



EXTENSION

Evaluation of Pansy and Viola Cultivars as Bedding Plants

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Summary. We evaluated 89 cultivars of pansies (*Viola x Wittrockiana* Gams.) and 16 cultivars of viola (*V. cornuta* L. and *V. hybrida*) in replicated class tests at the University of Florida Gulf Coast Research and Education Center at Bradenton, Fla. [lat. 27.4 N, long. 82.5 W; AHS Heat Zone 10; USDA (American Horticultural Society, 1999); USDA Cold Hardiness Zone 9b (U. S. National Arboretum, 1990)] in the winter/spring of 2000. In this report we provided objective plant measurements of vegetative and flower characteristics, earliness of flowering, and flower divergence (Table 1). We also provided 4 subjective ratings for foliage and flower performance (28 Feb- 27 Mar.), and 3 subjective ratings for arthropod and disease symptoms (9 Mar.-10 Apr.) that permit readers to evaluate foliage and flower characteristics (Table 2), and the affect of plant pests (Table 3) at different times during the season, and to evaluate performance over time. Subjective ratings were on a scale from 1 to 7 with the highest rating of 7 for excellent. In general, cultivars with vegetative and floral ratings > 5.0 were considered outstanding, 4.0 – 4.9 as good performers, and < 3.9 as fair to poor. Cultivars are grouped into classes of solid color hues, shades and combinations of these color factors. Outstanding cultivars (overall rating > 5.0) in their class were: **‘Scala Mid Blue’** (pansy – blue, dark class); **‘Baby Bingo Sky Blue’** and **‘Dynamite Beacon Blue’** (pansy – blue shades class); **‘Baby Bingo Blue With Blotch 4’**, **‘Baby Bingo Experimental Marina Shades’** and **‘Scala Blue W/B’** (pansy – blue w/dark eye class); **‘Accord/Banner Black’** and **‘Halloween’** (pansy – black class); **‘Baby Bingo All-Seasons Mixture’**, **‘Baby Bingo Autumn Blaze Mixture’**, **‘Baby Bingo Winter Blues Mixture’**, **‘Trick or Treat’**, and **‘Ultima Impression Mixed’** (pansy – mix class); **‘Lavender Cool Shades’** (pansy – purple class); **‘Baby Bingo Denim’**, **‘Baby Bingo Experimental Denim’**, **‘Baby Bingo Midnight’** and **‘Baby Bingo Purple W/Face’** (pansy – purple w/dark eye class); **‘Baby Bingo Lavender Blue’** and **‘Purple Rain’** (pansy – purple w/light eye class); **‘Baby Bingo Beaconsfield’** (pansy – purple/white class); **‘Baby Bingo Rose Wing’** and **‘Bingo Rose Frost’** (pansy – rose w/blotch class); **‘Bingo Clear White’**, **‘Dynamite White’**, **‘Karma White’**, and **‘Scala Pure White’** (pansy – white class); **‘Scala Cream’** [pansy – white shades (cream) class]; **‘Bingo White W/B’** and **‘Scala**

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4 “With/Blotch” will be expressed as “W/B” throughout the remainder of this paper.

‘White W/Blotch’ (pansy – white w/dark eye class); **‘Baby Bingo Yellow’** (pansy – yellow class); **‘Baby Bingo Red & Yellow’** and **‘Bingo Red and Yellow’** (pansy – yellow w/blotch); **‘Penny Citrus Mix’** (viola – mix class); **‘Penny Orange’** (viola – orange class); **‘Penny Orange Jump-Up’** (viola – orange/purple class); **‘Penny Deep Blue’** (viola – blue, dark); **‘Gemini Purple White’** (viola – purple, dark; red-violet/

white/yellow); **'Princess Purple & Gold'** (viola – purple, dark; red-violet/yellow); **'Penny Orchid Frost'** (viola – purple, light; red- violet/white); **'Penny Porcelain'** (viola – purple, light; blue- violet/light violet); **'Princess Lavender Yellow'** (viola – purple, light; blue- violet/yellow); **'Penny White'** (viola – white class); **'Princess Cream'** (viola – white shades (creams) class); 'Gemini Purple Yellow', 'Penny Yellow Jump-Up' and 'Sorbet Lemon Swirl' (viola – yellow/purple). Those cultivars with the highest overall ratings were chosen this season for best of class (Table 3). These cultivars will be used in future trials as a standard by which all new entries will be judged, and each will be replaced, if a new cultivar outperforms the former best of class.

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Introduction

The United States wholesale value of floricultural crops was \$4.6 billion in 2000, estimated from growers with sales = \$10,000 (United States Department of Agriculture, 2001). Bedding and garden plants comprise 50% of the floriculture value at \$2.12 billion. Florida (\$107.4 million) ranks fifth behind California, Michigan, Texas and Ohio, who together generate 42% of the bedding/garden plant wholesale value. Pansies and violas now ranked third in both flat (\$56.9 million) and pot (\$19.4 million) wholesale value in the United States (United States Department of Agriculture, 1998).

Most of the bedding plant variety trials currently conducted in the United States are performed without multiple experimental units replicated in an appropriate experimental design that allows statistical analysis, thus these variety trials provide results that are of questionable scientific merit. This study was conducted to evaluate pansy and viola performance in a seasonal replicated trial in order to provide timely evaluations that may be used by growers, landscapers, consumers and seed companies as well as the scientific community.

Materials and methods

Seeds of 89 cultivars of pansies and 16 cultivars of viola were sown on 4-5 Dec. into a soil mix containing peat and vermiculite (1:1, volumetric) prepared and amended with dolomite 11.3 lbs./yd³ (6.7 kg/m³), superphosphate 5.6 lbs./yd³ (3.3 kg/m³) and hydrated lime 2.8 lbs./yd³ (1.7 kg/m³) and used for seed germination at 72 to 75 °F (22 to 24 °C) in a growth room with a photosynthetic photon flux (PPF) of 30 μmol·m⁻²·s⁻¹ for 12 h from cool-white fluorescent lamps. Immediately after germination, seedlings were transplanted into Todd ® planter flats [model 128: 1.5 inches x 1.5 inches x 2.5 inches (3.8 cm x 3.8 cm x 6.4 cm) cells; Speedling Incorporated, P. O. Box 7220, Sun City, Florida] and placed into a screen-sided, fiberglass-covered greenhouse. Seedlings were fertilized twice weekly with a 15N-4.1P-6.5K (22 Dec.-12 Jan.) and 20N-8.3P-8.7K (16 Jan.-26 Jan.) water soluble fertilizers (15-5-15 Ca-Mg Excel and 20-10-20 Florida Special; Scotts Co., Maryville, Ohio) solution containing 250 mg·L⁻¹. On 31 Jan-1 Feb.,

plugs were transplanted in full sun into raised ground beds with 6 plants per plot in 2 rows across the width of the bed, with each plant spaced at 9 inches (22.9 cm) centers. Beds were 32 inches wide x 8 inches high (81.3 cm x 20.3 cm). Nutricote® 13N-5.7P-10.8 K fertilizer (13-13-13 100-d slow release type; Florikan, Sarasota, Florida) was applied by hand to each plant on the soil surface approximately an inch from the plant stem under the plastic mulch at 262 lb N/row acre (293.6 kg·ha⁻¹) of nitrogen. Beds were fumigated > 14 days before planting with a mixture of 66% methyl bromide and 33% chloropicrin at 392 kg·ha⁻¹ (350 lb/acre) and covered with white-on-black polyethylene film. Subsurface seepage irrigation water was supplied from lateral ditches spaced 12.8 m (42 ft) apart (Howe and Waters, 1997).

Integrated pest management was employed to determine when pesticide applications were needed to control arthropod pests and plant pathogens. Temperature @ 2ft (61.0 cm) during the remainder of the experiment ranged from a low of 0.7 °C (33.2 °F) to a high of 31.1 °C (88.0 °F), with total rainfall of 27.6 cm (10.9 inches) from 31 Jan. to 10 April. All rain occurred in March for the trialing period, with eighty percent of the total rainfall between 29 and 30 Mar.

On 14-15 Mar. three plants per plot were selected from the center and edge of each plot, and the plant height (from the stem base to the inflorescence tip) and plant width were recorded for each plot. Plants in each plot were selected from the same positions in that plot. Subjective ratings were made for each cultivar on 28 Feb., 14-15 Mar. and 27 Mar. for foliage and flower quality, and 9 Mar., 24 Mar. and 10 April for pest symptoms. Each cultivar was rated on a 1 to 7 scale with the highest rating of 7 for excellent. Plant characteristics that merited a 7 were: (1) all plants in a plot had full and uniform foliage; (2) foliage and flowers were free of pest symptoms; (3) plants were free of abnormalities or weaknesses such as lodging; and (4) flowers were numerous and uniformly distributed over the plant.

In order to provide meaningful performance comparisons, cultivars were divided into classes of species (pansy and viola) and flower color as solid color hues, shades and combinations of these color factors. For pansy, the combinations include specific patterns called blotch or eye; within this class may be some variables such as the color of the cap petals and segments of the face. For violas, the classes are broken up into more segments to reflect greater variability in petal color patterns. Multicolored classes were represented as x/y/z, with x = primary color and y/z = secondary and tertiary color, respectively, on cap, wing or flower face (see flower diagram, p. 44) which may be called a blotch or eye (contrasting color located at the center of the flower face).

Best of class was chosen using the overall performance 5 rating. If two or more cultivars had equal values for that rating, another rating was used, until a superior rating was achieved by one cultivar. Best of class does not necessarily signify good performance, but does indicate the better performance for that class, and the cultivar that achieves this status will remain best of class until a better performance by a new entry. If a single cultivar was trialed alone in a class, it became the uncontested best of class. Each class was analyzed as a separate experiment. A randomized complete block experimental design was used with three blocks each containing six plants that

represented the experimental unit. 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, NC).

Results and Discussion

Pansy Classes.

Pansy – black class. Plant height ranged from 10 cm (3.9 inches) for 'Halloween' to 13 cm (5.1 inches) for 'Accord/Banner Black'. Plant width ranged from 18 cm (7.1 inches) for 'Accord/Banner Black' to 22 cm (8.7 inches) for 'Halloween'. Flower diameters ranged from 4.6 cm (1.8 inches) for 'Halloween' to 5.1 cm (2.0 inches) for 'Accord/Banner Black'. The first open flower ranged from 70 d for 'Halloween' to 73 d for 'Accord/Banner Black', and divergence ranged from 7.8 d for 'Halloween' to 10.8 d for 'Accord/Banner Black'. Average foliage ratings ranged from 4.9 for 'Halloween' to 5.1 for 'Accord/Banner Black'. Average flower ratings ranged from 4.0 for 'Halloween' to 4.5 for 'Accord/Banner Black'. Overall foliage/flower ratings ranged from 4.4 for 'Halloween' to 4.8 for 'Accord/Banner Black'. Average arthropod ratings ranged from 6.0 for 'Halloween' to 6.7 for 'Accord/Banner Black'. The average disease rating was 6.7 for 'Accord/Banner Black' and 'Halloween'. Overall pest ratings ranged from 6.4 for 'Halloween' to 6.7 for 'Accord/Banner Black'. Overall performance ratings ranged from 5.4 for 'Halloween' to 5.7 for 'Accord/Banner Black'. 'Accord/Banner Black' (Goldsmith Seed) was best of class.

Pansy – blue, dark class. Plant height was 12 cm (4.7 inches) for 'Scala Mid Blue', plant width was 18 cm (7.1 inches), and flower diameter was 5.7 cm (2.2 inches). The first open flower was 75 d, and flower divergence was 10.3 d. The average foliage rating was 4.8, and the average flower rating was 4.1. The overall foliage/flower rating was 4.5. The average arthropod rating was 4.8, and the average disease rating was 5.1. The overall pest rating was 5.0. The overall performance rating was 4.7. 'Scala Mid Blue' (PanAmerican Seed) was best of class, uncontested.

5 The formula for overall performance = [foliage and flower overall rating (Table 2) + overall pest rating (Table 3)/2]

Pansy – blue shades class. Plant height ranged from 11 cm (4.3 inches) for 'Dynamite Beacon Blue' and 'Dynamite Light Blue' to 13 cm (5.1 inches) for 'Bingo Azure Clear' and 'Scala Sky Blue'. Plant width ranged from 17 cm (6.7 inches) for 'Dynamite Beacon Blue' to 20 cm (7.9 inches) for 'Baby Bingo Sky Blue'. Flower diameter ranged from 4.7 cm (1.9 inches) for 'Baby Bingo Sky Blue' to 6.0 cm (2.4 inches) for 'Bingo Azure Clear'. The first open flower ranged from 68 d for 'Bingo Azure Clear' to 77 d for 'Scala Sky Blue'. Flower divergence ranged from 5.3 d for 'Dynamite Beacon Blue' to 12.8 d for 'Bingo Azure Clear'. Average foliage ratings ranged from 4.2 for 'Dynamite Light Blue' to 4.9 for 'Baby Bingo Sky Blue'. Average flower ratings ranged from 3.2 for 'Scala Sky Blue' to 4.1 for 'Baby Bingo Sky Blue'. Overall foliage/flower ratings ranged from 3.8 for 'Scala Sky Blue' to 4.5 for 'Baby Bingo Sky Blue'. Average arthropod ratings ranged from 5.5 for 'Dynamite Light Blue'

to 6.2 for 'Baby Bingo Sky Blue'. Average disease ratings ranged from 4.8 for 'Dynamite Light Blue' and 'Scala Sky Blue' to 6.1 for 'Baby Bingo Sky Blue'. Overall pest ratings ranged from 5.2 for 'Dynamite Light Blue' and 'Scala Sky Blue' to 6.2 for 'Baby Bingo Sky Blue'. Overall performance ratings ranged from 4.5 for 'Scala Sky Blue' to 5.3 for 'Baby Bingo Sky Blue'. 'Baby Bingo Sky Blue' (PanAmerican Seed) was best of class.

Pansy – blue w/dark eye. Plant height ranged from 11 cm (4.3 inches) for 'Bingo Blue W/B', 'Dynamite Blue With/Blotch 6', 'Dynamite Ocean', 'Majestic Giant Supreme

Blue & White W/B', 'Maj. Gt. Supreme Deep Blue W/B', 'Majestic Giant Supreme Mid Blue W/B', and 'Scala Blue W/B' to 13 cm (5.1 inches) for 'Bingo Light Blue W/B'. Plant width ranged from 15 cm (5.9 inches) for 'Bingo Blue Frost' to 21 cm (8.3 inches) for 'Bingo Light Blue W/B'. Flower diameter ranged from 4.3 cm (16.9 inches) for 'Baby Bingo Experimental Marina Shades' to 6.4 cm (2.5 inches) for 'Majestic Giant Supreme Mid Blue W/B'. The first open flower ranged from 65 d for 'Dynamite Blue With/Blotch' to 73 d for 'Bingo Blue Frost' and 'Majestic Giant Supreme Blue & White W/B'. Flower divergence ranged from 5.0 d for 'Baby Bingo Experimental Marina Shades' to 15.8 d for 'Scala Blue W/B'. Average foliage ratings ranged from 3.6 for 'Bingo Blue Frost' to 5.3 for 'Baby Bingo Blue W/B' and 'Baby Bingo Experimental Marina Shades'. Average flower ratings ranged from 3.4 for 'Dynamite Ocean' and 'Majestic Giant Supreme Blue & White W/B' to 5.5 for 'Baby Bingo Experimental Marina Shades'. Overall foliage/flower ratings ranged from 3.7 for 'Bingo Blue Frost' to 5.4 for 'Baby Bingo Experimental Marina Shades'. Average arthropod ratings ranged from 3.4 for 'Dynamite Ocean' to 6.5 for 'Baby Bingo Experimental Marina Shades'. Average disease ratings ranged from 4.2 for 'Dynamite Ocean' to 6.2 for 'Baby Bingo Experimental Marina Shades', 'Dynamite Blue W/B' and 'Majestic Giant Supreme Blue & White W/B'. Overall pest ratings ranged from 4.8 for 'Baby Bingo Blue W/B' and 'Bingo Blue W/B' and 'Scala Sky Blue' to 6.4 for 'Baby Bingo Experimental Marina Shades'. Overall performance ratings ranged from 4.0 for 'Dynamite Ocean' to 5.9 for 'Baby Bingo Experimental Marina Shades'. 'Baby Bingo Experimental Marina Shades' (PanAmerican Seed) was best of class.

6 "With Blotch" will be referred to as "W/B" for the remainder of this paper.

Pansy – mix class. Plant height ranged from 12 cm (4.7 inches) for 'Baby Bingo All-Seasons

Mixture', 'Ultima Impression Mixed' and 'Dynamite Clear Mixed' to 13 cm (5.1 inches) for 'Baby Bingo Autumn Blaze Mixture', 'Baby Bingo Winter Blues Mixture', 'Dynamite Blotch Mixed' and 'Trick or Treat'. Plant width ranged from 18 cm (7.1 inches) for 'Baby Bingo Autumn Blaze Mixture' to 22 cm (8.7 inches) for 'Baby Bingo Winter Blues Mixture' and 'Trick or Treat'. Flower diameter ranged from 4.0 cm (1.6 inches) for 'Ultima Impression Mixed' to 5.7 cm (2.2 inches) for 'Dynamite Blotch Mixed'. The first open flower ranged from 65 d for 'Baby Bingo All-Seasons Mixture' to 72 d for 'Dynamite Blotch Mixed', 'Trick or Treat' and 'Ultima Impression Mixed'. Flower divergence ranged from 6.0 d for 'Dynamite Blotch Mixed' to 12 d for 'Trick or Treat'. Average foliage ratings ranged from 4.0 for 'Baby Bingo Autumn Blaze Mixture' to 5.1 for 'Baby Bingo Winter Blues Mixture'. Average flower ratings ranged from 3.8 for 'Dynamite Clear Mixed' to 5.1 for 'Baby Bingo All-Seasons Mixture'. Overall

foliage/flower ratings ranged from 4.0 for 'Dynamite Clear Mixed' to 5.0 for 'Baby Bingo All-Seasons Mixture'. Average arthropod ratings ranged from 4.8 for 'Dynamite Blotch Mixed' to 5.9 for 'Ultima Impression Mixed'. Average disease ratings ranged from 5.1 for 'Dynamite Blotch Mixed' to 6.5 for 'Ultima Impression Mixed'. Overall pest ratings ranged from 5.0 for 'Dynamite Blotch Mixed' to 6.0 for 'Baby Bingo Autumn Blaze Mixture', 'Baby Bingo Winter Blues Mixture' and 'Trick or Treat'. Overall performance ratings ranged from 4.6 for 'Dynamite Blotch Mixed' to 5.4 for 'Baby Bingo All-Seasons Mixture' and 'Baby Bingo Winter Blues Mixture'. 'Baby Bingo All-Seasons Mixture' (PanAmerican Seed) was best of class.

Pansy – orange class. Plant height was 12 cm (4.7 inches) for 'Scala Pure Orange Improved', plant width was 18 cm (7.1 inches), and flower diameter was 4.8 cm (1.9 inches). The first open flower occurred in 70 d, and flower divergence was 12.8 d. The average foliage rating was 3.7, and the average flower rating was 2.8. The overall foliage/flower rating was 3.3. The average arthropod rating was 4.1, and the average disease rating was 6.2. The overall pest rating was 5.1. The overall performance rating was 4.3. 'Scala Pure Orange Improved' (PanAmerican Seed) was best of class, uncontested.

Pansy – purple class. Plant height ranged from 11 cm (4.3 inches) for 'Lavender Cool Shades' to 12 cm (4.7 inches) for 'Dynamite Lavender' and 'Fama Lilac Shades'. Plant width ranged from 17 cm (6.7 inches) for 'Lavender Cool Shades' to 19 cm (7.5 inches) for 'Dynamite Lavender' and 'Lavender Cool Shades'. Flower diameter ranged from 4.9 cm (1.9 inches) for 'Fama Lilac Shades' to 5.6 cm (2.2 inches) for 'Dynamite Lavender' and 'Lavender Cool Shades'. The first open flower ranged from 68 d for 'Lavender Cool Shades' to 73 d for 'Fama Lilac Shades'. Flower divergence ranged from 7.5 d for 'Lavender Cool Shades' to 14.3 d for 'Fama Lilac Shades'. Average foliage ratings ranged from 4.1 for 'Fama Lilac Shades' to 4.7 for 'Fama Lavender Shades' and 'Lavender Cool Shades'. Average flower ratings ranged from 3.0 for 'Fama Lilac Shades' to 3.7 for 'Lavender Cool Shades'. Overall foliage/flower ratings ranged from 3.5 for 'Fama Lilac Shades' to 4.1 for 'Fama Lavender Shades' and 'Lavender Cool Shades'. Average arthropod ratings ranged from 5.5 for 'Dynamite Lavender' to 5.8 for 'Fama Lilac Shades' and 'Lavender Cool Shades'. Average disease ratings ranged from 5.9 for 'Dynamite Lavender' to 6.2 for 'Fama Lilac Shades'. Overall pest ratings ranged

from 5.7 for 'Dynamite Lavender' to 6.0 for 'Fama Lilac Shades'. Overall performance ratings ranged from 4.8 for 'Fama Lilac Shades' to 5.0 for 'Lavender Cool Shades'.

'Lavender Cool Shades' (PanAmerican Seed) was best of class..**Pansy – purple, dark**

class. Plant height ranged from 10 cm (3.9 inches) for 'Fama Purple' to 11 cm (4.3 inches) for 'Accord/Banner Purple' and 'Dynamite Purple'. Plant width ranged from 15 cm (5.9 inches) for 'Fama Purple' to 17 cm (6.7 inches) for 'Accord/Banner Purple' and 'Dynamite Purple'. Flower diameter ranged from 4.8 cm (1.9 inches) for 'Fama Purple' to 5.5 cm (2.2 inches) for 'Dynamite Purple'. The first open flower ranged from 72 d for 'Accord/Banner Purple' to 74 d for 'Fama Purple'. Flower divergence ranged from 7.0 d for 'Dynamite Purple' to 12.5 d for 'Accord/Banner Purple'. Average foliage ratings ranged from 4.1 for 'Dynamite Purple' to 4.6 for 'Fama Purple'. Average flower ratings ranged from 3.6 for 'Accord/Banner Purple' to 3.9 cm for 'Dynamite Purple' and 'Fama Purple'. Overall foliage/flower ratings ranged from 3.9

for 'Accord/Banner Purple' to 4.3 for 'Fama Purple'. Average arthropod ratings ranged from 5.2 for 'Accord/Banner Purple' to 4.9 for 'Dynamite Purple'. Average disease ratings ranged from 5.9 for 'Dynamite Purple' to 6.0 for 'Accord/Banner Purple'. Overall pest ratings ranged from 5.4 for 'Dynamite Purple' to 5.6 for 'Accord/Banner Purple'. 'Fama Purple' was the only cultivar in the test to have poor germination and insufficient plants to trial in the unsprayed field for pest evaluation. Overall performance was 4.8 for 'Accord/Banner Purple' and 'Dynamite Purple'. 'Dynamite Purple' (Sakata Seed America) was best of class.

Pansy – purple w/dark eye class. Plant height ranged from 9.0 cm (3.5 inches) for 'Purple W/Face' to 12 cm (4.7 inches) for 'Baby Bingo Denim' and 'Bingo Deep Purple'. Plant width ranged from 18 cm (7.1 inches) for 'Majestic Giant Supreme Purple W/B' to 22 cm (8.7 inches) for 'Baby Bingo Denim'. Flower diameter ranged from 4.1 cm (1.8 inches) for 'Baby Bingo Purple W/Face' to 6.0 cm (2.4 inches) for 'Majestic Giant Supreme Purple W/B'. The first open flower ranged from 62 d for 'Purple W/Face' to 73 d for 'Baby Bingo Midnight'. Flower divergence ranged from 4.5 d for 'Baby Bingo Experimental Denim' to 13.3 d for 'Majestic Giant Supreme Purple W/B'. Average foliage ratings ranged from 4.5 for 'Majestic Giant Supreme Purple W/B' to 6.3 for 'Baby Bingo Midnight'. Average flower ratings ranged from 3.6 for 'Majestic Giant Supreme Purple W/B' to 4.9 for 'Baby Bingo Purple W/Face'. Overall foliage/flower ratings ranged from 4.0 for 'Majestic Giant Supreme Purple W/B' to 4.9 for 'Baby Bingo Denim' and 'Baby Bingo Purple W/Face'. Average arthropod ratings ranged from 3.9 for 'Bingo Deep Purple' to 5.2 for 'Baby Bingo Experimental Denim'. Average disease ratings ranged from 5.3 for 'Bingo Deep Purple' to 6.7 for 'Baby Bingo Purple W/Face'. Overall pest ratings ranged from 4.5 for 'Bingo Deep Purple' to 5.9 for 'Baby Bingo Experimental Denim'. Overall performance ratings ranged from 4.5 for 'Bingo Deep Purple' to 5.4 for 'Baby Bingo Experimental Denim'. 'Baby Bingo Experimental Denim' (PanAmerican Seed) was best of class.

Pansy – purple w/light eye class. Plant height ranged from 10 cm (inches) for 'Baby Bingo Lavender Blue' to 13 cm (inches) for 'Purple Jester' and 'Purple Rain'. Plantwidth ranged from 16 cm (6.3 inches) for 'Purple Jester' to 22 cm (8.7 inches) for 'Baby Bingo Lavender Blue' and 'Purple Rain'. Flower diameter ranged from 3.8 cm (1.5 inches) for 'Purple Rain' to 4.9 cm (1.9 inches) for 'Purple Jester'. The first open flower ranged from 63 d for 'Purple Rain' to 71 d for 'Purple Jester'. Flower divergence ranged from 5.8 d for 'Purple Rain' to 11.5 d for 'Baby Bingo Lavender Blue'.

Average foliage ratings ranged from 4.3 for 'Purple Jester' to 5.3 for 'Purple Rain'. Average

flower ratings ranged from 3.5 for 'Purple Jester' to 5.4 for 'Purple Rain'. Overall foliage/flower ratings ranged from 3.9 for 'Purple Jester' to 5.3 for 'Purple Rain'. Average arthropod ratings ranged from 4.1 for 'Purple Rain' to 5.9 for 'Baby Bingo Lavender Blue'. Average disease ratings ranged from 6.4 for 'Purple Jester' to 6.9 for 'Baby Bingo Lavender Blue'. Overall pest ratings ranged from 5.4 for 'Purple Rain' to 6.4 for 'Baby Bingo Lavender Blue'. Overall performance ratings ranged from 4.7 for 'Purple Jester' to 5.8 for 'Baby Bingo Lavender Blue'. 'Baby Bingo Lavender Blue' (PanAmerican Seed) was best of class.

Pansy – purple/white class. Plant height ranged from 11 cm (4.3 inches) for 'Baby Bingo Beaconsfield' to 14 cm (5.5 inches) for 'Dynamite Purple Rose White'. Plant

width ranged from to 18 cm (7.1 inches) for 'Dynamite Purple Rose White' to 19 cm (7.5 inches) for 'Accord Purple Picotee' and 'Baby Bingo Beaconsfield'. Flower diameter ranged from to 4.3 cm (1.7 inches) for 'Baby Bingo Beaconsfield' to 5.6 cm (2.2 inches) for 'Accord Purple Picotee' and 'Dynamite Purple Rose White'. The first open flower ranged from 69 d for 'Dynamite Purple Rose White' to 71 d for 'Accord Purple Picotee' and 'Baby Bingo Beaconsfield'. Flower divergence ranged from 5.3 d for 'Accord Purple Picotee' to 10 d for 'Baby Bingo Beaconsfield'. Average foliage ratings ranged from 4.0 for 'Accord Purple Picotee' to 5.4 for 'Baby Bingo Beaconsfield'. Average flower ratings ranged from 3.5 for 'Dynamite Purple Rose White' to 4.7 for 'Baby Bingo Beaconsfield'. Overall foliage/flower ratings ranged from 3.9 for 'Accord Purple Picotee' and 'Dynamite Purple Rose White' to 5.0 for 'Baby Bingo Beaconsfield'. Average arthropod ratings ranged from 4.4 for 'Dynamite Purple Rose White' to 6.6 for 'Baby Bingo Beaconsfield'. Average disease ratings ranged from 5.9 for 'Accord Purple Picotee' to 6.6 for 'Baby Bingo Beaconsfield'. Overall pest ratings ranged from 5.4 for 'Dynamite Purple Rose White' to 6.4 for 'Accord Purple Picotee'. Overall performance ratings ranged from 4.6 for 'Dynamite Purple Rose White' to 5.8 for 'Baby Bingo Beaconsfield'. 'Baby Bingo Beaconsfield' (PanAmerican Seed) was best of class.

Pansy – red class. Plant height ranged from 10 cm (3.9 inches) for 'Dynamite Scarlet' to 11 cm (4.3 inches) for 'Scala Scarlet'. Plant width ranged from to 17 cm (6.7 inches) for 'Dynamite Scarlet' to 18 cm (7.1 inches) for 'Scala Scarlet'. Flower diameter was 5.3 cm (2.1 inches) for 'Dynamite Scarlet' and 'Scala Scarlet'. The first open flower occurred in 71 d for 'Dynamite Scarlet' and 'Scala Scarlet'. Flower divergence ranged from 4.3 d for 'Dynamite Scarlet' to 11.0 d for 'Scala Scarlet'. Average foliage ratings ranged from 3.4 for 'Scala Scarlet' to 4.0 for 'Dynamite Scarlet'. Average flower ratings ranged from 3.2 for 'Scala Scarlet' to 4.0 for 'Dynamite Scarlet'. Overall foliage/flower ratings ranged from 3.3 for 'Scala Scarlet' to 4.0 for 'Dynamite Scarlet'. Average arthropod ratings ranged from 4.2 for 'Dynamite Scarlet' to 4.7 for 'Scala Scarlet'. Average disease ratings ranged from 5.5 for 'Dynamite Scarlet' to 6.2 for 'Scala Scarlet'. Overall pest ratings ranged from 4.8 for 'Dynamite Scarlet' to 5.4 for 'Scala Scarlet'. Overall performance ratings were 4.4 for 'Dynamite Scarlet' and 'Scala Scarlet'.

'Dynamite Scarlet' (Sakata) was best of class, based on overall foliage/flower ratings.

Pansy – red w/dark eye class. Plant height ranged from 10 cm (3.9 inches) for 'Baby Bingo Fire', 'Bingo Red W/B' and 'Majestic Giant Supreme Red W/B' to 12 cm (4.7

inches) for 'Fama Red'. Plant width ranged from to 16 cm (6.3 inches) for 'Baby Bingo Fire' and 'Bingo Red W/B' to 18 cm (7.1 inches) for 'Dynamite Red W/B'. Flower diameter ranged from to 4.8 cm (1.9 inches) for 'Baby Bingo Fire' to 6.2 cm (2.4 inches) for 'Majestic Giant Supreme Red W/B'. The first open flower ranged from 70 d for 'Baby Bingo Fire' and 'Dynamite Red' to 75 d for 'Majestic Giant Supreme Red W/B'. Flower divergence ranged from 5.8 d for 'Dynamite Red W/B' to 10.0 d for 'Fama Red'. Average foliage ratings ranged from 3.7 for 'Dynamite Red W/B' to 4.4 for 'Karma Red Blotch'. Average flower ratings ranged from 2.7 for 'Majestic Giant Supreme Red W/B' to 3.7 for 'Karma Red Blotch'. Overall foliage/flower ratings ranged from 3.3 for 'Majestic Giant Supreme Red W/B' to 4.1 for 'Karma Red Blotch'. Average arthropod ratings ranged from 3.9 for 'Dynamite Red' and 'Majestic Giant Supreme Red W/B' to 4.8 for 'Baby Bingo Fire'. Average disease ratings ranged from 4.8 for 'Majestic Giant

Supreme Red W/B' to 6.6 for 'Baby Bingo Fire'. Overall pest ratings ranged from 4.3 for 'Majestic Giant Supreme Red W/B' to 5.7 for 'Baby Bingo Fire'. Overall performance ratings ranged from 3.8 for 'Majestic Giant Supreme Red W/B' to 4.7 for 'Karma Red Blotch'. 'Karma Red Blotch' (Goldsmith Seeds) was best of class.

Pansy – rose class. Plant height was 11 cm (4.3 inches) for 'Karma Rose', plant width was 17 cm (6.7 inches), and flower diameter was 5.3 cm (2.1 inches). The first open flower occurred in 69 d, and flower divergence was 9.3 d. The average foliage rating was 3.8, and the average flower rating was 3.9. The overall foliage/flower rating was 3.9. The average arthropod rating was 4.5, and the average disease rating was 6.2. The overall pest rating was 5.4. The overall performance rating was 4.6. 'Karma Rose' (Goldsmith Seed) was best of class, uncontested.

Pansy – rose w/blotch class. Plant height ranged from 9 cm (3.5 inches) for 'Majestic Giant Supreme Rose W/B' to 14 cm (5.5 inches) for 'Bingo Rose Frost'. Plant width ranged from to 16 cm (6.3 inches) for 'Dynamite Rose W/B' and 'Majestic Giant Supreme Rose W/B' to 20 cm (7.9 inches) for 'Bingo Light Rose W/B'. Flower diameter ranged from to 5.3 cm (2.1 inches) for 'Baby Bingo Rose Wing' and 'Dynamite Rose W/B' to 6.0 cm (2.4 inches) for 'Bingo Light Rose W/B'. The first open flower ranged from 69 d for 'Dynamite Rose W/B' to 75 d for 'Majestic Giant Supreme Rose W/B'. Flower divergence ranged from 4.3 d for 'Baby Bingo Rose Wing' to 10.8 d for 'Dynamite Rose W/B'. Average foliage ratings ranged from 3.4 for 'Dynamite Rose W/B' to 4.8 for 'Bingo Rose W/B' and 'Bingo Rose Frost'. Average flower ratings ranged from 3.2 for 'Bingo Light Rose W/B' and 'Bingo Rose Frost' to 4.5 for 'Baby Bingo Rose Wing'. Overall foliage/flower ratings ranged from 3.5 for 'Dynamite Rose W/B' and 'Majestic Giant Supreme Rose W/B' to 4.5 for 'Baby Bingo Rose Wing'. Average arthropod ratings ranged from 3.8 for 'Karma Rose Blotch' to 6.9 for 'Bingo Rose Frost'. Average disease ratings ranged from 4.2 for 'Majestic Giant Supreme Rose W/B' to 6.2 for 'Baby Bingo Rose Wing' and 'Bingo Rose Frost'. Overall pest ratings ranged from 4.2 for 'Majestic Giant Supreme Rose W/B' to 6.5 for 'Bingo Rose Frost'. Overall performance ratings ranged from 3.9 for 'Majestic Giant Supreme Rose W/B' to 5.3 for 'Bingo Rose Frost'. 'Bingo Rose Frost' (PanAmerican Seed) was best of class..

Pansy – white class. Plant height ranged from 12 cm (4.7 inches) for 'Bingo Clear White', 'Dynamite White' and 'Karma White' to 14 cm (5.5 inches) for 'Scala Pure White'. Plant width ranged from to 17 cm (6.7 inches) for 'Karma White' to 21 cm (8.3 inches) for 'Scala Pure White'. Flower diameter ranged from to 4.8 cm (1.9 inches) for 'Scala Pure White' to 5.7 cm (2.2 inches) for 'Karma White'. The first open flower ranged from 70 d for 'Bingo Clear White' to 72 d for 'Dynamite White' and 'Karma White'. Flower divergence ranged from 6.0 d for 'Karma White' to 9.5 d for 'Scala Pure White'. Average foliage ratings ranged from 4.1 for 'Karma White' to 5.0 for 'Scala Pure White'. Average flower ratings ranged from 3.4 for 'Dynamite White' to 4.1 for 'Bingo Clear White' and 'Scala Pure White'. Overall foliage/flower ratings ranged from 3.8 for 'Dynamite White' to 4.5 for 'Scala Pure White'. Average arthropod ratings ranged from 6.3 for 'Dynamite White' to 6.5 for 'Scala Pure White' and 'Karma White'. Average disease ratings ranged from 6.1 for 'Bingo Clear White' to 6.7 for 'Scala Pure White'. Overall pest ratings ranged from 6.1 for 'Bingo Clear White' to 6.6 for 'Scala Pure White'. Overall performance ratings ranged from 5.1 for 'Dynamite White' and 'Karma White' to 5.6 for 'Scala Pure White'. 'Scala Pure White' (PanAmerican Seed)

was best of class.

Pansy – white shades (creams) class. Plant height was 12 cm (4.7 inches) for ‘Scala Cream’, plant width was 21 cm (8.4 inches), and flower diameter was 5.7 cm (2.2 inches). The first open flower occurred in 71 d, and flower divergence was 8.5 d. The average foliage rating was 4.5, and the average flower rating was 4.0. The overall foliage/flower rating was 4.3. The average arthropod rating was 5.4, and the average disease rating was 6.2. The overall pest rating was 5.8, while the overall performance rating was 5.0. ‘Scala Cream’ (PanAmerican Seed) was best of class, uncontested.

Pansy – white w/dark eye class. Plant height ranged from 12 cm (4.7 inches) for ‘Fama Spanish Eyes’, ‘Karma White Blotch’, ‘Majestic Giant Supreme White W/B’, and ‘Scala White W/Blotch’ to 24 cm (9.4 inches) for ‘Bingo White W/B’. Plant width ranged from 17 cm (6.7 inches) for ‘Fama Spanish Eyes’ and ‘Karma White Blotch’ to 20 cm (7.9 inches) for ‘Bingo White W/B’, ‘Majestic Giant Supreme White W/B’ and ‘Scala White W/Blotch’. Flower diameter ranged from 4.9 cm (1.9 inches) for ‘Fama Spanish Eyes’ to 6.1 cm (2.4 inches) for ‘Majestic Giant Supreme White W/B’. The first open flower ranged from 70 d for ‘Bingo White W/B’, ‘Dynamite White W/Blotch’ and ‘Scala White W/Blotch’ to 74 d for ‘Majestic Giant Supreme White W/B’. Flower divergence ranged from 4.3 d for ‘Dynamite White W/Blotch’ to 11.3 d for ‘Scala White W/Blotch’. Average foliage ratings ranged from 4.0 for ‘Fama Spanish Eyes’ to 4.9 for ‘Scala White W/Blotch’. Average flower ratings ranged from 2.8 for ‘Fama Spanish Eyes’ to 3.7 for ‘Scala White W/Blotch’ and ‘Fama Spanish Eyes’. Overall foliage/flower ratings ranged from 3.4 for ‘Fama Spanish Eyes’ to 4.3 for ‘Scala White W/Blotch’. Average arthropod ratings ranged from 5.5 for ‘Majestic Giant Supreme White W/B’ to 6.2 for ‘Scala White W/Blotch’. Average disease ratings ranged from 5.4 for ‘Dynamite White W/Blotch’ to 6.3 for ‘Scala White W/Blotch’. Overall pest ratings ranged from 5.5 for ‘Dynamite White W/Blotch’ to 6.3 for ‘Scala White W/Blotch’. Overall performance ratings ranged from 4.6 for ‘Karma White Blotch’ to 5.3 for ‘Scala White W/Blotch’. ‘Scala White W/Blotch’ (PanAmerican Seed) was best of class.

Pansy – yellow class. Plant height ranged from 9 cm (3.5 inches) for ‘Bingo Clear Yellow’ to 13 cm (5.1 inches) for ‘Fama Golden Yellow’, ‘Karma Yellow’ and ‘Scala Yellow’. Plant width ranged from 15 cm (5.9 inches) for ‘Bingo Clear Yellow’ to 22 cm (8.7 inches) for ‘Karma Yellow’. Flower diameter ranged from 4.2 cm (inches) for ‘Baby Bingo Yellow’ to 5.9 cm (inches) for ‘Bingo Clear Yellow’. The first open flower ranged from 70 d for ‘Baby Bingo Yellow’ to 79 d for ‘Bingo Clear Yellow’. Flower divergence ranged from 5.8 d for ‘Dynamite Yellow’ to 15.5 d for ‘Scala Primrose’. Average foliage ratings ranged from 3.5 for ‘Bingo Clear Yellow’ to 4.7 for ‘Fama Golden Yellow’. Average flower ratings ranged from 2.6 for ‘Bingo Clear Yellow’ to 5.0 for ‘Baby Bingo Yellow’. Overall foliage/flower ratings ranged from 3.0 for ‘Bingo Clear Yellow’ to 4.8 for ‘Baby Bingo Yellow’. Average arthropod ratings ranged from 4.2 for ‘Bingo Clear Yellow’ to 5.9 for ‘Scala Primrose’. Average disease ratings ranged from 4.1 for ‘Bingo Clear Yellow’ to 6.4 for ‘Scala Yellow’. Overall pest ratings ranged from 4.2 for ‘Bingo Clear Yellow’ to 5.9 for ‘Scala Primrose’. Overall performance ratings ranged from 3.6 for ‘Bingo Clear Yellow’ to 5.2 for ‘Baby Bingo Yellow’. ‘Baby Bingo Yellow’ (PanAmerican Seed) was best of class.

Pansy – yellow w/blotch class. Plant height ranged from 10 cm (3.9 inches) for ‘Karma Yellow Blotch’, ‘Majestic Giant Supreme Yellow W/B’ and ‘Scala Yellow W/Blue Wings’ to 13 cm (5.1 inches) for ‘Fama Dark Eyed Lemon’. Plant width ranged from to 17 cm (6.7 inches) for ‘Dynamite Red & Yellow’, ‘Karma Yellow Blotch’, ‘Scala Yellow W/B’ and ‘Scala Yellow W/Blue Wings’ to 20 cm (7.9 inches) for ‘Bingo Red and Yellow’. Flower diameter ranged from to 4.6 cm (1.8 inches) for ‘Baby Bingo Red & Yellow’ to 6.5 cm (inches) for ‘Majestic Giant Supreme Yellow W/B’. The first open flower ranged from 70 d for ‘Baby Bingo Red & Yellow’, ‘Bingo Red and Yellow’ and ‘Karma Yellow Blotch’ to 77 d for, ‘Majestic Giant Supreme Yellow W/B’. Flower divergence ranged from 5.5 d for ‘Majestic Giant Supreme Yellow W/B’ to 10.5 d for ‘Dynamite Yellow W/B’ and ‘Fama Dark Eyed Lemon’. Average foliage ratings ranged from 3.7 for ‘Dynamite Yellow W/B’ to 4.8 for ‘Scala Yellow W/B’. Average flower ratings ranged from 2.6 for ‘Scala Yellow W/Blue Wings’ to 4.3 for ‘Baby Bingo Red & Yellow’. Overall foliage/flower ratings ranged from 3.4 for ‘Majestic Giant Supreme Yellow W/B’ to 4.4 for ‘Bingo Red and Yellow’. Average arthropod ratings ranged from 4.3 for ‘Dynamite Red & Yellow’ to 5.8 for ‘Fama Dark Eyed Lemon’. Average disease ratings ranged from 4.9 for ‘Dynamite Yellow W/B’ to 6.7 for ‘Baby Bingo Red & Yellow’. Overall pest ratings ranged from 4.7 for ‘Dynamite Yellow W/B’ to 6.1 for ‘Fama Dark Eyed Lemon’. Overall performance ratings ranged from 4.1 for ‘Majestic Giant Supreme Yellow W/B’ to 5.1 for ‘Bingo Red and Yellow’. ‘Bingo Red and Yellow’ (PanAmerican) was best of class.

Viola Classes

Viola – mix class. Plant height was 11 cm (4.3 inches) for ‘Penny Mix Citrus’, plant width was 18 cm (7.1 inches), and flower diameter was 3.1 cm (1.2 inches). The first open flower occurred in 60 d, and flower divergence was 10.3 d. The average foliage.rating was 4.4, and the average flower rating was 5.1. The overall foliage/flower rating

was 4.7. The average arthropod rating was 5.9, and the average disease rating was 6.5. The overall pest rating was 6.2. The overall performance rating was 5.5. ‘Penny Mix Citrus’ (Ball Seed Company) was best of class, uncontested.

Viola – orange class. Plant height was 11 cm (4.3 inches) for ‘Penny Orange’, plant width was 17 cm (6.7 inches), and flower diameter was 3.0 cm (1.2 inches). The first open flower occurred in 67 d, and flower divergence was 11.8 d. The average foliage rating was 3.5, and the average flower rating was 3.6. The overall foliage/flower rating was 3.5. The average arthropod rating was 6.7, and the average disease rating was 7.0. The overall pest rating was 6.8. The overall performance rating was 5.2. ‘Penny Orange’ (Ball Seed Company) was best of class, uncontested.

Viola – orange/purple class. Plant height was 13 cm (5.1 inches) for ‘Penny Orange Jump-Up’, plant width was 18 cm (7.1 inches), and flower diameter was 2.8 cm (1.1 inches). The first open flower occurred in 58 d, and flower divergence was 7.8 d. The average foliage rating was 4.6, and the average flower rating was 4.9. The overall foliage/flower rating was 4.7. The average arthropod rating was 6.2, and the average disease rating was 6.9. The overall pest rating was 6.6. The overall performance rating was 5.6. ‘Penny Orange Jump -Up’ (Goldsmith Seeds) was best of class, uncontested.

Viola – blue class. Plant height ranged from 10 cm (3.9 inches) for ‘Princess Blue’ to

11 cm (4.3 inches) for 'Penny Deep Blue'. Plant width ranged from 16 cm (6.3 inches) for 'Princess Blue' to 18 cm (7.1 inches) for 'Penny Deep Blue'. Flower diameter was 3.4 cm (1.3 inches) for 'Penny Deep Blue' and 'Princess Blue'. The first open flower ranged from 59 d for 'Penny Deep Blue' to 70 d for 'Princess Blue'. Flower divergence ranged from 5.5 d for 'Penny Deep Blue' to 7.5 d for 'Princess Blue'. Average foliage ratings ranged from 3.7 for 'Princess Blue' to 4.8 for 'Penny Deep Blue'. Average flower ratings ranged from 4.5 for 'Penny Deep Blue' to 4.8 for 'Princess Blue'. Overall foliage/flower ratings ranged from 4.2 for 'Princess Blue' to 4.6 for 'Penny Deep Blue'. Average arthropod ratings ranged from 3.5 for 'Princess Blue' to 5.1 for 'Penny Deep Blue'. Average disease ratings ranged from 6.2 for 'Princess Blue' to 7.0 for 'Penny Deep Blue'. Overall pest ratings ranged from 4.9 for 'Princess Blue' to 6.1 for 'Penny Deep Blue'. Overall performance ratings ranged from 4.6 for 'Princess Blue' to 5.4 for 'Penny Deep Blue'. 'Penny Deep Blue' (Goldsmith Seeds) was best of class.

Viola – purple, dark; red-violet/white/yellow class. Plant height was 14 cm (5.5 inches) for 'Gemini Purple White', plant width was 24 cm (9.4 inches), and flower diameter was 3.7 cm (1.5 inches). The first open flower occurred in 58 d, and flower divergence was 10.8 d. The average foliage rating was 5.0, and the average flower rating was 4.1. The overall foliage/flower rating was 4.5. The average arthropod rating was 4.8, and the average disease rating was 6.2. The overall pest rating was 5.5. The overall performance rating was 5.0. 'Gemini Purple White' (Ball Seed Company) was best of class, uncontested.

Viola – purple, dark; red-violet/yellow class. Plant height was 11 cm (4.3 inches) for 'Princess Purple & Gold', plant width was 19 cm (7.5 inches), and flower diameter was 2.9 cm (1.1 inches). The first open flower occurred in 72 d, and flower divergence was 3.3 d. The average foliage rating was 5.4, and the average flower rating was 5.0. The overall foliage/flower rating was 5.2. The average arthropod rating was 5.6, and the average disease rating was 7.0. The overall pest rating was 6.3. The overall performance rating was 5.7. 'Princess Purple & Gold' (PanAmerican Seed) was best of class, uncontested.

Viola – red-violet/white class. Plant height was 12 cm (4.7 inches) for 'Penny Orchid Frost', plant width was 19 cm (7.4 inches), and flower diameter was 3.3 cm (1.3 inches). The first open flower occurred in 60 d, and flower divergence was 6.8 d. The average foliage rating was 5.3, and the average flower rating was 5.3. The overall foliage/flower rating was 5.3. The average arthropod rating was 6.9, and the average disease rating was 6.4. The overall pest rating was 6.7. The overall performance rating was 6.0. 'Penny Orchid Frost' (Goldsmith Seeds) was best of class, uncontested.

Viola – blue -violet/light violet class. Plant height was 11 cm (4.3 inches) for 'Penny Porcelain', plant width was 17 cm (6.7 inches), and flower diameter was 3.4 cm (1.3 inches). The first open flower occurred in 57 d, and flower divergence was 9.3 d. The average foliage rating was 5.4, and the average flower rating was 4.6. The overall foliage/flower rating was 5.0. The average arthropod rating was 6.6, and the average disease rating was 6.4. The overall pest rating was 6.5. The overall performance rating was 5.7. 'Penny Porcelain' (Goldsmith Seeds) was best of class, uncontested.

Viola – blue violet/yellow class. Plant height was 10 cm (3.9 inches) for 'Princess Lavender Yellow', plant width was 19 cm (7.5 inches), and flower diameter was 3.0 cm (1.2 inches). The first open flower occurred in 71 d, and flower divergence was 7.5 d.

The average foliage rating was 4.7, and the average flower rating was 4.8. The overall foliage/flower rating was 4.8. The average arthropod rating was 6.8, and the average disease rating was 7.0. The overall pest rating was 6.9. The overall performance rating was 5.8. 'Princess Lavender Yellow' (PanAmerican Seed) was best of class, uncontested.

Viola – white class. Plant height was 9 cm (3.5 inches) for 'Penny White', plant width was 15 cm (5.9 inches), and flower diameter was 2.8 cm (1.1 inches). The first open flower occurred in 59 d, and flower divergence was 10.5 d. The average foliage rating was 4.4, and the average flower rating was 4.3. The overall foliage/flower rating was 4.4. The average arthropod rating was 7.0, and the average disease rating was 6.2. The overall pest rating was 6.7. The overall performance rating was 5.5. 'Penny White' (Goldsmith Seeds) was best of class, uncontested.

Viola – white shades (creams) class. Plant height was 10 cm (3.9 inches) for 'Princess Cream', plant width was 15 cm (5.9 inches), and flower diameter was 2.8 cm (1.1 inches). The first open flower occurred in 69 d, and flower divergence was 7.8 d. The average foliage rating was 4.2, and the average flower rating was 5.2. The overall foliage/flower rating was 4.7. The average arthropod rating was 5.9, and the average disease rating was 5.1. The overall pest rating was 5.5. The overall performance rating

was 5.1. 'Princess Cream' (PanAmerican Seed) was best of class, uncontested.

Viola – yellow class. Plant height was 9 cm (3.5 inches) for 'Princess Yellow', plant width was 14 cm (5.5 inches), and flower diameter was 2.8 cm (1.1 inches). The first open flower occurred in 69 d, and flower divergence was 5.0 d. The average foliage rating was 3.5, and the average flower rating was 4.2. The overall foliage/flower rating was 3.8. The average arthropod rating was 5.2, and the average disease rating was 6.6. The overall pest rating was 5.9. The overall performance rating was 4.9. 'Princess Yellow' (PanAmerican Seed) was best of class, uncontested.

Pansy – yellow/purple class. Plant height ranged from 11 cm (4.3 inches) for 'Penny Yellow Jump-Up' to 13 cm (5.1 inches) for 'Gemini Purple Yellow'. Plant width ranged from 19 cm (7.5 inches) for 'Sorbet Lemon Swirl' to 24 cm (9.4 inches) for 'Gemini Purple Yellow'. Flower diameter ranged from 3.1 cm (1.2 inches) for 'Penny Yellow Jump-Up' to 3.6 cm (1.4 inches) for 'Gemini Purple Yellow'. The first open flower ranged from 55 d for 'Sorbet Lemon Swirl' to 60 d for 'Gemini Purple Yellow'. Flower divergence ranged from 5.8 d for 'Sorbet Lemon Swirl' to 10.5 d for 'Gemini Purple Yellow'. Average foliage ratings ranged from 5.0 for 'Penny Yellow Jump-Up' to 5.7 for 'Gemini Purple Yellow'. Average flower ratings ranged from 3.9 for 'Gemini Purple Yellow' to 5.0 for 'Penny Yellow Jump-Up'. Overall foliage/flower ratings ranged from 4.8 for 'Gemini Purple Yellow' to 5.0 for 'Penny Yellow Jump-Up' and 'Sorbet Lemon Swirl'. Average arthropod ratings ranged from 4.8 for 'Gemini Purple Yellow' to 6.2 for 'Sorbet Lemon Swirl'. Average disease ratings ranged from 6.5 for 'Gemini Purple Yellow' and 'Sorbet Lemon Swirl' to 6.9 for 'Penny Yellow Jump-Up'. Overall pest ratings ranged from 5.6 for 'Gemini Purple Yellow' to 6.4 for 'Sorbet Lemon Swirl'. Overall performance ratings ranged from 5.2 for 'Gemini Purple Yellow' to 5.7 for 'Sorbet Lemon Swirl'. 'Sorbet Lemon Swirl' (Ball Seed Company) was best of class.

Conclusions and comments.

Overall Performance and Best of Class Cultivars

While early or late season performance, a particular plant height, or shade of the same color may be a selection criteria outweighing seasonal performance, the combined foliage and flower ratings represent an overall view of performance for each cultivar in its class over the entire season. We consider cultivars with a combined rating average > 5.0 as outstanding, 4.0 to 4.9 as good performers, and < 3.9 as fair to poor. We choose best of class by selecting the cultivar with the highest numerical value for the overall performance rating. This is a summary of overall performance by class and our choice for best of class for those classes trialed this season: **'Scala Mid Blue'** (best of class, uncontested) (pansy – blue, dark class); **'Baby Bingo Sky Blue'** (best of class) and **'Dynamite Beacon Blue'** (pansy – blue shades class); **'Baby Bingo Blue W/B'**, **'Baby Bingo Experimental Marina Shades'** (best of class) and **'Scala Blue'** (pansy – blue w/dark eye class); **'Accord/Banner Black'** (best of class) and **'Halloween'** (pansy – black class); **'Baby Bingo All-Seasons Mixture'** (best of class), **'Baby Bingo Autumn Blaze Mixture'**, **'Baby Bingo Winter Blues Mixture'**, **'Trick or Treat'**, and **'Ultima Impression Mixed'** (pansy – mix class); **'Lavender Cool Shades'** (pansy – purple.class); **'Baby Bingo Denim'**, **'Baby Bingo Experimental Denim'**, **'Baby Bingo Midnight'** and **'Baby Bingo Purple W/Face'** (pansy – purple w/dark eye class); **'Baby Bingo Lavender Blue'** and **'Purple Rain'** (pansy – purple w/light eye class); **'Baby Bingo Beaconsfield'** (pansy – purple/white class); **'Baby Bingo Rose Wing'** and **'Bingo Rose Frost'** (pansy – rose w/blotch class); **'Bingo Clear White'**, **'Dynamite White'**, **'Karma White'**, and **'Scala Pure White'** (pansy – white class); **'Scala Cream'** [pansy – white shades (cream) class]; **'Bingo White W/B'** and **'Scala White W/Blotch'** (pansy – white w/dark eye class); **'Baby Bingo Yellow'** (pansy – yellow class); **'Baby Bingo Red & Yellow'** and **'Bingo Red and Yellow'**; **'Penny Citrus Mix'** (viola – mix class); **'Penny Orange'** (viola – orange class); **'Penny Orange Jump-Up'** (viola – orange/purple class); **'Penny Deep Blue'** (viola – blue, dark); **'Gemini Purple White'** (viola – purple, dark; red-violet/white/yellow); **'Princess Purple & Gold'** (viola – purple, dark; red- violet/yellow); **'Penny Orchid Frost'** (viola – purple, light; red-violet/white); **'Penny Porcelain'** (viola – purple, light; blue- violet/light violet); **'Princess Lavender Yellow'** (viola – purple, light; blue-violet/yellow); **'Penny White'** (viola – white class); **'Princess Cream'** (viola – white shades (creams) class); **'Gemini Purple Yellow'**, **'Penny Yellow Jump-Up'** and **'Sorbet Lemon Swirl'** (viola – yellow/purple). Those cultivars receiving a rating < 5.0, but chosen best in their class were: **'Scala Pure Orange Improved'**, uncontested (pansy – orange class); **'Dynamite Purple'**, (pansy – purple, dark class); **'Dynamite Scarlet'**, (pansy – red, dark class); **'Karma Red Blotch'** (pansy – red with dark eye class); **'Karma Rose'**, uncontested (pansy – rose class); It should be noted that (with the exception of yellow) every class of viola had outstanding performers. A number of cultivars within a class had similar high performance ratings, indicating breeding efforts from different seed companies have resulted in similar outstanding performance for the season, while other classes did not, indicating that more work is needed in their development, if they are to be successful in Central Florida.

Plant pests – arthropods.

Observed pest symptoms were restricted to the flower parts in this trial. Few pests

were detected on the foliage this season. The primary arthropod pest symptoms were from thrips (*Frankiniella bispinosa*). In addition to thrips feeding, feeding was seen by lepidopterous larvae that included southern armyworm [*Spodoptera eridania* (Cramer) (Insecta: Lepidoptera: Noctuidae)].

Plant pests – disease.

Symptoms of gray mold (*Botrytis cinerea*), the primary pathogen this season, were observed on the flowers. It should be noted that violas in general did not display the same level of symptoms in the presence of plant pests during this trial, when compared to pansies.

During this trial we were experiencing a severe drought. Though 27.6 cm (10.9 inches) of rain fell during the evaluation period, it only fell in Mar., and 80 % fell in a two-day period. The lack of normal rainfall may have contributed to better performance, and with less potential infestation of flowers, less inoculum would be present to spread disease to the foliage. Nevertheless, clear differences can be seen in the data.

Heat Tolerance.

After the regular trialing period had ended, observations were made across the replicated plots while walking through the field in early May to see if any attractive cultivars appeared to be strikingly better than others in a class. The following cultivars were observed to maintain an attractive display of foliage and flowers through 6 May: **‘Baby Bingo Blue W/B’** and **‘Baby Bingo Experimental Marina Shades’** (Pansy – blue w/dark eye class); **‘Accord/Banner Black’** (pansy – black class) **‘Lavender Cool Shades’** (Pansy – purple class); **‘Accord/Banner Purple’** (pansy – purple, dark class); **‘Baby Bingo Midnight’** (Pansy – purple w/dark eye class); **‘Baby Bingo Lavender Blue’** (Pansy – purple w/light eye class); **‘Bingo Rose W/B’** (pansy – rose w/blotch class), **‘Bingo Red W/B’** (Pansy – red w/dark eye class); **‘Scala Yellow’** (pansy – yellow class); **‘Bingo Red and Yellow’** (pansy – yellow w/blotch); **‘Scala Pure White’** (pansy – white); **‘Scala White W/Blotch’** (pansy – white w/dark eye); **‘Ultima Impression Mixed’** (pansy – mix class); **‘Princess Cream’** (Viola – white shades (creams) class). 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 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 United States or other parts of the world with similar climatic conditions.

Cultivar Changes.

Since this trial was completed, changes in names or cultivar combinations in mixes have been made to the flowering cultivars: ‘Baby Bingo All -Seasons Mixture’ becomes **‘Panola All-Seasons Mixture’**, and the mixture reworked in 2003, while ‘Baby Bingo Autumn Blaze Mixture’ becomes **‘Panola Autumn Blaze Mixture’**, and ‘Baby Bingo Winter Blues Mixture’ becomes **‘Panola Winter Blues Mix’** (pansy – mix class); ‘Baby Bingo Beaconsfield’ (pansy – purple/white class) becomes **‘Panola Beaconsfield’**; ‘Baby Bingo Blue W/B’ (pansy – blue w/dark eye class) becomes **‘Panola Blue W/B’**

Improved’; ‘Baby Bingo Experimental Marina Shades’ (pansy – blue w/dark eye class) is now **‘Panola Marina Shade s’**; ‘Baby Bingo Fire’ becomes **‘Panola Fire’** (pansy – red w/dark eye class); ‘Baby Bingo Yellow’ becomes **‘Panola Golden Yellow’** (pansy – yellow class).

Note

The information in this report is a summary of experimental results and does not provide recommendations for crop production. Where trade names are used, no discrimination is intended or endorsement implied.

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