

FORT LAUDERDALE TRIAL GARDEN—YEAR 2

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Abstract. On December 10, 2003, 18 plants each of 89 vegetatively propagated bedding plant cultivars were transplanted into the trial garden located at the University of Florida Fort Lauderdale Research and Education Center. The plants were planted as 3 groups of 6 plants, with the groups being randomly placed in the garden. All of the cultivars were planted under 30% shade. Plants were watered 3 times per week for 30 minutes using overhead irrigation. Monthly evaluations were conducted to record plant height, plant width, flower number, number of plants with flowers, insect and disease damage, and quality rating. Quality was rated on a scale of 0 to 5 with 5 = top performance, 3 = plants of interest, 1 = poor performance, and 0 = dead. Two consumer preference surveys also

were conducted with the first survey in January 2004 and the second in March 2004. Results from the two consumer preference surveys and from the monthly quality ratings are presented in the text.

Because of the ideal weather in Fort Lauderdale during the winter (26.1 N, 80.2 W, AHS Heat Zone 11, USDA Hardiness Zone 10a), a trial garden was developed to assist companies who wish to trial vegetatively propagated cultivars before summer trials in the rest of the nation. The winter trial garden in Fort Lauderdale is part of the Environmental Horticulture departments statewide ornamental trial program and is in its second year (Moore et al., 2003). The goal of the statewide program is to develop unbiased evaluations of cultivar performance of both vegetative and seed grown annuals and perennials. All cultivars in the Fort Lauderdale trial garden were evaluated for flower and plant performance as well as uniformity.

Materials and Methods

Transplant production. In Oct. 2003, rooted liners of 89 bedding plant cultivars from Fides North America (Costa Rica), Fischer (Boulder, Colo.), and Henry F. Michell Company (King of Prussia, Pa.) were transplanted into 400 mL round pots filled with Pro-mix 'BX' (Premier Horticulture, Inc., Red Hill, Pa.) (Table 1). Plants were grown in an open-sided greenhouse exposed to ambient air temperatures of ≈ 30 °C day/21 °C night. Plants were watered daily and fertilized twice a week with 150 mg kg⁻¹ of nitrogen (N) from Peter's 21N-5P₂O₅-20K₂O (The Scotts Company, Marysville, Ohio).

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Table 1. List of cultivars planted in the Fort Lauderdale Trial garden in December 2003.

Source	Cultivar
Fischer	Geraniums (Beach, Bravo, Noblesse, Picasso, Rocky Mnt., Pink Blizzard, Samba, Summer Rose, Taj Mahal, Tango) New Guinea Impatiens (Sonic and Super Sonic)
Fides North America	Dahlia (Dahlinova) New Guinea Impatiens (Tamarinda) Petunia (Fortunia)
Henry F. Michell Company	Agastache (Acapulco) Begonia (Gumdrop) Calibrachoa (Spring Fling) Diascia (Miracle Red) Double Impatiens (Double Up) Fuchsia (Windchime Pink/Purple) Lantana (Morning Glow) Lavender (Madrid) Miniature Impatiens (Little Lizzy) Osteospermum (Sea Mist) Petunia (Blanket, Tiny Tunia) Shasta Daisy (Shasta Daisy)

Field evaluation. The 100 ft × 100 ft garden has a Margate fine sand soil with 1.6% organic matter, a pH of 6.74 pH, a soluble salt level of 0.30 mS/cm, a NO₃-N concentration of 9.00 mg kg⁻¹, a NH₄-N concentration of 5.00 mg kg⁻¹, a P concentration of 27.00 mg kg⁻¹, and a K concentration of 3.7 mg kg⁻¹ (samples collected from top 6 inches of soil). Samples were analyzed by the University of Florida's soil testing laboratory. A 3-inch mulch layer was spread over the garden to help control weeds.

On Dec. 10, 2003, 18 plants per cultivar were planted into the trial garden. Three groups of 6 plants per cultivar were randomly planted in the garden. All cultivars were planted in the 7000 ft² area of 30% shade. No plants were planted in the remaining part of the garden that is exposed to full sun. At planting, each plant was top dressed with 5 g of Nutricote 18N-6P₂O₅-8K₂O type 70 (Florikan Corp., Sarasota, Fla.). Plants were watered overhead three times a week for 30 min.

Data collection. Monthly mean temperature and rainfall were collected. Once a month plant height, width, flower number, and quality were recorded for each individual plant in the garden. Plant quality was based on the appearance of the group of 6 plants (3 groups of 6 plants for each cultivar) and took into account the number of plants in flower in a group as well as uniformity in growth and appearance. Plant quality was based on a scale of 0 to 5 with 5 = top performance, 4 = strong display of color and good growth habit, 3 = plants of interest, 2 = plants are green and growing, 1 = poor performance, and 0 = dead.

Two consumer preference surveys also were conducted in which participants were asked to check all of the cultivars that they liked. Percentages were calculated by dividing the number of individuals who selected a specific cultivar by the total

number of respondents. The first survey was conducted in January 2004 and the second survey was in March 2004. All data were analyzed using analysis of variance (SAS Systems, SAS Institute, Cary, N.C.).

Results and Discussion

Weather. Unlike the winter of 2003 in Fort Lauderdale, in which we reached a low of 0.93 °C, we had very few temperature extremes during the winter 2004 (Moore et al., 2003). We experienced a fairly mild and dry winter in Fort Lauderdale during 2004 (Table 2).

Plant Growth and Rating. All cultivars planted in the garden in December 2003 grew well. Plant height, width, and flower number increased from December to March/April with no further increases (data can viewed at the Fort Lauderdale Trial Garden link on <http://frec.ifas.ufl.edu>). All plants in the garden reached their peak growth and bloom and had their highest quality ratings between February and March (Tables 3, 4, and 5). Quality ratings started to decrease in April (Tables 3, 4, and 5).

In January, the geranium cultivars that 40% or more consumers choose as a cultivar that they liked included: Bravo, Noblesse 99, Picasso, Rocky Mountain Dark Red, Rocky Mountain Lavender, Rocky Mountain Light Pink, Rocky Mountain Light Salmon, Rocky Mountain Magenta, Rocky Mountain Orange, Rocky Mountain Royal Red, Rocky Mountain Violet, Summer Rose Lilac, Taj Mahal, and Tango Neon Red (Table 3). In March, the geranium cultivars that 40% of more consumers choose as a plant that they liked included: Rocky Mountain Red and Rocky Mountain Violet.

Table 2. Temperature and rainfall at the University of Florida's Fort Lauderdale Research and Education Center during winter 2003-2004.

Month/Year	Avg. mean temperature (°C)	Minimum temperature (°C)	Maximum temperature (°C)	Monthly rainfall (cm)
January 2004	17.9	5.2	30.0	8.70
February 2004	20.5	8.6	30.1	9.96
March 2004	21.6	9.8	31.5	3.30
April 2004	22.2	9.9	33.5	6.21

Table 3. Consumer preference results and plant quality ratings of geranium cultivars recorded 34, 64, 90 and 118 days after planting (DAP). Ratings were based on a scale of 0 to 5 with 0 = dead, 3 = plants of interest, and 5 = top performance. Plants were planted on December 10, 2003.

Cultivar	Quality rating				Consumer preference ^z (%)	
	Jan 34 DAP	Feb 64 DAP	Mar 90 DAP	Apr 118 DAP	Jan	Mar
Beach 99	3.0	4.3	4.2	3.3	22	14
Bravo	3.2	3.7	5.0	4.2	42	35
Noblesse 99	3.2	4.0	5.0	4.0	49	21
Picasso	2.8	3.8	4.7	4.0	89	26
RM Dark Red ^y	3.2	4.5	5.0	4.3	49	41
RM Deep Rose	3.2	4.2	5.0	4.0	38	33
RM Lavender	2.8	4.0	5.0	4.3	47	35
RM Lavender Pink	3.0	3.8	5.0	4.2	20	30
RM Light Pink	3.3	3.8	5.0	4.0	40	30
RM Light Salmon	3.3	3.8	5.0	4.2	40	30
RM Magenta	3.2	3.7	4.8	4.2	42	26
RM Orange	3.0	3.8	5.0	4.0	49	27
RM Red 2003	3.0	3.8	5.0	4.2	9	26
RM Royal Red	3.3	4.2	5.0	4.3	47	23
RM Salmon 2004	3.2	4.2	5.0	4.3	22	26
RM Salmon Rose	3.0	4.0	5.0	4.2	16	29
RM Scarlet	3.7	3.3	5.0	4.0	13	17
RM Violet	3.0	4.2	5.0	4.2	40	42
RM White	3.0	3.8	5.0	3.8	20	9
Pink Blizzard	3.0	3.7	4.0	4.2	27	9
Samba	3.3	3.2	5.0	4.2	31	36
Summer Rose Lilac	3.3	4.8	5.0	4.5	49	32
Taj Mahal	3.5	4.3	4.7	3.8	44	24
Tango	2.8	3.7	5.0	4.0	11	11
Tango Dark Red	2.8	3.8	4.9	4.2	20	24
Tango Lavender	3.3	3.8	4.9	3.8	22	17
Tango Neon Purple	2.7	3.5	4.8	4.3	47	33
Tango White	3.2	4.2	5.0	4.0	24	9

^zThe percentage is based on the number of respondents who choose the plant as one that they like divided by the total number of respondents. The consumer survey conducted in Jan 2004 had 45 completed surveys while the survey conducted in March 2004 had 66 completed surveys.

^yRM = Rocky Mountain.

Table 4. Consumer preference results and plant quality ratings of New Guinea impatiens cultivars recorded 34, 64, 90, and 118 days after planting (DAP). Ratings were based on a scale of 0 to 5 with 0 = dead, 3 = plants of interest, and 5 = top performance. Plants were planted on December 10, 2003.

Cultivar	Quality rating				Consumer preference ^z (%)	
	Jan 34 DAP	Feb 64 DAP	Mar 90 DAP	Apr 118 DAP	Jan	Mar
Sonic Amethyst	3.0	5.0	5.0	4.2	49	27
Sonic Hot Rose on gold	2.7	4.7	4.7	3.7	49	61
Sonic Light Lavender	3.0	5.0	5.0	4.2	44	33
Sonic Lilac	2.7	5.0	4.9	3.8	44	23
Sonic Orange	3.0	5.0	5.0	4.0	0	33
Sonic Pastel 2003	2.7	4.8	4.9	3.3	24	15
Sonic Salmon Ice	2.8	5.0	5.0	4.2	36	32
Sonic Sweet Cherry	2.7	5.0	5.0	4.0	31	27
Sonic White 2003	2.7	5.0	5.0	4.0	20	18
Super Sonic Burgundy	3.0	4.8	4.8	3.5	33	27
Super Sonic Cherry Cream	3.0	5.0	5.0	4.0	80	42
Super Sonic Coral Ice 2003	2.8	5.0	5.0	4.3	44	23
Super Sonic Flame	2.5	4.8	5.0	4.2	38	44
Super Sonic Hot Pink 2004	3.0	5.0	5.0	4.0	24	23
Super Sonic Lilac	3.0	5.0	5.0	4.0	38	45
Super Sonic Magenta	2.8	5.0	4.8	3.8	58	47
Super Sonic Orchid	3.0	5.0	4.9	4.0	49	26
Super Sonic Violet Ice	2.8	4.8	4.9	4.0	36	21
Super Sonic White 2003	2.8	5.0	5.0	4.0	16	17
Tamarinda Bicolor Purple	2.0	4.3	5.0	4.2	27	61
Tamarinda Cherry Red	2.0	4.7	4.7	3.5	9	44
Tamarinda Orange	2.0	4.2	5.0	4.0	2	41
Tamarinda True Pink	2.0	4.0	5.0	4.0	9	29
Tamarinda Violet	2.0	4.3	5.0	4.0	7	26

^zThe percentage is based on the number of respondents who choose the plant as one that they like divided by the total number of respondents. The consumer survey conducted in Jan 2004 had 45 completed surveys while the survey conducted in March 2004 had 66 completed surveys.

Table 5. Consumer preference results and quality ratings of petunia, Shasta Daisy, double impatiens, miniature impatiens, fushia, dahlia, lavender, begonia, calibrachoa, osteospermum, lantana, diascia, and agastache cultivars recorded 34, 64, 90, and 118 days after planting (DAP). Ratings were based on a scale of 0 to 5 with 0 = dead, 3 = plants of interest, and 5 = top performance. Plants were planted on December 10, 2003.

Cultivar	Quality rating				Consumer preference ^c (%)	
	Jan 34 DAP	Feb 64 DAP	Mar 90 DAP	Apr 118 DAP	Jan	Mar
Petunia						
Blanket Purple	3.0	3.0	5.0	5.0	33	45
Blanket White	2.5	4.5	4.9	4.7	18	20
Fortunia Blue Improved	2.7	4.8	5.0	4.0	58	24
Fortunia Pink Vein	2.2	4.8	5.0	4.7	44	29
Fortunia. Red	2.8	4.0	4.8	3.3	40	17
Tiny Tunia Blue	2.0	2.8	5.0	3.8	22	32
Tiny Tunia Pink	2.0	2.2	4.3	3.8	2	15
Tiny Tunia Red	2.5	3.5	5.0	3.7	13	17
Tiny Tunia Violet	2.3	2.2	3.7	3.5	27	15
Tiny Tunia White	2.7	3.8	5.0	4.3	29	6
Shasta Daisy (Darling)	2.8	4.0	5.0	4.5	36	39
Double impatiens						
Double Up Passion	2.8	5.0	4.8	3.3	36	20
Double Up Red	2.8	5.0	4.7	3.5	31	29
Double Up Rose	2.8	5.0	5.0	3.7	49	30
Miniature impatiens						
Little Lizzy Orange	2.7	5.0	5.0	3.0	29	15
Little Lizzy Violet	2.5	5.0	4.7	2.5	33	24
Little Lizzy White	2.5	4.8	5.0	2.8	31	29
Fushia (Wind chime Pink/Purple)	2.0	4.0	4.0	3.0	4	2
Dahlia						
Dahlinova Sabinas	2.0	2.0	4.0	2.5	11	8
Dahlinova Terraba	3.0	3.5	3.7	2.5	60	11
Lavender						
Madrid Blue	2.8	4.0	4.7	4.0	18	20
Madrid Midnight	2.8	4.7	5.0	4.0	22	33
Madrid Pink	2.7	4.2	5.0	4.0	13	26
Begonia						
Gumdrop Mandarin	2.2	3.7	4.3	4.0	20	15
Gumdrop Red	2.2	2.7	4.5	4.0	24	14
Gumdrop Rose	2.3	3.3	5.0	4.0	24	14
Calibrachoa						
Spring Fling Lemon	1.7	1.8	3.0	3.0	0	2
Spring Fling Salmon	2.0	2.5	5.0	4.2	4	29
Spring Fling Yellow	1.7	2.7	3.8	4.0	11	20
Osteospermum						
Sea Mist Pink/White	2.0	4.0	5.0	3.3	9	53
Sea Mist Purple	1.8	4.0	5.0	4.2	29	47
Sea Mist White	2.3	4.2	5.0	4.0	0	48
Lantana						
Morning Glow Pink/Yellow	1.5	2.7	5.0	3.3	11	17
Morning Glow Yellow	1.5	3.0	5.0	3.3	7	15
Diascia (Miracle Red)	2.0	4.7	5.0	5.0	42	26
Agastache						
Acapulco Rose	2.0	3.5	5.0	5.0	16	27
Acapulco Salmon/Pink	2.5	3.8	4.2	4.5	38	9

^cThe percentage is based on the number of respondents who choose the plant as one that they like divided by the total number of respondents. The consumer survey conducted in Jan 2004 had 45 completed surveys while the survey conducted in March 2004 had 66 completed surveys.

In January, the New Guinea impatiens cultivars that 40% or more consumers picked included: Sonic Amethyst, Sonic Hot Rose on Gold, Sonic Light Lavender, Sonic Lilac, Super Sonic Cherry Cream, Super Sonic Coral Ice 2003, Super Son-

ic Magenta, and Super Sonic Orchid (Table 4). In March, the cultivars that 40% or more consumers liked included: Sonic Hot Rose on Gold, Super Sonic Cherry Cream, Super Sonic Flame, Super Sonic Lilac, Super Sonic Magenta, Tamarinda

Bicolor Purple, Tamarinda Cherry Red, and Tamarinda Orange. The cultivar Super Sonic Cherry Cream also was a favorite from the garden in 2003 (Moore et al., 2003).

Forty percent or more consumers in January chose the following as plants they liked: petunia Fortunia Blue Improved, petunia Fortunia Pink Vein, petunia Fortunia Red, impatiens Double Up Rose, dahlia Dahlinova Terraba, and diascia Miracle Red. In March, 40% or more consumers choose the following plants: petunia Blanket Purple, Shasta Daisy Darling, and osteospermum Sea Mist White, Sea Mist Purple, and Sea Mist Pink/White. Because of our mild temperatures, we suspect that the osteospermum performed better than anticipated. In general, osteospermum grow better in USDA hardiness Zone 8. They prefer cooler night temperatures and do not grow well in areas of excessive humidity.

Summary

Information about bedding plant field performance is important when making recommendations for landscape use.

Because of the mild climate in south Florida, early trials are useful to evaluate plant growth, plant and flower uniformity, and floral display. Consumer surveys also help in marketing flower colors and plants that appeal to the general public.

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Literature Cited

Moore, K. K., E. C. Worden, and W. Vendrame. Fort Lauderdale winter trial garden. *Proc. Fla. State Hort. Soc.* 116:179-183.