

# Coneflowers 2020

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## Description of the Evaluation Project

WOOSTER, OH--In 2019, Secrest Arboretum (located at 40°46'56.4"N 81°55'10.2"W; USDA Hardiness Zone 6a) began a three-year evaluation of select *Echinacea* cultivars. The primary goal of the study is to recommend superior taxa (selections) based on the following observations: winter hardiness, floral display (including flower size, quantity, color, and bloom period), ability to attract pollinators, disease resistance, and overall plant habit (including height and width, foliage quality, stem strength—the need for staking or pinching). Ratings shall be based on a scale of 1-5 where 1=very poor, 2=poor, 3=fair, 4=good, 5=excellent.

108 cultivars and one species (*Echinacea purpurea*) were planted in June 2019 and will be evaluated through the fall of 2022. One plant of each taxon was planted in each of three identical replications (Figure 1). Each replication contains *E. purpurea* in the first position (indicated as "1" above) with successive cultivars generally arranged in alphabetical order by their most familiar trade name or series thereof. Plants that did not survive the winter of 2019/2020 were replaced in 2020, but any plants lost in the future will not be replaced. Only plants that survived the 2019/2020 winter were evaluated in 2020. Plants added in 2020 will be evaluated for the first time in 2021. Plant size at the time of planting varied due to availability. Most plants were planted from a #1 ("1 gallon") container while others were acquired in quart or 3.5" pots, depending on the supplier.

Maintenance practices will be minimized during the evaluation period to simulate typical upkeep provided by the average homeowner. Irrigation from soaker hoses was provided as needed, during 2019 to assist in plant establishment. Fungicides were not used to control foliar diseases, nor were fertilizers or winter protection applied. One of the replications, center replication, was deadheaded throughout the season, while the other two were deadheaded only at the end of the growing season. Weeding was performed as needed throughout the season.



Figure 1. *Echinacea* evaluation plot layout.

The evaluation plot is a former rose garden. The soil is silt loam with an average pH of 7.0, which has been amended with bark mulch on a yearly basis since the garden's installation in 1970 (organic matter 8.1%). A double-ground hardwood bark mulch was used around the plants for aesthetic purposes, to control weeds, and help maintain consistent soil moisture levels. The evaluation plots are raised 3-4" above grade to assist with drainage and are surrounded by turfgrass on all sides. Taxa were planted at 21" on center as an average based on the spacing of 18-24" typically recommended by breeders and producers. The site receives 11-15 hours of sun during the day (throughout the growing season) and is openly exposed to wind in all directions. Detailed weather data for 2020 can be found in Table 6.

Data was collected on a weekly basis once flowering began. Disease data was initially collected on a weekly basis but was reduced to monthly collection when the data did not change from week to week. Each week, the total number of flowers providing pollinator benefits (pollen and nectar) were counted. Therefore, flowers counted the previous week were also included in the current week's count.

## 2020 Observations

It is first important to note that this report consists of data collected solely during the 2020 growing season and should be viewed as preliminary. It is expected that rankings and information provided herein will likely change with long-term evaluation.

From the initial data, the top 30 plants (Table 1) have been selected based on the average scores for disease resistance, stem strength, plant habit, and foliage quality for the plants in each replication. Detailed rankings and photos of these taxa can be found on pages 5-12. Floral color and number of flowers, while important, did not factor as significantly as other criteria, but still factored into the overall rating for each taxon. Table 3 contains an alphabetical list of the additional taxa being evaluated, along with preliminary scores and rankings. Table 4 lists the taxa added or replaced in 2020 for future evaluation.



**Figure 2. Northeast replication August 2020**

Pollinator presence at the time of data collection was recorded as a simple 'YES' OR 'NO.' Upon data review, the response was changed to 1 for 'YES' and 0 for 'NO.' This allowed a total score based on the number of days pollinators were observed on the plants. The resulting data for pollinators can be found in Table 5. This data is based solely on pollinator presence and independent of other evaluation data (e.g., disease resistance). Types of pollinators observed include native bees, honeybees, butterflies, soldier beetles, and flies.

The pollinator data presented here may not be an accurate representation of a cultivar's ability to attract pollinators. Many factors such as time of day, sunlight, and temperature affect pollinator activity. Data collection should coincide with optimal pollinator activity to collect this data.

Floral structure influences pollinator activity. Single-flowered cultivars attracted a greater number of pollinators than double or triple-flowering cultivars. Double and triple flowering characteristics are

a result of selecting for long ray flowers in the center of the inflorescence. Lengthening these flowers decreases or eliminates pollinator's ability to access nectar and pollen in these flowers. Finally, the practice of deadheading in the center replication played no role in increasing overall floral production.

**Table 1. 30 highest rated taxa by overall rank.**

Ratings: 1=very poor, 2=poor, 3=fair, 4=good, 5=excellent

Rank	Taxon	Overall Rating	Overall Score
1	'Pink Fascinator'	Excellent	4.62
2	Delicious Candy® ('Noortdeli')	Excellent	4.61
3	Fine Feathered™ 'Parrot'	Excellent	4.59
4	'Glowing Dream'	Excellent	4.56
5	Sombrero® Hot Coral ('Balsomcor')	Excellent	4.56
6	Sombrero® Granada Gold ('Balsomold')	Excellent	4.54
7	Sombrero® Adobe Orange ('Balsomador')	Excellent	4.53
8	Sombrero® Flamenco Orange ('Balsomenco')	Good	4.45
9	Cone-fections™ 'Sweet Chili'	Good	4.44
10	'Sensation Pink'	Good	4.43
11	'Solar Flare'	Good	4.40
12	Sombrero® Sangrita ('Balsomanita')	Good	4.37
13	'Playful Meadow Mama'	Good	4.34
14	Sombrero® Blanco ('Balsomblanc')	Good	4.33
15	'Dixie Scarlet'	Good	4.32
16	PUFF® Vanilla ('TNECHPV')	Good	4.31
17	Sombrero® Tres Amigos ('Balsomtresgo')	Good	4.31
18	Pixie Meadowbrite™ ('CBG Cone 2')	Good	4.29
19	'White Fascinator'	Good	4.28
20	PowWow® Wild Berry ('Pas702917')	Good	4.28
21	Eye-Catcher™ 'Canary Feathers'	Good	4.27
22	KISMET® Intense Orange ('TNECHKIO')	Good	4.25
23	Butterfly™ Rainbow Marcella™ ('Rain299')	Good	4.25
24	Sombrero® Lemon Yellow Improved ('Balsomemyim')	Good	4.24
25	'Sunbird'	Good	4.24
26	Sombrero® Sandy Yellow ('Balsomselo')	Good	4.23
27	Prairie Pillars™ 'Leilani'	Good	4.14
28	Butterfly™ 'Julia'	Good	4.14
29	Sombrero® Salsa Red ('Balsomsed')	Good	4.14
30	LAKOTA™ Fire	Good	4.13

## Floral Color

Primary floral color is perhaps the most important ornamental attribute of cultivated coneflowers. Table 2 groups the top 30 performers into six categories based on general flower color.

Table 2 groups the top 30 performers into six categories based on general flower color. Some colors are self-explanatory while others require some description. For example, taxa listed as “orange” in color exhibit duller shades of orange such as tangerine, apricot, or pumpkin. Taxa in the “red/orange” category exhibit brighter shades of orange, some with red influence, such as coral, scarlet, and crimson. Cultivars marketed as “red” are included in this category.

Taxa listed as having “mixed” floral colors may have different colored flowers on the same plant ('Cheyenne Spirit') or within the same inflorescence (Butterfly™ Rainbow Marcella™). This description is also used for plants that may have banding on the ray flowers (such a red band on Fine Feathered™ 'Parrot').

**Table 2. Floral color.**

<b>Category</b>	<b>Taxon</b>
<b>Mixed</b>	Fine Feathered™ 'Parrot' Butterfly™ Rainbow Marcella™ ('Rain299') LAKOTA™ Fire 'Playful Meadow Mama' Sombrero® Hot Coral ('Balsomcor') Sombrero® Tres Amigos ('Balsomtresgo')
<b>Orange</b>	Butterfly™ 'Julia' Cone-fections™ 'Sweet Chili' KISMET® Intense Orange ('TNECHKIO') Sombrero® Adobe Orange ('Balsomador') Sombrero® Flamenco Orange ('Balsomenco')
<b>Pink/Purple</b>	Delicious Candy® ('Noortdeli') 'Glowing Dream' 'Pink Fascinator' Pixie Meadowbrite™ ('CBG Cone 2') PowWow® Wild Berry ('Pas702917') 'Sensation Pink' 'Solar Flare'
<b>Red/Orange</b>	'Dixie Scarlet' Sombrero® Sangrita ('Balsomanita') Sombrero® Salsa Red ('Balsomسد')
<b>White/Cream</b>	PUFF® Vanilla ('TNECHPV') Sombrero® Blanco ('Balsomblanc') 'White Fascinator'

**Table 2 (continued).**

Category	Taxon
Yellow/Gold	Eye-Catcher™ 'Canary Feathers'
	Sombrero® Granada Gold ('Balsomold')
	Sombrero® Lemon Yellow Improved ('Balsomemyim')
	Sombrero® Sandy Yellow ('Balsomselo')
	'Sunbird'

## Top 30 Performers – Detailed Rankings



### Rank: 1

Selection: 'Pink Fascinator'  
Overall Rating: Excellent  
Weeks of Bloom: 13  
Average Flower Size: 2.7"  
Color: Pink/Purple  
Height Range: 18-24"  
Width Range: 18-24"  
Overall Plant Habit: Excellent  
Overall Stem Strength: Excellent  
Overall Foliage Quality: Excellent  
Overall Disease Resistance: Good

### Rank: 2

Selection: Delicious Candy® ('Noortdeli')  
Overall Rating: Excellent  
Weeks of Bloom: 12  
Average Flower Size: 2.6"  
Color: Pink/Purple  
Height Range: 18-24"  
Width Range: 18-24"  
Overall Plant Habit: Excellent  
Overall Stem Strength: Excellent  
Overall Foliage Quality: Excellent  
Overall Disease Resistance: Excellent



### Rank: 3

Selection: Fine Feathered™ 'Parrot'  
Overall Rating: 5  
Weeks of Bloom: 13  
Average Flower Size: 3.3"  
Color: Mixed  
Height Range: 18-24"  
Width Range: 18-24"  
Overall Plant Habit: Excellent  
Overall Stem Strength: Excellent  
Overall Foliage Quality: Excellent  
Overall Disease Resistance: Excellent



**Rank: 4**

Selection: 'Glowing Dream'  
Overall Rating: Excellent  
Weeks of Bloom: 11  
Average Flower Size: 3.3"  
Color: Pink/Purple  
Height Range: 18-24"  
Width Range: 18-24"  
Overall Plant Habit: Excellent  
Overall Stem Strength: Excellent  
Overall Foliage Quality: Excellent  
Overall Disease Resistance: Good



**Rank: 5**

Selection: Sombbrero® Hot Coral ('Balsomcor')  
Overall Rating: Excellent  
Weeks of Bloom: 11  
Average Flower Size: 2.8"  
Color: Mixed  
Height Range: 12-18"  
Width Range: 12-18"  
Overall Plant Habit: Excellent  
Overall Stem Strength: Excellent  
Overall Foliage Quality: Excellent  
Overall Disease Resistance: Excellent

**Rank: 6**

Selection: Sombbrero® Granada Gold ('Balsomold')  
Overall Rating: Excellent  
Weeks of Bloom: 13  
Average Flower Size: 2.9"  
Color: Yellow/Gold  
Height Range: 18-24"  
Width Range: 18-24"  
Overall Plant Habit: Excellent  
Overall Stem Strength: Excellent  
Overall Foliage Quality: Excellent  
Overall Disease Resistance: Excellent



**Rank: 7**

Selection: Sombbrero® Adobe Orange ('Balsomador')  
Overall Rating: Excellent  
Weeks of Bloom: 11  
Average Flower Size: 2.9"  
Color: Orange  
Height Range: 18-24"  
Width Range: 18-24"  
Overall Plant Habit: Excellent  
Overall Stem Strength: Excellent  
Overall Foliage Quality: Excellent  
Overall Disease Resistance: Good

**Rank: 8**

Selection: Sombrero® Flamenco Orange ('Balsomenco')

Overall Rating: Good

Weeks of Bloom: 12

Average Flower Size: 3.0"

Color: Orange

Height Range: 18-24"

Width Range: 18-24"

Overall Plant Habit: Excellent

Overall Stem Strength: Excellent

Overall Foliage Quality: Excellent

Overall Disease Resistance: Good



**Rank: 9**

Selection: Cone-fections™ 'Sweet Chili'

Overall Rating: Good

Weeks of Bloom: 13

Average Flower Size: 2.6"

Color: Orange

Height Range: 24-30+"

Width Range: 18-24"

Overall Plant Habit: Excellent

Overall Stem Strength: Excellent

Overall Foliage Quality: Good

Overall Disease Resistance: Excellent

**Rank: 10**

Selection: 'Sensation Pink'

Overall Rating: Good

Weeks of Bloom: 11

Average Flower Size: 3.4"

Color: Pink/Purple

Height Range: 18-24"

Width Range: 18-24"

Overall Plant Habit: Good

Overall Stem Strength: Excellent

Overall Foliage Quality: Excellent

Overall Disease Resistance: Excellent



**Rank: 11**

Selection: 'Solar Flare'

Overall Rating: Good

Weeks of Bloom: 11

Average Flower Size: 3.4"

Color: Pink/Purple

Height Range: 18-24"

Width Range: 18-24"

Overall Plant Habit: Good

Overall Stem Strength: Excellent

Overall Foliage Quality: Excellent

Overall Disease Resistance: Good

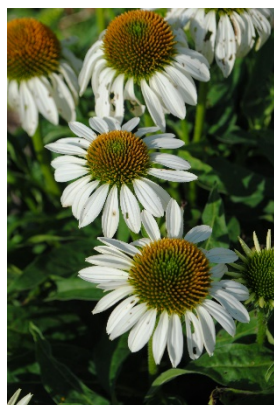


**Rank: 12**

Selection: Sombrero® Sangrita ('Balsomanita')  
Overall Rating: Good  
Weeks of Bloom: 12  
Average Flower Size: 3.3"  
Color: Red/Orange  
Height Range: 12-18"  
Width Range: 12-18"  
Overall Plant Habit: Good  
Overall Stem Strength: Excellent  
Overall Foliage Quality: Good  
Overall Disease Resistance: Excellent

**Rank: 13**

Selection: 'Playful Meadow Mama'  
Overall Rating: Good  
Weeks of Bloom: 13  
Average Flower Size: 2.8"  
Color: Mixed  
Height Range: 18-24"  
Width Range: 12-18"  
Overall Plant Habit: Excellent  
Overall Stem Strength: Excellent  
Overall Foliage Quality: Excellent  
Overall Disease Resistance: Excellent



**Rank: 14**

Selection: Sombrero® Blanco ('Balsomblanc')  
Overall Rating: Good  
Weeks of Bloom: 13  
Average Flower Size: 2.5"  
Color: White/Cream  
Height Range: 18-24"  
Width Range: 18-24"  
Overall Plant Habit: Excellent  
Overall Stem Strength: Excellent  
Overall Foliage Quality: Good  
Overall Disease Resistance: Good

**Rank: 15**

Selection: 'Dixie Scarlet'  
Overall Rating: Good  
Weeks of Bloom: 11  
Average Flower Size: 3.1"  
Color: Red/Orange  
Height Range: 18-24"  
Width Range: 12-18"  
Overall Plant Habit: Good  
Overall Stem Strength: Excellent  
Overall Foliage Quality: Good  
Overall Disease Resistance: Excellent







**Rank: 16**

Selection: PUFF® Vanilla ('TNECHPV')

Overall Rating: Good

Weeks of Bloom: 13

Average Flower Size: 2.4"

Color: White/Cream

Height Range: 12-18"

Width Range: 12-18"

Overall Plant Habit: Excellent

Overall Stem Strength: Excellent

Overall Foliage Quality: Excellent

Overall Disease Resistance: Excellent

**Rank: 17**

Selection: Sombrero® Tres Amigos ('Balsomtresgo')

Overall Rating: Good

Weeks of Bloom: 12

Average Flower Size: 3.1"

Color: Mixed

Height Range: 12-18"

Width Range: 12-18"

Overall Plant Habit: Good

Overall Stem Strength: Excellent

Overall Foliage Quality: Good

Overall Disease Resistance: Good



**Rank: 18**

Selection: Pixie Meadowbrite™ ('CBG Cone 2')

Overall Rating: Good

Weeks of Bloom: 10

Average Flower Size: 2.8"

Color: Pink/Purple

Height Range: 18-24"

Width Range: 18-24"

Overall Plant Habit: Good

Overall Stem Strength: Excellent

Overall Foliage Quality: Excellent

Overall Disease Resistance: Excellent

**Rank: 19**

Selection: 'White Fascinator'

Overall Rating: Good

Weeks of Bloom: 12

Average Flower Size: 2.4"

Color: White/Cream

Height Range: 12-18"

Width Range: 12-18"

Overall Plant Habit: Good

Overall Stem Strength: Excellent

Overall Foliage Quality: Excellent

Overall Disease Resistance: Excellent





**Rank: 20**

Selection: PowWow® Wild Berry ('Pas702917')

Overall Rating: Good

Weeks of Bloom: 13

Average Flower Size: 2.9"

Color: Pink/Purple

Height Range: 18-24"

Width Range: 18-24"

Overall Plant Habit: Excellent

Overall Stem Strength: Excellent

Overall Foliage Quality: Good

Overall Disease Resistance: Good

**Rank: 21**

Selection: Eye-Catcher™ 'Canary Feathers'

Overall Rating: Good

Weeks of Bloom: 12

Average Flower Size: 3.0"

Color: Yellow/Gold

Height Range: 12-18"

Width Range: 12-18"

Overall Plant Habit: Good

Overall Stem Strength: Excellent

Overall Foliage Quality: Excellent

Overall Disease Resistance: Good



**Rank: 22**

Selection: KISMET® Intense Orange ('TNECHKIO')

Overall Rating: Good

Weeks of Bloom: 12

Average Flower Size: 3.2"

Color: Orange

Height Range: 18-24"

Width Range: 12-18"

Overall Plant Habit: Good

Overall Stem Strength: Good

Overall Foliage Quality: Good

Overall Disease Resistance: Good

**Rank: 23**

Selection: Butterfly™ Rainbow Marcella™ ('Rain299')

Overall Rating: Good

Weeks of Bloom: 13

Average Flower Size: 3.5"

Color: Mixed

Height Range: 18-24"

Width Range: 18-24"

Overall Plant Habit: Good

Overall Stem Strength: Excellent

Overall Foliage Quality: Good

Overall Disease Resistance: Good





**Rank: 24**

Selection: Sombrero® Lemon Yellow Improved ('Balsomemyim')

Overall Rating: Good

Weeks of Bloom: 12

Average Flower Size: 2.9"

Color: Yellow/Gold

Height Range: 12-18"

Width Range: 12-18"

Overall Plant Habit: Good

Overall Stem Strength: Excellent

Overall Foliage Quality: Good

Overall Disease Resistance: Good

**Rank: 25**

Selection: 'Sunbird'

Overall Rating: Good

Weeks of Bloom: 9

Average Flower Size: 3.4"

Color: Yellow/Gold

Height Range: 18-24"

Width Range: 18-24"

Overall Plant Habit: Good

Overall Stem Strength: Excellent

Overall Foliage Quality: Excellent

Overall Disease Resistance: Excellent



**Rank: 26**

Selection: Sombrero® Sandy Yellow ('Balsomselo')

Overall Rating: Good

Weeks of Bloom: 11

Average Flower Size: 3.1"

Color: Yellow/Gold

Height Range: 18-24"

Width Range: 18-24"

Overall Plant Habit: Good

Overall Stem Strength: Excellent

Overall Foliage Quality: Good

Overall Disease Resistance: Good

**Rank: 27**

Selection: Prairie Pillars™ 'Leilani'

Overall Rating: Good

Weeks of Bloom: 12

Average Flower Size: 3.6"

Color: Yellow/Gold

Height Range: 24-30"

Width Range: 18-24"

Overall Plant Habit: Good

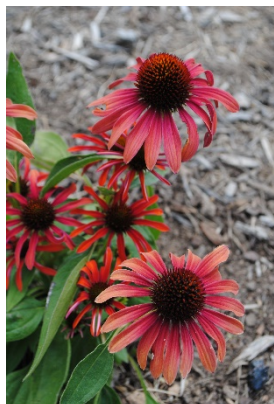
Overall Stem Strength: Good

Overall Foliage Quality: Good

Overall Disease Resistance: Good





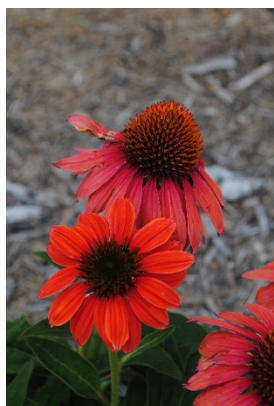


**Rank: 28**

Selection: Butterfly™ 'Julia'  
Overall Rating: Good  
Weeks of Bloom: 11  
Average Flower Size: 3.7"  
Color: Orange  
Height Range: 12-18"  
Width Range: 12-18"  
Overall Plant Habit: Good  
Overall Stem Strength: Excellent  
Overall Foliage Quality: Good  
Overall Disease Resistance: Good

**Rank: 29**

Selection: Sombrero® Salsa Red ('Balsomsed')  
Overall Rating: Good  
Weeks of Bloom: 11  
Average Flower Size: 2.8"  
Color: Red/Orange  
Height Range: 12-18"  
Width Range: 12-18"  
Overall Plant Habit: Good  
Overall Stem Strength: Excellent  
Overall Foliage Quality: Good  
Overall Disease Resistance: Good



**Rank: 30**

Selection: LAKOTA™ Fire  
Overall Rating: Good  
Weeks of Bloom: 11  
Average Flower Size: 3.0"  
Color: Mixed  
Height Range: 12-18"  
Width Range: 9-12"  
Overall Plant Habit: Good  
Overall Stem Strength: Good  
Overall Foliage Quality: Good  
Overall Disease Resistance: Good





Figure 3. Sombrero® series August 2020.

**Table 3. Additional taxa under evaluation.**

Ratings: 1=very poor, 2=poor, 3=fair, 4=good, 5=excellent

<b>Taxon</b>	<b>Color Category</b>	<b>Average Height and Width</b>	<b>Weeks of Bloom</b>	<b>Disease Resistance Rating (1-5)</b>	<b>Overall Rating</b>	<b>Overall Rank</b>
'Big Kahuna'	Orange	15"x15"	12	4.39	3.76	64
Big Sky Harvest Moon™ ('Matthew Saul')	Yellow/Gold	15"x15"	10	3.17	3.18	88
Big Sky Sundown™ ('Evan Saul')	Orange	21"x15"	9	3.54	3.52	78
Big Sky™ 'Sunrise'	Yellow/Cream	15"x15"	11	3.71	3.55	77
Blushing Meadow Mama™ ('Blus302')	Mixed	15"x15"	12	4.33	3.68	70
Butterfly™ 'Cleopatra'	Yellow/Gold	21"x15"	11	3.92	3.88	50
Butterfly™ 'Orange Skipper'	Orange	15"x15"	9	3.83	3.67	71
Butterfly™ Postman™ ('Post301')	Red/Orange	21"x15"	13	4.29	4.07	34
Butterfly™ 'Purple Emperor'	Pink/Purple	21"x21"	13	4.21	3.87	51
Butterfly™ Yellow Rainbow Marcella™ ('Ech391')	Mixed	9"x9"	8	3.60	3.30	86
CARA MIA™ Rose ('TNECHCMR')	Pink/Purple	15"x15"	9	4.42	3.84	54
CARA MIA™ Yellow ('TNECHCMY')	Yellow/Gold	21"x21"	11	4.29	3.99	41
'Cheyenne Spirit'	Mixed	21"x21"	11	3.50	3.82	58
Color Coded™ 'Orange You Awesome'	Orange	15"x15"	11	4.13	4.00	40
Color Coded™ 'Yellow My Darling'	Yellow/Gold	21"x21"	11	4.00	4.03	36
Cone-fections™ 'Butterfly Kisses'	Pink/Purple	9"x9"	12	4.17	3.92	45
Cone-fections™ Cherry Fluff™ ('Echcher298')	Pink/Purple	15"x9"	4	3.29	2.83	92
Cone-fections™ 'Hot Papaya'	Red/Orange	27"x21"	9	4.04	3.74	66
Cone-fections™ Lemon Drop™ ('Drop352')	Yellow/Gold	21"x21"	9	4.29	3.72	67
Cone-fections™ 'Marmalade'	Orange	27"x27"	11	4.50	3.35	85
Cone-fections™ 'Pink Double Delight'	Pink/Purple	21"x21"	9	3.96	3.84	55
Cone-fections™ 'Raspberry Truffle'	Pink/Purple	15"x15"	10	3.92	3.37	84
Double Scoop™ Bubble Gum ('Balscblum')	Pink/Purple	15"x15"	12	4.21	3.59	75
Double Scoop™ Cranberry ('Balscanery')	Pink/Purple	15"x21"	11	4.38	3.91	47

**Table 3 (continued).**

<b>Taxon</b>	<b>Color Category</b>	<b>Average Height and Width</b>	<b>Weeks of Bloom</b>	<b>Disease Resistance Rating (1-5)</b>	<b>Overall Rating</b>	<b>Overall Rank</b>
Double Scoop™ Raspberry ('Balsceras')	Red/Orange	21"x21"	12	4.09	3.89	49
Double Scoop™ Raspberry ('Balsceras')	Red/Orange	21"x21"	12	4.09	3.89	49
Echinacea purpurea	Pink/Purple	21"x15"	9	4.17	3.64	73
Eye-Catcher™ 'Atomic Orange'	Orange	6"x6"	3	3.63	2.13	94
Eye-Catcher™ 'Coral Craze'	Pink/Purple	21"x21"	10	3.96	4.09	33
Fatal Attraction'	Pink/Purple	9"x9"	8	3.11	3.02	89
Feeling Pink'	Pink/Purple	15"x15"	12	3.67	3.59	76
Fiery Meadow Mama'	Mixed	21"x21"	12	4.46	3.63	74
'Firebird'	Red/Orange	21"x21"	9	3.79	3.71	68
'Gemini Pink'	Pink/Purple	9"x9"	7	2.63	2.78	93
Green Jewel'	White/Cream	9"x9"	6	3.95	3.44	81
'Green Twister'	Mixed	21"x21"	9	4.06	3.89	48
'Kim's Knee High'	Pink/Purple	21"x15"	11	3.16	3.26	87
KISMET® Raspberry ('TNECHKR')	Pink/Purple	21"x21"	12	3.79	3.87	52
KISMET® Yellow ('TNECHKY')	Yellow/Gold	9"x9"	11	4.07	3.65	72
'Magnus'	Pink/Purple	21"x15"	7	4.35	3.84	53
'Mama Mia'	Mixed	27"x21"	12	4.0	3.98	42
Mellow Yellows'	Yellow/Gold	15"x9"	12	3.7	3.48	80
'Pica Bella'	Pink/Purple	21"x21"	12	4.25	4.04	35
PowWow™ White ('Pas702918')	White/Cream	21"x15"	12	4.29	4.09	32
Prairie Pillars™ 'Aloha'	Yellow/Gold	15"x15"	12	4.46	3.76	63
Prairie Pillars™ 'Flame Thrower'	Orange	21"x21"	11	4.43	3.81	60
Prairie Pillars™ 'Fragrant Angel'	White/Cream	15"x15"	10	4.29	3.71	69
Prairie Pillars™ 'Hope'	Pink/Purple	21"x15"	13	4.29	3.83	56
Prairie Pillars™ 'Hot Lava'	Red/Orange	27"x27"	11	4.71	4.00	39
Prairie Pillars™ 'Tiki Torch'	Orange	27"x21"	11	4.71	4.02	37
Prairie Splendor'	Pink/Purple	21"x15"	13	4.06	3.44	82
Prairie Splendor™ Rose Compact	Pink/Purple	15"x15"	10	4.17	3.77	62
'Primadonna'	Pink/Purple	21"x15"	11	4.52	3.82	57

**Table 3 (continued).**

<b>Taxon</b>	<b>Color Category</b>	<b>Average Height and Width</b>	<b>Weeks of Bloom</b>	<b>Disease Resistance Rating (1-5)</b>	<b>Overall Rating</b>	<b>Overall Rank</b>
PRIMA™ Cinnamon ('TNECHPC')	Red/Orange	15"x15"	6	4.13	3.81	61
PRIMA™ Ginger ('TNECHPG')	Orange	15"x15"	8	4.13	3.81	59
'Rubinstern' ('Ruby Star')	Pink/Purple	21"x21"	13	4.46	3.97	43
Sombrero® Baja Burgundy ('Balsombabur')	Red/Orange	21"x15"	11	3.75	4.12	31
SUPREME™ 'Cantaloupe'	Orange	15"x9"	11	3.71	2.98	90
SUPREME™ 'Flamingo'	Pink/Purple	21"x21"	10	4.38	3.92	44
'Tomato Soup'	Red/Orange	21"x21"	13	4.13	4.01	38
'Vintage Wine'	Pink/Purple	9"x9"	9	2.74	2.98	91
'Virgin'	White/Cream	21"x15"	12	3.42	3.49	79
'White Swan'	White/Cream	21"x15"	13	4.29	3.91	46

**Table 4. Taxa for future evaluation (added in 2020).**

Butterfly™ 'Apricot Rainbow Marcella'	Eye-Catcher™ 'Swan Song'
Butterfly™ Golden Skipper™ ('Ech01243')	Eye-Catcher™ 'Tanager'
Color Coded™ 'Frankly Scarlet'	KISMET® Red ('TNECHKRD')
Color Coded™ 'The Price is White'	KISMET® White ('TNECHKW')
Cone-fections™ 'Milkshake'	'Orange Fascinator'
Cone-fections™ Mini Belle™ ('Minbel252')	PRIMA™ Ruby ('TNECHPR')
Evolution™ Embers™ Sparks ('TNECHES')	'Tweety'

**Table 5. Pollinator visitation.**

<b>Taxon</b>	<b>Days of Pollinators</b>
Sombrero® Sandy Yellow ('Balsomselo')	14
Sombrero® Adobe Orange ('Balsomador')	12
Sombrero® Blanco ('Balsomblanc')	11
Sombrero® Baja Burgundy ('Balsombabur')	10
Color Coded™ 'Yellow My Darling'	9
'Glowing Dream'	8
PowWow® Wild Berry ('Pas702917')	8
Butterfly™ Rainbow Marcella™ ('Rain299')	8
'Sensation Pink'	8
Sombrero® Lemon Yellow Improved ('Balsomemyim')	8
Fine Feathered™ 'Parrot'	7



**Table 5 (continued).**

<b>Taxon</b>	<b>Days of Pollinators</b>
Sombrero® Granada Gold ('Balsomold')	7
Delicious Candy® ('Noortdeli')	7
Sombrero® Hot Coral ('Balsomcor')	6
Sombrero® Tres Amigos ('Balsomtresgo')	6
'Playful Meadow Mama'	5
Sombrero® Flamenco Orange ('Balsomenco')	5
PowWow™ White ('Pas70918')	5
KISMET® Intense Orange ('TNECHKIO')	5
'Solar Flare'	5
'Pink Fascinator'	4
Sombrero® Sangrita ('Balsomanita')	4
Pixie Meadowbrite™ ('CBG Cone 2')	3
Eye-Catcher™ 'Canary Feathers'	3
Butterfly™ 'Julia'	3
Cone-fections™ 'Sweet Chili'	2
PUFF® Vanilla ('TNECHPV')	2
'Dixie Scarlet'	2
'White Fascinator'	1
Eye-Catcher™ 'Coral Craze'	1

## Diseases

The following diseases were observed on the plants:

- Coneflower Rosette Mite
- Foliar nematodes (*Aphelenchoides*)
- Leaf spot (*Xanthomonas* and *Pseudomonas*)
- Alternaria leaf spot (*Alternaria* sp.)
- Botrytis
- Powdery mildew
- Sclerotium crown rot<sup>1</sup>
- Sclerotinia stem rot<sup>1</sup>

What was suspected to be aster yellows at the beginning of the season, turned out to be coneflower rosette mite after laboratory analysis. In addition, several abiotic diseases were observed in the trial throughout the summer (Figures 4 and 5). It is believed that they may be the result of high temperatures early in the season, and drought in the month of July (see table 4). At the end of the growing season, all plants were cut back, and the debris removed to reduce inoculum for 2021. No diseased plants were removed during the 2020 trial year.

<sup>1</sup> Not confirmed by the C. Wayne Ellet Plant and Pest Diagnostic Clinic, OSU.



Figure 4 and 5. Unidentified abiotic diseases.

Table 6. 2020 weather data.

Month	Total Precipitation (Inches)*	Mean Daily High Temperature (°F)	Mean Daily Low Temperature (°F)	Mean Monthly Temperature (°F)	Average Soil Temperature at 2" depth (°F)
January	2.73	41.38	27.44	33.46	36.79
February	2.06	39.67	24.09	32.22	35.44
March	4.11	53.42	35.18	44.28	43.47
April	2.81	57.47	36.12	46.68	48.27
May	2.87	68.66	47.77	57.99	56.83
June	3.97	81.69	57.82	69.83	70.44
July	1.38	87.22	64.00	75.40	76.26
August	4.40	82.68	60.01	70.83	73.64
September	2.79	74.92	52.20	62.96	67.04
October	3.46	61.95	44.05	52.40	56.76
November	2.57	56.38	35.27	45.55	47.01
December	1.09	39.81	27.31	33.39	39.05
<b>YEAR</b>	<b>34.24</b>	<b>62.1</b>	<b>42.61</b>	<b>52.08</b>	<b>54.25</b>

\*2020 rainfall deficit of 4.66" compared to historical average

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A formal report will be released upon completion of the trial in 2022.



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