

GROWERTALKS

Features

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Know Before You Grow

Jennifer Zurko

Night Sky Petunia

By Gary Vollmer

Night Sky Petunia is a 2015/16 FleuroStar winner that brings growers and consumers an exciting new petunia color pattern. An exceptional, early-flowering, mounding then trailing vegetative petunia, Night Sky is an excellent match to Selecta's Headliner Petunia series. The speckled color pattern is truly unique—no other petunia has this pattern. Also, no two blooms are exactly alike. While these characteristics make Night Sky uniquely beautiful, they contribute to potential instability in the pattern itself.

Genetically, Night Sky is a very stable petunia. It produces excellent-performing plants uniform in branching foliage, timing, vigor, etc. However, Night Sky can be environmentally unstable. This article will share our best practices for growing Night Sky, and specifically what factors we know that influence the color pattern, and strategies for managing it.

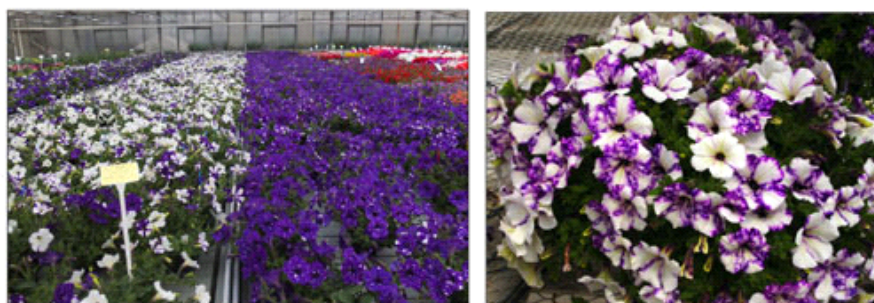


Figure 1: The use of B-Nine tends to make the blooms more white. B-Nine 3,000 ppm spray three times (left); Bonzi drench 3 ppm one time (right).

Figure 2: In growing conditions where night temperatures are very low (below 50F/10C) and the day temperatures are very high (around 100F/38C), the color pattern on Night Sky gets whiter.



Figure 3: When growing in summer conditions of warm humid days and specifically warm nights, the pattern becomes more purple.

Figure 4: This plant was grown in a day temperature of 75F (24C) and night temperature of 60F (16C) with a Bonzi 2 ppm drench one time.

Propagation

To propagate Night Sky, it's important to choose a well-drained medium with an EC of 0.75 to 0.80 mmhos and a pH of 5.5 to 5.8. Soil temperature should be maintained at 68 to 74F (20 to 23C) until roots are visible. Begin fertilization with 75 to 100 ppm N when roots become visible. Increase to 150 to 200 ppm N as roots develop. Once roots are visible, the media should be kept only moderately wet and never saturated. Night Sky Petunias can be pinched if desired 18 to 24 days after sticking, when roots are well developed, to promote early branching and improve habit. Night Sky rooted cuttings should be ready for transplanting 21 to 28 days after sticking.

Finished growing

Use a well-drained, disease-free, soilless medium with a pH of 5.5 to 6.0. Night temperatures from 52 to 62F (11 to 17C) and day temperatures from 58 to 75F (14 to 24C) are recommended for finishing Night Sky. Higher than recommended temperatures will cause stretch, weak stems and reduced flower size.

Night Sky Petunias grow best in high light conditions with ideal intensities between 5,000 to 8,000 f.c. (50,000 to 80,000 Lux). Low light levels promote stem stretch and reduce plant quality. Night Sky is an early flower petunia variety that doesn't require long days to flower.

Water management is an important aspect of growing Night Sky. Avoid excessive water, as it can lead to thin weak growth, as well as diseases. It's equally important not to dry Night Sky down to the point of wilt, as this will adversely affect the flower count and color stability. Use constant feed with a balanced fertilizer at 150 to 250 ppm N with additional iron as needed based on water quality. A full complement of minor elements should be provided to the plant. Apply clear water to runoff periodically to prevent problems with soluble salt buildup.

All petunias should be monitored regularly for early, visual signs of high pH (interveinal yellowing on youngest leaves). Regular soil pH tests are an excellent way to identify movements in pH before they create visual symptoms, which can be difficult to reverse. Irrigation water with high alkalinity can drive the pH up higher, which can trigger an iron deficiency. The most effective and reliable method to correct and control iron deficiency is to apply a chelated iron product as a soil drench.

Night Sky is also a free-branching petunia variety. If desired, or if planting from a stretched liner, pinch plants 10 to 14 days after transplanting to improve basal branching.

Use high light levels and cool temperatures to control growth. Night Sky Petunias should not receive any B-Nine applications within 5 weeks of desired finish date due to sensitivity of the color pattern to B-Nine. If PGRs are required, Night Sky can be drenched with Bonzi (1 to 3.0 ppm) to significantly slow vegetative growth while allowing flowering to continue. Bonzi as a drench can prevent flowers from turning too white.

Controlling the color pattern

There are several factors that we know that affect the color pattern on Night Sky. First is the influence of PGR chemistry, application method and timing. The use of B-Nine spray in finishing close to the time of bloom will have a significant effect on the blooms by dramatically increasing the amount of white in the blooms. When growing in spring conditions, do not apply any B-Nine within 5 weeks of the target sale date. Any PGR spray during the finishing phase will tend to make the blooms more white, but none as dramatic as B-Nine. If a PGR is desired, we recommend the use of a low rate Bonzi drench (Figure 1).

The second major factor that can affect the color pattern is temperature. In growing conditions where night temperatures are very low (below 50F/10C) and the day temperatures are very high (around 100F/38C), the color pattern on Night Sky gets whiter (Figure 2). When growing in Southern summer conditions of warm humid days and specifically warm nights, the pattern becomes more purple (Figure 3). These first two factors are related to greenhouse growing conditions. When Night Sky is grown outdoors, and in consumer applications, the color pattern reflects the purple background with white spots that's preferred.

A third factor that will influence the color pattern is wilting from drought. The wilting influence on the color pattern is less dramatic than the influence of PGRs and temperature. The response from drought is to increase the white in the coloration. This wilt response is short-lived and seems to only influence the expanding flower buds on the plant at the time of wilt.

Night Sky is a true breakthrough in petunia breeding. This award-winning variety has created excitement—and scrutiny—with growers, retailers and consumers. By following the temperature and PGR guidelines, we can produce Night Sky that's truly out of this world (Figure 4). Download complete growing culture at selectanorthamerica.com.

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Dragon's Breath Celosia

By Ken Harr

Captivating audiences in the industry with not only its stunning appearance of deep maroon flowers and foliage, Sakata's award-winning Dragon's Breath Celosia also possesses the attributes of easy-to-grow, long-lasting shelf life, great garden performance throughout the season, and the ability to sell-through at retail quickly. Dragon's Breath has the ability to be sold in the prime bedding plant weeks, as well as a season extender, and is poised to become one of the hottest new varieties on the market in the 2016 season.

There are three primary cultural factors to consider when producing Dragon's Breath Celosia: photoperiodic response, fertilizer formulations and environmental factors.

Photoperiodic response

Dragon's Breath Celosia is an "Obligate Short Day Plant," meaning in order to flower, the plants require less than 11 hours of daylength. Celosia are generally able to initiate flowering at 14 to 21 days after sowing. In order for celosia plugs to bulk up enough prior to flower initiation, it may be necessary to extend the daylength greater than 12 hours. This will depend on the time of year and geographical location. Once plants have started flower development, a period of 14 to 21 days under short days should be sufficient to maintain continued development. Therefore, it's necessary to always be aware of the natural daylength during the growing period and either extend the daylength to bulk up plants or apply short day conditions if necessary for flower initiation.

Fertilizer requirements and plant specifications

One of Dragon's Breath Celosia's best attributes is its brilliant, deep red foliage. This is the result of the plant's ability to grow and thrive without normal amounts of ammonium and phosphorous usually needed for adequate plant growth. After transplanting, when the young plants have rooted out to the sides of the containers, decrease the amounts of ammonium and phosphorous by either feeding with fertilizer formulations with lower amounts of these two nutrients or by decreasing the number of fertilizer applications throughout its growing period. A 15-3-20 or 14-2-14 formulation with a targeted soil EC of 0.75 to 1.0 are two good recommendations for growing on Dragon's Breath Celosia. Remember to keep adequate potassium, magnesium and boron levels in the fertilizer applications to prevent any twisting, tip abortion or discoloration of the crop's foliage.

Local environmental factors

Because of its short-day requirement to initiate flowering, Dragon's Breath Celosia can be grown for several different applications. Under normal spring bedding plant production plans, Dragon's Breath can be grown in 1-qt., 2.5-qt., 1-gal. containers and larger, as well in mixed combinations, where the striking red foliage will pose as an excellent backdrop for its other component plants. The plugs should be started under long-day conditions to be bulked-up, then placed under the natural short days of late winter for flower development.

For summer production specifically for landscape purposes, Dragon's Breath can be grown under natural

long days, where they'll produce larger plants with deep red foliage. Again, the plants will serve as an excellent background for brightly colored blooms such as Sakata's new Marigold Proud Mari or Double Profusion Zinnias. Dragon's Breath plants will then begin to produce blooms in the late summer and fall months, extending the bright landscape color well into September, October and November depending on the local climate.

In the deep southern states or far western states where the danger of frost is minimal, Dragon's Breath can be grown for containers or in the landscape under natural short days, producing shorter plants, but with larger and luxurious deep red to maroon plumes of color.

In all of these scenarios, it's necessary to schedule the crops accordingly to produce what's required for growers' customers—will it be plants in bloom, vegetative plants for the landscape or something in-between? The versatility of Dragon's Breath Celosia can supply all of these needs.

PGRs

Because Dragon's Breath Celosia is an "Obligate Short Day Plant," the finished height can be regulated by the amount of daylength it receives at specific points in its crop time. If plants are grown under short days early in plug production, flower initiation will occur and the finished crop will be short in height. Conversely, if the plants are grown under long days and kept in a vegetative stage, the finished height will be taller.

If PGR applications are required, B-Nine (daminozide) at 1,000 to 2,500 ppm can be sprayed in the plug stages and during transplant/finish at 2,500 to 5,000 ppm. Bonzi sprays (paclobutrazol) at 5 to 10 ppm may also be utilized; however, it's not recommended to drench PGRs. Moisture management may also be used to keep plants in check. Water up to Level 3 (media appears dark brown) and dried down to Level 2 (media is tan). Some foliage flagging is okay, but don't allow to wilt, as celosia can be susceptible to high salt levels resulting in edge burn.

Dragon's Breath Celosia has received an enormous amount of attention since its introduction at Spring Trials in April 2015. But even before that, those industry growers and buyers that viewed Dragon's Breath in trial gardens across the country couldn't help but stop and rave over the plant's deep red foliage and large flower plumes that seemed to never stop blooming. It's no wonder then, that Dragon's Breath Celosia won the Industry Choice Award at Cultivate'15 this summer.

Whether Dragon's Breath is placed in containers, the landscape or on the consumer's deck, that vibrant maroon, deep red foliage along with its outstanding flowers will surprise, astound and delight everyone.

Ken Harr is the Product Technical Manager for Sakata Seed supporting grower/customers, with the latest, up-to-date cultural information of Sakata ornamental genetics.



Catch the Buzz With Beedance Bidens

By Delilah Onofrey

Beedance Bidens drew a swarm of attention during the California Spring Trials, where visitors saw them in whimsical retail displays, mass plantings and combination baskets. And the plants live up to their name! Bees were “dancing” all over the plants in Ventura.

Although Beedance is seed sterile, it’s not pollen sterile and truly does attract bees. Painted Red, especially, has a soft honey fragrance. Proceeds from cuttings sales will support honeybee health research through the Pollinator Partnership.

The series debuts in North America with two varieties:

- **Beedance Painted Red**—Painted Red won the Innovation Award at the IPM Essen show in Germany for best new bedding and balcony plant. Temperature influences the coloring. In warmer conditions, blooms have yellow centers and red-orange tips. In cooler weather, blooms are more solid red-orange.
- **Beedance Red Stripe**—Bright yellow blooms feature unique red stripes on each petal. Stripes are more visible in cooler temperatures. In warmer weather, flowers are more yellow. Red Stripe is slightly more compact than Painted Red and one week earlier to bloom.

The two Beedance varieties differ from Suntory’s Marietta Bidens, which is very compact and creates a tight mound. Beedance flowers dance above the foliage and are more suited to intermingling with other varieties in combinations.

Beedance benefits

In addition to the striking bicolor patterns, Beedance offers distinct advantages that make these varieties superior to other novelty bidens on the market:

- **Dense branching and short internodes**—Creates a manageable growth habit and high flower count. One cutting will fill out a pot nicely, reducing the number of inputs and production time.
- **Early flowering**—Plants were selected to flower under short days.
- **Continuous flowering**—Plants are sterile and do not set seed, so Beedance blooms from early spring through fall, until temperatures fall below 32F (0C). Burr-like seeds are a common problem in bidens.
- **Plays well with others**—Beedance Bidens offer controlled growth that’s harmonious to plant in combinations with other popular vegetative annuals.

Production tips

Beedance Bidens are easy to grow. The breeders from Suntory offer the following tips for success:

Crop time:

- 5 to 7 weeks for a 4-in. pot, one liner, 1 to 2 pinches
- 7 to 10 weeks for a 6-in. pot, two liners, 1 to 2 pinches

Growing temperatures: 55 to 76F (12 to 24C)

Light: Plants are daylength neutral. No supplemental lighting is needed. Beedance will flower under 11-hour days compared to 12 hours or more for other bidens.

PGRs: Spray 3,000 to 4,000 ppm B-Nine. Bonzi is not recommended. PGR effect varies by variety. Spray, do not drench. Plants will stop growing with a PGR drench. Best to use PGRs early in production because sometimes plants will produce fewer leaves in the center later.

For more information about Beedance Bidens, visit www.suntorycollection.com.

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Shocking Summer Color with Jolt Dianthus

By Shravan Dasoju

PanAmerican Seed has redefined how dianthus can be used by growers and consumers alike with the recent introduction of Jolt, an F1 interspecific dianthus that's the most heat-tolerant dianthus on the market. It's suitable for premium-choice container programs and summer landscape use. The Jolt series comes in two vivid colors—Pink and Cherry (pictured). Jolt Pink is a 2015 All-America Selections National Bedding Plant Award Winner.

Most of the dianthus varieties currently available are primarily used for cool-season programs. Jolt, an interspecific hybrid that's durable to withstand hot summer conditions, adds this new and exciting heat tolerance to the dianthus class, creating more options for growers and consumers. Also, due to its interspecific nature, it doesn't set seed and continues to flower, providing a powerful surge of season-long performance and electrifying color. Jolt performs as a semi-hardy annual in Zone 7 and milder. Here are some culture tips for production success with Jolt:

Plug culture

Jolt is offered in pelleted seed form and can be germinated at 64 to 68F (18 to 20C). It takes about 3 to 5 days to germinate. Light isn't required to germinate, but can be beneficial. Cover the seed with a medium layer of coarse-grade vermiculite after sowing to maintain uniform moisture around the seed during germination.

Maintain the media pH at 5.8 to 6.2 and EC of 0.7 to 1.0 mS/cm during the plug production.

PGRs

A paclobutrozol (Bonzi, Piccolo) foliar spray of 4 to 6 ppm applied at Stage 3 (about 14 to 18 days from sow) is effective for plug height control and can be repeated if necessary. But, if the plugs are being produced under low light conditions, then foliar sprays of paclobutrazol at 5 ppm can be applied early at the radicle emergence stage, which will help in controlling the early hypocotyl stretch.

Plug finish time is about 5 to 6 weeks from sow for a 288-size tray. It will slightly take longer if producing in a bigger cell size.

Growing on to finish

Jolt has a naturally well-balanced plant habit with excellent basal branching making it perfectly suitable for premium containers, such as quarts and 1-gal. It can be grown successfully in quarts with 1-plant/pot and 1-gal. with 1 to 3 plants/pot. Pack production isn't recommended for finishing Jolt.

After transplant, provide 65 to 75F (18 to 24C) daytime temperatures and about 60F (15C) nighttime temperatures for the first few weeks of greenhouse production to establish the crop. The crop can finish at 60 to 70F (15 to 21C) days and nights in the 50sF (11 to 12sC). Lower temperatures can be tolerated, but it will lengthen the crop time. Jolt will flower earlier under warmer temperatures.

Maintain the media pH at 5.8 to 6.2 and EC of about 1.5 mS/cm by providing adequate fertilization with a balanced fertilizer.

Jolt is a facultative/quantitative long-day plant and can flower under different daylengths, but it will take slightly longer to flower under short days than long days. Also, its flowering is influenced by light intensities and temperatures, especially during winter and early spring season. It will benefit from being grown under high light levels, but low light conditions (<5 moles.m-2.d-1) could significantly delay flowering.

PGRs

Plant growth regulators will be helpful in producing a nice, toned, finished product in premium containers, such as quarts and 1-gal. Foliar sprays of paclobutrazol (Bonzi, Piccolo) at 20 ppm applied 2 to 3 weeks after transplant will be effective in controlling height. If necessary, repeat 2 to 3 weeks later as needed.

Crop scheduling

Jolt can be scheduled to finish successfully for late spring through summer sales, stretching into the fall shoulder season. Winter through early spring finishing is possible where conditions are favorable, but the crop time will be longer. Above is a scheduling chart for reference.

Scheduling a year-round dianthus program

Jolt can also be used in rotation with Dash Dianthus to program a year-round dianthus production schedule, especially for premium-choice container programs. Dash Dianthus, another recent introduction from PanAmerican Seed, is a compact Sweet William (*Dianthus barbatus*) that doesn't require vernalization for flowering and is more suitable for cool-season, spring/early season sales.

Crop Scheduling			
Season	Plug crop time (weeks)	Transplant to finish (weeks)	Total crop time from sow (weeks)
Late spring through autumn finishing (optimal season)	5 to 6	11 to 13	16 to 18
Winter to early spring finishing	5 to 6	14 to 18	19 to 23

Note: These crop times are based on a 288-cell size plug for finishing in a quart with 1 PPP and 1-gal. with 3 PPP. Crop times may vary depending on environmental conditions and cultural practices.

For more details on scheduling Jolt and Dash for different regions, please visit www.panamseed.com/culture.

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Getting Ready for Opening Act Phlox

By Rick Schoellhorn

Proven Winners is excited to be offering two new garden phlox with outstanding disease resistance and overall performance. Opening Act Duo (White and Blush) join Shockwave Phlox in the Proven Winners Perennials collection, and while Shockwave also boasts wonderfully variegated foliage, Opening Act Duo are both dark green-leaved varieties and the emphasis is on the flowers.

Pictured: Opening Act Blush Phlox

The innovation here is in earliness to flower, with first blooms in early summer, compared to older *Phlox paniculata* cultivars that bloom in late summer. Opening Act Phlox continues to bloom with a longer season of flower, outstanding tolerance of heat and humidity, and additional reblooming in fall. Opening Act Duo expands both the garden Phlox bloom season and provides strong performance all season for the perennial garden.

Not only is garden phlox a mainstay of the perennial border (USDA Zones 4 to 8), but they're all hybrids of native North American species, so they have additional marketing potential at retail. Opening Act Blush and Opening Act White have a mature size of 18 to 20 in.—for garden phlox they're quite compact and their foliage is a rich dark green, glossy mound with exceptional mildew and disease resistance. This cross also adds in some genetics to expand their heat and humidity tolerance. For the central United States and Canada, expect flowering to begin in early June and continue through mid-summer. If trimmed back, there's also a short reblooming season in fall.

Production specifications

Fertilization: 75 to 100 ppm N—Avoid over-fertilizing phlox. They require low levels of nutrition for optimal growth. Also, avoid high urea forms of nitrogen, as they can often reduce leaf quality and increase susceptibility to fungal and other disease pathogens. pH/EC (2:1 extract): 5.8 to 6.5/0.6 to 0.9

Light level: High light is also essential to developing good foliage earlier in the season. Low light levels in production give thinner, weaker leaves.

Watering: Moderate to moist at all times. Do not use drought stress to control plant size as this causes leaf yellowing and lower leaf drop.

Growing temp: 60 to 65F (15 to 18C) is optimal and plants can be held at cooler temperatures (40 to 50F/4 to 10C) if desired.

Sales window: Early summer through fall

Pinching and PGRs: Soft pinch liners 1 to 2 weeks after planting or when the plant is 3 to 4 in. tall. This will encourage a stronger plant chassis and more flower spikes when plants come into bloom. Usually no pinch is required on spring-planted bare root divisions, but can be beneficial for liners. Growing plants under proper conditions can help prevent the need for PGRs. If necessary, you can spray 2,000 ppm of B-Nine and 3 ppm of uniconazole to control growth. Growth regulator disclaimer: Check manufacturer's labels for approved rates and usage recommendations.

Photoperiod: *Phlox paniculata* are long day (LD) flowering, Opening Act White and Blush are faster into flower and do not require as many long days as older cultivars to begin flowering.

Vernalization: REQUIRED 8 to 10 weeks at 35 to 40F (1.6 to 4C). If ordering liners, check with your supplier to see if they're vernalized. Vernalizing phlox improves vigor, decreases flower initiation time and improves uniformity of flowering and overall crop performance.

Vigor rating: Moderate. Opening Act Phlox are mid-sized compact growers.

Time to finish: The fastest crops are from vernalized liners in spring. For 4.5-in. Grande and Quarts with 1 liner per pot, expect 8 to 10 weeks. For gallon containers, 9 to 11 weeks. For larger 2- to 3-gal. or 14-in. patio containers, use 2 to 3 liners per pot and crop time will vary between 10 to 12 weeks depending on environmental conditions.

Remember to avoid over-feeding this crop; they prefer a lower EC than many bedding plants and a frequent problem annual growers have with phlox is simply keeping the fertility too high. Plants can be moved outside as soon as all danger of frost is passed. Treat with a preventative broad-spectrum fungicidal drench at transplant.

Earlier-blooming perennials allow growers and retailers to capture more sales in the early season when more consumers are in retail outlets. Opening Act Phlox offer late spring to early summer flowers and the higher price point of perennial plants. Their long-lasting blooms keep that sales window open into summer and make a great crossover plant into the summer season!

For larger container plants in spring, consider ordering liners in late summer or fall and overwintering these phlox so the spring crop is larger, vernalized and ready to sell when consumers are shopping.

This is a plant that really benefits from a late-summer planting. The results are fuller, more compact plants with better flower performance. Don't forget to mention to your customers that phlox are all native to the North American continent and can be marketed either as traditional perennials or in the native plant section of their retail outlet.

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Producing Sensational Scabiosa

By Chanochi Zaks

Pincushion flower gets a new look with the delightfully double Scabiosa Gelato Blueberry. Early to flower under long-day conditions, it produces an abundance of full, rich flowers on 15- to 24-in. tall plants. The eye-catching, unique, ball-shaped blooms in rich magenta to deep burgundy cover 3-ft. compact mounds of deep green, frilly leaves. You'll enjoy the long flowering period, too—spring, summer and autumn. This sun-loving scabiosa is great for pots and flower beds alike.

Stick April 1 to flower naturally in June. Gelato Blueberry must be grown in long days to flower. For earlier flowering, provide a 4-hour night interruption from the day of sticking until natural long days occur.

Stick one liner per cell for rooting and provide preventive spray of fungicide, such as Daconil, on the day of sticking. The day after stick, apply a PGR spray, such as B-Nine at 2,500 ppm. High light levels (minimum 5,000 foot candles) are the best to produce floriferous, compact plants.

Maintain pH at approximately 5.8 to 6.2 during rooting and throughout production. Keep electrical conductivity (EC) at approximately 0.80. Mist with a balanced fertilizer of 50 ppm nitrogen in week 1. Temperatures should stay around 72 to 74F (22 to 23C) during the day and a few degrees cooler at night. Keep plants moist, being careful not to overwater and cause root rot.

In week 2, consider a second application of Daconil as a preventive measure at the same rate. If PGRs are needed, try a tank mix of B-Nine and A-Rest at 2,500 ppm and 10 ppm, respectively. If less effect is needed, cut the application rate in half. Continue balanced feeding of 50 ppm nitrogen in a mist.

At week 3, pinch and continue to provide long days of light. Increase feed to 100 to 150 ppm nitrogen. Maintain temperatures at 72 to 74F (22 to 23C) days, staying slightly cooler at night. EC can vary as high as 1.0 from here on out in the production cycle.

Week 4 is when cool temperatures should start for success. Greenhouse temperatures should be between 65 and 68F (18 and 20C) during the day (a few degrees cooler at night). pH should still be 5.8 to 6.2; EC 0.90 to 1.0.

Transplant in week 5, one plant per trade gallon or larger. Choose a well-drained, fertile growing medium. After transplant, provide a preventive fungicide spray of a product such as Daconil or Spectro. Provide 2,500 ppm B-Nine if PGRs are needed and continuous feed with a balanced fertilizer containing 100 to 150 ppm nitrogen. Plants will finish from rooted cuttings in 16 weeks.

From weeks 6 to 16, maintain cooler greenhouse temperatures below 68F (20C) daytime, with nighttime a few degrees cooler. Gelato Blueberry can grow cooler if you extend production time slightly. This variety will respond well to a Bonzi drench.

Maintain a preventive program that includes good air circulation and moderate humidity levels. Insects and diseases typically aren't a problem with proper environment management. Monitor and scout vigilantly to prevent disease or insect activity.

For more information on scabiosa or any of Danziger's products, call (972) 3-9602525, email danziger@danziger.co.il or visit www.danziger.co.il.

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Upgrade With Lollipop Impatiens

By Jen Calhoun

This year Benary introduced Lollipop Impatiens. Some might consider trying a new impatiens series as a risk; however, breeding and seed technology are constantly improving. They knew that this series would be successful because it's the most state-of-the-art *Impatiens walleriana* on the market.

Pictured: Lollipop Orange Peach and Cherry Impatiens

Why should you risk trying Lollipop? The short answer is because they aren't a risk—they're a sure thing. With super high germination (95%+) there's no need for patching trays anymore. Lollipop also has excellent vigor and branching, which means fuller pots and baskets with more flowers at retail.

So what about sell-through? Thanks to Metrolina's latest Home Garden Panel consumer research (April 2015), we know 28% of consumers bought impatiens in 2015. Impatiens are still one of the top 5 most purchased annuals in the study. Why? Because consumers love the color and range of colors that only *Impatiens walleriana* can provide. Lollipop Impatiens have the richest, most vibrant colors of any *Impatiens walleriana* series on the market. They also have well-presented flowers that don't stretch for the best possible presentation at retail.

Here are some tips to growing the perfect pop of color for your production:

Plug culture

Sow seeds into a 288 tray. The seeds may be covered very lightly with a layer of vermiculite to maintain proper moisture levels, but when the trays are watered in, the media should be visible through the vermiculite. Lollipop Impatiens are day neutral and will flower regardless of daylength. Supplemental lighting during

germination will help reduce stretch, but isn't necessary. Temperature will have a greater affect on the total crop time. The pH should be kept between 6.2 to 6.5—a low pH below 5.5 can promote shoot tip abortion and cause sodium toxicity. It's best to maintain an EC between 0.5 to 0.75. The use of phosphoric acid to control pH is not recommended because it can result in seedling stretch.

Moisture: Seedlings should be kept saturated (5) for the first 1 to 2 days, then the moisture can be slowly decreased. By day 11, the moisture level can be allowed to dry back to a medium (2), then you can alternate between a wet (4) and a medium. Always allow the soil to dry back slightly before re-saturating. Never allow any free moisture on the top of the seedlings going into the night because this can cause tip abortion. Proper moisture management is very effective in controlling growth.

During germination, 95% to 100% humidity levels are recommended until radicle emergence; then you can reduce them to 40% to 70% for the rest of the crop time. However, it's crucial to provide proper ventilation and horizontal airflow to help dry back the media. This will allow more oxygen to the roots to improve plant quality.

Germination temperatures below 70F (21C) will slow the speed and uniformity of germination and may even cause tip abortion or malformed seedlings. It's best to keep seedlings at 72 to 75F (22 to 24C) until day 6, then reduce slightly to 70 to 72F (21 to 22C). Thereafter, grow at 62 to 65F (17 to 18C) to hold and tone the plugs. A temperature of 67F (19.5C) will give the shortest crop time.

Fertilization can begin early on day 3 with low rates of 25 to 50 ppm nitrogen using a calcium-based feed (14-0-14). Fertilize with a calcium-based feed (14-0-14, 15-2-15) at 75 to 100 ppm nitrogen every second or third watering, using a feed containing both potassium nitrate and calcium nitrate. Minimal use of fertilizer will keep seedlings compact and promote flowering. Avoid the use of phosphorous to prevent seedling stretch.

Supplemental lighting can be used to tone seedlings, especially under low light conditions.

There are several things that can cause leaves to yellow during production. These are:

- Lighting for more than two weeks in the early stages of production (phyto-oxidation).
- Using DIFF can result in yellow leaves, which can be reversed by discontinuing DIFF for approximately one week.
- A pH below 5.5 can promote shoot tip abortion and leaf yellowing (sodium toxicity).

Growth regulators: Early applications of growth regulators is the best approach to control growth. In the later stages, proper management of temperature, light and moisture will result in the highest quality plugs. Growth regulators that can be used effectively are B-Nine (daminozide), Bonzi (paclobutrazol) and Sumagic (uniconazole).

Fungicides: Applications of fungicides can be made, especially under low light and cooler conditions.

Plug Crop Time	
288 tray	4 to 5 weeks
Finished Crop Time (from 288 tray)	
Packs	5 to 6 weeks
4-in. / 10-cm pots	6 to 7 weeks
10-in. / 25-cm baskets	7 to 8 weeks

Growing on

If using a 288 tray, plugs will be ready for transplanting 4 to 5 weeks after sowing. Transplant into a well-drained media with a pH of 6.2 to 6.5 and EC 0.75 to 1.0. Alternate between wet and medium. Allow the moisture level to approach a medium (2) before re-saturating to a wet (4).

Provide light levels of 8 to 12 mols (2,500 to 3,000 ft. candles/25,000 to 35,000 lux). A light shade can be used to reduce the light levels.

Maintain temperatures of 60 to 65F (16 to 18C) nights, 70 to 75F (21 to 24C) days. An ADT (average daily temperature) of 67F (19.5C) will give the fastest finished crop.

Fertilize every second or third watering with a calcium-based feed at 75 to 100 ppm nitrogen (13-2-13, 14-4-14). Minimal fertilization will result in more compact plants and promote flowering. Tall lush plants with flowers below the foliage or late flowering indicates too much fertilizer.

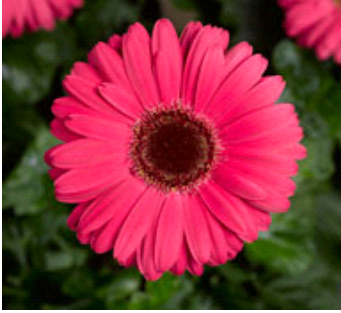
Growth regulators such as B-Nine (daminozide), Bonzi (paclobutrazol) and Sumagic (uniconazol) can be used in the later stages of production. After transplanting, the best means of controlling growth is the proper management of temperature, light, moisture and fertilization.

All *Impatiens walleriana* are susceptible to pythium, rhizoctonia, alternaria leaf spot, botrytis, tomato spotted wilt virus, pseudomonas, downy mildew and impatiens necrotic virus.

Apply fungicides during long periods of low light and high humidity. Some growers have treated their Lollipop Impatiens with Subdue Maxx as a drench at transplant and later in the production cycle as a spray with Heritage per the labeled rate before shipping and the plants hold up very well for their customers.

To maintain finished plant quality, fertilize with potassium nitrate at 100 to 150 ppm 1 to 2 weeks prior to shipping.

Jen Calhoun is the Marketing Specialist for Ernst Benary of America.



New Bengal Gerbera Series

By Amy Briggs-Macha

Gerbera daisy continues to be one of the most recognizable and popular flowers in retail garden centers. Consumers love the wide variety of colors and the nostalgic daisy flower that works in an array of pot sizes and containers.

With such high demand from retailers, growers are faced with the challenge of choosing the right gerbera series to match their production needs while delivering high-quality plants that will fly off store benches.

Pictured: Bengal Rose With Eye Gerbera

The new Bengal Gerbera series, introduced this year by Syngenta Flowers, offers growers a plant that's perfectly suited to 6-in. pot sizes and larger. Added to the Syngenta Flowers Gerbera assortment, Bengal is the big brother to the best-selling Jaguar Gerbera series. The Bengal Gerbera series provides a plant with excellent vigor to fill containers, but with a tidy and manageable habit that allows for production efficiencies from sowing through shipping.

This new series includes six core colors—Orange, Orange with Eye, Rose with Eye, Red, White and Yellow with Eye. With outstanding flower power, growers can expect multiple flowers at first flush on short, strong stems that sit right above the plant canopy.

Plug culture

Bengal Gerbera offers outstanding seed quality and vigor for growers who propagate. With a minimum germination rate of 90%, plug producers are ensured to have excellent uniformity and seedling vigor in the young plant stage of production.

Bengal Gerbera should be sown in a larger cell-sized plug tray, such as a 128- or 105-cell configuration, with one seed per cell. Seed is offered with a bright yellow coating to help the large seed pass smoothly through seed drums and allow easier visibility of seed placement in the plug trays. Light is required for germination, but a thin layer of vermiculite can be used to help maintain high humidity around the seed during radicle emergence. Media temperatures at 74 to 76F (23 to 24C) are necessary to ensure uniform and consistent germination.

During germination through the development of cotyledons, media moisture levels should be maintained at level 4 (wet) to a level 3 (moist). Once the first true leaves develop, media moisture levels must be reduced to avoid stunted, gnarled plants. Moisture levels should be alternated from a level 3 (moist) to a level 2 (medium) for the rest of the plug production cycle. Application of calcium nitrate-based fertilizers, such as 13-2-13 or 14-4-14, at 75 to 125 ppm nitrogen are recommended. Avoid fertilizers with high concentrations of phosphorus, as these formulations can also cause damage to newly formed leaves. Plug crop times are generally 6 to 7 weeks with the development of 5 to 6 true leaves.

Finished culture

Plant Bengal Gerberas in pot sizes ranging from 6 in. gallons, hanging baskets and larger patio containers. For 6-in. and gallon pots, use one plant per pot and increase up to 3 plants per pot for larger containers. Planting depth is critical for gerbera—make sure the crown of the plant is above the soil line to prevent flower delay!

Media moisture management remains critical throughout the finished production cycle to ensure high-quality plant material. Maintain irrigation cycles that alternate from a level 4 (wet) down to a level 2 (medium) to avoid stunting plant growth. If plants are slightly flagging at the end of the day, wait to irrigate the following morning, as free moisture on leaves at night can cause stunted new growth.

Gerberas are fairly heavy feeders, so it's important to provide a well-balanced fertilizer at 150 to 200 ppm nitrogen during the finished production. Adding supplemental chelated iron, such as Sprint 138, and magnesium sulfate applications every 3 to 4 weeks during production will help maintain a healthy, shiny, green color to the plants.

Gerbera daisy is a facultative short-day plant, meaning it will flower fastest at daylengths less than 12 hours. Most growers don't manipulate photoperiod when producing gerbera, but may extend daylength in the late winter and early spring months to allow plants to bulk up slightly before flowering. During summer months, flowering will take approximately a week longer than in spring production and plants will have larger foliage.

Finished crop time for Bengal Gerbera ranges from 10 to 12 weeks, depending on plug size, pot size and time of year. Specifically bred for a compact habit, Bengal can be grown with less square feet per pot compared to other varieties. With the very free-flowering nature of this series, growers can expect 3 to 5 blooms to flush at one time, making for efficient bench run shipping. The short, thick flower stems will also help enable better efficiencies for rack shipping with the ability to have more layers per rack going out to the store.

Amy Briggs-Macha is the Customer Solutions Technical Lead for Syngenta Flowers



Luscious Lantana for Low-Water Landscapes

By Rick Schoellhorn

As North American growers go into planning and placing orders for the Spring 2016 market, it's impossible not to consider the issues of drought and its impact on sales—especially in the Western United States. Crops that can continue to produce heavy flowers and tolerate reduced irrigation levels become more desirable as consumer interest in these plants continues to grow.

Pictured: Luscious Pinkberry Blend Lantana

Proven Winners Luscious Lantana collection is a great solution for this market. New this season is Luscious Pinkberry Blend, a rich mix of pinks and yellow blooms on a vigorous plant with an upright, mounded habit. It's extremely heat- and drought-tolerant and nearly sterile with low seed set for longer flowering. Good for both 4.25-in. Grande containers and monoculture hanging baskets or combos with other medium-vigor varieties.

Lantana species are largely from the southern United States and tropical Central and South America. They're known for being extremely drought-tolerant and resistant to most common greenhouse pests and diseases. Due to their tropical nature, they prefer warm production temperatures and a well-drained soil mix. Sterility is something breeders look for in this crop, as sterile hybrids tend to produce a heavier flower load and expend less energy on seed production. All of the Luscious Lantanas have been selected for the lowest possible seed set, while still showing the maximum flower coverage all season long. Luscious Pinkberry Blend is nearly sterile, drought-tolerant, heat- and humidity-tolerant and a great new color addition to the Luscious collection. In lantana, new blooms emerge and change color as they age. With Luscious Pinkberry Blend, new flowers are a creamy yellow and age to an antique pastel pink.

Production guidelines

Fertilization: Constant feed at rates between 150 to 250 ppm with a balanced fertilizer. pH/EC: 5.8 to 6.2/0.6 to 1.5. When weather is colder in early-season production, fertilize less so that fertilizer doesn't build up in the soil mix. As weather warms into summer, increase fertilizer to accommodate increased growth.

Light level: Lantanas need very high light levels in production—the brighter the light, the darker the foliage and the denser the plant habit becomes.

Watering: Moderately moist at all times; avoid heavy wet soil mixes and cold conditions.

Growing temp: 70 to 75F (21 to 23C); cold and wet growing conditions can double the crop time.

Sales window: Late spring to summer finish.

Pinching: Pinch at 1 to 2 weeks after transplant if needed. The Luscious collection of lantana will vary somewhat in form (see table). Use care when applying Florel or any ethylene precursors around Lantana, as they are sensitive to this type of chemical and will lose leaves if exposed to this category of plant growth regulator.

Finish Time

Finish Size	Liner/Pot	Weeks to Finish
Grande	1	4 to 6
Quart	1	5 to 7
Royale	1	7 to 9
10-in. basket	3 to 5	10 to 12

Vigor rating: Luscious Pinkberry Blend is a high-vigor variety; when grown in combinations, pair it with other high-vigor plant materials.

Luscious Pinkberry Blend has an upright, mounded habit and is similar in vigor to Luscious Citrus Blend. This higher vigor means the plants will be faster to finish if your production temperatures are cooler than optimum. For Southern growers, these will be very vigorous under warm production conditions and best in gallon or larger containers. A second pinch may be needed to shape plants, especially if they're grown in smaller containers.

The two most common problems growers have with lantana are early shipping and temperature issues either in shipping or in a cold greenhouse. When plants are chilled, they'll wilt slightly and if cold is severe enough, the plants defoliate, so use care when you order your plants in for production and make sure your temperatures are warm enough to maintain active growth. Secondly, whiteflies can be an issue in many parts of the United States and a good scouting program can keep this insect out of your facility.

High Vigor Upright	Medium Vigor Mounding	Medium Vigor Trailing
Luscious Citrus Blend	Luscious Lemonade	Luscious Grape
Luscious Pinkberry Blend	Luscious Bananarama	
Luscious Berry Blend	Luscious Marmalade	
	Luscious Piña Colada	

Quick reference guide for the Luscious Lantana Collection:

Grower tips

- Treat with a preventative broad-spectrum fungicidal drench at 1 to 2 weeks after transplant. Scout crops regularly (at least once a week) for disease and insect development.
- Warm, bright growing conditions are optimum. Where early spring conditions do not allow production under these parameters, consider growing lantana for late spring to summer sales.
- PGRs should not be needed. Use caution when using Florel, as leaf drop can occur.
- Good air circulation, control of humidity and good sanitation practices are critical. Good sanitation practices include keeping greenhouses clean at all times, eliminating weeds and debris, disinfecting equipment and greenhouses as often as possible, and keeping hose ends off the floor. Good water management practices are critical to healthy plant growth.

Rick Schoellhorn handles new products for Proven Winners. He can be reached at rick@provenwinners.com.



Bossa Nova Begonia

By Peter Bradford

Begonia Bossa Nova brings the Carnivale to your containers. Full of flowers and available in a range of bright colors, Bossa Nova is sure to add a new dimension to your bedding displays.

Brilliant blooms cover the plant from late spring until frost and the well-branched plants look stunning in a large container or hanging basket, either singly or as part of a combo.

Available as pelleted seed, Bossa Nova is the economical alternative to cutting-raised begonia. The large flowers and nonstop flowering makes Bossa Nova a great choice for any climate, but will particularly thrive in warm situations, even where other begonia have failed.

For consumers, too, Begonia Bossa Nova is a great choice, as it's very tough and durable once established, needing little water and fertilizer, and performing well in full sun or shady positions. New flowers are constantly replacing old through the season, giving a vibrant, clean injection of color to any outdoor space.

There are now eight colors in the series with a ninth on the way for 2016, so there are plenty of color options for mixed combos and mono plantings. Here's our guide to growing a great crop of Begonia Bossa Nova:

Plug production

Use a well-drained, disease-free, peat-based plug medium with a pH of 5.5 to 5.8 and EC of 0.5 to 1.0 mmhos. No covering is needed. Being a tuberous begonia, there are some typical but important factors to successful plug production. Temperature should be 73 to 78F (23 to 25C) and humidity high. Light is not essential for emergence, but once emerged, it's critical to grow the plants under 14-hour days, using supplementary lights if natural daylength is less than 14 hours. This will keep the plants growing actively, as under short days, the plants are naturally looking to shut down for the winter. Good-quality light isn't essential; it's the daylength that's essential, although good-quality grow lights will improve quality.

As with all tuberous begonias, plug production time is around 8 weeks, so good moisture management is required. Aim for a constant moisture level avoiding extremes as roots develop slowly and can be damaged by over drying. Too much water, on the other hand, can encourage algae growth and Sciarid fly. If growers can factor it in, it's recommended to sow into a small cell, like a 480- to 512-tray and then transplant into a 72- to 128-cell tray. From here, you can move the plants into a 6- to 8-in. pot or into baskets and containers.

Growing on

Media: Use a well-drained, disease-free, peat-based growing mix with a pH of 5.5 to 5.8 and EC of <1.5 mmhos. Adding perlite for extra drainage is beneficial. Do not bury the plugs, as this can encourage crown rot.

Temperatures: Keep soil temperature at 65 to 68F (18 to 20C) for rooting out, then lower to 61 to 68F (16 to

20C) to grow on. Once established, night temperatures can be dropped as low as 50 to 54F (10 to 12C).

Light: Higher light levels (<4000 f.c.) will help to keep plants more compact and will improve the “showiness” of finished plants.

Irrigation: Practice a good wet/dry moisture cycle, but avoid over-drying, especially wilting, as this will result in uneven and stunted growth. Water early in the day to avoid leaf scorch on sunny days. Bossa Nova responds well to sub-irrigation.

Fertilizer: Feed once to twice per week with 200 to 300 ppm N from 20-10-20, 15-5-15 or 17-5-17, but alternating with a higher potassium feed will help to keep plants compact when flowering. High nitrogen feeds will promote larger, softer leaves.

Pests and diseases: Fungus gnats and shoreflies during propagation. Western flower thrips can be a present when in flower, but do very little damage. Burying the crown when transplanting can encourage stem rot, causing plant collapse. Water droplets on the foliage may cause scorch in high heat/light conditions. PGRs: Managing moisture, fertilizer, light and temperature are the best way to control growth. Sprays of B-Nine (1,500 to 2,500 ppm) can be used if needed.

Plug Times: 512-plug: 5 to 6 weeks; 288-plug: 7 to 9 weeks; 72-plug (from a 512): 3 to 4 weeks

Transplant to Finish:

Container	Plants/Container	Transplant to Finish	Total Crop Time
4-in. (10.5-cm) Pots	1 x 288-cell plug	7 to 8 weeks	14 to 16 weeks
12-in. (30-cm) Baskets	5 x 72-cell plugs	8 to 10 weeks	18 to 20 weeks

Peter Bradford is Product Development Manager for Floranova.



Producing Amazing Andropogons

By Josiah Raymer

When it comes to *Andropogon gerardii*, the expansive category makes playing favorites tough and it's made even more difficult by recent advancements in breeding and selection. Often a savior in difficult sites, the new andropogons also add beauty to beds and borders. A few to watch:

- Rain Dance features red-tipped foliage, deeper green than the species, which turns totally maroon in fall. Adding to the interest: red flowers on red stems. A sun lover, Rain Dance grows to 6-ft. tall and is hardy in Zones 3 to 9.
- Red October boasts deep green foliage that darkens to purple in late summer, then vivid scarlet in autumn

for spectacular late-season color. Red October loves sun and reaches heights of 5 to 6 ft. It's hardy in Zones 3 to 8.

- Two new picks just introduced this year: Blackhawks, with dark green foliage turning dark purple in fall, and Dancing Wind, with green foliage transforming to vivid red for autumn. Both reach 6-ft. tall and prefer full sun. Blackhawks is hardy in Zones 4 to 9, Dancing Wind in Zones 3 to 9.

Great andropogon production starts from the roots up. Plant one plant per one trade gallon pot. Plants will be finished for spring sale in approximately 6 to 8 weeks. Pinching and plant growth regulators generally aren't required for andropogons.

Fertilizer

Use a low to medium rate of slow-release fertilizer or a constant, low-level balanced liquid feed providing approximately 50 to 75 ppm nitrogen.

Media, EC & pH

Sensitive to poor drainage, andropogons respond positively to well-draining, disease-free commercial media. Maintain electrical conductivity (EC) at 0.6 to 0.9 mS/cm using the 2:1 extraction method. pH levels should be 5.8 to 6.2.

Irrigation

Take care not to overwater. Allow plants to dry thoroughly between irrigation. Water thoroughly.

Temperatures & light

Daytime temperatures should be 65 to 75F (18 to 23C) with nighttime temperatures at 55 to 65F (12 to 18C). No supplemental lighting necessary. Maintain at least 5,000 foot candles—high light levels.

Pests and diseases

Pests and diseases should not be an issue with standard sanitation practices. Follow a good preventive program, including managing humidity levels and maintaining good air circulation. Scout vigilantly and regularly for pests and leaf spot diseases. Apply a broad spectrum fungicide drench at liner planting.

Josiah Raymer is head grower and general manager for Emerald Coast Growers, one of the country's largest ornamental grass and perennial producers. He can be reached at (877) 804-7277, sales@ecgrowers.com or www.ecgrowers.com.



Growing Balsamic Blooms

Compiled by the EuroAmerican New Product & Marketing Team

Balsamic Blooms, an *Ocimum* hybrid, is a new versatile basil that's completely edible and tastes as good as it looks! With flavors ranging from mint-blooms to soft, sweeter basil leaves, this has everything you need.

Balsamic Blooms has a mounding habit and is great for both landscapes and containers. The deep purple blooms are simply fabulous, lasting for weeks and are pollinator magnets. This versatile basil could be grown in an edible or ornamental program and would be a great choice to feature as an end-cap display at retail.

These beauties are easy to grow and perform well in an array of pot sizes including 4-in., 6-in. and gallons. Enjoying full sun to part shade, they reach a height of between 12 and 18 in. and a width of between 18 to 24 in. This annual continues to produce soft foliage during and after blooming without becoming brittle and dying off. This is a long lasting crop with long-lasting blooms.

Cultural Information

Zone: 10 to 11

Soil type: A mixture of 67% peat moss and 33% perlite is recommended

Height: 12 to 18 in.

Width: 18 to 24 in.

pH: 5.8 to 6.2

EC: 0.75 to 1.5

Fertilization: Up to 100 ppm nitrogen

Light requirements: High (6,000 to 9,000 foot candles)

Watering requirements: Moderate to moist

Rooting temperature: 70 to 75F (21 to 23C)

Growing temperature: 60 to 75F (15 to 23C)

Holding temperature: 50 to 60F (10 to 15C)

Vernalization: No, not cold hardy

Finish Time

4- to 5-in. pots = (1) 84-cell Liner = 4 to 6 weeks to finish

6-in./ 1-gal. pots = (1) 84-cell Liner = 8 to 10 weeks to finish

8- to 10-in. pots = (1) 84-cell liner = 12 to 14 weeks to finish

Production Information

Transplant liners in early spring through early summer, maintaining adequate temperature for optimal root development at 70 to 75F (21 to 23C). Upon receiving liners, plant one liner per pot in a disease-free, well-drained media. A soil mixture of 67% peat moss and 33% perlite is recommended.

Thoroughly water newly planted liners; soil moisture should be moderate and avoid saturation. After watering,

apply a broad-spectrum fungicide. Balsamic Blooms requires little fertilization, so be mindful not to over-fertilize. Provide low fertilizer levels of up to 100 ppm nitrogen, including micronutrients as a constant feed: 20-10-20 with micros is recommended.

Maintain a pH of 5.8 to 6.2 throughout production. Start with an EC level of 0.75 in week 1 and then increase to approximately 0.75 to 1.0 for week 2. For week 3 to finish, increase the EC to 1.0 to 1.5. Using the “pour-through” method to obtain EC readings is recommended. Pinching is not recommended for this crop. Also, no PGRs are needed.

This specific *Ocimum* is daylength sensitive. In order to produce the unique blooms, the plant needs at least 12 to 15 hours of light. The recommended pest and disease control method for an ornamental crop is to use general and preventative measures correlated with a well-thought-out Integrated Pest Management Program. In addition, be mindful of whiteflies, aphids, fungus gnats and red spider mites, as they’re known for being common pests to this genus. Botrytis is a known common disease that can affect this genus during cool weather. If you’re growing your Balsamic Blooms as an edible crop, we recommend using a Pest Management Plan similar to those used for herbs and vegetables. **GT**