

Colorado State University

2013-2014 Cool Season Trials Performance Report



Annual Flower Trial Garden
1401 Remington Street
NE Corner of College Avenue and Lake Street
Colorado State University
Department of Horticulture and Landscape Architecture
Ft. Collins, CO. 80523
www.flowertrials.colostate.edu

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Introduction

This is the sixth year that Colorado State University conducted a Winter Cool Season Trial in ground beds. It marks the fourteenth year that the Gardens are located at the Annual Flower Trial Garden, adjacent to the Center for the Fine Arts at Colorado State University. The overall goal of this project is to determine which varieties of cool season plants are best suited for marketing and growing in this region. Initial data was recorded in October 2013, then approximately every two weeks from February-May 2014 (no data was collected in December 2013 and January 2014 due to snow cover). Irrigation was also monitored throughout this time period and any additional water given to these plants was recorded. This year the cool season trials were evaluated by industry professionals and company representatives on April 21, 2014.

The cool season trials at Colorado State University have no specific operation dollars from state funds. Financial assistance, plant material, and other miscellaneous materials for the trials were acquired from sponsoring seed companies and several Colorado Greenhouse companies. Special thanks to Welby Gardens Inc. for their generous support in growing a flat of each of the cool season varieties. Some operational and staff dollars have come from the Colorado State University Agriculture Experiment Station, Extension, and the Department of Horticulture and Landscape Architecture. Seed companies that participated in this trial were: Benary Seed, Burpee Home Garden, Syngenta Flowers, Pan America Seed.

Cultural Data for the 2013-2014 Winter Pansy Trial Gardens

Planting Dates

All cool season plants were planted on October 8th, 2014. All plants arrived from Welby Gardens as rooted seedlings in cell packs that were 2.25" deep. They were then transplanted into planting beds located in the Annual Flower Trial Garden at 1401 Remington Street. There were 4 plants per cell pack, and 15 cell packs were planted in each row of the beds.

Watering

All watering was monitored. Watering was done when natural precipitation was low and when the ground media was not saturated. The winter of 2013-14 had moderate winter precipitation when compared to other winters. There was snow cover on the bed during most of the month of January and the majority of February. The beds were watered using a frost free line on October 8th, 30th, and January 22. On March 19th, the plants were hand watered using a watering wand. Watering from late-March through May was done with the permanent irrigation system. The irrigation system was typically run for 2 hours on a weekly basis. The irrigation system applies .39in of water per hour.

Dates of Severe Weather

Winter temperatures in 2013-2014 were fairly typical of a normal Colorado winter. This year's extensive snow cover occurred from January-mid February. The first hard freezes, (low temps. below 25°F) after the trials were planted, were recorded on November 6th and 18th, when temperatures were recorded to be 19°F and 22°F respectively. Extreme cold temperatures are listed in the table below. Wind-chill factors are not included but can be quite significant in Colorado's winter climate. One later freeze of 15°F was recorded on 3/15 which occurred while a majority of the entries were in half bloom. This later freeze seemed to damage some of the flowers on a handful of entries, but no other significant frost damage was noticed.

Dates of temperatures at 5°F or lower:

Date	Low	Date	Low	Date	Low	Date	Low	Date	Low
12/4/13	-6	12/9/13	-4	1/24/14	3	2/4/14	-6	3/1/14	3
12/5/13	-8	12/10/13	0	1/28/14	-4	2/5/14	-11	3/2/14	3
12/6/13	-5	12/11/13	5	1/29/14	3	2/6/14	-11		
12/7/13	-9	1/5/14	-9	2/2/14	4	2/7/14	-11		
12/8/13	1	1/6/14*	-15*	2/3/14	1	2/26/14	3		

*Lowest recorded temp of the winter.

Weather Data November – May

October 2013

Ave Max T = 59.7°F
 Ave Min T = 35.0 °F
 Ave MeanT = 47.3 °F
 Max Max T = 77.0 °F
 Min Min T = 26.0 °F
 Total Prec= 1.68 in.
 Max Prec= 0.49 in.

November 2013

Ave Max T = 54.0 °F
 Ave Min T = 26.3 °F
 Ave Mean T = 40.1 °F
 Max Max T = 67.0 °F
 Min Min T = 14.0 °F
 Total Prec= 0.22 in.
 Max Prec= 0.21 in.

December 2013

Ave Max T = 41.2 °F
 Ave Min T = 14.7 °F
 Ave Mean T = 27.9 °F
 Max Max T = 63 °F
 Min Min T = -8°F
 Total Prec= 0.45 in.
 Max Prec= 0.34 in.

January 2014

Ave Max T = 46.3 °F
 Ave Min T = 18.5 °F
 Ave MeanT = 32.4 °F
 Max Max T = 65 °F
 Min Min T = -6 °F
 Total Prec= 1.43 in.
 Max Prec= 0.64 in.

February 2014

Ave Max T = 42.2 °F
 Ave Min T = 16.2 °F
 Ave MeanT = 29.2 °F
 Max Max T = 64°F
 Min Min T = -14 °F
 Total Prec= 0.30 in.
 Max Prec= 0.12 in.

March 2014

Ave Max T = 54 °F
 Ave Min T = 25 °F
 Ave MeanT = 40 °F
 Max Max T = 73 °F
 Min Min T = 3 °F
 Total Prec= 0.93 in.
 Max Prec= 0.55 in.

April 2014

Ave Max T = 62 °F
 Ave Min T = 34 °F
 Ave Mean T = 48 °F
 Max Max T = 78°F
 Min Min T = 15 °F
 Total Prec= 0.28 in.
 Max Prec= 0.15 in.

Data Collection Methods from Planting through Evaluation Day

Tom Zimmermann (undergraduate Environmental Horticulture student) collected data throughout the 2013-14 cool season trial. The data categories collected included: overall rating (1-5), as well as frost dieback ratings as a percentage and percent flower coverage.

The overall rating scoring was: 1=poor condition (dying), 2=weak condition (struggling with some dieback), 3=average (few to no flowers with healthy foliage), 4=good condition (progressing flowers with healthy foliage growth), and 5=great condition (many flowers with healthy uniform foliage growth).

The frost damage/ dieback was based on the number of the all plants per entry row that showed visible frost damage (dead plant material).

The frost damage/ dieback rating was recorded beginning in November of 2013 through mid-April of 2014. Plants were rated as: 1= little dieback to no dieback, 2= some dieback, 3= visible dieback, 4= significant dieback, 5= dead (all brown).

Bloom percentage was rated as first bloom=one bloom is visible on any plant in the variety in the spring, 50% bloom=variety appears to average 4 blooms/cell pack, and 100% bloom=variety has full flower coverage.

Conclusion

This was a successful year for the cool season due to the earlier planting date of all entries on October 8, 2013. With this earlier planting date entries were able to become more successfully rooted and established before the first hard freeze of the winter. In addition to the earlier planting date the consistent snow cover through Colorado's coldest months of January and February also helped provide protection to the entries during this cold period. In the spring it was evident that the plants received adequate winter protection and water from the snow because many of the entries quickly developed attractive, full blooms in the spring. It was the opinion of the advisory committee that the cool season trials should continue in 2014-2015. In addition to the continued growth of the cool season there is a push to find additional cool season plants along with Violas and Pansies to trial in future years.

2013-2014 Cool Season Best Of's

Best of Show Pansy: Pansy Inspire® Purple & White

Nothing says “Best Of” like 100% survival through the winter. This Pansy has very bright and high contrasting blue white flowers. The flowers seem to have a blue top and a white bottom that make them very noticeable from across the whole garden.

Best Blue/Violet Pansy: Pansy Inspire® True Blue

This Pansy seemed to have the largest flowers out of all the Pansys, these large blue flowers made this plant a standout. In addition to the large flowers it was also noted that it had the ‘truest blue flower’. This Pansy also displayed a very uniform and upright growth habit.

Best Yellow Pansy: Pansy Cool Wave™ Golden Yellow

The first thing that everyone will notice about this Pansy is the profusion of large, attractive flowers. Not only are there many flowers, but the flowers are a bright golden yellow that is sure to catch garden visitor’s eyes. This Pansy was also very vigorous and displayed a spreading growth habit.

Best of Show Viola: Viola Sorbet XP Morpho

This Viola was described as a sturdy, small, uniform plant. The flower color is a very rich combination of deep blue and canary yellow. This color combination gave the plant great contrast, allowing it to become a garden favorite. This Viola also had 100% survival during the winter.

Best Blue/Violet Viola: Viola Penny Deep Marina

One evaluator described this plant as, “Cute, cute, cute!” and “Perfect for homeowners!” This Viola had a unique flower color combination of deep purple, purple, and white. The plants were very uniform in growth habit and each plant was just blanketed in flowers.

Best Yellow Viola: Viola Popsicles Yellow

This Viola seemed to have to most intense yellow flower color. The yellow flowers had a golden yellow throat that made it standout. All of the flowers were displayed perfectly on top of the foliage of the plant. It was also noted that this Viola was a great, sturdy plant.

For photos of these plants visit www.flowertrials.colostate.edu. – Best Pansy/Viola

Overall Rating by Evaluators and Evaluator Comments

Genus	Cultivar	Company Name	New	Bloom Dates			Rating **	Evaluators' Comments on 4/21/2014
				1st	50%	100%		
Dianthus	Dash Crimson	PanAmerican Seed	New				2.5	Small and non-uniform growth habit. Moderate winter survival and moderate dieback. Surviving plants have many flower buds but no flowers in bloom at this date.
Dianthus	Dash Magician	PanAmerican Seed	New				4.62	All plants survived the winter, although with some winter dieback. Plants were uniform in growth habit. Lots of flower buds on plants but no flowers at this date.
Pansy	Colossus Tricolor Improved	Syngenta Flowers		3/6/14	4/17/14		6.5	Very interesting flower color variation. Non-uniform growth habit. Lots of blooms and larger flowers.
Pansy	Colossus Yellow with Blotch Improved	Syngenta Flowers		2/25/14	4/3/14		5.43	Large flowers but plants lack uniformity. Flowers have a nice and attractive bi-color. Some plants did not survive the winter and appear weaker.
Pansy	Cool Wave™ Golden Yellow	PanAmerican Seed	New	2/25/14	4/10/14	4/17/14	8	A vigorous, spreading plant that was very floriferous. Blooms are very large and a very bright yellow color. One of the better performing yellow pansies.
Pansy	Cool Wave™ Purple	PanAmerican Seed	New	3/6/14	4/10/14		5.18	Small deep purple flowers, but fewer. Plants have a more open/prostrate growth habit. Non-uniform growth habit.
Pansy	Delta Premium Pure Lemon Improved	Syngenta Flowers		2/25/14	4/10/14		6.62	Plants have large blooms with a full growth habit. Plants overwintered well and displayed an attractive lemon flower color. A solid performer with good flower facing and peduncle length.
Pansy	Inspire® Blue Angel	Benary		3/6/14	4/10/14	4/17/14	7.68	Very floriferous, can't see the foliage through the flowers. Pastel flower edge provides great contrast. Some flower color is fading. Good growth habit and good peduncle length.
Pansy	Inspire® Blue Velvet	Benary		3/6/14	4/17/14		5.37	Small compact plants, very mounded growth habit. Lots of blooms. 100% winter survival.
Pansy	Inspire® Blue with Blotch	Benary		2/25/14	4/3/14	4/17/14	6.81	Wow! Great deep purple flower color and larger flowers. Uniform growth habit. All the flowers were facing forward, and had shorter peduncles.
Pansy	Inspire® Carmine with Blotch	Benary		3/6/14	4/10/14		6.87	Plants a little more non-uniform in growth habit. Lots of flowering. Flowers have attractive deep rose colors with slight yellow eye. Plants have a good peduncle length and uniform in facing.

**Ratings = 1 (poor) to 10 (excellent) on evaluation day by evaluators

Overall Rating by Evaluators and Evaluator Comments

Genus	Cultivar	Company Name	New	Bloom Dates			Rating **	Evaluators' Comments on 4/21/2014
				1st	50%	100%		
Pansy	Inspire® Deep Orange	Benary		3/27/14	4/10/14		5.18	Small and non-uniform growth habit, didn't over winter well. Great orange, smaller flower color with a good peduncle length.
Pansy	Inspire® Golden Yellow	Benary		2/25/14	4/10/14		5.43	Plant has moderate vigor and are slightly non-uniform. Flowers are golden in color and do not completely cover the plant.
Pansy	Inspire® Lemon with Blotch	Benary		3/6/14	4/3/14	4/17/14	6.68	Plant is very uniform in growth habit and very floriferous. Plants have yellow and primrose colored flowers. Flower pattern is stable and has great aesthetics.
Pansy	Inspire® Lilac with Blotch	Benary		3/13/14	4/10/14		4	Only 60% of plants made it through the winter. Plants are small and non-uniform in growth habit. Plants have small and fewer flowers.
Pansy	Inspire® Purple & Orange	Benary		3/6/14	4/10/14		6.12	Some variability in plant size with medium size flowers. Flowers are an interesting bi-color of deep purple and orange. A very interesting flower color combo.
Pansy	Inspire® Purple & White	Benary		2/25/14	4/3/14	4/17/14	8.5	Wow! Tons of flowers. Flowers are large and a great bi-color. Blooms have excellent peduncle length. Plants overwintered very well with 100% winter survival. Plants had a mounded growth habit.
Pansy	Inspire® Red with Blotch	Benary		3/6/14	4/17/14		5.31	Some winter loss, about 25% of plants lost. Smaller plants but attractive flowers. Great deep red flower color stands above all other red blooming pansys. Not as uniform in growth habit.
Pansy	Inspire® True Blue	Benary		3/6/14	4/3/14	4/10/14	7.62	Very showy! Best blue flowers, flowers are large but have some color variation and some lack of uniformity.
Pansy	Inspire® White	Benary		3/6/14	4/17/14		4.43	Plants lack vigor and appear stunted. May have had trouble overwintering. Flowers are small and the majority of the flower are already spent.
Pansy	Inspire® White with Blotch	Benary		3/6/14	4/17/14		5.06	Some plants have a more variable growth habit. Plants display moderate vigor. Larger flowers but slightly droppy.
Pansy	Inspire® Yellow with Blotch	Benary		2/25/14	4/10/14	4/17/14	4.43	Smaller plants and lacked uniformity. Few plants didn't survive the winter. Weakest of all yellow blotch pansies with some death.
Pansy	Inspire® Deep Blue with Blotch	Benary		3/6/14	4/17/14		5.93	Smaller plants with larger flowers. Flowers have nice deep blue color with a yellow eye and shorter peduncles.

**Ratings = 1 (poor) to 10 (excellent) on evaluation day by evaluators

Overall Rating by Evaluators and Evaluator Comments

Bloom Dates

Genus	Cultivar	Company Name	New	1st	50%	100%	Rating **	Evaluators' Comments on 4/21/2014
Pansy	Inspire®Terracotta	Benary		3/13/14	4/10/14		4.87	Plants have an irregular growth habit. Flower color is faded and washed out. Flowers were described as messy looking. Plants didn't withstand late season frost well.
Pansy	Inspire®White with Red Blotch	Benary		3/27/14	4/17/14		4.68	Non uniform growth habit with low vigor. Not as strong in overwintering. Smaller flowers but flowers have a unique and eye catching color combination of white with a red blotch.
Pansy	Inspire®Yellow with Red Wing	Benary		3/6/14	4/17/14		4.68	Small, weak plants with fewer flowers. What flowers that are present are larger in size. Flowers pattern isn't especially showy or attractive.
Pansy	Karma Lemon	Syngenta Flowers		2/25/14	4/10/14		5.87	Plant lacks uniformity and moderate in flowering. Flowers have an attractive pastel yellow color.
Pansy	Karma Red with Blotch Improved	Syngenta Flowers		3/13/14	4/17/14		5	Smaller plants with irregular growth habit. Plants lack vigor have some color variation within the flowers.
Pansy	Karma White with Blotch	Syngenta Flowers		3/6/14	4/17/14		5.56	Good flower presentation. Most successful and attractive of the white flowering pansy's. Plants appear to have moderate vigor and lack uniformity.
Pansy	Matrix Lavender Shades	PanAmerican Seed	New	2/25/14	4/10/14		5.62	Smaller, compact plants with larger flowers, attractive flower color variations. Smaller growth habit.
Pansy	Matrix Yellow Blotch Improved	PanAmerican Seed	New	2/25/14	3/27/14	4/17/14	6.37	Strong flowering with a uniform growth habit. Plants, "Bulked well after winter" described one evaluator. Flowers were large and a great peduncle length with good winter survival.
Pansy	Spring Matrix Blue Wing	PanAmerican Seed	New	3/6/14	4/10/14	4/17/14	7.06	Great larger flower size. Some variation to the flower color and fading to the color. Plants are vigorous and have good growth habit.
Pansy	Spring Matrix Rose Blotch	PanAmerican Seed	New	3/6/14	4/17/14		6.93	Flowers described having a soft romantic feel. Plants are floriferous and have an attractive color variation. Plants overwintered well. Plants have a uniform growth habit, great facing and peduncle length.
Pansy	WonderFall Blue with Blotch	Syngenta Flowers		2/25/14	4/3/14	4/17/14	5.31	Non uniform growth, habit a bit open looking, plant is more stretchy to open. Moderate flowering with long peduncles.

**Ratings = 1 (poor) to 10 (excellent) on evaluation day by evaluators

Overall Rating by Evaluators and Evaluator Comments

Genus	Cultivar	Company Name	New	Bloom Dates			Rating **	Evaluators' Comments on 4/21/2014
				1st	50%	100%		
Pansy	Wonderfall Yellow	Syngenta Flowers		2/25/14	4/10/14	4/17/14	8.31	Plants had a great and full uniform growth habit with many flowers. The flower coverage was excellent. 100% winter survival. Rich yellow color that creates an eye catching display. Flowers had excellent facing.
Pansy	Wonderfall Yellow with Blotch	Syngenta Flowers		3/6/14	4/10/14	4/17/14	6.81	Vigorous pansy that is very floriferous. Plants had a mounding growth habit. Flowers are smaller with lighter yellow flower color.
Viola	Exp. Deep Blue with Blotch	Benary		3/6/14	4/3/14	4/10/14	6.93	Very floriferous, flowers have an intense, deep purple color. Blotch is difficult to see, with the deep purple flower color. Plant has more prostrate growth habit and longer peduncle.
Viola	Exp. Marina	Benary		3/6/14	4/3/14	4/10/14	7.5	Plant has very uniform growth habit and is floriferous. Flowers are larger and have a noticeable eye to them. Plants overwintered well.
Viola	Exp. Orange with Purple Wing	Benary		3/6/14	4/3/14	4/17/14	6.62	Small plant, smaller flowers but uniform growth habit. Unique flower color, purple and orange flowers described as cute, danty, and great color contrast. Plants overwintered well.
Viola	Exp. Pink	Benary		3/6/14	4/17/14		4.5	Plant not uniform in growth habit and looking weak and not floriferous. Flowers more sparse.
Viola	Exp. Pink with White Face	Benary		3/6/14	4/10/14	4/17/14	7.18	Floriferous plant but flower color seems to fade. Flower color seems to fade with age. Plant has uniform growth habit and excellent vigor.
Viola	Exp. Purple with Blotch & Blue Face	Benary		3/6/14	4/10/14	4/17/14	6.25	Weaker plant with non-uniform growth habit. Sparse flowering but flowers are bold in color. Stronger purple, blue flower combination.
Viola	Exp. Red with Blotch & Yellow Face	Benary		3/6/14	4/3/14	4/10/14	7.37	A plant with flower color contrast and that is floriferous. The plant also displays a uniform growth habit and holds the flowers above the foliage. Flower color is striking and eye catching.
Viola	Exp. Yellow	Benary		2/25/14	4/3/14	4/17/14	7	This plant had a larger and more uniform growth habit. Flowers were attrctive and bright yellow but smaller. Flowers were not held above the foliage well, with much of the foliage visible.

**Ratings = 1 (poor) to 10 (excellent) on evaluation day by evaluators

Overall Rating by Evaluators and Evaluator Comments

Genus	Cultivar	Company Name	New	Bloom Dates			Rating **	Evaluators' Comments on 4/21/2014
				1st	50%	100%		
Viola	Penny Deep Marina	Syngenta Flowers		2/25/14	4/3/14	4/10/14	8	A very floriferous and uniform plant. Plants hold their purple flowers above the foliage well. The flowers completely cover the plant.
Viola	Penny Primrose with Blotch	Syngenta Flowers		3/6/14	4/10/14	4/17/14	5.56	Plants with lower vigor but a compact growth habit. Plants were described as dainty. Lighter yellow flowers were dense but were not especially showy.
Viola	Popsicles Frost	Burpee Home Garden	New	3/6/14	4/10/14	4/17/14	7.56	A very floriferous viola that was slightly non-uniform. Plants had larger peduncles that displayed flowers well. Flowers were mostly lavender with some shades of blue. 100% winter survival.
Viola	Popsicles Purple Face	Burpee Home Garden	New	3/6/14	4/10/14	4/17/14	6.87	Larger plants with moderate flowering. Some variation to flower colors. Flowers held well above the foliage with longer peduncles. Attractive color combination.
Viola	Popsicles Purple/Yellow	Burpee Home Garden	New	3/6/14	4/10/14	4/17/14	7	Larger plants with moderate flowering. Plants had a slightly irregular growth habit. Very attractive bi-color flowers, though flowers are smaller. Yellow petals contrast well with the purple petals. Smaller flowers held well above the foliage.
Viola	Popsicles Red/Fire	Burpee Home Garden	New	3/13/14	4/10/14	4/17/14	6.37	Uniform growth habit, and floriferous. Some winter loss, approximately 30%. Unique flower color with some variation in the flowers. Flowers described as Halloween colors.
Viola	Popsicles White	Burpee Home Garden	New	3/6/14	4/10/14	4/17/14	5	Smaller plants with irregular growth habit. The plants look tattered and have sparse flowering. Not many flowers and flowers had inconsistent color.
Viola	Popsicles Yellow	Burpee Home Garden	New	2/25/14	3/27/14	4/10/14	8.31	The plant had a lot of flower power. Plants had bright yellow/gold flower color making it stand out. Plants were vigorous and completely covered in flowers. This plant stood out due to the multitude of flowers held above the foliage with a mounded habit.
Viola	Sorbet XP Black Delight Imp.	PanAmerican Seed		3/6/14	4/3/14	4/10/14	6.43	Unique black flower color, some blooms not as stable and are deep purple. Uniform growth habit with flowers held above the foliage.

**Ratings = 1 (poor) to 10 (excellent) on evaluation day by evaluators

Overall Rating by Evaluators and Evaluator Comments

Bloom Dates

Genus	Cultivar	Company Name	New	1st	50%	100%	Rating **	Evaluators' Comments on 4/21/2014
Viola	Sorbet XP Denim	PanAmerican Seed		3/6/14	4/10/14	4/17/14	6	Plants were non-uniform in their growth habit and had sparse flowering. Flowers were attractive but beginning to fade. Some winter kill on the plants.
Viola	Sorbet XP Lemon Ice Blotch	PanAmerican Seed	New	2/25/14	3/27/14	4/17/14	6.43	This plant had a uniform growth habit and was floriferous. The flowers had a strong color and an attractive splotch. The plant had good flower presentation.
Viola	Sorbet XP Marina Improved	PanAmerican Seed	New	3/6/14	4/3/14	4/10/14	6.56	Smaller plants with a compact growth habit. A floriferous plant with tall peduncles that support the flowers well. Many flowers with little foliage showing.
Viola	Sorbet XP Morpho	PanAmerican Seed	New	2/25/14	3/27/14	4/17/14	8.37	Plants were very uniform in growth habit and were covered in flowers. Color combination provided great contrast and very uniform. 100% winter survival.
Viola	Sorbet XP Primrose Blotch	PanAmerican Seed	New	2/25/14	3/27/14	4/17/14	6.06	Moderate flowering and non-uniform growth habit. Flowers were more yellow than primrose, and began to fade.
Viola	Sorbet XP Red Blotch	PanAmerican Seed		3/6/14	4/3/14	4/17/14	6.75	Floriferous plant with uniform growth habit. Plants are small but hold flowers well above the foliage. Flowers are a red color and held the color well through the spring.
Viola	Sorbet XP White Blotch	PanAmerican Seed	New	2/25/14	4/10/14	4/17/14	6	Vigorous plant with an open/loose growth habit. Most attractive white flower out of the violas. Small blotch on the flowers, and flowers have good facing.

Weekly Overall Appearance Data

Genus	Cultivar	Company Name	New	11/7	12/2	12/18	2/18	2/25	3/6	3/13	3/27	4/3	4/10	4/17
Dianthus	Dash Crimson	PanAmerican Seed	New	3	3	2	2	2	1	1	1	2	2	4
Dianthus	Dash Magician	PanAmerican Seed	New	3	3	2	3	2	2	2	2	3	3	4
Pansy	Colossus Tricolor Improved	Syngenta Flowers		3	3	2	3	3	2	3	2	2	4	5
Pansy	Colossus Yellow with Blotch Improved	Syngenta Flowers		3	3	2	3	3	2	3	3	3	4	5
Pansy	Cool Wave™ Golden Yellow	PanAmerican Seed	New	3	3	2	3	3	2	3	2	3	3	4
Pansy	Cool Wave™ Purple	PanAmerican Seed	New	3	3	2	2	3	2	3	2	3	1	1
Pansy	Delta Premium Pure Lemon Improved	Syngenta Flowers		3	3	2	3	3	2	3	3	3	4	4
Pansy	Inspire® Blue Angel	Benary		3	3	2	3	3	2	2	2	2	2	3
Pansy	Inspire® Blue Velvet	Benary		3	3	2	3	3	2	3	2	2	2	3
Pansy	Inspire® Blue with Blotch	Benary		2	3	2	3	3	3	3	3	3	3	4
Pansy	Inspire® Carmine with Blotch	Benary		3	3	0	3	3	2	3	2	3	4	5
Pansy	Inspire® Deep Orange	Benary		3	3	2	3	3	2	2	2	2	2	3
Pansy	Inspire® Golden Yellow	Benary		3	3	2	2	3	2	3	2	2	4	5
Pansy	Inspire® Lemon with Blotch	Benary		3	3	2	3	3	2	3	3	3	4	5
Pansy	Inspire® Lilac with Blotch	Benary		3	3	2	2	2	2	2	2	2	3	3
Pansy	Inspire® Purple & Orange	Benary		2	2	2	2	3	2	2	2	2	3	4
Pansy	Inspire® Purple & White	Benary		3	3	2	3	3	2	3	3	3	3	4
Pansy	Inspire® Red with Blotch	Benary		3	3	2	2	3	2	2	2	2	2	3
Pansy	Inspire® True Blue	Benary		2	2	2	3	3	2	3	3	4	3	4
Pansy	Inspire® White	Benary		3	3	0	3	3	2	2	2	2	3	3
Pansy	Inspire® White with Blotch	Benary		3	3	0	3	3	2	2	2	2	3	3

**Ratings = 1 (poor) to 5 (excellent)

Weekly Overall Appearance Data

Genus	Cultivar	Company Name	New	11/7	12/2	12/18	2/18	2/25	3/6	3/13	3/27	4/3	4/10	4/17
Pansy	Inspire® Yellow with Blotch	Benary		3	3	2	2	3	2	2	2	2	3	3
Pansy	Inspire® Deep Blue with Blotch	Benary		3	3	2	3	3	2	2	2	2	3	4
Pansy	Inspire® Terracotta	Benary		3	3	2	3	3	2	3	2	2	3	4
Pansy	Inspire® White with Red Blotch	Benary		3	2	0	3	3	2	2	2	2	3	4
Pansy	Inspire® Yellow with Red Wing	Benary		3	3	2	2	3	2	3	2	2	3	3
Pansy	Karma Lemon	Syngenta Flowers		3	3	2	3	3	2	3	3	3	2	3
Pansy	Karma Red with Blotch Improved	Syngenta Flowers		3	3	2	3	3	2	3	2	2	3	3
Pansy	Karma White with Blotch	Syngenta Flowers		3	3	2	3	3	2	2	2	2	3	4
Pansy	Matrix Lavender Shades	PanAmerican Seed	New	3	3	2	3	3	2	3	2	2	3	4
Pansy	Matrix Yellow Blotch Improved	PanAmerican Seed	New	3	2	2	2	3	2	3	3	3	3	5
Pansy	Spring Matrix Blue Wing	PanAmerican Seed	New	2	2	0	3	3	2	3	2	2	4	5
Pansy	Spring Matrix Rose Blotch	PanAmerican Seed	New	3	3	0	3	3	2	3	2	3	2	3
Pansy	WonderFall Blue with Blotch	Syngenta Flowers		3	3	2	3	3	2	3	3	4	4	5
Pansy	Wonderfall Yellow	Syngenta Flowers		3	3	0	3	3	2	3	3	4	4	5
Pansy	Wonderfall Yellow with Blotch	Syngenta Flowers		3	3	2	2	3	2	3	2	2	4	5
Viola	Exp. Deep Blue with Blotch	Benary		3	4	2	2	3	2	3	3	4	4	5
Viola	Exp. Marina	Benary		3	3	2	2	3	2	3	3	4	4	4
Viola	Exp. Orange with Purple Wing	Benary		3	3	2	3	3	2	3	2	3	5	5
Viola	Exp. Pink	Benary		3	3	2	2	2	2	2	2	2	4	4
Viola	Exp. Pink with White Face	Benary		3	3	2	2	2	2	2	2	3	3	4
Viola	Exp. Purple with Blotch & Blue Face	Benary		3	3	2	2	3	2	2	2	3	4	5

**Ratings = 1 (poor) to 5 (excellent)

Weekly Overall Appearance Data

Genus	Cultivar	Company Name	New	11/7	12/2	12/18	2/18	2/25	3/6	3/13	3/27	4/3	4/10	4/17
Viola	Exp. Red with Blotch & Yellow Face	Benary		3	3	2	2	3	2	3	3	4	4	4
Viola	Exp. Yellow	Benary		3	3	2	3	3	2	3	2	4	3	4
Viola	Penny Deep Marina	Syngenta Flowers		3	3	2	3	3	2	3	3	4	5	5
Viola	Penny Primrose with Blotch	Syngenta Flowers		3	3	2	2	3	2	2	2	3	4	5
Viola	Popsicles Frost	Burpee Home Garden	New	3	3	2	3	3	2	3	3	3	1	1
Viola	Popsicles Purple Face	Burpee Home Garden	New	3	3	2	2	3	2	2	2	3	4	5
Viola	Popsicles Purple/Yellow	Burpee Home Garden	New	3	2	2	3	3	2	2	2	3	5	5
Viola	Popsicles Red/Fire	Burpee Home Garden	New	3	2	2	2	3	2	3	2	3	1	1
Viola	Popsicles White	Burpee Home Garden	New	3	2	2	2	3	2	2	2	3	4	4
Viola	Popsicles Yellow	Burpee Home Garden	New	3	3	2	3	3	2	3	3	4	4	5
Viola	Sorbet XP Black Delight Imp.	PanAmerican Seed		3	2	2	2	3	2	3	2	4	4	4
Viola	Sorbet XP Denim	PanAmerican Seed		3	3	2	2	3	2	2	2	3	3	4
Viola	Sorbet XP Lemon Ice Blotch	PanAmerican Seed	New	3	3	2	3	3	2	3	2	3	3	3
Viola	Sorbet XP Marina Improved	PanAmerican Seed	New	3	2	0	3	3	2	3	2	3	3	4
Viola	Sorbet XP Morpho	PanAmerican Seed	New	3	3	2	3	3	2	3	3	4	3	4
Viola	Sorbet XP Primrose Blotch	PanAmerican Seed	New	3	3	0	3	3	2	3	3	3	3	4
Viola	Sorbet XP Red Blotch	PanAmerican Seed		3	2	2	3	3	2	3	3	3	4	4
Viola	Sorbet XP White Blotch	PanAmerican Seed	New	3	4	2	2	3	2	2	2	3	3	3

**Ratings = 1 (poor) to 5 (excellent)

Weekly Frost Damage Data

Genus	Cultivar	Company Name	New	11/7	12/2	12/18	2/18	2/25	3/6	3/13	3/27	4/3
Dianthus	Dash Crimson	PanAmerican Seed	New	0	1	1	3	4	4	4	5	4
Dianthus	Dash Magician	PanAmerican Seed	New	0	1	1	1	3	3	3	3	3
Pansy	Colossus Tricolor Improved	Syngenta Flowers		0	1	0	1	2	1	1	2	2
Pansy	Colossus Yellow with Blotch Improved	Syngenta Flowers		0	1	1	2	3	1	1	2	2
Pansy	Cool Wave™ Golden Yellow	PanAmerican Seed	New	0	1	0	1	2	1	2	2	2
Pansy	Cool Wave™ Purple	PanAmerican Seed	New	0	1	0	1	2	1	2	3	3
Pansy	Delta Premium Pure Lemon Improved	Syngenta Flowers		0	0	0	1	2	1	2	2	1
Pansy	Inspire® Blue Angel	Benary		0	1	1	2	3	1	2	3	3
Pansy	Inspire® Blue Velvet	Benary		0	1	1	1	2	2	1	2	2
Pansy	Inspire® Blue with Blotch	Benary		0	1	1	1	2	1	1	2	2
Pansy	Inspire® Carmine with Blotch	Benary		0	1	0	1	2	1	1	3	2
Pansy	Inspire® Deep Orange	Benary		0	1	0	1	2	2	3	3	3
Pansy	Inspire® Golden Yellow	Benary		0	0	0	1	2	1	2	3	2
Pansy	Inspire® Lemon with Blotch	Benary		0	1	1	1	3	2	2	2	2
Pansy	Inspire® Lilac with Blotch	Benary		0	1	1	1	3	4	4	4	4
Pansy	Inspire® Purple & Orange	Benary		0	1	1	2	3	1	3	3	3
Pansy	Inspire® Purple & White	Benary		0	1	1	2	3	1	2	2	2
Pansy	Inspire® Red with Blotch	Benary		0	1	1	2	3	2	3	4	3
Pansy	Inspire® True Blue	Benary		0	1	1	1	2	1	1	2	1
Pansy	Inspire® White	Benary		0	1	0	1	2	1	3	3	2
Pansy	Inspire® White with Blotch	Benary		0	1	0	1	2	1	2	3	2

**Ratings = 1 (little to no dieback) to 5 (Dead)

Weekly Frost Damage Data

Genus	Cultivar	Company Name	New	11/7	12/2	12/18	2/18	2/25	3/6	3/13	3/27	4/3
Pansy	Inspire® Yellow with Blotch	Benary		0	1	1	1	2	2	3	3	4
Pansy	Inspire® Deep Blue with Blotch	Benary		0	1	1	1	2	3	3	3	3
Pansy	Inspire® Terracotta	Benary		0	1	1	1	2	1	2	2	2
Pansy	Inspire® White with Red Blotch	Benary		0	1	0	1	2	2	3	3	3
Pansy	Inspire® Yellow with Red Wing	Benary		0	1	0	1	2	2	2	2	2
Pansy	Karma Lemon	Syngenta Flowers		0	1	0	1	2	1	1	2	1
Pansy	Karma Red with Blotch Improved	Syngenta Flowers		0	1	1	1	2	1	2	2	2
Pansy	Karma White with Blotch	Syngenta Flowers		0	1	1	1	2	2	3	3	3
Pansy	Matrix Lavender Shades	PanAmerican Seed	New	0	1	1	1	2	1	1	2	3
Pansy	Matrix Yellow Blotch Improved	PanAmerican Seed	New	0	1	1	2	3	1	2	1	1
Pansy	Spring Matrix Blue Wing	PanAmerican Seed	New	0	0	0	1	2	1	1	2	2
Pansy	Spring Matrix Rose Blotch	PanAmerican Seed	New	0	1	0	1	2	1	1	2	2
Pansy	WonderFall Blue with Blotch	Syngenta Flowers		0	1	1	1	2	1	2	1	1
Pansy	Wonderfall Yellow	Syngenta Flowers		0	1	0	1	2	1	1	1	1
Pansy	Wonderfall Yellow with Blotch	Syngenta Flowers		0	1	1	1	2	1	1	1	2
Viola	Exp. Deep Blue with Blotch	Benary		0	0	0	1	2	2	2	2	2
Viola	Exp. Marina	Benary		0	1	0	1	2	1	2	2	1
Viola	Exp. Orange with Purple Wing	Benary		0	1	1	1	3	2	1	0	2
Viola	Exp. Pink	Benary		0	1	1	2	3	3	4	4	4
Viola	Exp. Pink with White Face	Benary		0	1	1	2	3	2	3	3	2
Viola	Exp. Purple with Blotch & Blue Face	Benary		0	1	0	1	2	2	3	3	2

**Ratings = 1 (little to no dieback) to 5 (Dead)

Weekly Frost Damage Data

Genus	Cultivar	Company Name	New	11/7	12/2	12/18	2/18	2/25	3/6	3/13	3/27	4/3
Viola	Exp. Red with Blotch & Yellow Face	Benary		0	0	0	1	2	1	2	2	2
Viola	Exp. Yellow	Benary		0	0	0	1	2	1	1	2	1
Viola	Penny Deep Marina	Syngenta Flowers		0	0	0	1	2	1	1	2	1
Viola	Penny Primrose with Blotch	Syngenta Flowers		0	0	0	1	2	1	2	3	3
Viola	Popsicles Frost	Burpee Home Garden	New	0	0	0	1	2	1	2	2	1
Viola	Popsicles Purple Face	Burpee Home Garden	New	0	0	1	2	3	3	3	3	2
Viola	Popsicles Purple/Yellow	Burpee Home Garden	New	0	0	0	1	2	2	3	2	1
Viola	Popsicles Red/Fire	Burpee Home Garden	New	0	1	1	2	3	1	1	3	2
Viola	Popsicles White	Burpee Home Garden	New	0	1	1	1	2	1	2	3	2
Viola	Popsicles Yellow	Burpee Home Garden	New	0	0	0	1	2	1	2	2	1
Viola	Sorbet XP Black Delight Imp.	PanAmerican Seed		0	0	1	1	2	1	2	2	1
Viola	Sorbet XP Denim	PanAmerican Seed		0	1	1	1	2	2	3	3	2
Viola	Sorbet XP Lemon Ice Blotch	PanAmerican Seed	New	0	0	1	1	2	1	1	2	2
Viola	Sorbet XP Marina Improved	PanAmerican Seed	New	0	0	0	1	2	1	2	2	2
Viola	Sorbet XP Morpho	PanAmerican Seed	New	0	1	0	1	2	1	2	0	2
Viola	Sorbet XP Primrose Blotch	PanAmerican Seed	New	0	1	0	1	2	1	1	2	2
Viola	Sorbet XP Red Blotch	PanAmerican Seed		0	1	1	2	3	1	1	2	1
Viola	Sorbet XP White Blotch	PanAmerican Seed	New	0	0	1	1	2	1	2	2	2

**Ratings = 1 (little to no dieback) to 5 (Dead)