

2019 ASCFG Seed Trial Report



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Opening the box of Trial seed each year is like opening presents at the holidays—you're never sure what you're going to get, but you know there will be something wonderful inside.

In 2019 we received 30 cultivars from six companies, and many were terrific performers. Snapdragons appear to be the stars of the Trial; all three cultivars performed very well—so well, in fact, that they have been added to our list for ASCFG Cut Flowers of the Year consideration. This is a bit of a surprise, since snaps can be difficult for some growers to grow well, especially where summers are hot, springs are short, and winters are cold. In those areas, spring plantings typically do not produce much before the heat sets in, but the winters are too cold for overwintering plants. What is clear is that growers are getting better at producing snaps outdoors or in unheated tunnels, and that seed companies are breeding cultivars that are not only attractive but durable enough for field and open tunnel production.

The highest-rated snapdragon was '**Potomac Royal Improved**' from Ball/PanAmerican Seed, with 30-inch long, thick stems (at least one Trialer got 44-inch stems) and about 4½ stems per plant. We received several superlatives about this cultivar: "BEST snapdragon I've ever grown, and we grow a lot of snapdragons," "This is a great flower!", and "This snapdragon was one of our favorite things we grew for the Trial". The wonderful purple-rose color certainly helped. Trialers also noted that 'Potomac Royal Improved', and the other two cultivars had an excellent return crop after the first stems were harvested.

'**Monaco Orange**', from Ball PanAmerican Seed, stood out for its vibrant orangey pink color as well as its productivity (4.1 stems/plant) and stem length, which ranged from 12 to 36 inches. One Trialer stated "This was another favorite of ours, fantastic for a field-grown snapdragon, stems were strong and flower heads were large and full".

'Potomac White Improved', also from Ball/PanAmerican Seed, rounds out the trio with 4.2 stems/plant and 18 to 36-inch long stems. You can't beat the straightforward comments from one Trialer: "Love! Tall and really white!"

Ornamental cabbage and kale often are difficult to evaluate in this program for the same reasons as the snapdragons. However, **'Condor Red'**, **'Condor White'**, and **'Flare Rose'** all performed well for a number of our Trialers. 'Condor Red' and 'Flare Rose' were the favorites, with one Trialer writing "This is the perfect specimen of flowering cabbage." for 'Condor Red'. However, 'Condor White' had its fans as well: "Perfect cupcake-looking heads... best ornamental cabbage I've grown." Stem length for all three averaged 29-30 inches, with individual Trialers getting 12 to 54-inch stems.

Rounding out the list of cool season cuts, we had a stellar stock in the trials: **'Katz Hi Double White'** from PanAmerican Seed. As with snaps and ornamental cabbage and kale, stock doesn't do well in many climates. However, this stock scored well and produced one stem/plant that averaged 24 inches, although two growers got 36 inches. One Trialer commented "My #1 favourite in the trial."

New marigolds continue to dominate the Trial. This program had eight cultivars, of which the Coco series from Sakata performed the best. All three **Coco** cultivars, **Gold**, **Orange**, and **Yel-**

What is clear is that growers are getting better at producing snapdragons outdoors or in unheated tunnels, and that seed companies are breeding cultivars that are not only attractive but durable enough for field and open tunnel production.



Photo Tanis Clifton

low, had the longest stems, averaging 23 to 29 inches, with individual responses ranging from 12 to 54 inches. Plants were productive, averaging 11 to 13 stems per plant, with responses ranging from 1 to 30 stems/plant. The large flowers and great colors sealed the deal. Several folks also noted that the flowers dried well. **'Oriental Yellow'** from AmeriSeed was not far behind in the ratings, noted for producing lots of long stems topped with large, bright yellow flowers.

Considering the number of marigold cultivars in the Trials over the years, it is getting more difficult to produce a cultivar that stands out. It is clear from the comments that some growers are harvesting stems with a single flower, while others are harvesting sprays with multiple flowers per stem. One Trialer said it best in comments regarding **'Bali Gold'** from AmeriSeed: "Nice, thick, sturdy central stem that opens to a VERY usable tight spray, one stem, bouquet complete, definitely growing this again!" A similar comment was received for **'Bindi Orange'** from AmeriSeed: "SINGLE STEM WITH AN AMAZING CLUSTER, definitely no side shoots, but the cluster was great, one stem, bouquet done!" It might be time to start producing cultivars specifically bred for single flower production or for spray production as with chrysanthemums and a few other species.



Photo Jamie Sammons



Photo Tanis Clifton

There were only two lisianthus in the Trial, both from the **Arena series—Purple** and **White**, from American Takii. As more and more lisianthus varieties are made available, the bar gets ever higher. Both varieties did well, producing about 4 stems per plant that averaged about 18 inches long, good for outdoor-grown lisianthus. A couple of top-notch growers reported stems up to 30 inches long for both cultivars. For those not growing lisianthus, one of the draws of this flower is the long vase life, averaging around 12 days for both cultivars.

Celosias are another mainstay crop for our industry and as such they garner much attention. There were three cultivars in the Trial, all from the **Sunday Series** from PanAmerican Seed. All three were productive, producing about 8 stems per plant that ranged from 6 to 24 inches long, averaging about 16 inches. The top-ranked cultivar was **'Orange Improved'**, due to its burnt orange color, and taller stems. The original 'Sunday Orange' was the ASCFG Cut Flower of the Year for 2015, so it is not surprising that 'Improved' scored well in the trials. According to one Trialer "This was one of my favorite Trial varieties". **'Bright Pink'** and **'Purple'** stood out for their colors as well, both of which are uncommon in celosia.

One of the long-term trends in floriculture has been the annualization of biennials and perennials, the process by which breeders select cultivars that flower in the first year from seed or cuttings. This is done by selecting plants that grow fast, have a short juvenility period, or bypass one or more of the flowering control mechanisms such as cold or photoperiod. Campanulas, stock, and delphiniums are three notable cut flowers that have undergone the treatment. This year's Trial include four species that have been annualized over the years. **'Camelot'** digitalis from Syngenta/Goldsmith produced a wonderful array of colors on stems that ranged from 12 to 24 inches long. One Trialer said it was "Nice to have a second succession of foxglove from spring-seeded plants, overwintered plants bloomed first and as they grew tired here came this next succession, continued to bloom well into the summer months." Another stated "Can't go wrong with any foxglove especially one that flowers first year!"

This was the first time we had lavender in the Seed Trial. Both **'Blue Scent Early'** and **'White Scent Early'**, from Syngenta/Goldsmith were productive, with 14-15 stems per plant, and up to 34 from one Trialer. Not surprisingly, the stems were short but lavender has such a strong customer following that growers found a way to use the short stems. One Trialer noted that 'Blue Scent Early' was "One of my top five favs in the trials." First-year flowering is particularly important for lavender as it does not overwinter well in areas with wet winters, even in mild climates.

Rounding out the list of annualized perennials/biennials were delphinium and campanula. Both do best in cool climates, in greenhouses, or in areas with long springs. Growers loved the deep purple blue of campanula **'Campana Deep Blue Improved'** (PanAmerican), and the colors of the delphinium **'Delphine Dark Blue White Bee'** and **'Rose White Bee'** (Syngenta/Goldsmith).

Not surprisingly, we had sunflowers in the Trial again this year. All three were excellent, noted for their uniformity, strong stems, and long vase life, averaging 10 days. Stem length ranged from 2 to 5 or 6 feet for all three, and while none are considered branching cultivars, at least one Trialer was able to get a second crop of side flowers.

The highest-scoring sunflower was **'ProCut Horizon'**, getting a score as close to perfect as we have ever seen in the Trials. Not surprisingly, one Trialer called it the "perfect 'sunflower' sunflower with dark center and golden petals", and several noted that the upward-facing flowers allowed them to be used more easily in bouquets.

'Sunrich Gold Summer' from American Takii and **'ProCut Gold Lite DMR'** from Sunflower Selections rounded out the trio. Both cultivars had green-centered, golden-petaled flowers. Interestingly, while a couple Trialers noted that difficulty of selling a



Photo Rachael Ackerman

sunflower without the classic dark center, we received this comment far less than in previous years: customer preferences might be broadening or maybe these cultivars were extra special!

Based on the combined ratings score (market appreciation + repeat again + ease of cultivation), the top five cultivars will be nominated for the ASCFG Cut Flower of the Year: Snapdragon ‘Monaco Orange’, ‘Potomac Royal Improved’ and ‘Potomac White Improved’, and sunflower ‘ProCut Horizon’ and ‘Sunrich Gold Summer’.

Interpreting the trial results: The numbers reported are averages of all the respondents. Many factors will affect the success of any cultivar. Our participants grow and harvest Trial plants using several methods. After looking at the average, check the range of responses listed below each number to see how the cultivar performed at its best and its worst. If the range of responses in the ratings is narrow and high, i.e., 3-5 or 4-5, the plant was a winner for most of the respondents and is likely to do well for you. The ‘Repeat Again Rating’ is particularly important because it indicates if the Trialer would take the time, money, and space to grow the cultivar again. Review the results carefully. If a variety sounds interesting, but did not appear to do well, try it anyway; it may work well for you.

Acknowledgments: Thank you to each of the 17 evaluators who returned their Trial reports! We very much appreciate the time it takes to do the Trials. We want to especially thank Tanis Clifton for being the first Trialer to return her evaluations! Thank you to the seed companies for providing the plant materials. We would also like to thank Sydney Ruppert and Ingram McCall for assisting with the NCSU trials. In preparing the report we did a bit of editing of the comments for space and clarity; our apologies if we’ve altered the tone or content of anyone’s comments.

Participating Trialers

Mackenze Burkhardt
Michelle Elston
Roots Cut Flower Farm
Carlisle, PA
Zone 6b

Tanis Clifton
Happy Trails Flower Farm
Dennis, MS
Zone 7b

Connie Dam-Byl
William Dam Seeds
Dundas, ON
Zone 5

Dave Delbo
Dave’s Flowers
Catawissa, PA
Zone 6a

Julio Freitas
The Flower Hat
Bozeman, MT
Zone 4b

Jason Funkhouser
Divisions Cut Flower Farm
Darlington, WI
Zone 5a

Janis Harris
Harris Flower Farm
St. Thomas, ON
Zone 6

Morgan Hopkins
Urban Buds:
City Grown Flowers
St. Louis, MO
Zone 6b/7a

Nathan Jahnke
John Dole
NC State University
Raleigh, NC
Zone 7b

Barbara Jewell
Island Meadow Farms
York, PEI
Zone 5b

Barbara Lamborne
Greenstone Fields
Purcellville, VA
Zone 7a

Jim Martin
Compost in my Shoe
Charleston, SC
Zone 9a

Denise Peterson
Blue Door Garden
Abingdon, VA
Zone 6a

Martha Pineda
Martha’s Gardens
Dubuque, IA
Zone 5a

Jamie Rhoda
Harvest Home Flowers
Waverly, NE
Zone 5

Jamie Sammons
Jayflora Designs
Fonda, NY
Zone 5

Susan Wright
Shady Grove
Gardens & Nursery
Vilas, NC
Zone 6

Participating Companies

American Takii

Salinas, California
www.takii.com

AmeriSeed

Lompoc, California
www.ameriseed.net

Ball/PanAmerican Seed

West Chicago, Illinois
www.panamseed.com

Sunflower Selections

Woodland, California
www.sunflowerselections.com

Sakata

Morgan Hill, California
www.sakata.com

Syngenta/Goldsmith

Gilroy, California
www.syngentaflowers-us.com
American Takii



about an inch above the ground, which would be great if they were tall, the stems were just too short to harvest individually, so we cut the entire plant at the base and used them in small arrangements; Need to cover to avoid leafhopper spread of aster yellows; Difficult to germinate, browning of the yellow center in field; We had disease issues with 80% of our asters this year; Deer and groundhogs like; Not high producer.

Similar Cultivars: 'Serenade'; Taller than 'Serenade'; Some florists bought in place of 'Monte Casino' aster.

Postharvest Recommendations: Clear 300.

Comments: Nice straight stems grew in raised beds and they did wonderfully; We harvested as a whole plant, but cut the sections apart to get 6 stems per plant; Our aster crop overall was poor the past two years, not from aster yellows but from very poor roots, and they did have some type of foliar fungal disease that affected 80% of our aster crop, I find asters less of a "sure thing" every year, will grow them again next season paying closer attention to disease prevention; Held in flats too long, may have stunted growth; Dried flowers lost their petals, leaving an interesting off-white texture, not sure we'll use in wreath work or not.

Cabbage 'Condor Red' (Sakata)

Good Qualities: Upright habit (2); Nice purple color (2); Small heads, loved the white better than the red but both great cultivars; Fun color for late fall bouquets; This is a perfect specimen of flowering cabbage, did not get as damaged by cabbage worm as other types, we grew this in the high tunnel to have more control of its environment, has a very hearty stem, we planted close together and had very straight stems; Okay without netting, stood tall and straight.

Problems: Rotted in the field with a spring planting; Some variation in colour intensity; Must be double fenced, worms a problem no matter how much we spray with BT etc.; This variety grew very tall, and did not form as compact a head as our Crane varieties, it is however shorter than kale 'Flare Rose', the taller the cabbage the more difficult it is to keep the crop from falling over, even when netted; It's a brassica; needing foliar sprays of Bt., harlequin beetles can also be a problem, this year, we set up a short hoophouse structure with insect netting over the bed of flowering kale and cabbage, reduced the need to spray considerably, no harlequin damage, (in years past, flowering kale has been decimated by harlequin beetles.) took a long time to flower!—seeded on May 18 and harvest began October 31, 166 days, thick stems, hard to work into small arrangements; Nothing particularly special, similar to Crane series. *Similar Cultivars:* 'Crane Red'.

Postharvest Recommendations: Chlorine tablet for extended vase life, and less scent.

Comments: Late summer planting for a fall crop may provide better results; Too late to sell to our markets, too many worms to be worth growing; We had an extremely warm fall which led to the stretching of the cabbages, however, our Crane varieties did not stretch as much as the Condors, and developed a more compact and desirable head; Growing them under cover may have stretched the stem height; Both had great color after temps fell below 50 at night, definitely need to spray for caterpillars to prevent leaf damage.

Summary of Comments. Note: many respondents did not make specific comments on each cultivar and in a few cases, comments have been shortened because of limited space. The number in a parenthesis refers to the number of respondents who made the comment. If no number is present, only one person made the comment. Comments by each individual are separated with a semicolon (;).

Aster 'Nina Plus Purple'

(American Takii)

Good Qualities: Vibrant deep purple colour (5); Great for mason jars and event work (boutonnieres and corsages); Beautifully-shaped flower, consistent colour and flower shape from plant to plant; Very salable; Market customers loved it, we grew this in the high tunnel; Small flowers, good as a filler; Spray of flowers is nice; Great at market!

Problems: Very short and branched (6); Although the plants branched from



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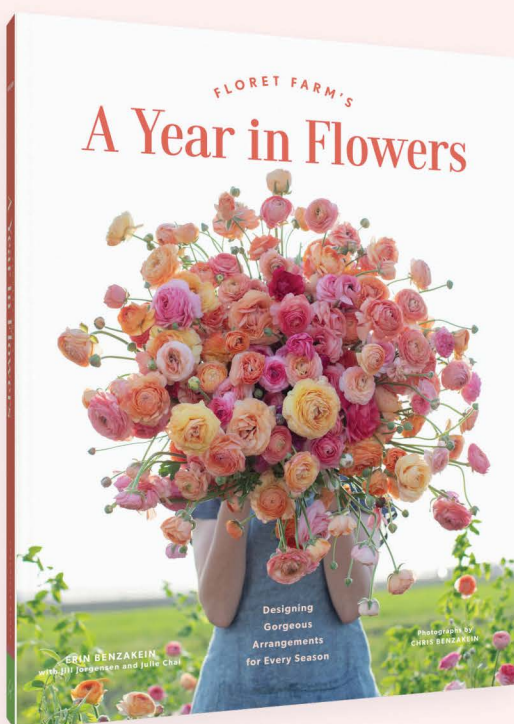
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'Condor White'
cabbage has perfect
cupcake-looking, small
heads which are great
for design work, best
ornamental cabbage
I've grown.

Cabbage 'Condor White' (Sakata)

Good Qualities: Great frost colour! (4); Uniform colour and form; Perfect cupcake-looking, small heads which is great for design work, best ornamental cabbage I've grown, frost hardy; This is a great cabbage, did not have the problems with cabbage worm that we've had in the past, grew in the high tunnel for a more controlled environment, sowed both colors 6-23-19, was ready to pick in September, when planted close together had hearty, straight stems; Okay without netting, still stood tall and straight.

Problems: Rotted in the field during the summer if planted in the spring; Hard to fight the pests; Must be double fenced, worms a problem no matter how much we spray with Bt etc.; The 'Condor White' grew extremely tall, and did not form much of a compact head, the height made it difficult to keep the crop from falling over; Requires Bt for cabbage moth caterpillars, protection from harlequin bugs, slow to mature; 160+ days, thick stems—hard to work into small arrangements, can be heavy in bridal bouquets; Nothing particularly special, similar to Crane series.

Similar Cultivars: 'Crane White'.

Postharvest Recommendations: Chlorine tablet for increased vase life, and less scent.

Comments: Late summer planting may provide fall crop; Too late to sell to our markets, too many worms to be worth growing; The height was due to an unseasonably warm fall, but our Crane



'Condor White'



'Condor Red'

Photo Jamie Sammons

varieties did not grow as tall as the Condors, and also formed a more compact and uniform head; Nice to have something new and interesting at market at the end of October, customers loved it, I was afraid that like most brassicas they would have an "off" smell of sulfur decay, but even after a week in the vase, no smell was detected; Both had great color after temps fell below 50 at night, definitely need to spray for caterpillars to prevent leaf damage.

Campanula 'Campana Deep Blue Improved' (PanAmerican)

Good Qualities: This flower has amazing color (5); Good germination (2); Lots of florets, smelled great; The plants stayed green and healthy and flowered pretty much all season; Love the shape; Large flowers; I did not get the stem lengths because of not giving them the short days they needed, customers just loved it.

Problems: Too short for a cut (3), we tried it indoors in crates and in the field,



'Campana Deep Blue Improved'

both were the same result; Not all of the plants bloomed, thrips damage; Needs a very cool climate, if planted too late, they don't get very tall. I would not recommend campanula to every grower; Weak production; Toppled over, not enough support in greenhouse; Having to give it special treatment for proper stem lengths, if a person can devote the time, it is an amazing flower; Planted outside they didn't get enough length, possibly different if planted in the fall in a hoop house.

Similar Cultivars: We grow campanula Cup & Saucer Mix, and we believe that 'Campana Deep Blue Improved' would be comparable to that variety if planted in the fall; 'Champion Deep Blue'.

Postharvest Recommendations: No hydrator or holding solution; Keep in cooler. *NC State conducted vase life testing of this cultivar; see article in this issue for details.*

Comments: I have never found an annual campanula that will produce a decent stem, perhaps a GA₃ is required? it would make a nice bedding or container plant but not for a cut; Greenhouse grown, need support netting; Didn't really use this variety due to its short stems, tried to fall-seed it for overwinter production in the hoop house but two successions of seedlings failed; The plants that did produce were productive (6 stems), then a second flush.

Celosia 'Sunday Bright Pink'

(PanAmerican)

Good Qualities: The color is amazing! (10), we need more bright pink celosia options for summer bouquets; Excellent producer, kept shooting up stems of useful length, good germination and vigour; Well-formed plumes and many usable stems per plant; Productive and of good height; Branched nicely after pinching; Nice shape and texture, kept producing usable stems for weeks; Plants were all very uniform, first-flush stems were all good quality, this was the earliest blooming of the Sunday celosias, it was also the most prolific producer of harvestable side shoots; Dries beautifully, great for masons or

small arrangements; Good vase life, good branching, great fullness of plume.

Problems: Too short (6), usable only in low centerpiece arrangements, would not grow again because of height alone; Plumes were not super full; Short harvest window; None; Hot pink is not a trendy color right now, so although we loved this variety, we will not grow very much of it next year; Should have pinched better.

Similar Cultivars: Similar in height and productivity to 'Sunday Orange Improved'.

Postharvest Recommendations: Holding solution; Did not store in cooler, used immediately or color changes to a deeper tone. *NC State conducted vase life testing of this cultivar; see article in this issue for details.*

Comments: This was one of my top five of all the Trials this year; Colour lightened in late September to a washed-out pink, October flowers were light pink, okay, but not bright like in the rest of summer; Loved the color of these but it reminded me why I don't usually grow the plumed celosia, they seem to run to seed too fast, my florists hate it when seeds drop; Loved the colors, very bold in arrangements.

Celosia 'Sunday Orange Improved'

(PanAmerican)

Good Qualities: Loved the burnt orange color (9); Great for summer and fall arrangements and bouquets (4); Dries beautifully (2); Great vase life (2); Usable side shoots (2); The color seemed brighter and more vivid than 'Sunday Orange'; Tallest of the Sunday series in the Trial; Great germination, easy to grow, kept producing for a good length of time, we did not net this one



Sunday 'Purple', 'Bright Pink', and 'Orange Improved'

Photo Jamie Rohda

and it stayed straight and sturdy until Hurricane Dorian in early September; Combines well in arrangements, many usable stems from each plant; Early maturity, good height, productive; We love 'Sunday Orange', the only difference I noticed between this trial of 'Sunday Orange Improved' and our regular plantings of 'Sunday Orange' were that the Improved variety did not have any weird/fasciated stems, whereas the non-improved version had a few in each planting; Great for masons or small arrangements; Very salable; Good branching, great plume.

Problems: Short stems (3), shortest of all of the Sunday celosias we grew; As with all celosia it does not like wet, cold weather of which we had both for the month of September, I think it would have produced a longer period if the weather had been favourable; Would prefer a taller bright orange variety but would still grow this again for design work; Muddy color; Flowers got botrytis and became unsalable quickly; It also was the least prolific regarding side shoot production after the main cut; Best grown inside.

Similar Cultivars: I honestly could not see a difference between the 'Sunday Orange' and 'Sunday Orange Improved'; 'Sunday Orange', Other Sundays.

Postharvest Recommendations: Plain water; Did not store in cooler, used immediately or color changes to a deeper tone. *NC State conducted vase life testing of this cultivar; see article in this issue for details.*

Comments: The 'Bright Pink Improved' and 'Orange Improved' bloom time were similar, the Sunday series is a reliable producer for us, dependable, we grow the mix every year, we do not irrigate and we had a very dry hot late July and August which may have affected the stem length; I actually prefer the 'Sunday Orange', I suppose it's a matter of preference but I felt like this one went to a muddy orange fairly quickly; A favorite for the beginning of the season as it reaches maturity a bit earlier than other varieties; I saw no difference between these "Improved" and 'Sunday Orange'; This was one of my favorite Trial varieties, loved the color, texture and vase life, dried beautifully for fall wreath work; We should note that we did not pinch any of these Sunday celosia, we harvested one large main stem from each plant, then were usually able to harvest a couple/few side shoots from the same plants after a couple of weeks; Loved the colors, very bold in arrangements; Always a great Sunday, we could not see any difference between this and 'Sunday Orange'.

Celosia 'Sunday Purple'

(PanAmerican)

Good Qualities: Beautiful deep purple color! (9); Customers raved about the color and want it for their weddings next year; Good germination; Consistent form and colour all season long; Very salable, has side shoots not counted above; Dried to a wonderful purple extremely useful in dried wreath work!; We loved this variety, very prolific side shoot production, which began even before we had harvested the main stem, it grew almost like it had been pinched; Dries beautifully, great for masons or small arrangements; Good vase life, good branching, great plume.

Celosia 'Sunday Orange Improved' had great germination, easy to grow, kept producing for a good length of time—we did not net this one and it stayed straight and sturdy until Hurricane Dorian in early September.

Problems: Plants and stems were too short (6); Did not produce, and plumes were small; I found the bloom on the purple was heavier/thicker and not as easy to use as the Orange and Pink, also the stalk was thicker; Okay for lower centerpiece designs but would grow this only for its popular color; Best grown inside; In order to get enough length, the first cut required taking the majority of the plant, wasting future side shoots; Hard to use for market bouquets; No problems.

Similar Cultivars: Other Sundays.

Postharvest Recommendations: Did not store in cooler, used immediately or color changes to a deeper tone.

Comments: We did not cut this one as much, the other plume type celosia offered more usable (cleaner) stems, it had more of a bedding plant behavior, bloom time was a bit later for this one, no irrigation and perhaps that stressed this variety more than the 'Bright Pink' and 'Orange'; Loved the color of this one but as with the other plumed varieties I find they go to seed too fast for us; Did not grow as tall as the other Sunday varieties; Would grow specifically for dried work next year, maybe try a small patch in the hoop house to see if stems will stretch, great color!; Loved the colors—very bold in arrangements.

Delphinium 'Delphine Dark Blue White Bee' (Syngenta/Goldsmith)

Good Qualities: Great color and large flowers.

Problems: Too short (3); Did not bloom early enough to avoid summer heat; Our cut flower trials were on compostable plastic mulch this season, which delphiniums don't really like, however, our Pacific Giants next to Delphine were okay and are blooming now; I had poor germination especially with the Blue,



'Delphine Dark Blue White Bee'



'Delphine Rose White Bee'

I did not find it to be a strong variety, could have just been some production issues for us, my seedlings were not vigorous and only had a handful to go to the field, I would be surprised should they overwinter for us; Little to no production; Grown near other cultivars that were fall seeded and overwintered which did amazingly well.

Similar Cultivars: None listed.

Postharvest Recommendations: None listed.

Comments: I probably won't try this one again as there are other varieties that are easier and offer similar qualities; In our climate zone delphinium requires vernalization for increased production, we expected to have poor results with a spring planting, so our results were unsurprising; This one was lost in the summer chaos due to its short stems, tried to fall seed but seed failed twice as it was very hot and very dry this fall.

Delphinium 'Delphine Rose White Bee' (Syngenta/Goldsmith)

Good Qualities: Loved the color (2); A compact plant.

Problems: Too short (3); Some plants died before blooming; They did not germinate and thrive for us, it very well could have been a production issue with us; Little to no production; Just never got the height needed so it was forgotten, tried to fall seed but failed.

Similar Cultivars: None listed.

Postharvest Recommendations: None listed.

Comments: They did not transplant well with our compostable plastic mulch, so there were few small plants, and no blooms; Just the same as the Blue, possibility more usable than regular delphinium; I would not grow again as there are other varieties that work more consistently for us; Without a vernalization period we expected little to no production, so our results are unsurprising.

Digitalis 'Camelot' Mix

(Syngenta/Goldsmith)

Good Qualities: Great mix of colors (7); Robust plants; Quick to bloom, vigorous plants; Can't go wrong with any foxglove especially one that flowers first year!; Sought after; This cultivar was strong for a spring planting, if allowed a vernalization period, we believe it would be comparable to the Excelsior variety we fall plant; Great shape, nice to have a second succession of foxglove from spring-seeded plants, overwintered plants bloomed first and as they grew tired here came this next succession, continued to bloom well into the summer months; Good second flush, hoping they will perennialize; Strong stems.

Problems: Some plants did not survive the summer heat; On the shorter side compared to second year-flowering foxglove, but still every bit as usable and desirable; I got only one nice tall stem from each one and then several small stems, small stems were too short to be useful in my market; Plants were shorter than overwintered plants.

Similar Cultivars: None listed.

Postharvest Recommendations: High-walled buckets to prevent bending; Flower food, cooler. *NC State conducted vase life testing of this cultivar; see article in this issue for details.*

Comments: This mix could be improved with the addition of an apricot colour; Less spider mite than with other varieties; I wouldn't buy a mix of digitalis, would only grow straight colors, the apricot ones were definitely the best, I think we get too hot, too fast here so a lot of them burned in our hoop house,



'Camelot' Mix

would probably have benefited from shade cloth; I sowed this at 70 degrees in a 50 tray, sowed March 4, transplanted April 28, didn't seem to suffer at all from all our rain this year.

Kale 'Flare Rose' (American Takii)

Good Qualities: Great color (6) after it cooled down temp wise; We planted this in the high tunnel so we would have more control with its environment, great stem strength, straightness; Great germination and growth rate; Early to colour, good height; Late crop; Appealing scalloped leaf shape; This variety was large, ruffly, and colorful, the ruffles are an interesting addition to our lineup of kales; Flaring leaves are different than cabbages; We liked this one, it got tall and required good support to keep straight; Attractive; Good vase life, good shape and look for cabbage rose; Wholesale customers liked its openness.

Problems: So much damage with cabbage worm, we planted along with Condor type flowering cabbage and worms went after this instead; Rotted in the field if planted in the spring; Needs support as all kale in my area and spray to prevent caterpillar damage to leaves; Most of the stems were



'Flare Rose'

way too oversized for design work, even when planted closely together; Must be double fenced, worms were a problem no matter how much we spray with BT, etc.; This specific variety grew extremely tall, and in some cases very wide, yet did not develop a strong center "flower"; The leaves of this variety are arranged much "looser" than other varieties, sometimes meaning that they looked thin or scrawny, however, they were the largest variety we grew; Long growing season—136 days, shorter than the cabbages, needs foliar spraying for cabbage moth, potential harlequin bug damage; We found it grew quite large (too large) and therefore had limited usefulness in bouquet work, it was on the same 4-inch spacing as the other varieties.

Similar Cultivars: Similar to the Lady series, but we preferred the more tightly-spaced leaves of the Lady series to the Flare series.

Postharvest Recommendations: Can be held in cooler up to 1 week before it starts yellowing; Chlorine tablets can increase vase life and decrease the coloring and scent of the water; Change water often.

Comments: May want to do a late summer planting for a fall crop; Too late to sell to our markets, too many worms to be worth growing; We have had a unique fall weather pattern here in central Pennsylvania this year, it has been unseasonably warm, which we

attribute the extreme height of the cabbages to, that being said, Kale 'Flare Rose' was still significantly taller, and less well formed than the Crane varieties that we also grow; Groundhog ate all soon after transplanting; This was my first successful year growing flowering cabbages and kales, growing them under insect netting was advantageous as it cut down on the spray regimen, beautiful for late fall arrangements!; We grew the 'Flare White', also it was the tallest of any variety this year at 38-42 inches, the same issue with the very large heads, very attractive, just too large.

Lavender 'Blue Scent Early' (Syngenta/Goldsmith)

Good Qualities: Good fragrance (3); Darker blue lavender heads (4); This lavender was very easily germinated (2), at 70 degrees it germinated in 6 days; It was easy to grow (2); Early to bloom with straight stems; This cultivar had good vegetative growth this year but no bloom, I was hopeful, but it was not transplanted until June; Put on a lot of growth in the first year, love using flowers and greens in floral wearables, looks like a promising variety; Fairly strong once it gets going; My favourite thing about it was the number of consistent quality stems, and being able to harvest over a long period, they seemed to stay viable on the plant if left for a while, it would be a good item for

those in a harsh winter climate, where lavenders often do not survive, a first-year lavender such as this one would be a good alternative, I sowed this twice and the later planting was every bit as good as the early one, in fact October 23 we still have some good stems, on each stem there was the terminal flower which was several inches longer and larger than the shorter multi blooms on the same stem; One of my top five favs in the trials; It's still alive!; Comparable to other varieties such as 'Phenomenal', productive in terms of blooms; Most of the plants survived our torrential rains of this past summer; Bloomed from seed first year; Nice flowers.

Problems: Too short (5); Despite being sown, bumped up, and planted at the same time and into the same bed as the 'Early Scent White', the 'Early Scent Blue' did not survive our summer; Hoping to get longer for next year's growing season; Poor germination, even worse than the white variety; I found when we dried the stems many of the "buds" dropped, this could have been from the timing too mature, each grower would have to experiment to find the ideal harvest window for drying; Best used for small lavender sachets and boutonnieres.



'Blue Scent Early'

Photo Mackenze Burkhardt

Similar Cultivars: 'Elegance Purple'.

Postharvest Recommendations: If you are drying, make sure they are not over mature to prevent bud drop/shatter.

Comments: Slow to grow and bloom, but fairly disease resistant; We aren't always successful at overwintering lavender here but we're going to cover it for the winter and hope for the best next year; Guessing like other lavender plants in my life, that these plants will grow and be much bigger next year, while most of my lavender grows inside an unheated hoop house, these plants are outside, may they survive and thrive under a cover of leaves and floating row cover this winter; Easy to germinate in soil blocks, well established plants for overwintering.

Lavender 'White Scent Early'

(Syngenta/Goldsmith)

Good Qualities: Love the unusual grey-white colour (3); Great scent (2); Lavender is hard to grow in our area, but the 'Early Scent White' thrived with no special care necessary; Vigorous grower, dries beautifully to a silvery white; Great for use in wearables and color fits into most wedding design work, looks like a promising plant for next year if it survives the cold; Fairly strong once it gets going; It held up well in corsages, as with the Blue, I was surprised with the ease of cultivation, the plants stayed healthy and required no special care, to have an annual produce consistent stems has put this variety on one to grow; It's still alive!; We had great germination, seeds were up in 4 days at 70 degrees, unlike the Blue, the white did not all survive our rains of this summer, both were planted in the same row and had the same sun, we planted in a raised bed at the top of an incline as not to have standing water.

Problems: Stems were short (7), but that is to be expected in their first year; Older blooms get brown parts, like most white flowers; Poor germination, did not bloom the first year; Little production, and the blooms turn brown very fast; While white flowers were anticipated, insect damage was exten-

We are looking forward to seeing what lavender 'White Scent Early' does next year—market customers seemed particularly intrigued by the white flower buds as opposed to the blues and purples they are familiar with.

sive, hoping that plants will be bigger and stronger after a long winter's nap and the anticipation of white blooms will rebound with spring; Best used for short lavender sachets and boutonnières; Not as many flowers as the Blue. *Similar Cultivars:* None listed.

Postharvest Recommendations: Cut before too mature to avoid bud drop.

Comments: We are looking forward to seeing what these do next year, market customers seemed particularly intrigued by the white flower buds as opposed to the blues and purples they are familiar with; Slow to grow and bloom, but fairly disease resistant; As the white lavender matured we would often see touches of pink in some of the stems, we have already ordered seed for 2020, recommended for a lavender to grow where the perennial does not consistently survive; Just like the Blue, it survived the summer and we'll do our best to overwinter it; We did use the foliage from these plants in design work at times, but mostly we found it to be unusable; Easy to germinate, strong well-established plants, hope to overwinter in Zone 6.

Lisianthus 'Arena Purple'

(American Takii)

Good Qualities: Great deep purple (6); Both varieties produced a decent, although shorter, second flush (3); Large double blooms, didn't need too much care; Germinated well with the white more predominant, had no disease issues; I was able to keep it in the cooler two weeks for a wedding that needed purple; Early blooming; Great for summer and fall bouquet work, nice flower shape with whorls of petals, tall plants, easy to work with, continued to bloom

even as light levels dwindled; Both of these are solid, standard lisianthus, they had good stem length in the field, and the purple was able to withstand some rain without becoming bruised or spotty; Open-faced ruffles in petals. *Problems:* Slow to grow; Poor germination; Thrips damage noticeable on the purple blooms; Caterpillar magnet, needed Bt and hand picking to maintain.

Similar Cultivars: 'Echo Blue'.

Postharvest Recommendations: Holding solution; Keep water clean. NC State conducted vase life testing of this cultivar; see article in this issue for details.

Comments: We should have protected it from wind and rain damage, this is a



Group 1 lisianthus, but it grew similar to Group 3s that we were also growing; Some worm damage inside; As we grow without irrigation outdoors, our home seed-sown lisi struggles at times to get good stem length, I usually purchase ours as starts which seem to be able to deal with our irregular conditions easier, going forward I would start the seed earlier than I did this year to see if that would be beneficial; Lisianthus takes so long to grow is the only reason for my rating on question #10, if I have the money I prefer to buy plugs; Besides a slight variation in bloom time, most lisianthus look alike; This was my first success in growing lisianthus from seed—so proud! opens opportunities for me to try to germinate these varieties in the future rather than just purchasing plugs, these plants were grown in a hoophouse environment thus they were tall and had spotless blooms, dark purples often get spotty with rain when grown outside; We also grew 'Arena Baby Pink' from a purchased plug and it had an 20-23 inch stem average;

Lisianthus 'Arena White'

(American Takii)

Good Qualities: Vibrant white (4); Both varieties produced a decent, although shorter, second flush (2); Long-lasting blooms, good double; Both of these are solid, standard lisianthus, they had good stem length in the field, and the purple was able to withstand some rain without becoming bruised or spotty; In demand; Good germination, the stems while short due to weather conditions were strong and upright, under more ideal conditions it would be one to try; Early blooming; Tall strong stems; Bell-shaped flower, lots of blooms per stem. *Problems:* Some browning of petals due to being grown with no protection from elements, would be better grown under cover; On the shorter side, not as vigorous as 'Arena Purple', Poor germination, worms in high tunnels; None; Didn't like the open nature of the bloom, I tend to like more ruffles in my lisianthus blossoms.

Similar Cultivars: 'Echo White'; We like



'Mariachi White' and 'ABC White' better than 'Arena'; There are so many lisi varieties, I think it's personal preference to choose the variety that works best for your growing conditions and where it is being used.

Postharvest Recommendations: Holding solution; Clear 300. *NC State conducted vase life testing of this cultivar; see article in this issue for details.*

Comments: We were surprised by how easy it was to grow this plant; Some worm damage inside; Grown with irrigation this variety would have had longer stems, our month of August was hot and dry, if growing lisi from seed in the future, I would grow in a tunnel to improve quality; Lisianthus takes so long is the reason for rating in question # 10-11, if we have the money prefer to buy plugs; white lisi is an easy sale to florists for weddings; Happy to have had the chance to grow lisi from seed for the first time, I'm encouraged at how easy it was, in the past, I have failed, losing quite a bit of money.

Marigold 'Bali Gold' (AmeriSeed)

Good Qualities: FABULOUS gold color (6), my favorite gold; Smaller plant, sturdier stems; Lots of flowers; Great for garlands and market bouquets, but definitely short; Huge first flowers;

Nice, thick, sturdy central stem that opens to a VERY usable tight spray, one stem, bouquet complete, definitely growing this again!; Color mixes well with other fall flowers; Great both fresh and dried, plant was more compact than others I've grown; Tall stems, good branches, usable for bouquets.

Problems: Too short and very branched (6), so there were no stems long enough; Weak heads, only 1 stem per plant; The benefits of the great spray far outweigh the bending over to harvest, this cultivar still has enough length for standard bouquet work; This one was the shortest of all the Trial marigolds, it also did not naturally branch well, so rather than harvesting single stems (or first harvesting/pinching out the middle bloom then cutting single stem side shoots), we had to cut the main stem low and take them as a spray, we were able to separate a few stems into more than one marketable stem, but generally these were our least productive marigold; Few blooms, and early disease, we had early significant rain, stunted growth; Late to bloom, the only way to harvest any blooms that were even close to bouquet length would be to cut the entire plant; Took half the plant to get a decent stem length, lots of cutting of side branches, green centers of young flowers unattractive; The stem growth was weak compared to other cut cultivars I have grown, it is a medium-sized grower for us, not something we need in our mix; Stems became brittle when harvested later in season.

Similar Cultivars: 'Big Duck Gold'; 'Coco Gold'; Not really.

Postharvest Recommendations: Like all marigolds, the heads on these are quite prone to breaking off, so it is important to minimize the number of times you touch/move them postharvest; Keep water clean; Change water often.

Comments: Great color, just difficult because it's more of a landscape size and stems seemed to get really bulky, overall great for garlands and large focal flower; Even though people use these just as flower heads, it is hard work

bending over so far to cut the stems, so a bit more height would be helpful! This would be a great landscape plant, bushy, compact, great orange color.

Marigold 'Bindi Orange' (AmeriSeed)
Good Qualities: Deep orange color (6); Strong stems (3); Great producer, straight stems; SINGLE STEM WITH AN AMAZING CLUSTER, definitely no side shoots, but the cluster was great, one stem, bouquet done!; Good doubleness; Good germination and easy to grow, no disease issues, excellent bloom size and quality, overall height was 36 inches, bloom size was 4 inches; Large flower heads; It had medium heads compared to the size of the typical cut cultivars I grow, it could be useful in floral design where a smaller head is needed for the purpose of scale; Nice dark orange color when dried; Long vase life, good stem length great for market bouquets; Our favorite though not many side stems due to height.

Problems: Extremely short (4); Not really a problem, but definitely grows shorter than most marigolds, so it is definitely a "bend over and cut" variety; Shorter than others; Very limited number of stems per plant; Too branched so it was more work to remove side shoots to get a stem over 12 inches; Needs support and I pinched after planting; Orange is quite pale, almost gold, taller than Bali; Few blooms, and early disease, we had early significant rain; Bushy, and late to bloom, the only way to harvest any bouquet length stems would be to harvest the entire plant; For us the necks were very weak; Japanese beetle magnet; Plants also did not branch from the base, so we mainly harvested one large, thick stem that had several blooms at the top; It was weak stemmed compared to the Giant series that I typically grow, understanding they all have stem rigidity problems, so this one isn't that much different, in our trial it was not a robust cultivar in flower production or stem length; Early disease pressure in outdoor production, flower blossoms began to rot from the underside, blossoms prone to insect damage; Stems became brittle when harvested later in season.

Similar Cultivars: No.

Postharvest Recommendations: Handle very carefully to prevent bent neck; Keep water clean.

Comments: Darkest orange color of all Trial varieties; Japanese beetle candy as are all marigolds, excellent producer; Lots of early rain; This and all the marigolds in the Trial were a disappointment for us as a cut, all were started in our greenhouse and transplanted to the field through bio black plastic with no irrigation, all 8 marigolds in the Trial grew very well for us, we had issues with Hurricane Dorian in early September which caused a lot of them to blow over despite netting and extra stakes, up to the storm the blooms were excellent, they were easy to grow, however, we had a frustrating time with bent neck, I would very much like to know if we could apply a nutritional supplement to help prevent this issue; Great fresh or dried.

Marigold 'Coco Deep Orange' (Sakata)
Good Qualities: Great orange color! (7), deeper orange color than others; Nice-sized heads (3); Nice height and stem length, comparable in height to 'Optiva Orange'; That is exactly what I would expect a marigold to look like, the stems seemed relatively sturdy, there were a



'Coco Deep Orange'

Nice long cuts on all of the Coco marigold series; very long lasting—best of the Trials!

good number of flowers per stem, this variety would make a great focal flower in a market bouquet; Love how it mixes with the rest of the arrangements; Nice stem size; I think the color was richer than 'Giant Orange', the other cultivar I typically grow, the flower size was a little bigger and the plants performed in our heat and humidity, the stem strength seemed to be no different than 'Giant Orange'; Nice long cuts on all of the Coco series; Very long lasting—best of the Trials! great overall plant health; This is a great fresh and dried flower; Good vase life, tall, straight usable strong stems.

Problems: Japanese beetle magnet (3); Similar in color to 'Optiva Orange', later to bloom than 'Optiva Orange'; Always need to fence from animals, even with fencing this one was eaten several time—no results; Centers of young flowers darker green tone, which isn't pleasing to the eye, looks brown, field-grown plants were susceptible to disease, many were unusable after 6-week bloom time; Typical problems with marigold as a cut flower, weak connection close to the flower head, but no different than any other cut marigold cultivar; Some of the stems snapped and the heads flopped over; Stems weakened after being harvested for a long time, first through third stems were the best.

Similar Cultivars: 'Jedi', 'Giant Orange', but I thought this one was better; 'Giant Orange'; 'Garland Orange'.

Postharvest Recommendations: Hydrator and holding solution; Keep water clean; Clean water. NC State conducted vase life testing of this cultivar; see article in this issue for details.



'Coco Gold'

Comments: This variety was the closest to our favorite variety, 'Optiva Orange', it is the variety we would likely grow again if we needed to introduce another highly productive orange; Marigolds are kind of a hard sell to most of our customer base of florists but those who buy marigolds loved these; Great fresh or dried; I am in love with the Coco cultivars, I will switch and grow these instead of the Giant series; All marigolds trialed last in vase with clean, changed every other day, water and floral food for nearly 3 weeks; After a few days, the blooms actually had a sweet scent, pleasant surprise! plants fell over in a windburst, but after a few weeks they started to form new stems and buds; Love.

Marigold 'Coco Gold' (Sakata)

Good Qualities: Great gold color (4), nice intermediate between orange and yellow varieties; Nice long cuts on all of Coco series; Vigorous and healthy plants filled with quality blooms; Nice large heads; Comparable height to 'Optiva Orange'; Huge 4- to 5-inch blooms, best of the gold marigolds in trial, long stems—best stem length of gold marigolds in trial, most disease resistant of all marigold trials in field production,

excellent color retention when dried; The side shoot growth was good and while the flower size decreased in half over the summer, it was still a high quality cut stem, I traditionally have been growing 'Giant Orange' and 'Giant Yellow', so having the nuances of this color in my offering was super; Good vase life, tall, straight usable strong stems.

Problems: Fragile heads; Center head is so big that many broke under their own weight, especially with rain; Always need to fence from animals, even with fencing this one was eaten several times—no results; Light orange in color, not truly a "gold", later to bloom than 'Optiva Orange'; Typical marigold problems of weak stem connection near the flower head, I hate that snap sound heard too much with marigolds; Stems weakened after being harvested for a long time, first through third stems were the best

Similar Cultivars: Similar color to 'Bali Gold' but not in height or stem length; Color wise, in this size, no.

Postharvest Recommendations: None listed. *NC State conducted vase life testing of this cultivar; see article in this issue for details.*

Comments: This colour is similar to 'Bindi Orange'; We harvested some

stems as a single spray and some side shoots were long enough—12-16 inches—to use in bouquets; All marigolds trialed lasted in vase with clean, changed every other day, water, and floral food for nearly 3 weeks; Again, lovely flower but hard to sell in my market, hard to get an accurate stem count as the bed was so full and lush it was hard to tell which plant we were cutting from but they were great producers; Favorite gold marigold to date, will definitely grow again!; I think this color is a nice addition when needing a softer color for design work.

Marigold 'Coco Yellow' (Sakata)

Good Qualities: Fresh yellow colour (5); Very productive (2); Tall plant, sturdy; NICE LONG CUTS ON ALL OF COCO SERIES; Good doubleness, same great plant health as rest of Coco series; Easier to cut, less branchy than other, more vigorous, straighter stems; Nice large heads; Earlier to bloom than other yellow varieties; Customers at market really loved all the Coco series, good stem strength; 3-inch blooms, nice stem length, nice head shape, similar in size to other Coco colors, beautiful marigold! dries well, smaller head size that's nice and easy to use in bouquet work; Good vase life, tall, straight usable strong stems.

Problems: Weaker stems/necks than 'Garuda Yellow' (2); Did not branch well; Some flower heads flopped over and stems snapped; Always need to fence from animals; Japanese beetle magnet; More misshaped blooms than other yellow varieties; Stems weakened after being harvested for a long time, first through third stems were the best. *Similar Cultivars:* 'Oriental Yellow'; 'Babuda Yellow', and 'Oriental Yellow' were not as good as 'Coco Yellow'; 'Garuda Yellow'; Similar in height and productivity to our favorite variety, 'Optiva', and comparable to 'Oriental Yellow' as well; 'Falcon Yellow', has a smaller bloom size which is nice.

Postharvest Recommendations: Hydrator and holding solution; Clean water. *NC State conducted vase life testing of*

this cultivar; see article in this issue for details.

Comments: All marigolds trialed lasted in vase, changed every other day, water and floral food for nearly 3 weeks; A solid option for yellow marigolds; Not everyone appreciates marigolds, but their colors are so vivid and striking, especially into the fall months when I can't grow enough yellow and orange, some are put off by the marigold scent, but once you strip the leaves, the flower doesn't really have a strong fragrance.

Marigold 'Garuda Yellow'

(AmeriSeed)

Good Qualities: Bright yellow color (3); Really tall sturdy plants; Flowers seemed larger than normal; Good vase life; Nice large heads, very productive; Very long, strong stem, and easy to strip, good late season option, when stems are becoming weak; Attractive green centers when immature, uniform head formation, nice shape—round and puffy, good stem length, longest of the yellow trials, dried flowers hold a beautiful yellow color.

Problems: Just like any other marigold, the stems are hollow which makes the heads really heavy compared to strength of the stem, so they easily break; Disease and need to fence from animals; Japanese beetle magnet; Yellow tends to attract more insect pests; Too thick and short, hard to cut and remove most of plant to get a stem.

Similar Cultivars: It is literally the same as 'Coco Yellow'; 'Oriental Yellow', 'Oriental Yellow' and 'Babuda' are better varieties of yellow; 'Falcon Yellow'.

Postharvest Recommendations: Keep water clean; Marigolds don't seem to care if they're in water or given food, they just need lots of it, during the dry heat, they sucked it up out of the vase! replace water often. *NC State conducted vase life testing of this cultivar; see article in this issue for details.*

Comments: This was our favorite Trial marigold of the season—we will be growing it again; This marigold was great fresh and dried; Half of my marigold trial was conducted in the field

while the other half was grown in a ventilated greenhouse—field plants had 2 weeks of bloom time before disease began, a wet early summer could have been the cause, but my experience over many years of marigold growing is that these plants grow much better: longer, taller, healthier and stronger in a covered structure, even after a hard freeze these plants are still producing blooms, whereas the field plants are LONG gone.

Marigold 'Narai Orange' (AmeriSeed)

Good Qualities: Pretty orange color (6); Very nice tight top cluster of blooms with a definite central stem below, one stem and bouquet is complete!; Great producer; Plentiful small- to medium-sized blooms; Necks seem stronger than many varieties; Excellent hardiness, both fresh and dried; Beautiful 3-inch blooms, very productive and long lived in covered structure, beautiful dark orange color when dried; Of all the orange selections tried this year, this one, excluding the 'Coco Deep Orange', had longer stems in my trials, medium to large heads compared to some of the other cultivars.

Problems: The heads tend to get too big and heavy; The cultivar was too branched, we had to remove a large number of side shoots to create a stem 12 inches long; Weak plant health—was first to get disease in the patch; Disappointed in the number of blooms, stunted looking; Light for an "orange" marigold variety, extremely short before the first cut, then approached a usable length, later to bloom than our favorite variety 'Optiva Orange', not highly productive; A magnet for Japanese beetles; Field plants had the worst disease pressure of all marigold trials, produced blooms for only 3 weeks before plants were unusable, orange blossoms with concave centers, stem length a little short for market even when grown in covered structure; It was weak stemmed compared to the Giant series that I typically grow, understanding they all have stem rigidity problems, so this one isn't that much different, in



'Garuda Yellow'

our trial it was not a robust cultivar in flower production or stem length; Too short and stalky plant, had to cut and remove most of plant to get a usable stem. **Similar Cultivars:** 'Coco Orange'.

Postharvest Recommendations: Keep water clean; Lots of water, their vase life is amazing in just water.

Comments: We did not sell any because this was not usable in the wedding arrangements we made throughout the summer; Great for bouquets, manageable size to design with; These were in a later planting and we didn't get to harvest enough to get good data on them but they seem very promising; This variety is not conducive to bouquet production operations; Looks great dried for fall dried flower arrangement; We love these as a spray stem, a little short for harvesting, but worth it, would definitely grow this again!

Marigold 'Oriental Yellow'

(AmeriSeed)

Good Qualities: Beautiful yellow color (6); Great stem length, good manageable sized heads; Vigorous plants; Super tall so very easy to harvest; Good grower; Good height and stem length; This is a great cultivar, stem strength



'Monaco Orange'

excellent; Big 5-inch yellow blooms; Small heads, nice size stems, beautiful for cut flower work, nice head, form strong stems.

Problems: The color is not suitable for wedding design in our area; I thought the huge heads looked a bit weird before totally opened, this was in a late planting so we didn't get to harvest from it for very long, this problem may have only been with the very first large buds; Slightly later to bloom, stems become weak as season progresses; Japanese beetle magnet; Disease issues within 3 weeks of bloom time in field-grown plants, disease issues totally overtook plants within 6 weeks of blooming; Too short and stalky plant, had to cut and remove most of plant to get a usable stem.

Similar Cultivars: 'Garuda Yellow' (2); 'Coco Yellow' (2); 'Coco Yellow' is nicer 'Falcon Yellow'.

Postharvest Recommendations: Clean water. *NC State conducted vase life testing of this cultivar; see article in this issue for details.*

Comments: We cut some as a spray and some as individual side shoots as they were long enough, 12-16 inches, for bouquets; Lots of early rain; If I had any unused marigolds in the cooler after 10

days, I would dry them, worked every time; Yellows are always a favorite variety, grew much better in a covered structure.

Snapdragon 'Monaco Orange'

(PanAmerican)

Good Qualities: Very vibrant color (13), was a hit with both florists and at farmers' markets; Very tall sturdy straight stems even without netting (4); Produced throughout summer; Uniform plants; We typically grow 'Opus Early Bronze' but the color of 'Monaco Orange' was much better, we will grow this variety in the future; Good shelf life in the cooler, this cultivar was still giving off a few flowers when we closed down the garden; Sold even in the spring; This was another favorite of ours, fantastic for a field-grown snapdragon, stems were strong and flower heads were large and full; True snapdragon shape that can "talk" to customers, children always enjoy a good "snap", bloomed in spring and fall; Great size flower spike, good second flush; We split the seeding on this variety, saving a tray for late production, we have some just starting to bloom right now on October 7, they are field planted, just in soil and not netted, our September has been very cool and wet, they are not as tall as the early planting but useful for bouquet work, a good variety; This is a great flower! the spikes were huge, stems tended to break easily, perhaps the inflorescence was too big!

Problems: Stems were on the short side; None; Didn't get a great second flush late season; Wimpy late in the season, the normal time for this color; Had to be netted.

Similar Cultivars: Similar to 'Cool Orange', we may be replacing our usual 'Cool Orange' with the 'Monaco Orange', as the flower heads on the 'Monaco Orange' were much larger; Compared 'Monaco Orange' with 'Potomac Deep Orange': 'Monaco' has rosier red petaling at the top of the mouth, less pronounced yellow tones and a more muted darker orange, less bright and "popping" than 'Potomac Deep Orange';

'Potomac Orange', 'Overture Orange' not as good.

Postharvest Recommendations: Try to keep the stems straight in tall buckets but don't crowd stems, we use hydrator if required otherwise just in #2 grower solution from Chrysal; Use a high-walled bucket to prevent bending, store in a cooler if not using immediately; We use Clear 300; Stems need to be kept upright after harvest to prevent bending, we use, thin-walled 4-inch diameter pvc pipes cut to 12-inch lengths that fit inside a 5 gallon bucket. *NC State conducted vase life testing of this cultivar; see article in this issue for details.*

Comments: Loved this variety, will grow again!; Caterpillar feeding was bad this year; We got only one large stem from each because we didn't pinch and we had to tear them out before they had a chance to regrow, will pinch next time; Some worm damage inside, grown inside a high tunnel.

Snapdragon 'Potomac Royal Improved' (PanAmerican)

Good Qualities: Stunning purple rose colour! (12), popular with both florists and at farmers' market; Strong, thick stems (4); It was our tallest snap, lots of great stems at the same time, not just 3 at a time but more like 7 ready on each plant at once, impressive; Great for summer and fall; BEST snapdragon I've ever grown and we grow a lot of snapdragons, tallest and most sturdy thick stems I've ever had, great for statement arrangements, florists love them, will grow again; Lots of usable stems; Very good rebloomer when grown in a high tunnel; This snapdragon was one of our favorite things we grew for the Trial, sown in February and planted out in the field, we were harvesting them by the last week of May, about 10 days earlier than the 'Potomac White Improved' that was sown and planted at the same time; Very unique, customers loved it; Great addition to arrangements; Good second flush; This is a great flower! the spikes were huge, stems tended to break easily, perhaps the inflorescence was too big!

Problems: None (3); We had an issue with the lower petals of this variety browning, as well as the 'Potomac White Improved', it was unclear if the issue was due to disease, or just a shorter field life, we did not experience this issue with the other varieties we grew including the trial of 'Monaco Orange'; Had to be netted.

Similar Cultivars: None listed.

Postharvest Recommendations: High-walled bucket to prevent bending, and cold storage if not used promptly; Keep stems upright so they remain straight; We use Clear 300, keep in cooler. *NC State conducted vase life testing of this cultivar; see article in this issue for details.*

Comments: This was my fav snap of the trial; Did okay without support, but it would be helpful to get long straight stems, had an issue with caterpillar feeding this year on all snaps; We used a stake and mesh system for this variety with great success; Some worm damage inside; Despite the issue with the lower petals, we would be willing to try to grow this variety again for its unique color; Keeping this cultivar in my selection; Was able to keep in cooler up to two weeks.

Snapdragon 'Potomac White Improved' (PanAmerican)

Good Qualities: Great pure white (5); Strong stems (3); White color for bridal work; Full spikes; Productive; Excellent vigor, height, rebloom plus it's sturdy, high quality rebloom; This variety had good strength and length; Very hardy; Thick stem, large flower spike; We sowed this crop in February and planted out in the field, stems were nearly of the same quality as greenhouse-grown snapdragons, tall, strong stems with good-sized flower spikes, we were lucky and did not have any issue with thrips on these; Straight strong stems even in late fall production, light fragrance; Love! tall and really white! good second flush.

Problems: Rain makes blooms transparent and also they seemed to brown

fast if left too long before harvest, best luck was 3-4 flowers open, otherwise they needed cleaning up; Worms; We had an issue with the lower petals of this variety browning, like with the 'Potomac Royal Improved', it was unclear if the issue was due to disease, or just a shorter field life, we did not experience this issue with the other varieties we grew including 'Monaco Orange'; None; Had to be netted; Beetles were a huge problem so flowers were challenged.

Similar Cultivars: 'Potomac White' (2); 'White Opus' not as good; This cultivar was comparable to the white that we typically grow, 'Maryland White'.

Postharvest Recommendations: Cut early morning into cold water, use hydrator if required, after hydrated place in #2, a tall bucket to support stems from curving; Holding solution; High-walled bucket to prevent bending, cold storage if not used right away; We use Clear 300, keep in cooler; Keep stems straight. *NC State conducted vase life testing of this cultivar; see article in this issue for details.*

Comments: Best of the trials; Providing support would provide straighter stems; All snaps grown for a single strong stem; Mesh really helped to keep the stems straight and plants growing tall; We pinched these and got two very nice stems from each, couldn't see much difference from the 'Potomac White'; Due to the problem with the lower petals it is likely that we will stick to growing 'Maryland White', but because the strength and length were comparable, it would be an option if we ever had an issue finding 'Maryland White' seed; Greenhouse grown; We plant our snapdragons generally intending to harvest one single stem, but sometimes we have subsequent harvestable stems if we do not get around to flipping the bed in time, that was the case with some of these, and we were able to harvest on average 2 to 3 more stems from the same plant, although these stems were much smaller, they were perfect to use in our market bouquets; Lovely variety, will grow again.



Potomac 'Royal Improved' and 'White Improved'

Stock 'Katz Hi Double White'

(PanAmerican)

Good Qualities: Almost all double flowers (5); Lovely fragrance (4); Great flower and shelf life; This was truly outstanding, lovely long blooms, large, well filled and a brilliant white, maturity was very even, easily harvested within 3 days, very impressed with this one, my #1 favourite in the trial; Katz stock never disappoints, stems were long and sturdy, flower spikes were full; small amount of green in center was great; Similar length and vase life to our favorite variety Japanese All Double (JADS); Beautiful growth in spring and fall months, easy to germinate; Taller than other stock, beefier than others; Beautiful large doubled flowers; Nice full flowers, happy to see this is a Katz. **Problems:** Stems were short; Most grow in cold climate; Does not do well in summer heat, especially on black plastic mulch; Less strength and uniformity than JADS, in this case uniformity mostly refers to there being more singles in the mix; Even with horizontal netting stems grew curved; Florist don't buy stock from us.



'Katz Hi Double White'

Similar Cultivars: 'Japan All Double White'/'White Beach'; With JADs seed possibly going out of production, this would be a strong contender for us as a replacement; Very similar to Cheerful Series (white varieties); 'Katz White' not as good.

Postharvest Recommendations: Change the water to keep this available out of the cooler for a few weeks; Chlorine tablets can be used to decrease scent; Keep stems upright, similar to snapdragons, we use 4-inch thin walled pvc pipes cut to 12-inch lengths tucked into 5-gallon buckets to keep stems straight in groups of 12-20 stems.

Comments: This variety was excellent, I had other Katz varieties, however, the blooms on this brilliant white stock was superior to all others, almost 100% double, consistent, recommend this one, I think it would be a good candidate for succession sowing; Unimpressed, short stem probably due to the heat that we get so soon in spring; Additional support would provide straighter stems; I am certain that we grew this at the wrong time of year for its best success; All our stock is grown in a hoophouse with shady ends, low light levels didn't deter stock from blooming on time, fragrance was amazing!; I really like this one; Customers commented on scent.

Sunflower 'ProCut Gold Lite DMR' (Sunflower Selections)

Good Qualities: Great color of light center and golden petals (3); They tended to all bloom at the same time, within a few days of each other (2); Sturdy (2); Perfect size when planted tight at 4 inches apart, straight stems, upward-facing heads, grew well in hot dry conditions, on barely any rain; Any sun variety which offers downy mildew protection is always a plus, especially during late season with variable temperatures and less sunlight; Very sturdy neck, perfectly shaped disk, this cultivar reminds me of a gerbera daisy; Healthy foliage—and we did have DM present; A unique color, lighter than that of a traditional "orange" sunflower, the light green center is vibrant; Typical light-centered sunflower, quick blooming period; Vigor, color consistent; Good vase life, like other suns, nice overlapping petals, perfect size side shoots.

Problems: Missed a few late fall harvests because they "blew open" too fast, they bloom on the same day and if you miss them by 4-5 days, they're too far past, could be due to the excessive hot dry weather we had; Market customers don't readily purchase light-colored faces as well as dark, this was a beautiful strong flower; Had to pick at claw stage as corn beetles damage the pet-

Katz stock never disappoints, stems were long and sturdy, flower spikes were full; small amount of green in center was great.

als; Higher pest pressure than 'ProCut Orange', stems not as strong as 'ProCut Orange'; None; Nothing spectacular or outstanding, we do not have (yet) a problem with downy mildew so can't evaluate.

Similar Cultivars: 'Sunrich Gold Summer' (3); 'ProCut Gold' has been my "go to" for green-centered sunflowers for years, nice to have a new option that offers a smaller, more compact head size; 'Vincent Fresh'.

Postharvest Recommendations: We used FloraLife 300 upon harvest; We have stored this variety dry lying flat in a covered box in cooler at 36 F for up to 10 days with no issues after rehydrating, they have the same vase life as those picked fresh, harvest when petals are starting to unfurl as with most suns; I use Chrysal CVBN tablets; Postharvest included chlorine tablets for 4-5 days, then changed the water every 2 days. *NC State conducted vase life testing of this cultivar; see article in this issue for details.*

Comments: Flowers a little smaller than the 'Sunrich Gold Summer'; Most of the ProCuts have a smaller centre which is less desirable than the Sunrich types, the colour was good and if growing again I would choose this one mainly for the DMR and reliable timing of the ProCut series, will definitely grow again; Definitely adding this one to my sunflower growing list, spacing did not seem to increase head size, in fact they were somewhat small based on the

10-12 inch spacing but still got a good usable head size, which may have been due to excessive rain, but we had really short stems; Sunflowers with light centers are not popular with our farmers' market customers, or in our grocery store wholesale bouquets; Would grow if color was in demand.

Sunflower 'ProCut Horizon'

(Sunflower Selections)

Good Qualities: Perfect "sunflower" sunflower with dark center and golden petals (8); Upward-facing blooms (4) which is a plus in bouquets; Sturdy and consistent growth; Great compact head size, straight stems, pollenless blooms; Great single stem sales; Small flower size, consistent colour, did well as a late-season planting; Strong stem, similar bloom time with 'ProCut Orange'; Great shape of petals, overlapping petals, full bloom, side shoots with small heads, great for mixed bouquets.

Problems: Must be double fenced; The harvest window was longer than other ProCut varieties, although not crucial for us but might be for some growers; Stems can be a little thick; Little big for bouquets, but great as a focal in larger pieces; None.

Similar Cultivars: 'Vincent Choice' (2); 'Sunrich Orange', the other ProCuts; Similar habit to 'Orange Excel' but slightly different colour.

Postharvest Recommendations: Cut when petals are starting to unfurl, check every day after cutting the first stems, ours were not ready within 1-4 days, they went on for 1-8 days for a harvest window; We used FloraLife 300 upon harvest for longer vase life; Cvb tab in water could hold up to 2 weeks; I use Chrysal CVBN tablets. *NC State conducted vase life testing of this cultivar; see article in this issue for details.*

Comments: Couldn't really tell the difference from 'Vincent's Choice'; A good sun and an improvement over 'ProCut Orange', similar features to 'ProCut Orange Excel'; Last seeding of August 27 bloomed on November 1 in our hoop house, spectacular, small head sunflowers that lasted 2 weeks

in the cooler, mixed with 'ProCut Gold Lite' they make a stunning sunflower arrangement; We liked the upright head and consistency, we would likely grow again.

Sunflower 'Sunrich Gold Summer'

(American Takii)

Good Qualities: Deep gold color with a nice golden and green center (9); Very sturdy neck, loved this sunflower; Great for market bouquets; Held its petals well; I really loved all of the sunflower Trial varieties this year, they were all perfect stems, easy germination, birds didn't seem to get to them like most of my other field varieties, perfect sized heads for design work; Sturdy and consistent growth; Bloomed within a few days from start to finish, our season was not as usual this year our suns were delayed in flowering, perhaps due to cool weather for most of July, all the suns were well over the typical days, typical excellent quality of the Sunrich series; Uniform, well-formed blooms, blooms quickly in late season for more chance of harvest (October 10!), our staff loved it; Slightly earlier than Sunrich; Small heads good for bouquet work;

Problems: Inconsistent bloom time, later bloom time, weaker stems than ProCut varieties; In Midwest must cut before open to prevent corn beetle damage; Took a full 70 days to begin blooming, and ten additional days before harvest was complete despite the Sunrich Summer series being meant to bloom in 50-60 days, this was, however, the first to bloom of all the Trial sunflowers; Must be double fenced; Customers at market didn't buy as readily as dark centers, some cucumber beetle

damage; None; Nothing special about this, no difference from 'Sunrich Gold'. *Similar Cultivars:* 'ProCut Gold Lite DMR'; 'Summer Gold'; 'Vincent Fresh'; All sunflowers...; 'ProCut Gold'.

Postharvest Recommendations: Post-harvest included chlorine tablets for 4-5 days, then changed the water every 2 days; Hold with a cvb tablet in cooler, if cut at claw stage can hold up to 2 weeks; I use Chrysal CVBN tablets; We use FloraLife Fresh 300 upon harvest. *NC State conducted vase life testing of this cultivar; see article in this issue for details.*

Comments: Because this variety is so slow we would likely never grow it instead of ProCut varieties; Definitely adding this one to my sunflower growing list, spacing did not seem to increase head size, we spaced 10-12 inches apart and still got a good usable head size; There aren't many differences in this variety as I mentioned we did not have a typical growing season, as a result our entire sunflower production was delayed, we start all our suns in trays of 200 and hand-plant on 4-foot spacing, 6 plants wide, no irrigation, no mulch; Was still 1 week earlier than 'Sunrich Gold', even in early October; Flowers a little larger than 'ProCut Gold Lite DMR'; Yellow-centered suns are harder for me to sell than the dark-centered sunflowers.



'Sunrich Gold Summer'

Table 1. The first row of data for each cultivar is the average and the second row is the range of responses. Note when only one response is shown in the range line, all respondents gave the same rating.

Species Cultivar Company	Yield (stems/plant)	Stem length (in.) ¹	Market appreciation rating ²	Ease of cultivation rating ²	Grow again rating ²	Average postharvest life (days)
Aster Nina Plus Purple American Takii	3.1 1-6	13.6 6-24	3.4 1-5	3.2 1-5	3.3 1-5	6.3 3-10
Cabbage Condor Red Sakata	1.0 1	29.6 12-50	4.3 2-5	3.8 1-5	3.8 1-5	9.8 7-14
Cabbage Condor White Sakata	1.0 1	30.4 18-50	4.5 2-5	3.9 1-5	4.0 2-5	9.8 7-14
Campanula Campana Deep Blue Imp. PanAmerican	1.2 1-2	11.6 4-18	3.2 1-5	2.6 1-5	2.9 1-4	13.5 12-14
Celosia Sunday Bright Pink PanAmerican	8.2 2-20	16.0 8-24	4.4 3-5	3.7 1-5	4.5 3-5	7.0 3-11
Celosia Sunday Orange Improved PanAmerican	8.7 1-20	16.8 6-24	4.3 4-5	4.3 2-5	4.8 4-5	7.0 3-10
Celosia Sunday Purple PanAmerican	8.3 1-20	15.3 8-24	4.4 3-5	3.8 1-5	4.5 2-5	5.7 3-7
Delphinium Delphine Dk. Blue Wt. Bee Syngenta/Goldsmith	1.6 1-4	16.4 8-19	3.7 3-5	2.2 2-3	2.0 1-3	7.0 7
Delphinium Delphine Rose White Bee Syngenta/Goldsmith	1.8 1-5	16.4 8-25	3.3 2-5	2.0 1-3	2.3 2-4	7.0 7
Digitalis Camelot Mix Syngenta/Goldsmith	3.4 1-12	17.5 12-24	4.6 4-5	4.3 2-5	3.8 4-5	8.3 7-11
Kale Flare Rose American Takii	1.0 1	28.9 15-54	3.8 1-5	3.1 1-5	4.3 1-5	10.5 7-14
Lavender Blue Scent Early Syngenta/Goldsmith	15.8 6-34	9.3 4-17	2.8 1-4	3.3 1-5	4.0 2-5	5.0 5
Lavender White Scent Early Syngenta/Goldsmith	14.0 6-34	9.9 4-17	3.6 1-5	3.2 1-5	4.0 2-5	5.0 5
Lisianthus Arena Purple American Takii	4.1 3-9	18.4 12-30	4.6 2-5	4.3 2-5	4.0 2-5	11.6 7-14
Lisianthus Arena White American Takii	3.8 1-8	17.6 12-28	4.9 4-5	3.9 3-5	3.7 2-5	12.1 7-14
Marigold Bali Gold AmeriSeed	3.6 1-10	14.6 4-25	3.1 1-5	2.3 1-5	4.8 4-5	8.9 5-12

Species Cultivar Company	Yield (stems/plant)	Stem length (in.) ¹	Market appreciation rating ²	Ease of cultivation rating ²	Grow again rating ²	Average postharvest life (days)
Marigold Bindi Orange AmeriSeed	7.5 1-20	19.0 6-38	4.0 2-5	2.7 1-5	4.7 4-5	10.1 5-15
Marigold Coco Deep Orange Sakata	12.9 4-30	23.9 12-54	4.1 1-5	4.3 1-5	4.6 1-5	10.4 7-16
Marigold Coco Gold Sakata	11.6 1-30	29.1 12-54	4.0 1-5	4.1 1-5	4.5 1-5	10.1 5-14
Marigold Coco Yellow Sakata	11.3 1-30	22.8 12-45	4.6 3-5	3.9 1-5	4.8 4-5	12.6 5-25
Marigold Garuda Yellow AmeriSeed	9.6 1-30	19.9 12-30	3.0 1-5	3.3 1-5	4.7 4-5	11.7 6-20
Marigold Narai Orange AmeriSeed	8.5 1-30	20.1 8-36	3.7 1-5	3.1 1-5	4.6 4-5	9.2 7-12
Marigold Oriental Yellow AmeriSeed	11.8 1-30	24.3 12-41	3.7 1-5	3.5 1-5	4.6 4-5	12.3 5-23
Snapdragon Monaco Orange PanAmerican	4.1 1-10	26.3 12-36	4.6 4-5	4.5 3-5	4.5 3-5	8.8 7-12
Snapdragon Potomac Royal Improved PanAmerican	4.5 1-12	30.3 18-44	4.9 4-5	4.7 4-5	4.4 3-5	9.8 7-14
Snapdragon Potomac White Improved PanAmerican	4.2 1-25	27.4 18-36	4.7 4-5	4.6 4-5	4.4 3-5	8.1 7-10
Stock Katz Hi Double White PanAmerican	1.0 1	24.2 12-36	4.3 2-5	3.9 1-5	4.0 2-5	10.3 7-14
Sunflower ProCut Gold Lite DMR Sunflower Selections	1.6 1-9	41.1 24-60	4.3 3-5	4.1 1-5	4.8 4-5	10.0 8-13
Sunflower ProCut Horizon Sunflower Selections	1.0 1	45.8 24-60	5.0 5.0	4.8 4-5	4.9 4-5	10.0 10
Sunflower Sunrich Gold Summer American Takii	1.2 1-7	44.2 24-72	4.5 3-5	4.3 3-5	4.9 3-5	10.8 7-14

¹Data shown are from the respondents who harvested stems. Some Trialers may have not harvested stems because they were too short. The stems, not the Trialers.

²1 to 5 scale with 5 being the best; market appreciation ratings are based on sales to wholesalers, retailers and/or final consumers.