



## **Evaluation of DriWater on Poinsettias**

Research conducted by Dr. Terrence Nell and the  
University of Florida, USA

### Summary Report

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- Experiment 1: The evaluation of DriWater on postharvest performance of the Spotlight Dark Red Poinsettia
- Experiment 2: The evaluation of DriWater on postharvest performance of the Whitestar Poinsettia
- Experiment 3: The evaluation of DriWater on postharvest performance of the Angelica White Poinsettia

### **Experiment #1**

The evaluation of DriWater on postharvest performance of the Spotlight Dark Red Poinsettia.

#### **Methods:**

The poinsettia variety 'Spotlight Dark Red' was grown in 6-inch pots using standard cultural practices. At marketable stage (2-4 cyathia showing pollen), plants were placed into a postharvest room maintained at 70F and a light level of 70 ftc (12 hours/day). Relative humidity was maintained at 50±5%. All plants were thoroughly watered upon placement into rooms. DriWater Gel pac were opened and placed on the soil surface according to directions. Plants had either one or two DriWater Gel pac placed on the soil surface. Plants with no DriWater Gel pac were used as the controls. There were a total of eight plants used for each treatment. Date of the first wilt and the second wilt were recorded. Plants were considered wilted when the leaves showed visible sign of wilt. At the first wilt, plants were watered thoroughly and were monitored until the second wilt. In addition, all pots were weighed daily to evaluate the amount of weight loss over the evaluation period.

Results:

Days to wilt

Table 1-1. Days to wilt of 'Spotlight Dark Red' poinsettia.

Number of DriWater Gel pac	Days to the first wilt	Days from the first wilt to the second wilt
0	12.7 ± 1.6 c <sup>1</sup>	7.4 ± 1.4 b
1	16.9 ± 2.0 b	10.4 ± 1.4 b
2	20.7 ± 2.4 a	16.4 ± 7.0 a

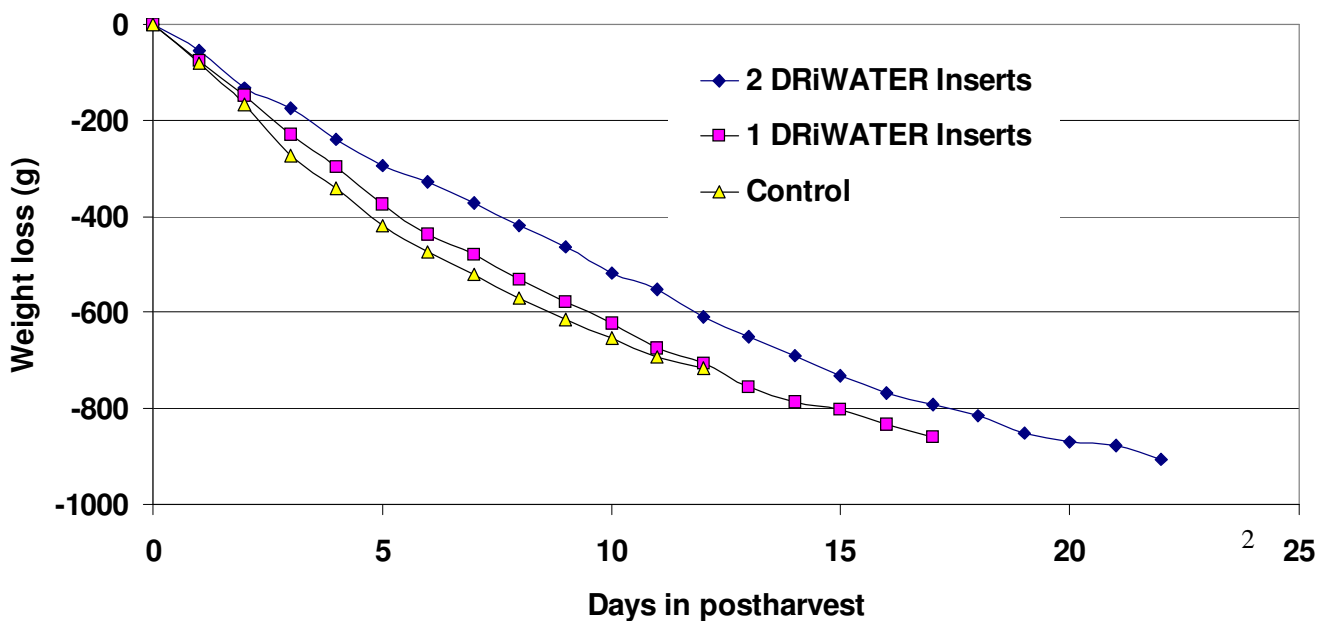
<sup>1</sup> Means with different letters are significantly different at P=0.05 confidence level using Duncan's test. Standard deviation follows each mean.

**Days to the first wilt was significantly delayed when DriWater was used.** Using two gel pacs provided the longest period to wilt, delaying wilt an average of 8 days compared to the control plants. No quality differences were observed at the first wilt dates compared to the control. Days to the second wilt was also significantly delayed on plants with 2 DriWater gel pacs. During the time to the second wilt, leaf yellowing and leaf drop did occur on all treatments from the stress imposed from wilting.

Weight loss

The cumulative weight loss of plants to the first wilt showed a faster rate of weight loss occurred in control plants compared to the DriWater treatments (Figure 1-1). Plants with 2 DriWater Gel pac lost the least amount of weight compared to the other treatments. This treatment also maintained turgidity at a weight loss beyond that which the control plants showed visible signs of wilt.

Figure 1-1. Cumulative weight loss to the first wilt of 'Spotlight Dark Red' poinsettia.



## Experiment #2:

The evaluation of DriWater on postharvest performance of the Whitestar Poinsettia.

### Methods:

The poinsettia variety 'Whitestar' was grown in 6-inch pots using standard cultural practices. Plants were placed into a postharvest room maintained at 70F and a light level of 70 ftc (12 hours/day) at marketable stage (2-4 cyathia showing pollen). Relative humidity was maintained at 50±5%. All plants were thoroughly watered upon placement into rooms.

According to the results of Experiment 1, the use of DriWater significantly extended the period to wilt, however, it was not clear whether the DriWater gel releases water into the soil that is available to the plant or if it just provides a barrier limiting the amount of evaporation from the soil. To evaluate this, we designed an experiment where we covered the soil surface with plastic, providing a barrier for evaporation and tested this against 2 DriWater Gel pac placed on the soil surface. There was a small amount of soil surface not covered by the DriWater Gel pac. Control plants were also included for a comparison. There were a total of six plants used for each treatment.

Date of the first and second wilt were recorded. Plants were considered wilted when the leaves showed visible sign of wilt. At the first wilt, plants were watered thoroughly and were monitored until the second wilt. All pots were weighed daily to evaluate the amount of weight loss over the evaluation period.

### Results:

Days to wilt

Table 2-1. Days to wilt of 'Whitestar' poinsettia.

Treatment	Days to the first wilt	Days from the first wilt to the second wilt
Control	12.3 ± 3.5 b <sup>1</sup>	8.3 ± 4.1 b
Plastic cover on soil surface	17.8 ± 6.4 ab	15.4 ± 1.8 a
2 DriWater Gel pac	24.3 ± 8.4 a	18.8 ± 4.3 a

<sup>1</sup> Means with different letters are significantly different at P=0.05 confidence level using Duncan's test. Standard deviation follows each mean.

**Plants with DriWater significantly delayed the time to first and second wilt by an average of 12 and 11 days, respectively, compared to the control (Table 2-1).** Plants with the plastic barrier did prolong the time to first and second wilt, but was not as effective as the DriWater treatment.

### Weight Loss:

Cumulative weight loss is shown in Figure 2-1. Control plants lost more weight at a faster rate compared to the other treatments. Control pots lost approximately 700 grams by day 10 while the other treatments lost between 500-600 grams in the same period. Interestingly, pots with plastic lost less weight than DriWater but wilted 7 days sooner. It appears from the results of this study, that the rate of weight loss over time is not always related to the number of days that it takes the plant to wilt.

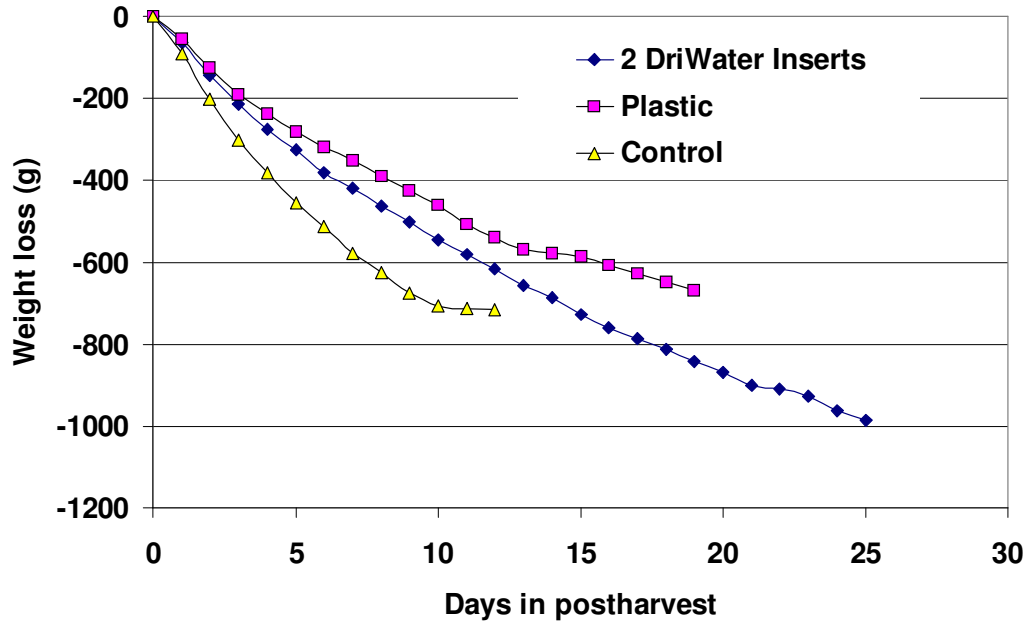


Figure 2-1. Cumulative weight loss to the first wilt of ‘Whitestar’ poinsettia.

### Experiment #3

The evaluation of DriWater on postharvest performance of the Angelika White Poinsettia.

#### Methods:

The poinsettia variety ‘V-17 Angelika White’ was grown in 6-inch pots using standard cultural practices. These plants were very tall and much larger than the previous varieties used in the past experiments. Plants were placed into a postharvest room maintained at 70F and a light level of 70 ftc (12 hours/day) at a late marketable stage (all cyathia showing pollen). Relative humidity was maintained at 50±5%. All plants were thoroughly watered upon placement into rooms.

This experiment was designed to repeat Experiment 2. The treatments were the same as in Experiment 2, except the 2 Gel pac of DriWater were covered under a plastic bag and sealed to prevent evaporation from occurring, providing a better comparison to the plastic only covered pots. Therefore, there was no soil exposed to the air in either of these treatments. Control plants were also included for a comparison. There were a total of three plants used for each treatment. This small sample size is due to the fact that these were the only poinsettias left in the greenhouse when this study was requested.

Date of the first wilt and the second wilt were recorded. Plants were considered wilted when the leaves showed visible sign of wilt. At the first wilt, plants were watered thoroughly and were monitored until the second wilt. In addition, all pots were weighed daily to evaluate the amount of weight loss over the evaluation period.

Results:

Days to wilt

Table 3-1. Days to wilt of 'V-17 Angelika White' poinsettia.

Treatment	Days to the first wilt	Days from the first wilt to the second wilt
Control	8.7 ± 1.2 b <sup>1</sup>	7.0 ± 3.6 a
Plastic cover over soil surface	9.7 ± 3.2 b	7.5 ± 0.7 a
2 DriWater Gel pac covered over in plastic	17.3 ± 4.6 a	8.0 ± 0.0 a

<sup>1</sup> Means with different letters are significantly different at P=0.05 confidence level using Duncan's test. Standard deviation follows each mean.

**The DriWater treatment was the only treatment that significantly delayed days to first wilt.** No differences were found, however, in days to the second wilt. This is in contrast to Experiment 2, where both treatments did significantly delay time to second wilt. Perhaps the small sample size contributed to this contradiction. These results do indicate that DriWater is providing more than just a barrier to soil evaporation.

Weight Loss:

A similar trend in weight loss occurred as found in Experiment 2 (Figure 3-1). Control plants lost weight slightly faster than the other treatments and the plastic covered pots lost the least amount of weight. Once again, there was no direct relationship between weight loss and days to wilt.

Figure 3-1. Cumulative weight loss to the first wilt of 'V-17 Angelika' poinsettia.

