilt
Solution 3	5	7.8%	All completely wilted	0 wilt



**Pictured:** Marvin Fessler,  
Color grower extraordinaire



**Trial products consisted of:** 64 oz measuring cup, 4 inch Impatien Super Elfin (16), Root-zone (18 oz), 5 oz measuring container, 4 inch Bidens 'Solaire Yellow' (16), labels.



**From left to right:** Control (0% Root-zone), 1.6%, 4.7% & 7.8%. Picture taken approximately one day after treatment.

## Results

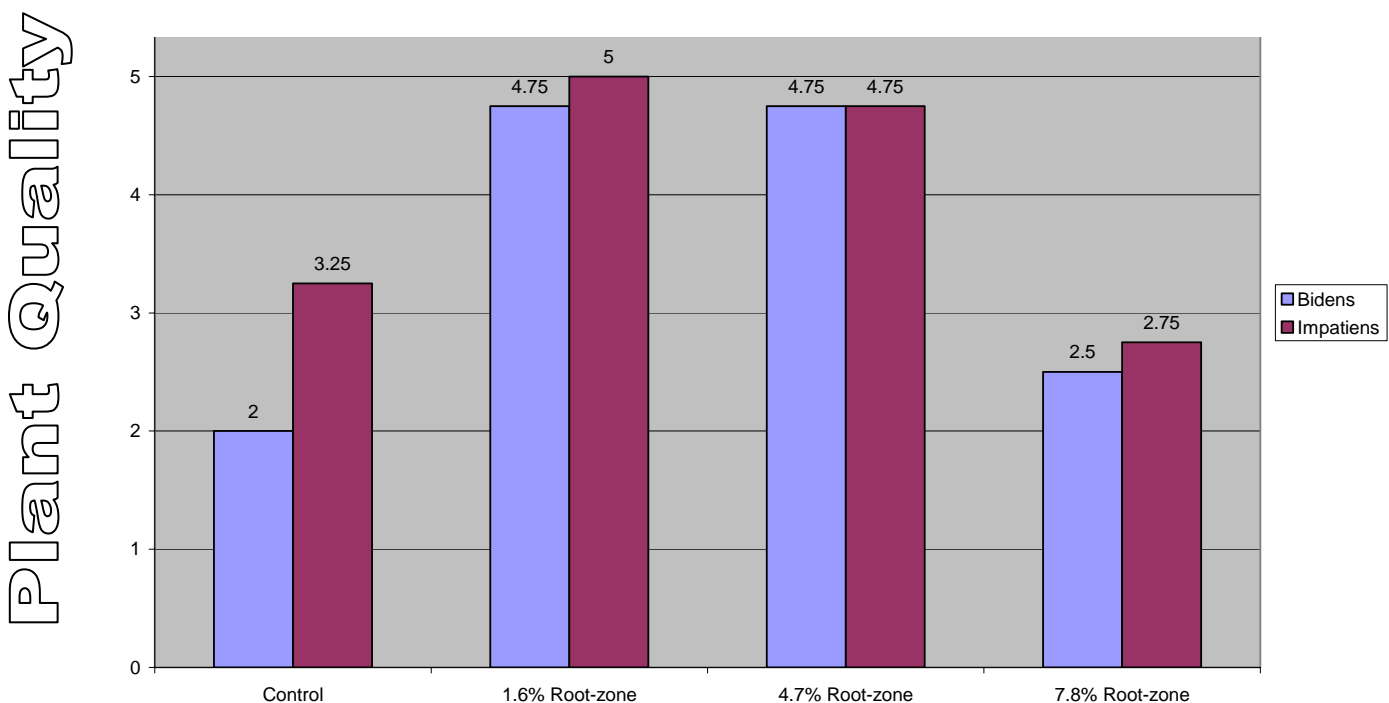
The plants treated with the 1.6% and 4.7% Root-zone solutions performed better than the control. Typically these annuals would be watered every two to three days. All of the plants remained without any irrigation for nine days. After this time, 100% of the plants treated with the lower Root-zone rates graded at four or better as opposed to 25% of the control or 13% of the highest Root zone treatment (7.8%).

Throughout the evaluation, the Bidens responded much differently than the Impatiens. The Bidens didn't show the initial wilt that the Impatiens did with the higher two Root-zone rates. The highest rate resulted in a permanent stem wilt with the Impatiens and resulted in substantial and immediate leaf loss. The remaining leaves on the Impatiens seemed to recover without burning and all of the Impatiens were responsive to rehydrating (100% appear to survive this trial). It appears that 50% of the Bidens will not survive from the water related stress in the two treatments consisting of the control and 7.8% Root-zone solution.

The preferred rate of Root-zone appears to be between the 1.6% and 4.7% on these two annual crops.

For more information, please reference the following table and picture.

Conclusion Quality Summary





**Picture:** From left to right: Control, 1.6%, 4.7%, 7.8% Root-zone treatments. Photo was taken 12 days after treatment and 3 days after a thorough irrigation. Plants were spaced generously to reduce an edge-effect with respect to water loss.

## Assessments

Throughout the evaluation period, individual wilt assessments were made to evaluate the relative visible water stress of each plant. This information follows.

### Progress Report: May 21, 2007

Reviewed this trial with Marvin and Dale Fessler. We evaluated each plant on a scale of 1-5, 1 showing no visible wilt and 5 being severe wilt. The results from this assessment follow along with a picture of the crop approximately four days after treatment (DAT).

Evaluation 4 DAT (1=no visible wilt, 5= severely wilted)		
Treatment	Bidens	Impatiens
Control	2.25 (2,2,2,3)	1 (1,1,1,1)
1.6% Root-zone	2 (2,2,1,3)	1 (1,1,1,1)
4.7% Root-zone	1.25 (1,1,1,2)	1 (1,1,1,1)
7.8% Root-zone	1 (1,1,1,1)	4.25 (5,3,5,4)

Also noted that the soil in the control appeared to be drier than the soil of the Root-Zone treated plants (both Bidens & Impatiens).



**From left to right:** Control (0% Root-zone), 1.6%, 4.7% & 7.8% Root-zone solutions. Picture taken approximately four days after treatment (DAT).

Weather in these past four days has been overcast with occasional rain.

**Progress Report: May 22, 2007**

The following assessment was taken five days after treatment (DAT).

<b>Evaluation 5 DAT (1=no wilt, 5= severely wilted)</b>				
<b>Treatment</b>	<b>Bidens</b>		<b>Impatiens</b>	
<b>Control</b>	<b>3</b>	3,2,3,4	<b>1.25</b>	2,1,1,1
<b>1.6% Root-zone</b>	<b>2.5</b>	2,3,2,3	<b>1</b>	1,1,1,1
<b>4.7% Root-zone</b>	<b>1</b>	1,1,1,1	<b>1</b>	1,1,1,1
<b>7.8% Root-zone</b>	<b>1</b>	1,1,1,1	<b>4.25</b>	5,3,5,4

**Progress Report: May 23, 2007**

The following assessment was taken 6 days after treatment (DAT).

<b>Evaluation 6 DAT (1=no wilt, 5= severely wilted)</b>				
<b>Treatment</b>	<b>Bidens</b>		<b>Impatiens</b>	
<b>Control</b>	<b>3</b>	5,2,5,5	<b>3</b>	3,3,3,3
<b>1.6% Root-zone</b>	<b>2.5</b>	3,3,3,3	<b>2</b>	2,2,2,2
<b>4.7% Root-zone</b>	<b>1</b>	1,1,1,1	<b>1.75</b>	2,1,2,2
<b>7.8% Root-zone</b>	<b>1</b>	1,1,1,1	<b>4.75</b>	5,4,5,5

**Progress Report: May 25, 2007**

The following assessment was taken 8 days after treatment (DAT).

<b>Evaluation 8 DAT (1=no wilt, 5= severely wilted)</b>				
<b>Treatment</b>	<b>Bidens</b>		<b>Impatiens</b>	
<b>Control</b>	<b>4.75</b>	5,4,5,5	<b>4.75</b>	4,3,4,4
<b>1.6% Root-zone</b>	<b>4</b>	4,4,4,4	<b>2.25</b>	3,2,2,2
<b>4.7% Root-zone</b>	<b>2.75</b>	3,3,2,3	<b>2</b>	2,2,2,2
<b>7.8% Root-zone</b>	<b>2</b>	2,2,2,2	<b>3.75</b>	5,4,3,3

**Progress Report: May 26, 2007**

The following assessment was taken 9 days after treatment (DAT).

<b>Evaluation 9 DAT (1=no wilt, 5= severely wilted)</b>				
<b>Treatment</b>	<b>Bidens</b>		<b>Impatiens</b>	
<b>Control</b>	<b>5</b>	5,5,5,5	<b>5</b>	5,5,5,5
<b>1.6% Root-zone</b>	<b>5</b>	5,5,5,5	<b>3.25</b>	3,4,3,3
<b>4.7% Root-zone</b>	<b>2</b>	2,1,2,3	<b>2</b>	1.5, 2, 2.5, 2
<b>7.8% Root-zone</b>	<b>1.75</b>	1,2,3,1	<b>3.5</b>	4,3,3,4

**Plants were thoroughly watered at this point.**

**Progress Report: May 29, 2007**

The following assessment was taken 12 days after treatment (DAT), and three days after re-hydrating, with regular irrigation schedule between.

The plants were then evaluated with a different scale, 5 being the highest retail quality, and 1 being non merchantable with respect to water stress related conditions (leaf drop, leaf burn, etc.).

<b>Evaluation 12 DAT (1= non sellable, 5=sellable)</b>				
<b>Treatment</b>	<b>Bidens</b>		<b>Impatiens</b>	
<b>Control</b>	<b>2</b>	1,5,1,1	<b>3.25</b>	3,3,4,3
<b>1.6% Root-zone</b>	<b>4.75</b>	5,5,5,4	<b>5</b>	5,5,5,5
<b>4.7% Root-zone</b>	<b>4.75</b>	5,5,5,4	<b>4.75</b>	5,4,5,5
<b>7.8% Root-zone</b>	<b>2.5</b>	3,3,1,3	<b>2.75</b>	2,3,2,4