University Test Results

Effect of ROOTBLAST®, or no fertilizer on Growth and Flowering of Viola xwittrockiana and Pelargonium xhortorum cultivars.

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INTRODUCTION

Rootblast® is a granular, slow release fertilizer designed for the homeowner and gardener (http://www.rootblast.co.nz). The effects of fertilizer on plant growth are well documented. Plants acquire their nutrients for growth and development from the soil through the root system. A healthy root system is thus required for overall healthy development (Marschner, 1996). “The ability of plants to absorb both water and mineral nutrients from the soil is related to their capacity to develop an extensive root system” (Taiz and Zeiger, 1991). Although there are questions as to exactly which part of the root is most actively involved in nutrient uptake (Bar-Yosef, et al., 1972 and Greenwood et al., 1974) there is little disagreement that a full, healthy root system is required for proper growth and development of plants.

The chemical Rootblast® was developed with the idea of developing a full root system that could be easily utilized by the homeowner on a wide range of plants. The product is a small amount of macronutrients (2-1-2, N-P-K) and a mix of micronutrients that is designed to be utilized in all stages of growth and development from seedlings to established plants. This research was designed to look at growth and flowering of two species of common bedding plants (Viola xwittrockiana and Pelargonium xhortorum) in response to the product Rootblast®.

MATERIALS AND METHODS

Soil was gathered from the woods north of the The Ohio State University Agricultural Technical Institute in Wooster, OH. The soil was analyzed and found to have 14% organic content, 35% clay, 40% silt and 25% sand, classifying this as a clay-loam soil. The pH of the sample was 5.8. Twenty four 6 _” pots were filled with this soil and 1 tsp of Rootblast was mixed into each pot. Sixteen Viola and eight Pelargonium were transplanted into the pots on August 8, 2005. Half of each species were the control plants, the other half would receive the treatment.

The Pelargonium were each pruned to a similar height, and had all old flowers and faded foliage removed to represent proper planting procedures for this time of the growing season in Ohio. The Viola were recent transplants when purchased and needed no pruning. Plants were placed into the greenhouse and watered as needed with distilled water for 6 weeks. Plant height was recorded at the beginning of the experiment. Time to flowering was noted during the six weeks, and final plant height was recorded along with overall appearance.

RESULTS

The Pelargonium were actively growing at purchase, and many had flowers, although it was obvious from their general appearance that the beginning of August is not the best time for purchasing new plants. The Viola were shipped as newly seeded plants in a 32-cell plug tray. Their starting appearance was as expected for new seedlings, full, healthy and dark green, though none were in flower.

Pelargonium treated with Rootblast flowered earlier and had greater numbers of flowers compared to untreated plants. The treated plants branched more, and had greater numbers of leaves, which were larger and greener than untreated plants. The treated Pelargonium were also slightly taller, than untreated plants. The root systems, although not fully developed after six weeks, were significantly greater than untreated plants.

Viola, however, showed significantly greater numbers of flowers earlier than untreated plants, and had much bigger foliage in larger numbers which was darker green compared to the untreated counterparts. Although the height for the treated vs. untreated plants is not greatly different, Viola is a plant that does not get very tall during the growing

season, thus a limited height difference is perhaps to be expected. Table 1 shows the beginning and ending heights for all plants. Table 2 shows the effect of Rootblast® on the flowering of Pelargonium and Viola. Figures 1 through 4 show photographs of treated plants vs. untreated plants.

Table 1. Effect of Rootblast® on height of Pelargonium xhortorum and Viola xwittrockiana cultivars during six weeks of growth. Pelarg TB = Pelargonium treated, beginning, Pelarg TE = Pelargonium treated, ending, Pelarg UB = Pelargonium untreated beginning, Pelarg UE = Pelargonium untreated ending. Viola TB = Viola treated beginning, Viola TE = Viola treated ending, Viola UB = Viola untreated beginning, Viola UE = Viola untreated ending. All heights are in inches; avg = average height for all replications for that treatment, Std. Dev = standard deviation for all replications for that treatment.

	Pelarg TB	Pelarg TE	Pelarg UB	Pelarg UE	Viola TB	Viola TE	Viola UB	Viola UE
	2	6	2	6	1	3	1	3.5
	3	8	2	6	1.5	3.5	1	4
	4	8	3	6.5	1	4	1.5	4.5
	3	7.5	3	5.5	1.5	4	1.5	3.5
					1	3.5	1	3.5
					1	4	1	3
					1.5	4	1	3.5
					1	3	1	4
Avg.	3	7.3	2.5	6	1.2	3.7	1.1	3.7
Std. Dev.	0.8	0.9	0.6	0.4	0.3	0.5	0.2	0.5

Table 2. Effect of Rootblast® on flowering of Pelargonium xhortorum and Viola xwittrockiana cultivars during six weeks of growth. Pel TBF = Pelargonium treated beginning flowers, Pel TEF = Pelargonium treated ending flowers, Pel UBF = Pelargonium untreated beginning flowers, Pel UEF = Pelargonium untreated ending flowers. Viola TBF = Viola treated beginning flowers, Viola TEF = Viola treated ending flowers, Viola UBF = Viola untreated beginning flowers, Viola UEF = Viola untreated ending flowers. Avg = average number of flowers for all replications for that treatment, Std. Dev = standard deviation for all replications for that treatment.

	Pelarg TBF	Pelarg TEF	Pelarg UBF	Pelarg UEF	Viola TBF	Viola TEF	Viola UBF	Viola UEF
	0	3	0	1	0	6	0	1
	0	4	0	2	0	5	0	0
	0	3	0	2	0	7	0	0
	0	4	0	0	0	8	0	2
					0	4	0	3
					0	5	0	2
					0	8	0	1

					0	3	0	2
Avg	0	3.5	0	1.25	0	5.75	0	1.375
Std. Dev	0	0.57735	0	0.957427	0	1.832251	0	1.0606602

Figure 1. *Pelargonium treated with Rootblast® (on the left) vs. Pelargonium left untreated (on the right). Both plants were pruned to the same size at the start of treatment and left to grow for 6 weeks.*

Figure 2. *Viola treated with Rootblast® (on the left) vs. Viola left untreated (on the right). Both plants were grown for 6 weeks.*

Figure 3. *Root mass of Viola xwittrockiana treated (top) and untreated (bottom) with Rootblast® and left to grow for six weeks in 6 _" containers with a clay-loam soil.*

Figure 4. *Roots of Pelargonium xhortorum treated (left) and untreated (right) with Rootblast® and left to grow for six weeks in 6 _" containers with a clay-loam soil.*

DISCUSSION and CONCLUSION

Pelargonium and Viola treated properly with Rootblast® showed greater numbers of flowers and increased growth over plants that were untreated. Although the height difference for Viola is limited, Viola is a plant whose mature height is in the 4-6" range, thus a large height difference would not be expected. The height difference for Pelargonium was much greater, expected for a plant whose final height could be in the 12-18" range at the end of a full growing season. These plants were grown for only 6 weeks, thus were not given a full growing season to develop fully.

The root systems of treated vs. untreated plants are dramatically different. Plants treated with Rootblast® developed significantly larger root systems during the six weeks of this experiment. The larger root systems would lead to larger plants, earlier flowering, increased numbers of leaves and better plant establishment in the landscape. Although it was difficult to see the numbers of roots on untreated Pelargonium, the roots of the treated plants were larger and readily visible. However, the root mass on Viola showed dramatic differences between treated and untreated plants. Treated plants had a root mass, that although didn't fill the container, was 2-3 times larger than untreated plants. Given a longer testing period, that different might be even greater.

The numbers of flowers produced by the treated plants would support a more developed root system in treated plants. The flowers were larger and in greater numbers for the Pelargonium and in dramatically increased numbers for Viola. Both species flowered approximately one week earlier than untreated plants.

If the Pelargonium were treated at the beginning of the season, rather than at the end of the season, it is possible the results would have been more dramatic as the plants may have been more actively photosynthesizing and growing. Viola is a cool season plant that growers are often starting toward the "end" of the growing season for fall sales and planting. Thus it is not surprising to find dramatic changes between fertilized and unfertilized plants. The effects of Rootblast® are such that these two species grew taller, flowered more and earlier, and appeared to be healthier to observers.

Rootblast® is effective in providing plants the initial nutrients required to develop a healthy root system in NE Ohio soils. Adding Rootblast® to newly planted bedding plants should allow the plants to develop faster, flower earlier and fill in faster than adding nothing to the soil at planting.

Works Cited

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