

Evaluation of Pansy Cultivars as Bedding Plants to Select the Best-of-class

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SUMMARY. Florida is one of the top wholesale producers of bedding plants, and in 2003 was ranked fourth in annual bedding plant production and fifth in potted pansy/viola production. Evaluation of pansy cultivars is vital for continued growth of the industry. We evaluated 210 cultivars of pansy (*Viola × wittrockiana*) (164 new cultivars) in replicated class tests at the University of Florida's Gulf Coast Research and Education Center at Bradenton, Fla., from 2000–04 to determine the best-of-class and use them in future trials to compare against new entries in the same class. In this report, we provide objective plant measurements of vegetative and floral characteristics as well as subjective performance ratings. Subjective ratings were on a 1 to 7 scale with the highest rating of 7 for excellent. In general, overall performance ratings (combined foliage, flower, arthropod, and disease ratings) ≥ 5.5 were considered outstanding. Pansy cultivars were grouped into classes based on flower color and pattern. Best-of-class selections that had an outstanding overall performance rating in one or more contested trials, never falling below 5.0 in other contested trials, were: (black class) 'Accord/Banner Black Beauty', (blue shades/tints class) 'Nature Blue', (blue with blotch class) 'Nature Ocean', (mix class) 'Panola Clear Mixture', (pink shades/tints with blotch class) 'Nature Pink Shades', [purple (dark), blue-violet with white cap class] 'Nature Beacon', [purple (dark), blue-violet/white face with blotch class] 'Panola Purple With Face', (purple with light eye class) 'Baby Bingo Lavender Blue', (white class) 'Nature White', (yellow class) 'Nature Yellow', (yellow with blotch and purple, blue-violet cap class) 'Iona Purple & Yellow With Blotch', (yellow with blotch and red cap class) 'Bingo Red & Yellow', (yellow with blotch and red cap class) 'Panola Yellow With Blotch', (yellow with dark veins class) 'Whiskers Yellow'. We believe these cultivars would perform well in the southern U.S. or areas of the world with similar heat and cold hardiness zones.

One of the oldest garden flowers is the pansy (from the French word *pensee*, meaning thought; folk-name: heartsease). John Parkinson mentions its use in 1629. Records indicate their use in medicine by the Greeks in the 4th century BCE. Hybrid pansies were created from violas, a large genus of 500 species. During this same period, it is believed that a European observed a plant similar to viola found in open, sunlit areas and called it a wild pansy. William Thompson, an English gardener in the early 19th century, made

crosses with *Viola tricolor*, *V. lutea*, and a blue flowered species thought to be of Russian origin. Thompson is credited with discovering the cross that began the new interspecific hybrid species *V. × wittrockiana* (Bailey, 1947; Texas A&M, 1997; U.S. Department of Agriculture, 2004a).

In the *USDA 1998 Census of Horticultural Specialties* (U.S. Department of Agriculture, 1998), pansy/viola ranked third for wholesale value of flats (\$57 million) and fourth for pots (\$19 million). Of the bedding plants surveyed with highest sales value to growers in 2003, pansy/viola flats contributed the second largest amount at \$118 million behind potted gerani-

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Units				
To convert			To convert	
U.S. to SI,	U.S. unit	SI unit	SI to U.S.,	
multiply by			multiply by	
0.3048	ft	m	3.2808	
0.0929	ft ²	m ²	10.7639	
2.5400	inch(es)	cm	0.3937	
1.1209	lb/acre	kg·ha ⁻¹	0.8922	
28.3495	oz	g	0.0353	
(°F - 32) ÷ 1.8	°F	°C	(1.8 × °C) + 32	

ums (from cuttings and seed) at \$150 million. Florida was fifth in the U.S. for the number of potted pansies/violas produced, and their wholesale value was \$2.0 million in 2003 (U.S. Department of Agriculture, 2004b).

The bedding plant industry requires timely evaluation of cultivars for a competitive market. Many of the bedding plant cultivar trials currently conducted in the U.S. are performed without replicated experimental units. While those trials provide valuable observational information, they require replication over years to gain the benefits from statistical analysis. Since seed companies are releasing new cultivars yearly, timely evaluations are critical to provide growers with non-biased performance evaluations to help them make cultivar selection decisions. Standards have not been developed for pansies and thus new cultivars are often compared with a random number of cultivars chosen from over 300 commercially available cultivars (Kessler, 1998). This study was done to evaluate pansy cultivar performance in seasonal replicated trials to provide evaluations that may be used by growers, landscapers, consumers and seed companies as well as the scientific community. These trials also were to establish cultivars to be used as standards (best-of-class) for comparing new cultivars as they become available without the need to re-evaluate all older cultivars.

Materials and methods

Four trials were conducted between Dec. 2000 and Mar. 2004. The initial trial was concluded in 2001, evaluating 87 cultivars, and was used to establish best-of-class standards to be used as comparisons for new cultivar releases in future trials. Cultivars were placed into classes based on flower color and pattern (Table 1). In 2001, some new classes were created as we felt some colors/patterns were so distinctly different as to warrant further separation. In all four trials, some cultivars were the sole entry for that class and were evaluated as uncontested. Forty-three new cultivars were evaluated in 2002, 22 in 2003, and 12 in 2004.

Seeds were sown on 4–5 Dec. 2000, 4–10 Oct. 2001, 10–17 Oct. 2002 and 6–20 Oct. 2003. Immediately after germination, seedlings were transplanted into Todd planter flats (model 128; Speedling Inc., Sun City, Fla.) with cells 1.5 × 1.5 × 2.5 inches,

and grown to mature non-flowering plugs in a greenhouse. One to two weeks before transplanting into the field, flats were placed outside in full sun for hardening. Plugs were transplanted on 31 Jan. 2000–1 Feb. 2001, 27–29 Nov. 2001, 11 Dec. 2002, and 17–24 Nov. 2003 into raised ground beds 32 inches wide × 8 inches high of Eau Gallie fine sand (pH range = 6.2–6.8). Six plants per plot spaced 9 inches apart and arranged from the bed center in two three-plant rows across the bed width for a 2 ft² plot with an equal area between plots.

Solid fertilizer was applied by hand to each plant on the soil surface approximately 1 inch from the plant stem under the plastic mulch in 2000–01 and 2001–02 at 0.5 oz per plant, using Nutricote 13–13–13 fertilizer (13N–5.7P–10.8K, 100 d slow-release type; Florikan, Sarasota, Fla.); Osmocote Plus 15–9–12 fertilizer (15N–3.9P–10K, 5–6 months slow-release type with micronutrients; Scotts Co., Maryville, Ohio) was used at the same rate in 2002–03 and 2003–04. Beds were fumigated ≥ 14 d before planting with a mixture of 66% methyl bromide and 33% chloropicrin at 350 lb/acre and covered with white-on-black polyethylene film. Subsurface seepage irrigation water was supplied from lateral ditches spaced 40.5 ft apart (Howe and Waters, 1989).

Integrated pest management was employed to determine when pesticide applications were needed to control arthropod pests and plant pathogens. Weather information was recorded by a University of Florida automated weather station [University of Florida, Gulf Coast Research and Education Center, Bradenton; lat. 27°4' N, long. 82°5' W; AHS Heat Zone 10 (American Horticultural Society, 1999); USDA Cold Hardiness Zone 9b (U.S. National Arboretum, 1990)].

Between 14–15 Mar. 2001, on 15 Feb. 2002, between 5–6 Feb. 2003, and on 26 Jan. 2004, plant height (from the stem base to the inflorescence tip), plant width at the widest point and flower diameter were recorded for three plants selected from the center and edge of each plot. Subjective ratings were made by the senior author between 28 Feb. and 10 Apr. 2001, 16 Jan. and 2 Mar. 2002, 15 Jan. to 29 Mar. 2003 and 7 Jan. to 5 Mar. 2004 (evaluations were across all six plants resulting in one value per plot). A

scale of 1 to 7 scale was used with the highest rating a 7. Floral characteristics were rated within a scale as follows: 7 = flowers were numerous, uniformly distributed over all plants, flowers were free from pest symptoms; 4 = average floral display, may have some pest damage but not severe enough to cause flowers to be unacceptable; and 1 = unacceptable flower number or display, and/or pest damage severe resulting in unattractive flowers. Foliage ratings were as follows: 7 = all plants in a plot had full and uniform foliage, plants were free of pest symptoms and abnormalities or weaknesses such as lodging; 4 = average foliage density, minimal lodging, and/or some insect damage but foliage was still acceptable; 1 = foliage sparse, stem lodging, and/or unacceptable pest damage making plants undesirable. Arthropod and disease ratings on flowers were as follows: 7 = all flowers free from arthropod feeding scars and absence of diseased tissue in the form of spots, blights, or tissue distortion caused by a pathogen; 4 = minimal pest damage to tissue, and flowers still acceptable; 1 = flowers severely infested and damaged, resulting in undesirable flowers. For a measure of performance over time, ratings were added and divided by the total number of ratings (two to four per trial). For a measure of overall performance, flower, foliage, arthropod, and disease ratings were added and divided by four. For each class, the cultivar with the highest overall performance rating was selected as best-of-class. If the rating was a tie, another rating was chosen. These cultivars were then used in trials 2–4 as the “standard” for comparison of new cultivars in their class. Some cultivars were the sole entry in their class, so they became uncontested best-of-class.

Each class was analyzed as a separate experiment. A randomized complete-block experimental design was used with three or four blocks containing six plants per plot. The experimental unit for objective data was the average measurement from three plants, and for subjective data, one rating value considering all six plants in the plot. All data were analyzed by analysis of variance (ANOVA) methods, and means of dependent variables significant at the 0.05 level of probability were separated using Duncan's multiple range test (PROC ANOVA; SAS Institute, Cary, N.C.).

Table 1. Plant and flowering characteristics and performance ratings for pansies grown in winter/spring 2000–01 in Bradenton, Fla., grouped within classes according to flower color. Seeds were sown on 4–5 Dec. 2000, and plugs transplanted to ground beds 31 Jan. 2000–1 Feb. 2001.

Cultivar	Seed source ^v	Measurements (cm) ^z			Flowering (d) ^y		Cultivar quality ^x		Pest symptoms ^w		Overall performance rating ^u
		Plant ht	Plant width	Flower diam	First flower	Flowering divergence	Foliage rating	Flower rating	Arthropod rating	Disease rating	
<i>Black class</i>											
Accord/Banner Black ^{t,s}	Goldsmith	13 a ^r	18 a	5.1 a	73	10.8	5.1	4.5 a	6.7	6.7	5.7 a
Halloween ^s	PanAmerican	10 b	22 a	4.6 b	70 ^{nsq}	7.8 ^{ns}	4.9 ^{ns}	4.0 b	6.0 ^{ns}	6.7 ^{ns}	5.4 b
<i>Blue, dark class</i>											
Scala Mid Blue ^t	PanAmerican	12	18	5.7	75	10.3	4.8	4.1	4.8	5.1	4.7
<i>Blue shades class</i>											
Baby Bingo Sky Blue ^{t,s}	PanAmerican	12	20	4.7 b	69 c	12.3 a	4.9	4.1 a	6.2 a	6.1 a	5.3 a
Bingo Azure Clear	PanAmerican	13	19	6.0 a	68 c	12.8 a	4.5	3.7 ab	5.6 bc	4.9 b	4.7 c
Dynamite Beacon Blue	Sakata	11	17	5.6 a	72 b	5.3 c	4.8	3.5 bc	5.6 bc	5.5 a	5.0 b
Dynamite Light Blue	Sakata	11	18	5.9 a	71 b	6.5 bc	4.2	4.0 a	5.5 c	4.8 b	4.6 c
Scala Sky Blue	PanAmerican	13 ^{ns}	18 ^{ns}	5.8 a	77 a	10.8 ab	4.5 ^{ns}	3.2 b	5.6 bc	4.8 b	4.5 c
<i>Blue with dark eye class</i>											
Baby Bingo Blue With Blotch ^t	PanAmerican	12	21 a	4.6 e	67 def	4.8 b	5.3 a	5.2 a	3.7 gh	5.9 ab	5.0 b
Baby Bingo Experimental Marina Shades ^{t,s}	PanAmerican	12	19 a-d	4.3 e	66 ef	5.0 b	5.3 a	5.5 a	6.5 a	6.2 a	5.9 a
Bingo Blue With Blotch	PanAmerican	11	18 a-d	5.5 c	69 b-e	10.3 ab	4.6 bc	4.4 b	3.9 fg	5.6 b	4.6 de
Bingo Blue Frost	PanAmerican	12	15 e	5.6 bc	73 a	9.0 b	3.6 d	3.8 de	4.7 cd	5.8 ab	4.5 e
Bingo Light Blue With Bloch	PanAmerican	13	21 ab	5.6 bc	68 cde	6.5 b	4.7 b	4.1 bcd	5.6 b	4.9 c	4.8 bcd
Dynamite Blue With Blotch	Sakata	11	17 cde	5.7 bc	65 f	10.8 ab	4.2 c	4.0 cd	4.4 de	6.2 a	4.7 cde
Dynamite Ocean	Sakata	11	20 abc	6.1 ab	71 abc	8.3 b	4.9 b	3.4 ef	3.4 h	4.2 d	4.0 f
Majestic Giants Supreme ^s	Sakata	11	18 bcd	5.9 bc	73 a	9.5 ab	4.7 b	3.4 f	4.3 def	6.2 a	4.6 de
Blue & White With Bloch	Sakata	11	17 cde	5.8 bc	71 ab	6.5 b	4.4 bc	4.5 abc	4.2 ef	5.8 ab	4.6 de
Majestic Giants Supreme ^s	Sakata	11	18 bcd	6.4 a	71 ab	5.8 b	4.6 bc	3.5 ef	4.2 ef	5.5 b	4.5 e
Deep Blue With Bloch	Sakata	11	17 cde	5.8 bc	71 ab	6.5 b	4.4 bc	4.5 abc	4.2 ef	5.8 ab	4.6 de
Majestic Giants Supreme ^s	Sakata	11	18 bcd	6.4 a	71 ab	5.8 b	4.6 bc	3.5 ef	4.2 ef	5.5 b	4.5 e
Mid Blue With Bloch	Sakata	11	18 bcd	6.4 a	71 ab	5.8 b	4.6 bc	3.5 ef	4.2 ef	5.5 b	4.5 e
Scala Blue With Blotch	PanAmerican	11 ^{ns}	16 de	5.1 d	69 bcd	15.8 a	4.7 b	4.3 bc	5.1 c	5.9 ab	5.0 bc
<i>Mix class</i>											
Baby Bingo	PanAmerican	12	20 ab	4.2 b	65 c	11.8	4.9 a	5.1 a	5.4 abc	6.2 a	5.4 a
All-Seasons Mixture ^{t,s}	PanAmerican	12	20 ab	4.2 b	65 c	11.8	4.9 a	5.1 a	5.4 abc	6.2 a	5.4 a
Baby Bingo	PanAmerican	12	20 ab	4.2 b	65 c	11.8	4.9 a	5.1 a	5.4 abc	6.2 a	5.4 a
Autumn Blaze Mixture ^s	PanAmerican	13	18 c	4.3 b	70 b	9.0	4.0 c	4.8 a	5.6 ab	6.4 a	5.2 a
Baby Bingo	PanAmerican	12	20 ab	4.2 b	65 c	11.8	4.9 a	5.1 a	5.4 abc	6.2 a	5.4 a
Winter Blues Mixture ^s	PanAmerican	13	22 a	4.5 b	70 ab	6.8	5.1 a	4.8 a	5.7 ab	6.3 a	5.4 a
Dynamite Blotch Mixed	Sakata	13	19 bc	5.7 a	72 ab	6.0	4.2 c	4.0 b	4.8 c	5.1 b	4.6 b
Dynamite Clear Mixed	Sakata	12	20 ab	5.5 a	70 b	8.0	4.2 c	3.8 b	5.2 bc	6.0 a	4.8 b
Trick or Treat Mixture	PanAmerican	13	22 a	4.5 b	72 a	12.0	4.7 ab	3.9 b	5.6 ab	6.4 a	5.2 a
Ultima Impression Mixed	Sakata	12 ^{ns}	21 ab	4.0 b	72 ab	8.8 ^{ns}	4.4 bc	4.0 b	5.9 a	6.5 a	5.2 a
<i>Orange class</i>											
Scala Pure Orange Improved ^t	PanAmerican	12	18	4.8	70	12.8	3.7	2.8	4.1	6.2	4.3
<i>Purple class</i>											
Dynamite Lavender	Sakata	12	19	5.6 a	70	9.5	4.7	3.5 b	5.4	5.9	4.9
Fama Lilac Shades	Benary	12	17	5.6 a	73	14.3	4.1	3.0 b	5.8	6.2	4.8
Lavender Cool Shades ^t	PanAmerican	11 ^{ns}	19 ^{ns}	4.9 b	68 ^{ns}	7.5 ^{ns}	4.7 ^{ns}	3.7 a	5.8 ^{ns}	6.1 ^{ns}	5.0 ^{ns}
<i>Purple, dark class</i>											
Accord/Banner Purple	Goldsmith	11	17	4.9 b	72	12.5	4.3	3.6	5.2	6.0	4.8
Dynamite Purple ^t	Sakata	11	17	5.5 a	73	7.0	4.1	3.9	4.9	5.9 ^{ns}	4.8 ^{ns}
Fama Purple	Benary	10 ^{ns}	15 ^{ns}	4.8 b	74 ^{ns}	7.5 ^{ns}	4.6 ^{ns}	3.9 ^{ns}	---	---	---
<i>Purple with dark eye class</i>											
Baby Bingo Denim ^t	PanAmerican	12 a	22	4.6 cd	69 c	5.8	5.2 a	4.6 b	4.8 b	6.1 c	5.2 ab
Baby Bingo Midnight	PanAmerican	10 b	19	5.1 bc	73 a	6.5	4.5 b	4.1 c	4.8 b	6.4 abc	5.0 b
Baby Bingo Purple With Face ^{s,p}	PanAmerican	9 b	21	4.1 d	62 d	9.8	5.0 ab	4.9 a	4.7 b	6.7 a	5.3 a
Bingo Deep Purple	PanAmerican	12 a	19	5.5 ab	72 ab	10.0	5.1 a	3.8 b	3.9 c	5.3 d	4.5 d
<i>Majestic Giants Supreme^e</i>											
Purple With Blotch	Sakata	10 b	18	6.0 a	71 bc	13.3 ^{ns}	4.5 b	3.6 d	4.8 b	6.2 bc	4.7 c
<i>Purple with light eye class</i>											
Baby Bingo Lavender Blue ^t	PanAmerican	10 b	22 a	4.0 b	66 b	11.5 a	5.2 a	5.2 a	5.9 a	6.9 a	5.8 a
Purple Jester	PanAmerican	13 a	16 b	4.9 a	71 a	10.5 a	4.3 b	3.5 b	4.8 b	6.4 b	4.7 c
Purple Rain	PanAmerican	13 a	22 a	3.8 b	63 b	5.8 b	5.3 a	5.4 a	4.1 c	6.7 a	5.4 b
<i>Purple/white class</i>											
Accord Purple Picotee	Goldsmith	12 ab	19	5.6 a	71	5.3	4.0 b	3.8 b	5.5 b	5.9 c	4.8 b
Baby Bingo Beaconsfield ^{t,s}	PanAmerican	11 b	19	4.3 b	71	10.0	5.4 a	4.7 a	6.6 a	6.6 a	5.8 a
Dynamite Purple Rose & White	Sakata	14 a	18 ^{ns}	5.6 a	69 ^{ns}	6.0 ^{ns}	4.4 b	3.5 b	4.4 c	6.2 b	4.6 b
<i>Red class</i>											
Dynamite Scarlet ^t	Sakata	10	17	5.3	71	4.3	4.0 a	4.0 a	4.2 b	5.5	4.4
Scala Scarlet	PanAmerican	11 ^{ns}	18 ^{ns}	5.3 ^{ns}	71 ^{ns}	11.0 ^{ns}	3.4 b	3.2 b	4.7 a	6.2 ^{ns}	4.4 ^{ns}
<i>Red with dark eye class</i>											
Baby Bingo Fire ^s	PanAmerican	10 b	16	4.8 c	70 b	6.8	3.8 c	3.3 b	4.8 a	6.6 a	4.6 a

Table 1. Continued on next page.

Table 1. Continued from previous page.

Cultivar	Seed source ^v	Measurements (cm) ^z			Flowering (d) ^y		Cultivar quality ^x		Pest symptoms ^w		Overall performance rating ^u
		Plant ht	Plant width	Flower diam	First flower	Flowering divergence	Foliage rating	Flower rating	Arthropod rating	Disease rating	
Bingo Red With Blotch	PanAmerican	10 b	16	5.4 b	73 ab	9.0	3.8 c	3.0 bc	4.3 ab	5.9 b	4.3 b
Dynamite Red With Blotch	Sakata	11 b	18	5.5 b	70 b	5.8	3.7 c	3.2 b	3.9 b	6.2 ab	4.3 b
Fama Red	Benary	12 a	17	5.4 b	71 b	10.0	4.3 a	3.0 bc	4.5 a	6.2 ab	4.5 a
Karma Red Blotch ^t	Goldsmith	11 b	17	5.2 b	71 b	8.3	4.4 a	3.7 a	4.6 a	6.1 b	4.7 a
Majestic Giants Supreme ^t Red With Blotch	Sakata	10 b	17 ^{ns}	6.2 a	75 a	9.5 ^{ns}	3.9 bc	2.7 c	3.9 b	4.8 c	3.8 c
					<i>Rose class</i>						
Karma Rose ^t	Goldsmith	11	17	5.3	69	9.3	3.8	3.9	4.5	6.2	4.6
					<i>Rose with blotch class</i>						
Bingo Light Rose With Blotch	PanAmerican	12 b	20 a	6.0 a	71 b	5.3	4.4 ab	3.2 b	5.1 b	5.9 a	4.6 b
Bingo Rose With Blotch	PanAmerican	12 b	18 abc	5.8 abc	71 b	8.5	4.8 a	3.8 b	4.9 bc	5.7 a	4.8 b
Bingo Rose Frost ^t	PanAmerican	14 a	19 ab	5.4 cd	70 b	9.5	4.8 a	3.2 c	6.9 a	6.2 a	5.3 a
Dynamite Rose With Blotch	Sakata	10 cd	16 c	5.3 d	69 b	10.8	3.4 d	3.6 bc	4.4 cd	6.1 a	4.4 c
Karma Rose Blotch	Goldsmith	10 d	17 bc	5.6 bcd	70 b	7.3	4.2 bc	3.5 bc	3.8 e	5.7 a	4.3 c
Majestic Giants Supreme ^t Rose With Blotch	Sakata	9 e	16 bc	5.9 ab	75 a	8.8 ^{ns}	3.8 cd	3.3 c	4.2 de	4.2 b	3.9 d
					<i>White class</i>						
Bingo Clear White	PanAmerican	12 b	18 b	4.9	70	9.3	4.5 ab	4.1	6.4	6.1 c	5.2 b
Dynamite White	Sakata	12 b	20 a	5.1	72	8.5	4.3 b	3.4	6.3	6.4 ab	5.1 b
Karma White	Goldsmith	12 b	17 b	5.7	72	6.0	4.1 b	3.9	6.5	6.2 bc	5.1 b
Scala Pure White ^t	PanAmerican	14 a	21 a	4.8 ^{ns}	71 ^{ns}	9.5 ^{ns}	5.0 a	4.1 ^{ns}	6.5 ^{ns}	6.7 a	5.6 a
					<i>White shades (cream) class</i>						
Scala Cream ^t	PanAmerican	12	21	5.7 a	71	8.5	4.5	4.0	5.4	6.2	5.0
					<i>White with dark eye class</i>						
Bingo White With Blotch	PanAmerican	24	20 a	5.8 a	70 b	6.0 bc	4.5 abc	3.6 a	5.6 b	6.2 a	5.0 b
Dynamite White With Blotch	Sakata	13	19 a	5.8 a	70 b	4.3 c	4.5 abc	3.3 ab	5.7 b	5.4 b	4.7 bc
Fama Spanish Eyes	Benary	12	17 b	4.9 b	71 b	5.3 bc	4.0 c	2.8 c	6.0 ab	6.3 a	4.8 bc
Karma White Blotch	Goldsmith	12	17 b	5.8 a	73 a	5.5 bc	4.3 bc	3.1 bc	5.6 b	5.5 b	4.6 c
Majestic Giants Supreme ^t White With Blotch	Sakata	12	20 a	6.1 a	74 a	9.0 ab	4.7 ab	3.3 ab	5.5 b	5.8 ab	4.9 bc
Scala White With Blotch ^t	PanAmerican	12 ^{ns}	20 a	5.1 b	70 b	11.3 a	4.9 a	3.7 a	6.2 a	6.3 a	5.3 a
					<i>Yellow class</i>						
Baby Bingo Yellow ^{s, s}	PanAmerican	11 c	19 b	4.2 e	70 cd	6.8 b	4.5 a	5.0 a	5.2 b	5.8 abc	5.2 a
Bingo Clear Yellow	PanAmerican	9 d	15 c	5.9 a	79 a	9.0 b	3.5 b	2.6 d	4.2 d	4.1 e	3.6 d
Dynamite Yellow	Sakata	11 bc	20 ab	5.6 abc	72 bc	5.8 b	4.5 a	4.2 b	4.8 bc	5.1 cd	4.6 bc
Fama Golden Yellow	Benary	13 a	21 a	5.8 ab	73 bc	8.8 b	4.7 a	3.4 c	4.9 bc	5.4 bc	4.6 c
Karma Yellow	Goldsmith	13 ab	22 a	5.5 bc	68 d	10.8 ab	4.5 a	4.2 b	4.7 cd	4.6 de	4.5 c
Scala Primrose	PanAmerican	12 abc	20 ab	5.3 cd	75 b	15.5 a	4.6 a	3.3 c	5.9 a	5.9 ab	4.9 ab
Scala Yellow	PanAmerican	13 ab	17 b	5.1 d	75 b	7.0 b	4.5 a	4.1 b	4.5 cd	6.4 a	4.9 ab
					<i>Yellow with blotch class</i>						
Baby Bingo Red & Yellow	PanAmerican	11 bc	19	4.6 f	70 c	6.8	4.1 bcd	4.3 a	5.1 bc	6.7 a	5.0 a
Bingo Yellow With Blotch	PanAmerican	12 ab	17	6.2 ab	76 a	8.0	4.3 abc	3.1 de	4.5 d	5.6 cd	4.4 de
Bingo Red & Yellow ^p	PanAmerican	11 bc	20	5.4 cd	70 c	9.0	4.5 ab	4.2 a	5.3 b	6.6 a	5.1 a
Dynamite Red & Yellow	Sakata	11 bc	17	5.2 de	72 ac	8.5	4.0 bcd	3.4 cd	4.3 d	6.5 a	4.5 cd
Dynamite Yellow With Blotch	Sakata	12 ab	18	5.1 d	71 c	10.5	3.7 d	3.8 ab	4.4 d	4.9 e	4.2 ef
Fama Dark Eyed Lemon ^t	Benary	13 a	18	5.8 bc	73 bc	10.5	4.6 a	3.0 de	5.8 a	6.3 ab	4.9 ab
Karma Yellow Blotch	Goldsmith	10 bc	17	5.5 cd	70 c	8.8	3.9 cd	3.7 bc	4.6 d	6.0 bc	4.5 cd
Majestic Giants Supreme ^t Yellow With Blotch	Sakata	10 c	18	6.5 a	77 a	5.5	4.1 bcd	2.8 ef	4.4 d	5.2 de	4.1 f
Scala Yellow With Blotch	PanAmerican	10 bc	17	4.9 ef	73 b	8.3	4.8 a	3.9 ab	4.7 cd	5.9 c	4.8 bc
Scala Yellow With Blue Wings ^p	PanAmerican	11 bc	17 ^{ns}	5.2 de	72 bc	7.0 ^{ns}	4.4 ab	2.6 f	5.2 bc	6.5 a	4.7 c

^z1 cm = 0.3937 inch.^yThe number of days from sowing seed to the unfurling of the first flower in a plot. Divergence is the average number of days that lapse between the unfurling of the first flower and the last flower in a plot, or a measure of uniform flowering.^xAverage of four foliage or flower quality ratings taken between 28 Feb. and 27 Mar. on a scale of 1 to 7 with 7 = excellent.^wAverage of three arthropod or disease ratings for flowers taken between 9 Mar. and 10 Apr. on a scale of 1 to 7 with 7 = all flowers in a plot were free from arthropod feeding or plant disease symptoms; no foliage pests observed.^vSeed Sources: Benary = Ernst Benary of America, Sycamore, Ill.; Goldsmith = Goldsmith Seeds, Gilroy, Calif.; PanAmerican = PanAmerican Seed Co., West Chicago, Ill.; Sakata = Sakata Seed America, Morgan Hill, Calif.^uOverall performance rating is the average of the foliage, flower, arthropod and disease ratings.^tBest-of-class chosen from the overall performance rating or by another rating, if overall performance values were equal.^sCultivar names were later changed by the seed company: 'Panola' series was created from 'Baby Bingo' and 'Panache' (see Table 2); 'Baby Bingo Yellow' became 'Panola Golden Yellow'; those 'Baby Bingo' best-of-class replaced by different genetics are considered improvements to be used for future comparisons. 'Halloween II' replaced 'Halloween'. 'Accord/Banner Black' became 'Accord/Banner Black Beauty'; 'Scala Pure Orange' became 'Scala Orange' (see Table 2); 'Majestic Giants Supreme' became 'Majestic Giants II' (see Table 3).^pMean separation within classes by Duncan's multiple range test, $P < 0.05$.ⁿDistances class was divided and a cultivar became a new class (thus, an uncontested best-of-class) or a class name was revised. Class changes were: 'Baby Bingo Purple With Face' [(Panola Purple With Face) purple (dark), blue-violet/white face with blotch; Tables 2-4]; 'Bingo Red & Yellow' (yellow with blotch and red cap; uncontested); and 'Scala Yellow With Blue Wings' (yellow with blotch and purple, blue-violet cap; Table 3).^{ns}Nonsignificant.

Results and discussion

Average monthly temperatures during the four trials ranged from 12.1 °C in Jan. 2003 to 22.1 °C in Mar. 2003 and ranges from the lowest to the highest temperature of -2.49 °C in Jan. 2003 to 31.7 °C in Mar. 2002. Total rainfall ranged from 0.0 inches in Nov., Feb. and Apr. 2001 to 10.8 inches in Mar. 2001 (Florida Automated Weather Network, 2004).

Three main pests lowered ratings. Thrips (*Frankliniella* spp.) and graymold (*Botrytis cinerea*) symptoms were observed on flowers every season, while powdery mildew (unidentified) was first observed on foliage (flowers symptom-free) in these trials in Mar. 2003-04. The mildew species *Sphaerotheca macularis*, *S. fuliginea*, and *S. violae* have been isolated from *Viola* spp. in the U. S. (Farr, 1989), while only *S. macularis* had been reported earlier in Florida (Florida Department of Agriculture and Consumer Services, 1994).

Best-of-class selections are presented below for each class, with the trial year when the cultivar was first established as best-of-class and in additional trials when compared to new cultivars. The trial year corresponds to its table as follows: 2001 (Table 1), 2002 (Table 2), 2003 (Table 3) and 2004 (Table 4). We realize a particular plant height, flower size, or flowering characteristic such as earliness to flower may be a selection criteria outweighing seasonal performance, so these characteristics are presented in Tables 1 to 4. It is also important to note that cultivars can be selected as best-of-class and have poor to outstanding performance ratings. Cultivars with an overall rating > 5.5 were considered outstanding, 5.0-5.4 as good, 4.0-4.9 as fair, and <4.0 as poor.

BLACK CLASS. 'Accord/Banner Black' was best-of-class in 2001 ('Accord/Banner Black Beauty' after trial) with an overall performance rating of 5.7 compared to 5.4 for 'Halloween'.

BLUE SHADES/TINTS CLASS. 'Nature Blue' was established as best-of-class in 2002 (class name changed from shades to shades/tints in 2003) with an overall performance rating of 5.8. Other cultivars ranged from 4.3 for 'Atlas Blue' and 'Atlas Blue Splash' to 4.9 for 'Springtime Mid-Blue'. In 2003, 'Nature Blue' had a rating of

6.3 compared to 5.1 for 'Fama Silver Blue', and in 2004, it had a rating of 6.2 compared to 5.5 for 'Atlas Sky Blue', and thus remained best of class.

BLUE WITH BLOTCH CLASS. 'Nature Ocean' was established as best-of-class in 2002 with an overall performance rating of 5.5. Other cultivars ranged from 4.1 for 'Colossus Deep Blue With Blotch' and 'Iona Ocean' to 5.4 for 'Baby Bingo Experimental Marina Shades' (renamed 'Panola Marina Shades', best-of-class in the 2001 trial; class name changed from dark eye to blotch in 2002). In 2004, 'Nature Ocean' had a rating of 5.9 compared to 5.3 for 'Karma Blue Blotch Improved', and thus remained best of class.

BLUE (DARK) CLASS. 'Scala Mid Blue' was best-of-class in 2001 with an overall performance rating of 4.7. Poor flower quality ratings all season and flower disease symptom ratings on 10 Apr. had the greatest impact on lowering performance for 'Scala Mid Blue'.

BLUE (DARK) WITH BLOTCH CLASS. 'Dynamite Deep Blue With Blotch' was best-of-class in 2003 with an overall performance rating of 4.8. Poor flower quality ratings all season resulted in the fairly low overall performance rating.

CREAM CLASS. 'Scala Cream' was best-of-class in 2001 with an overall performance rating of 5.0 (class name changed from white shades (cream) to cream in 2002).

MIX CLASS. 'Panola Clear Mixture' was established as best-of-class in 2004 with an overall performance rating of 5.8 that was equal to that of 'Panola All-Seasons Mix', the former best-of-class. In this case, 'Panola Clear Mixture' was selected best-of-class since it had a higher foliage and flower rating (5.5), compared to 5.1 for 'Panola All-Seasons Mix'. The overall performance rating for 'Dynamite Silhouette Mix' was 5.7.

ORANGE CLASS. 'Panola Orange' was established as best-of-class in 2002 with an overall performance rating of 4.7, equal to the ratings for 'Fama Deep Orange' and the former best-of-class, 'Scala Pure Orange Improved' ('Scala Orange' after 2001 trial). In this case, 'Panola Orange' was selected using the average flower rating which was 3.1 compared to 2.2 and 3.0 ratings for 'Fama Deep Orange' and 'Scala Orange Improved', respectively. The overall performance rating ranged from 4.1 for 'Delta Premium Pure Deep

Orange' to 4.2 for 'Atlas Orange'. In 2003, 'Panola Orange' had a rating of 5.5 compared to 5.0 for 'Giga Orange' and 'Karma Clear Orange' ('Karma Orange' after trial).

PINK SHADES/TINTS WITH BLOTCH CLASS. 'Nature Pink Shades' was established as best-of-class in 2002 with an overall performance rating of 5.6 compared to 4.8 for 'Springtime Pink Shades' (class name changed from pink to pink shades/tints in 2003).

PURPLE BLUE-VIOLET WITH BLOTCH. 'Baby Bingo Denim' (class name changed from dark eye to blotch in 2002) was established as best-of-class in 2001 with an overall performance rating of 5.2 compared to a range of 4.5 for 'Bingo Deep Purple' to 5.3 for 'Baby Bingo Purple with Face'. Since 'Baby Bingo Purple with Face' was placed into a new class (renamed 'Panola Purple with Face'), it was not considered for best-of-class.

PURPLE (DARK) BLUE-VIOLET CLASS. 'Bingo Clear Purple' was established as best-of-class in 2004 with an overall performance rating of 5.3 compared to 4.8 for 'Delta Pure Violet'. 'Delta Pure Violet' was best-of-class in 2002.

PURPLE (DARK), BLUE-VIOLET WITH BLOTCH CLASS. 'Giga Blue With Blotch' was best-of-class in 2003 with an overall performance rating of 5.1.

PURPLE (DARK), BLUE-VIOLET/WHITE FACE WITH BLOTCH CLASS. 'Baby Bingo Purple With Face' was removed from the purple with dark eye class after 2001 and renamed 'Panola Purple With Face'. It was established in this new class as best-of-class in 2002 with an overall performance rating of 5.3 compared to 4.9 for 'Fama See Me'. In 2003, it had a rating of 5.8 compared to 5.4 for 'Iona Purple & White', and thus remained best-of-class.

PURPLE (DARK), BLUE-VIOLET/WHITE FACE AND DARK VEINS CLASS. 'Whiskers Purple White' was established as best-of-class in 2003 with an overall performance rating of 5.4.

PURPLE (DARK), BLUE-VIOLET WITH WHITE CAP CLASS. 'Nature Beacon' was established as best-of-class in 2002 with an overall performance rating of 5.7. Other cultivars ranged from 4.6 for 'Bingo Beaconsfield' to 5.3 for 'Panola Beaconsfield' and 'Springtime Beaconsfield'. 'Panola Beaconsfield' (formally named 'Baby Bingo Beaconsfield') was selected best-of-class in 2001.

Table 2. Plant and flowering characteristics and performance ratings for pansies grown in winter/spring 2001–02 in Bradenton, Fla., grouped within classes according to flower color. Seeds were sown on 4–10 Oct. 2001, and plugs transplanted to ground beds on 27–29 Nov. 2001.

Cultivar	Seed source ^v	Measurements (cm) ^c			Flowering (d) ^y		Cultivar quality ^x		Pest symptoms ^w		Overall performance rating ^u
		Plant ht	Plant width	Flower diam	First flower	Flowering divergence	Foliage rating	Flower rating	Foliage rating	Flower rating	
<i>Blue shades class</i>											
Atlas Blue	Bodger	20t	24	5.3 a	71 bc	21.3	4.0 b	2.7 cd	6.5	4.1 c	4.3 d
Atlas Blue Splash	Bodger	22	28	5.2 a	69 bc	22.3	3.9 b	2.3 d	6.7	4.4 c	4.3 d
Baby Bingo Sky Blue ^s	PanAmerican	23	29	4.7 a	75 b	8.3	5.4 a	4.2 b	6.8	5.5 b	5.5 b
Nature Blue ^t	Takii	22	31	3.7 c	65 c	6.0	5.6 a	5.0 a	6.8	6.0 a	5.8 a
Springtime Mid-Blue	Floranova	23 ^{NS} q	31 ^{NS}	4.9 ab	84 a	18.3 ^{NS}	5.3 a	3.1 c	6.8 ^{NS}	4.5 c	4.9 b
<i>Blue with blotch class</i>											
Colossus Deep Blue With Blotch	Syngenta	13 c	26 bc	4.9 ab	72 b	14.0	4.2 c	2.6 e	6.1 b	3.7 c	4.1 e
Fama Dark Eyed Blue Improved	Benary	14 c	22 c	4.8 ab	78 a	32.3	4.2 c	3.2 d	6.6 a	4.5 b	4.6 d
Iona Ocean	Takii	17 ab	23 c	5.4 a	70 bc	17.7	3.8 c	2.9 de	6.2 b	3.8 c	4.1 e
Karma Blue Blotch	Goldsmith	16 abc	29 ab	4.6 bc	71 b	24.0	4.2 c	4.0 c	6.7 a	4.3 b	4.8 c
Nature Ocean ^t	Takii	15 c	29 b	3.7 d	65 c	19.7	4.7 b	5.2 a	6.8 a	5.3 a	5.8 a
Panola Blue With Blotch	PanAmerican	18 a	33 a	4.0 cd	69 bc	24.3	5.2 a	4.6 b	6.8 a	4.1 bc	5.2 b
Panola Marina Shades ^s	PanAmerican	18 ab	24 c	3.7 d	72 b	11.3 ^{NS}	5.3 a	4.6 b	6.8 a	5.0 a	5.4 a
<i>Mixes class</i>											
Panola All-Seasons Mixture ^r	PanAmerican	16	25 a	3.7 c	73	14.3	5.5 a	5.3 a	6.8 a	5.2 ab	5.7 a
Chalon Supreme Mixed	Floranova	14	16 b	4.5 ab	80	37.0	2.9 d	2.2 d	6.8 a	4.5 c	4.0 e
Fanfare Formula Mixed	Floranova	17	24 a	4.0 bc	77	31.0	4.8 b	3.2 c	6.5 b	5.0 b	4.9 c
Springtime Halloween Mixed	Floranova	17	24 a	4.7 a	76	32.0	3.9 c	2.7 cd	6.8 a	5.1 ab	4.6 d
Watercolors Mixed	Floranova	19 ^{NS}	29 a	5.0 a	77 ^{NS}	23.3 ^{NS}	4.3 bc	4.3 b	6.8 a	5.4 a	5.2 b
<i>Orange class</i>											
Atlas Orange	Bodger	16 b	25 ab	4.3 bc	74 b	27.3	4.9 ab	1.4 c	6.5 a	4.0 c	4.2 b
Delta Premium Pure Deep Orange	Syngenta	14 b	24 b	4.4 ab	76 b	33.7	4.3 b	1.8 bc	6.1 b	4.1 c	4.1 b
Fama Deep Orange	Benary	19 a	23 b	4.6 a	91 a	18.7	5.1 a	2.2 b	6.6 a	4.9 a	4.7 a
Panola Orange ^{s,p}	PanAmerican	16 b	24 ab	4.1 c	74 b	27.3	4.3 b	3.1 a	6.6 a	4.8 ab	4.7 a
Scala Orange ^s	PanAmerican	19 a	28 a	4.6 a	80 b	23.7 ^{NS}	5.0 a	3.0 a	6.4 a	4.4 bc	4.7 a
<i>Pink with blotch class</i>											
Nature Pink Shades ^r	Takii	18	26	3.9	68	9.3	4.9	4.8 a	6.8	6.0 a	5.6 a
Springtime Pink Shades	Floranova	15 ^{NS}	24 ^{NS}	4.6 ^{NS}	75 ^{NS}	26.7 ^{NS}	4.7 ^{NS}	3.1 b	6.6 ^{NS}	4.9 b	4.8 b
<i>Purple, dark blue-violet class</i>											
Atlas Purple	Bodger	18 a	26	4.4	69 c	17.0	4.6	2.7 b	6.4	4.3 b	4.5
Delta Pure Violet ^t	Syngenta	16 ab	27	5.0	74 b	19.0	4.6	3.6 a	6.7	4.5 a	4.9
Dynamite Purple ^s	Sakata	13 c	25	4.6	79 a	15.3	4.6	2.9 b	6.5	4.4 a	4.6
Panola Royal Purple ^p	PanAmerican	16 bc	24 ^{NS}	4.5 ^{NS}	71 bc	5.0 ^{NS}	4.1 ^{NS}	3.8 a	6.6 ^{NS}	4.0 c	4.6 ^{NS}
<i>Purple, dark blue-violet with white cap class</i>											
Bingo Beaconsfield	PanAmerican	15 c	23 c	4.2	71 bc	9.3	3.9 b	3.2 b	6.8	4.7 c	4.6 b
Nature Beacon ^t	Takii	19 b	27 b	3.6	68 c	7.7	5.6 a	4.7 a	6.7	5.8 a	5.7 a
Panola Beaconsfield ^s	PanAmerican	17 c	26 b	4.3	78 a	23.7	5.2 c	3.8 ab	6.8	5.5 ab	5.3 a
Springtime Beaconsfield	Floranova	21 a	31 a	4.2 ^{NS}	71 b	11.7 ^{NS}	5.7 a	3.5 b	6.8 ^{NS}	5.1 bc	5.3 a
<i>Purple, dark red-violet with blotch class</i>											
Iona Purple With Blotch ^t	Takii	16	25	4.8	76	21.0	4.3	2.6	6.4	4.2	4.4
<i>Purple, dark red/white class (picotee pattern)</i>											
Springtime Cassis ^t	Floranova	16	24	4.3	74	12.7	4.2	3.8	6.8	5.2	5.0
<i>Purple/white face with blotch and purple cap class (blue-violets)</i>											
Fama See Me	Benary	22 a	27 b	5.0 a	78 a	22.3	4.9	3.3	6.4 b	4.9 b	4.9
Panola Purple With Face ^t	PanAmerican	14 b	29 a	3.7 b	71 b	13.3 ^{NS}	4.8 ^{NS}	4.2 ^{NS}	6.8 a	5.5 a	5.3 ^{NS}
<i>Red with blotch class</i>											
Bingo Red With Blotch	PanAmerican	11 b	25 a	4.7	77 a	27.3 a	3.9 b	2.1 b	6.8	3.8 b	4.1 b
Colossus Red With Blotch	Syngenta	13 b	23 b	5.3	78 a	9.7 b	4.8 a	2.1 b	6.6	4.0 b	4.4 b
Karma Red Blotch ^t	Floranova	17 a	26 a	4.7 ^{NS}	73 b	14.3 b	5.3 a	3.2 a	6.7 ^{NS}	4.7 a	5.0 a
<i>Rose class</i>											
Atlas Rose	Bodger	15 a	24	4.5 ab	68 b	17.7	4.0	2.3 b	6.7	4.0	4.2
Delta Pure Rose	Syngenta	12 b	22	4.4 b	75 a	19.7	4.0	2.7 b	6.7	4.2	4.4
Karma Roser	Goldsmith	16 a	22 ^{NS}	4.8 a	74 a	15.3 ^{NS}	4.1 ^{NS}	3.2 a	6.8 ^{NS}	4.4 ^{NS}	4.6 ^{NS}
Rose with blotch											
Bingo Rose Frost ^s	PanAmerican	22 a	27	5.5	78	15.7 ab	5.0 a	2.6 b	6.6 ab	4.9 a	4.8 a
Colossus Rose With Blotch	Syngenta	13 b	23	5.7	80	22.3 a	4.4 b	2.3 b	6.4 b	3.8 b	4.2 b
Springtime Rose With Blotch ^t	Floranova	15 b	25 ^{NS}	5.3 ^{NS}	79 ^{NS}	9.0 b	4.3 b	3.4 a	6.8 a	4.6 a	4.8 a
<i>White class</i>											
Atlas White	Bodger	15 c	26	5.5 ab	71 b	28.0 a	5.0	2.7 c	6.8	4.3 c	4.7 b
Karma White	Goldsmith	17 b	23	5.2 b	77 a	22.0 a	4.9	3.5 b	6.8	4.8 b	5.0 ab
Panola White ^{s,p}	PanAmerican	13 c	25	4.3 c	72 b	4.3 b	4.7	4.4 a	6.8	5.4 a	5.3 a
Scala Pure White ^s	PanAmerican	20 a	27 ^{NS}	5.7 a	80 a	21.7 a	4.6 ^{NS}	3.7 b	6.8 ^{NS}	4.8 b	5.0 ab
<i>White face with blotch and rose cap class</i>											
Bingo Rose & Whiter	PanAmerican	17	26	4.9	76	11.0	5.0	3.6	6.5	4.7	4.9
<i>White with blotch class</i>											
Colossus White With Blotch	Syngenta	14 b	27	5.6	78	14.0	4.6 b	2.2 b	6.5 b	4.3 a	4.4 b
Iona White With Blotch ^t	Takii	14 b	24	5.1	76	19.3	5.3 a	3.4 a	6.5 b	4.5 a	5.0 a
Karma White Blotch	Goldsmith	20 a	30	5.7	76	9.0	5.3 a	3.5 a	6.5 b	4.5 a	5.0 a
Scala White With Blotch ^t	PanAmerican	17 ab	25 ^{NS}	5.3 ^{NS}	79 ^{NS}	21.3 ^{NS}	5.0 a	2.4 b	6.8 a	4.4 b	4.6 b

Table 2. Continued on next page.

Table 2. Continued from previous page.

Cultivar	Seed source ^v	Measurements (cm) ^z			Flowering (d) ^y		Cultivar quality ^x		Pest symptoms ^w		Overall performance rating ^u
		Plant ht	Plant width	Flower diam	First flower	Flowering divergence	Foliage rating	Flower rating	Foliage rating	Flower rating	
<i>White with yellow class</i>											
Iona Frosty Lemon ^f	Takii	15	24	4.9	72	9.7	4.7	3.7	6.3	4.7	4.8
<i>Yellow class</i>											
Atlas Primrose	Bodger	16	29 a	5.6 a	68 b	20.0	5.0	3.2 bc	6.5 b	4.6 b	4.8 bc
Atlas Yellow	Bodger	17	28 a	4.9 b	72 ab	11.0	4.7	2.8 cd	6.8 a	4.0 c	4.6 c
Panola Golden Yellow ^g	PanAmerican	16 ^{NS}	26 a	3.8 c	77 a	17.0 ^{NS}	5.2 ^{NS}	3.6 b	6.8 a	4.6 c	5.0 b
Character Clear Primrose	Grimes	19	29 a	5.0 b	72 ab	29.0	4.8	2.5 d	6.5 b	4.2 c	4.5 c
Nature Yellow ^f	Takii	16	21 b	3.6 c	72 ab	15.7	5.0	5.4 a	6.8 a	5.6 a	5.7 a
<i>Yellow with blotch class</i>											
Colossus Yellow With Blotch	Syngenta	13	25	5.7 a	85 a	20.0 ab	4.9	2.3 c	6.2 c	4.0 c	4.3 b
Delta Premium											
Yellow With Blotch	Syngenta	14	24	5.0 a	78 b	5.7 b	4.3	3.7 b	6.8 a	4.9 a	4.9 a
Fama Dark Eyed ^h											
Yellow	Benary	14	23	5.4 a	83 ab	28.0 a	4.4	2.7 c	6.4 bc	4.4 b	4.4 b
Panola Yellow With Blotch ^{e,p}	Takii	14 ^{NS}	26 ^{NS}	3.8 b	65 c	8.3 b	4.6 ^{NS}	4.3 a	6.7 ab	4.9 a	5.1 a
<i>Yellow with blotch and purple (blue-violet) cap class</i>											
Garden Leader Character Yellow & Blue With Face ^f	Grimes	16	25	4.8	68	20.3	5.1	2.6	6.5	5.0	4.8

^z1 cm = 0.3937 inch.

^yThe number of days from sowing seed to the unfurling of the first flower in a plot. Divergence is the average number of days that lapse between the unfurling of the first flower and the last flower in a plot, or a measure of uniform flowering.

^xAverage of three foliage or flower quality ratings taken between 16 Jan. and 7 Apr. on a scale of 1 to 7 with 7 = excellent.

^wAverage of two arthropod and disease ratings for foliage and for flowers taken between 24 Jan. and 2 Mar. on a scale of 1 to 7 with 7 = all foliage or flowers in a plot were free from arthropod feeding or plant disease symptoms.

^vSeed sources: Benary = Ernst Benary of America, Sycamore, Ill.; Bodger Seeds, South El Monte, Calif.; Floranova = Floranova Services, Hutchins Road, Litchfield, Mich.; Goldsmith = Goldsmith Seeds, Gilroy, Calif.; Grimes = Grimes Seeds & Plants, Concord, Ohio; PanAmerican = PanAmerican Seed Co., West Chicago, Ill.; Sakata = Sakata Seed America, Morgan Hill, Calif.; Syngenta = Syngenta Seeds, S&G Flowers, Downers Grove, Ill.; Takii = American Takii, Salinas, Calif.

^uOverall performance rating is the average of the foliage, flower, arthropod and disease ratings.

^eMean separation within classes by Duncan's multiple range test, $P < 0.05$

^fFormer best-of-class (selections in Table 1) replaced by new best-of-class.

^gBest-of-class chosen from the highest overall performance rating or by another rating, if overall performance values were equal.

^hNS = Nonsignificant.

^pNames were later changed by the seed company: 'Panache' cultivars used to create the 'Panola' series (see Table 1 for 'Baby Bingo' renamed 'Panola').

PURPLE (DARK), RED-VIOLET WITH BLOTCH CLASS. 'Iona Purple With Blotch' was uncontested best-of-class in 2002 with an overall performance rating of 4.4. However, very poor to fair flower quality and poor flower pest symptom ratings lowered overall performance.

PURPLE (DARK), RED-VIOLET WITH BLOTCH (BLUE VIOLET RIM) CLASS. 'Giga Purple With Blotch' was uncontested best-of-class in 2003 with an overall performance rating of 4.8. 'Giga Purple With Blotch' had an unsatisfactory flower display all season. More plants died per plot than all other cultivars in this trial, resulting in the lower performance rating.

PURPLE (DARK), RED/WHITE CLASS (PICOTEE PATTERN). 'Springtime Cassis' was uncontested best-of-class in 2002 with an overall performance rating of 5.0.

PURPLE WITH LIGHT BLOTCH CLASS. 'Baby Bingo Lavender Blue' was best-of-class in 2001 with an overall performance rating of 5.8. Other cultivars ranged from 4.7 for 'Purple Jester' to 5.4 for 'Purple Rain'. The

class name was changed from "eye" to "blotch" after 2004.

PURPLE SHADES/TINTS WITH YELLOW/WHITE FACE AND BLOTCH. 'Majestic Giants II Marina Shades' was uncontested best-of-class in 2004 with an overall performance rating of 5.4.

PURPLE SHADES/TINTS CLASS. 'Lavender Cool Shades' was best-of-class in 2001 (class name changed from purple in 2002) with an overall performance rating of 5.0. Other cultivars ranged from 4.8 for 'Fama Lilac Shades' to 4.9 for 'Dynamite Lavender'.

RED CLASS. 'Dynamite Scarlet' and 'Scala Scarlet' had an equal overall performance rating of 4.4 in 2001. In this case, 'Dynamite Scarlet' was selected best-of-class in 2001 using the average of the foliage and flower ratings of 4.0 compared to 3.3 for 'Scala Scarlet'. Foliage and flower quality ratings were poor to fair all season; lack of flower color stability, showing yellow or orange, lowered ratings. Thrips damage to flowers was severe between 9 and 24 Mar., and flower disease ratings low on 10 Apr. These factors resulted in the lower overall

performance for the class.

RED WITH BLOTCH/YELLOW CLASS. 'Dynamite Wine Flash' was established as uncontested best-of-class in 2004. It was evaluated in a special trial against 'Karma Red Blotch' that has a similar red with blotch. The overall performance rating for 'Dynamite Wine Flash' was 5.4 compared to 5.1 for 'Karma Red Blotch'.

RED WITH BLOTCH CLASS. 'Karma Red Blotch' was uncontested best-of-class in 2001 (class name changed from dark eye to blotch in 2002) with an overall performance rating of 4.7. Other cultivars ranged from 4.3 for 'Bingo Red With Blotch' and 'Dynamite Red With Blotch' to 4.6 for 'Baby Bingo Fire' (renamed 'Panola Fire'). In 2002, 'Karma Red Blotch' had a rating of 5.0 compared to ratings ranging from 4.1 for 'Bingo Red With Blotch' to 4.4 for 'Colossus Red With Blotch', in 2003, it had a rating of 5.3 compared to 4.7 for 'Giga Red With Blotch' and thus remained best of class.

ROSE CLASS. 'Karma Rose' was established as uncontested best-of-class

Table 3. Plant and flowering characteristics and performance ratings for pansies grown in winter/spring 2002–03 in Bradenton, Fla., grouped within classes according to flower color. Seeds were sown on 10–17 Oct. 2002, and plugs transplanted to ground beds 11 Dec. 2002.

Cultivar	Seed source ^v	Measurements (cm) ^c			Flowering (d) ^y		Cultivar quality ^x		Pest symptoms ^w		Overall performance rating ^z
		Plant ht	Plant width	Flower diam	First flower	Flowering divergence	Foliage rating	Flower rating	Foliage rating	Flower rating	
<i>Blue (dark) with blotch</i>											
Dynamite Deep Blue With Blotch ^t	Sakata	12	24	7.2	79	19.3	4.7	2.9	6.7	4.8	4.8
<i>Blue shades/tints class</i>											
Nature Blue ^t	Takii	12 a ^s	28 a	4.7 b	66 b	13.0 a	5.8 a	5.6 a	6.9 a	6.8 b	6.3 a
Fama Silver Blue	Benary	11 b	21 b	6.9 a	83 a	11.3 b	4.5 b	3.4 b	6.7 b	5.8 a	5.1 b
<i>Mix class</i>											
Panola All-Seasons Mixture ^t	PanAmerican	12	23	5.7	69 b	21.5	4.9	4.5	6.7	5.5	5.4
Panola Citrus Mixture	Ball	12 ^{NS r}	23 ^{NS}	5.8 ^{NS}	77 a	16.0 ^{NS}	4.8 ^{NS}	4.2 ^{NS}	6.8 ^{NS}	5.9 ^{NS}	5.4 ^{NS}
<i>Orange class</i>											
Giga Orange	Sahin	11	20	5.7	84	18.0	4.7 ab	3.0 c	6.7	5.6	5.0 b
Karma Clear Orange ^q	Goldsmith	11	20	6.0	78	17.8	4.3 b	3.3 b	6.8	5.6	5.0 b
Panola Orange ^t	PanAmerican	11 ^{NS}	22 ^{NS}	5.5 ^{NS}	80 ^{NS}	11.3 ^{NS}	5.2 a	4.2 a	6.8 ^{NS}	5.9 ^{NS}	5.5 a
<i>Purple (dark), blue-violet with blotch class</i>											
Giga Blue With Blotch ^t	Sahin	12	23	7.0	81	20.0	5.1	3.6	6.7	4.9	5.1
<i>Purple (dark), blue-violet/white face with blotch class</i>											
Iona Purple & White	Takii	14 a	23	6.7 a	79	7.5 b	5.0 b	4.3	6.8	5.4	5.4 b
Panola Purple With Face ^t	PanAmerican	11 b	26 ^{NS}	4.8 b	74 ^{NS}	17.0 a	5.6 a	4.9 ^{NS}	6.9 ^{NS}	5.9 ^{NS}	5.8 a
<i>Purple (dark), blue-violet/white face and dark veins class</i>											
Whiskers Purple White ^t	Ball	15	23	7.1	84	16.5	5.1	4.2	6.8	5.4	5.4
<i>Purple (dark), red-violet with blotch (blue violet rim) class</i>											
Giga Purple With Blotch ^t	Sahin	10	19	6.8	89	24.8	4.8	2.4	6.7	5.4	4.8
<i>Red with blotch class</i>											
Giga Red With Blotch	Sahin	13	22 b	7.2	81	11.8	5.0	2.4 b	6.8	4.6 b	4.7 b
Karma Red Blotch ^t	Goldsmith	11 ^{NS}	26 a	6.9 ^{NS}	82 ^{NS}	13.3 ^{NS}	5.4 ^{NS}	3.9 a	6.8 ^{NS}	5.0 a	5.3 a
<i>Rose with blotch class</i>											
Fama Carmine Rose With Blotch	Benary	12	22 ab	7.3 a	76	12.0	4.8	3.4 b	6.8 b	5.1 b	5.0 b
Nature Rose With Blotch ^t	Takii	12	25 a	4.7 c	72	15.0	5.3	4.9 a	7.0 a	6.1 a	5.8 a
Springtime Rose Blotch ^p	Floranova	11 ^{NS}	21 b	6.5 b	77 ^{NS}	15.0 ^{NS}	4.7 ^{NS}	3.9 b	6.8 b	5.3 b	5.2 b
<i>Rose shades/tints with blotch class</i>											
Majestic Giants II Rosalyn ^t	Sakata	10	21	8.6	82	15.3	5.2	3.4	6.7	5.1	5.1
<i>Rose to white shades/tints with blotch class</i>											
Dynamite Pink	Sakata	10 b	22	6.6	73 b	15.8	4.3 b	3.5	6.7	5.8	5.0 b
Fama Peach Shades ^t	Benary	12 a	22 ^{NS}	6.8 ^{NS}	79 a	13.8 ^{NS}	5.4 a	3.3 ^{NS}	6.8 ^{NS}	5.8 ^{NS}	5.4 a
<i>White class</i>											
Fama White Improved	Benary	9 c	18 c	6.4 a	82 a	14.3 b	3.7 c	2.9	6.8	5.9 c	4.8 c
Nature White ^t	Takii	14 a	25 a	4.4 b	70 b	19.3 a	5.6 a	5.9 a	6.9	6.7 a	6.3 a
Panola White ^p	PanAmerican	10 b	22 b	5.0 b	71 b	14.8 b	5.2 b	4.7 b	6.8 ^{NS}	6.2 b	5.7 b
<i>White with rose blotch class</i>											
Iona White With Rose Blotch ^t	Takii	11	2	6.6	73	15.3	4.0	3.5	6.8	6.3	5.2
<i>Yellow class</i>											
Iona Yellow	Takii	11	22	6.7 a	75 a	12.3	5.0	4.2 b	6.8	5.7 b	5.4 b
Nature Yellow ^t	Takii	12 ^{NS}	21 ^{NS}	3.8 b	67 b	20.3 ^{NS}	5.0 ^{NS}	5.9 a	6.9 ^{NS}	6.8 a	6.1 a
<i>Yellow with blotch class</i>											
Giga Yellow With Blotch	Sahin	9 b	17 b	7.2 a	83 a	17.0	3.9 c	2.9 c	6.7 b	5.3 c	4.7 c
Panola Yellow With Blotch ^t	PanAmerican	11 a	23 a	5.4 b	67 c	15.3	5.7 a	5.3 a	6.8 a	6.4 a	6.1 a
Promise Yellow With Blotch	Kieft	11 a	20 a	7.1 a	78 b	19.3 ^{NS}	4.9 b	3.8 b	6.8 a	5.5 b	5.3 b
<i>Yellow with blotch and purple, blue-violet cap class</i>											
Iona Purple & Yellow With Blotch ^t	Takii	11	21	6.6 b	85 a	11.3	5.7 a	3.7	6.8	5.7	5.5 a
Majestic Giants II Patricia	Sakata	13	24	8.2 a	76 b	12.8	5.4 b	3.8	6.8	5.5	5.4 b
Scala Yellow Blue Wings ^p	PanAmerican	12	22	6.7 b	72 b	18.8 ^{NS}	4.1 c	3.2 ^{NS}	6.7 ^{NS}	5.3 ^{NS}	4.9 b

^z1 cm = 0.3937 inch.

^yThe number of days from sowing seed to the unfurling of the first flower in a plot. Divergence is the average number of days that lapse between the unfurling of the first flower and the last flower in a plot, or a measure of uniform flowering.

^xAverage of three foliage or flower quality ratings taken between 15 Jan. and 15 Mar. on a scale of 1 to 7 with 7 = excellent.

^wAverage of three arthropod and disease ratings taken between 17 Jan. and 16 Mar. on a scale of 1 to 7 with 7 = all foliage or flowers in a plot were free from arthropod feeding or plant disease symptoms.

^vSeed Sources: Ball = Ball Seed Co., West Chicago, Ill.; Benary = Ernst Benary of America, Sycamore, Ill.; Floranova = Floranova Services, Hutchins Road, Litchfield, Mich.; Goldsmith = Goldsmith Seeds, Gilroy, Calif.; PanAmerican = PanAmerican Seed Co., West Chicago, Ill.; Sahin = K. Sahin (North America), Vista, Calif.; Sakata = Sakata Seed America, Morgan Hill, Calif.; Takii = American Takii, Salinas, Calif.

^zOverall performance rating is the average of the foliage, flower, arthropod and disease ratings.

^tBest-of-class was chosen from the highest overall performance rating or by another rating, if overall performance values were equal.

^sMean separation within classes by Duncan's multiple range test, P < 0.05.

^rNS = Nonsignificant.

^q'Karma Clear Orange' became 'Karma Orange' after trial.

^pFormer best-of-class (selections in Tables 1 and 2) replaced by new best-of-class.

Table 4. Statistical means for plant height, width, flower diameter, average combined cultivar quality ratings and pest ratings of pansies grown in winter/spring 2003–04 in Bradenton, Fla., grouped within classes according to flower color. Seeds were sown on 6–20 Oct. 2003 and plugs, transplanted to ground beds 17–24 Nov. 2003.

Cultivar	Seed source ^e	Measurements (cm) ^z			Flowering (d) ^y		Cultivar quality ^x		Pest symptoms ^w		Overall performance rating ^u
		Plant ht	Plant width	Flower diam	First flower	Flowering divergence	Foliage rating	Flower rating	Foliage rating	Flower rating	
<i>Blue shades/tints class</i>											
Atlas Sky Blue	Bodger	16 at	25	6.7 a	66 a	7.8	5.5	4.2 b	6.6	6.7 a	5.5 b
Nature Blue ^s	Takii	13 b	27 ^{NS†}	4.3 b	49 b	12.5 ^{NS}	5.8 ^{NS}	6.0 a	6.7 ^{NS}	5.9 b	6.2 a
<i>Blue with blotch class</i>											
Karma Blue Blotch Improved	Goldsmith	13	23	5.8 a	62	19.7	5.2	4.7 b	6.7	4.7 b	5.3 b
Nature Ocean ^s	Takii	12 ^{NS}	25 ^{NS}	3.8 b	57 ^{NS}	18.0 ^{NS}	5.6 ^{NS}	5.7 a	6.6 ^{NS}	5.9 a	5.9 a
<i>Mix class</i>											
Dynamite Silhouette Mix	Sakata	14	26	6.4 a	61	23.0	5.7	5.1	6.6	5.7	5.7
Panola All-Seasons Mix ^q	PanAmerican	14	26	4.6 b	62	21.0	5.4	5.1	6.5	5.6	5.8
Panola Clear Mixture ^e	PanAmerican	13 ^{NS}	24 ^{NS}	4.8 b	61 ^{NS}	17.3 ^{NS}	5.5 ^{NS}	5.5 ^{NS}	6.6 ^{NS}	5.4 ^{NS}	5.8 ^{NS}
<i>Purple (dark) blue-violet class</i>											
Bingo Clear Purple ^e	PanAmerican	15	25	6.7	70	20.0	5.8 a	4.3	6.6	4.7	5.3 a
Delta Pure Violet ^q	Syngenta	12 ^{NS}	21 ^{NS}	6.4 ^{NS}	63 ^{NS}	16.8 ^{NS}	4.7 b	3.8 ^{NS}	6.5 ^{NS}	4.5 ^{NS}	4.8 b
<i>Purple (dark), blue-violet/white face with blotch</i>											
Majestic Giants II Blue & White With Blotch	Sakata	13	24	7.4 a	66	13.8	5.3 b	4.3 b	6.4	4.7 b	5.2 b
Panola Purple With Face ^s	PanAmerican	12 ^{NS}	27 ^{NS}	4.1 b	57 ^{NS}	21.5 ^{NS}	6.1 a	5.5 a	6.3 ^{NS}	5.5 a	5.8 a
<i>Purple shades/tints with yellow/white face and blotch</i>											
Majestic Giants II Marina Shades ^e	Sakata	14	25	6.7	61	15.3	5.8	4.0	6.5	5.2	5.4
<i>Red with blotch (Karma) and Red with blotch-yellow rim (Dynamite) classes^f</i>											
Dynamite Wine Flash ^h	Sakata	14	27	6.0	65	15.5	6.0	4.5	6.6	4.5	5.4 a
Karma Red Blotch ^q	Goldsmith	13 ^{NS}	26 ^{NS}	5.8 ^{NS}	69 ^{NS}	13.8 ^{NS}	5.6 ^{NS}	4.3 ^{NS}	6.4 ^{NS}	4.3 ^{NS}	5.1 b
<i>Rose class</i>											
Bingo Clear Rose	PanAmerican	12 b	42	5.9 b	61 b	26.3	5.1	4.1	6.6	4.8	5.1
Karma Rose ^s	Goldsmith	15 a	25 ^{NS}	6.6 a	70 a	19.5 ^{NS}	5.5 ^{NS}	4.2 ^{NS}	6.5 ^{NS}	4.7 ^{NS}	5.2 ^{NS}
<i>Yellow class</i>											
Karma Yellow Improved	Goldsmith	13	24 a	6.9 a	65 a	10.8	5.9 a	4.3 b	6.5 b	5.5 b	5.5 b
Nature Yellow ^s	Takii	13 ^{NS}	20 b	3.5 b	47 b	15.5 ^{NS}	5.2 b	6.3 a	6.8 a	6.8 a	6.3 a
<i>Yellow with blotch and purple blue-violet cap class</i>											
Garden Leader Character Yellow & Blue With Face ^q	Grimes	13	24	5.6	71	15.5	5.7	4.5	6.6	5.0	5.4
Iona Purple & Yellow With Blotch ^h	Takii	14 ^{NS}	23 ^{NS}	5.6 ^{NS}	67 ^{NS}	13.8 ^{NS}	6.0 ^{NS}	4.8 ^{NS}	6.6 ^{NS}	5.0 ^{NS}	5.6 ^{NS}
<i>Yellow with dark veins class</i>											
Whiskers Yellow ^e	Ball	15	24	5.9	70	20.5	5.4	4.7	6.6	5.5	5.6

^z1 cm = 0.3937 inch.

^yThe number of days from sowing seed to the unfurling of the first flower in a plot. Divergence is the average number of days that lapse between the unfurling of the first flower and the last flower in a plot, or a measure of uniform flowering.

^xAverage of four foliage or flower quality ratings taken between 7 Jan. and 5 Mar. on a scale of 1 to 7 with 7 = excellent.

^wAverage of four arthropod and disease ratings for foliage and for flowers taken between 8 Jan. and 5 Mar. on a scale of 1 to 7 with 7 = all foliage or flowers in a plot were free from arthropod feeding or plant disease symptoms.

^eSeed Sources: Ball = Ball Seed Co., West Chicago, Ill.; Bodger Seeds, South El Monte, Calif.; Goldsmith = Goldsmith Seeds, Gilroy, Calif.; Grimes = Grimes Seeds & Plants, Concord, Ohio; PanAmerican = PanAmerican Seed Co., West Chicago, Ill.; Sakata = Sakata Seed America, Morgan Hill, Calif.; Syngenta = Syngenta Seeds, S&G Flowers, Downers Grove, Ill.; Takii = American Takii, Salinas, Calif.

^uOverall performance rating is the average of the foliage, flower, arthropod and disease ratings.

^hMean separation within classes by Duncan's multiple range test, $P < 0.05$.

^fBest-of-class marked with an asterisk (*); chosen from the highest overall performance rating or by another rating, if overall performance values were equal.

^{NS} = Nonsignificant.

^qFormer best-of-class (selections in Tables 1, 2, and 3) replaced by new best-of-class.

in 2001 with an overall performance rating of 4.6. In 2002, 'Karma Rose' had a rating of 4.6 compared to ratings ranging from 4.2 for 'Atlas Rose' to 4.4 for 'Delta Pure Rose'. In 2004, 'Karma Rose' had a rating of 5.2 compared to a rating 5.1 for 'Bingo Clear Rose', and thus remained best of class. Rose has been a weaker class, affected by poor ratings for all aspects of performance.

ROSE WITH BLOTCH CLASS. 'Nature Rose With Blotch' was established as best-of-class in 2003 with an overall performance rating of 5.8. Other cultivars ranged from 4.9 for 'Springtime

Rose Blotch', the former best-of-class in the 2002 trial, to 5.0 for 'Fama Carmine Rose With Blotch'. Unlike the rose class, the rose with blotch class performed well with 'Nature Rose With Blotch' genetics.

ROSE SHADES/TINTS WITH BLOTCH CLASS. 'Majestic Giants II Rosalyn' was untested best-of-class in 2003 with an overall performance rating of 5.1. Poor flower quality ratings before March and a very poor flower disease symptom rating on 16 Feb. lowered the overall performance rating.

ROSE TO WHITE SHADES/TINTS WITH BLOTCH CLASS. 'Fama Peach

Shades' was best-of-class in 2003 with an overall performance rating of 5.4, compared to 5.0 for 'Dynamite Pink'.

WHITE CLASS. 'Nature White' was established as best-of-class in 2003 with an overall performance rating of 6.3. Other cultivars ranged from 4.8 for 'Fama White Improved' to 5.7 for 'Panola White', the former best-of-class from the 2002 trial.

WHITE WITH BLOTCH CLASS. The class name was changed from dark eye to blotch after 2001. 'Iona White with Blotch' and 'Karma White Blotch' had an equal overall performance rating of

5.0 in 2002. 'Iona White with Blotch' was selected best-of-class based on the significantly different overall flower pest rating of 5.6 compared to 5.5 for 'Karma White Blotch'. Other cultivars ranged from 4.4 for 'Colossus White With Blotch' to 4.6 for 'Scala White With Blotch', the former best-of-class from the 2001 trial.

WHITE FACE WITH ROSE CAP AND BLOTCH CLASS. 'Bingo Rose & White' was uncontested best-of-class in 2002 with an overall performance rating of 4.9. Poor flower pest symptom ratings through 27 Feb. caused the overall performance rating to fall to a fair level.

WHITE WITH ROSE BLOTCH CLASS. 'Iona White With Rose Blotch' was uncontested best-of-class in 2003 with an overall performance rating of 5.2.

WHITE WITH YELLOW CLASS. 'Iona Frosty Lemon' was uncontested best-of-class in 2002 with an overall performance rating of 4.8. Flower quality ratings were poor from 16 Jan. to 27 Feb., but were good on 7 Apr. In contrast, foliage quality ratings were good in January and February, but very poor on 7 Apr. Pest ratings were low for flower disease symptoms. These variable ratings contributed to the lower performance rating.

YELLOW CLASS. 'Nature Yellow' was best-of-class in 2002 with an overall performance rating of 5.7. Other cultivars ranged from 4.6 for 'Atlas Yellow' to 5.0 for 'Panola Golden Yellow' (formally 'Baby Bingo Yellow'; best of class in the 2001 trial). In 2003, 'Nature Yellow' had a rating of 6.1 compared to 5.4 for 'Iona Yellow'. In 2004, it had a rating of 6.3 compared to 5.5 for 'Karma Yellow Improved', and thus remained best of class.

YELLOW WITH BLOTCH CLASS. 'Panola Yellow With Blotch' (formally Panache Yellow With Blotch) was best-of-class in 2002 with an overall performance rating of 5.1, compared to 4.4 for 'Fama Dark Eyed Yellow', the former best-of-class (when class divided in 2001). Other cultivars ranged from 4.3 for 'Colossus Yellow With Blotch' to 4.9 for 'Delta Premium Yellow With Blotch'. In 2003, 'Panola Yellow With Blotch' had a rating of 6.1 compared to ratings ranging from 4.7 for 'Giga Yellow With Blotch' to 5.3 for 'Promise Yellow With Blotch'.

YELLOW WITH BLOTCH AND RED CAP CLASS. Yellow with blotch class was divided in 2001, moving 'Bingo Red & Yellow' into the new class to

become uncontested best-of-class with an overall performance rating of 5.1.

YELLOW WITH BLOTCH AND PURPLE, BLUE-VIOLET CAP CLASS. 'Iona Purple & Yellow With Blotch' was best-of-class in 2003 with an overall performance rating of 5.5. Other cultivars ranged from 4.9 for 'Scala Yellow Blue Wings' (former best-of-class removed from the yellow with blotch class in 2001) to 5.4 for 'Majestic Giants II Patricia'. In 2004, 'Iona Purple & Yellow With Blotch' had a rating of 5.6 compared to 5.4 for 'Garden Leader Character Yellow & Blue With Face' (former uncontested best-of-class in 2002), and thus remained best of class.

YELLOW WITH DARK VEINS CLASS. 'Whiskers Yellow' was uncontested best-of-class in 2004 with an overall performance rating of 5.6.

Selecting outstanding cultivars

Those cultivars with the highest overall rating in their class (best-of-class) will be considered as standards for comparison with new releases in future trials, regardless of their relative performance, in order to eliminate the need for re-evaluation of so many cultivars. The ideal situation would be to have the best-of-class with an outstanding performance rating. Other cultivars in the same class may be statistically similar in overall performance, but have a lower rating value. Outstanding current best-of-class were: 'Accord/Banner Black Beauty', 'Baby Bingo Lavender Blue', 'Bingo Red & Yellow', 'Iona Purple & Yellow With Blotch', 'Nature Beacon', 'Nature Blue', 'Nature Ocean', 'Nature Pink Shades', 'Nature White', 'Nature Yellow', 'Panola Clear Mixture', 'Panola Purple With Face', 'Panola Yellow With Blotch', and 'Whiskers Yellow'. Outstanding former best-of-class were 'Atlas Sky Blue', 'Panola All Seasons Mixture', 'Panola Beaconsfield', 'Panola White', and 'Scala Clear White'. 'Dynamite Silhouette Mix' was also outstanding, but not best-of-class.

While our irrigation/soil type/fertilization practices may not represent cultural practices in other landscape situations, our choice of these growing conditions was to provide uniform and sufficient nutrients and moisture to allow for outstanding growth and flowering of pansies. Soil amendments and irrigation are typically used in bedding plant trials (Pemberton and Roberson, 2001), and indeed most gardeners and landscapers modify their

soil and provide irrigation/fertilizer to maximize plant growth and flowering. Thus, performance evaluations for bedding plants are more likely influenced by climatic conditions than by culture. We believe these performance evaluations would provide useful information for the bedding plant industry in the southeastern U.S. or other parts of the world with similar climatic conditions.

Literature cited

Alfieri, Jr., S.A., K.R. Langdon, J.W. Kimbrough, N.E. El-Gholl, and C. Wehlburg. 1994. Diseases and disorders of plants in Florida. Fla. Dept. Agr. Consumer Services Bul. 14.

American Horticultural Society. 1999. Heat zone map. 14 Nov. 2004. <http://www.ahs.org/publications/heat_zone_map.htm>.

Bailey, L.H. 1947. The standard cyclopedia of horticulture. Macmillan, New York.

Farr, D.F., G.F. Bills, G.P. Chamuris, and A.Y. Rossman. 1989. Fungi on plants and plant products in the United States. Amer. Phytopathol. Soc., St. Paul, Minn.

Florida Automated Weather Network. 2004. FAWN: Report generator. 14 Nov. 2004. <<http://fawn.ifas.ufl.edu/scripts/reportrequest.asp>>.

Howe, T.K. and W.E. Waters. 1989. Pansy cultivar evaluation in the landscape. Proc. Fla. State Hort. Soc. 102:97-101.

Kessler, J.R. 1998. Pansy production and marketing. Auburn Univ., ANR-596. 14 Nov. 2004. <<http://www.aces.edu/pubs/docs/A/ANR-0596/>>.

Pemberton, H.B. and W.E. Roberson. 2001. The east Texas bedding plant pack and garden performance trials. HortTechnology 11:392-396.

Texas A&M Univ. 1997. PLANTanswers information about flowers: Pansypansy. 14 Nov. 2004. <<http://aggie-horticulture.tamu.edu/plantanswers/flowers/pansies.html>>.

U.S. Dept. of Agriculture, National Agricultural Statistics Service. 1998. 1998 Census of horticultural specialties: Annual bedding/garden plants sold for the United States. 14 Nov. 2004. <<http://www.nass.usda.gov/census/census97/horticulture/table04-07.pdf>>.

U.S. Dept. of Agriculture, Agricultural Research Service and Germplasm Resources Information Network, National Genetic Resources Program. 2004a. Data from GRIN taxonomy: Taxon: *Viola x wittrockiana* Gams. 14 Nov. 2004. <<http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?312231>>.

U.S. Dept. of Agriculture, National Agricultural Statistics Service. 2004b. Floricultural crops 2003 summary. U.S. Dept. Agr., Washington, D.C.

U.S. National Arboretum. 1990. USDA Plant hardiness zone map. 14 Nov. 2004. <<http://www.usna.usda.gov/Hardzone/ushzmap.html>>.