GROWERTALKS

Features

9/30/2014

A Growing Culture

Compiled Jennifer Zurko

ColorMax Violas

By Ken Harr

The ColorMax Viola series is one of the most favorably reviewed introductions since Sakata debuted the new series at Spring Trials in April 2014.

ColorMax Violas complement and complete a long-standing tradition of excellent viola breeding programs from Sakata. True to form, the ColorMax varieties exhibit many of the most outstanding attributes a viola series needs in order to compete in today's markets. Extra-large and vibrant blooms, unique in their shape and design, sitting atop short peduncles are what top growers, retailers and gardeners are craving. The series is comprised of Clear Orange, Clear Yellow, Clear Purple, Berry Pie, Icy Blue, Lemon Splash, Popcorn, Purple Glow, Yellow Jump Up and a Mix *(pictured)*.

Plug production

ColorMax seed can be sown in 512 and/or 288 plug trays for pack or pot production, as well as multi-seeded into larger plug sizes (200s, 144s and up) for bigger containers, hanging baskets and mixed decorative pots. A few key points to watch for in viola plug production are:

- Ensure the media pH is between 5.5 to 5.9
- Soil EC is <0.75 (using a 2:1 slurry)
- At germination, soil temperature at 64 to 68F (18 to 20C) with a light vermiculite covering
- Avoid tip abortion due to Boron deficiency by supplementing with 0.25 ppm B in the fertilizer applications.
- If plug trays are placed in a germ chamber, pull trays and place in the greenhouse when the radicle emerges and begins to "hook." This will avoid hypocotyl stretch and prevent "floppy" seedlings.

After germination and the cotyledons have expanded, lightly fertilize with 75 ppm N from a well-balanced fertilizer blend. Boron deficiency can occur, especially during the summer months, resulting in tip abortion. To avoid this, supplement with Solubor or Borax with a target of boron at 0.25 ppm added to the stock tank.

Maintaining temperatures in the low to mid 60s with good airflow will greatly assist in keeping plugs compact and well toned. After the initial feed, begin fertilizing with 100 to 200 ppm N from a well-balanced fertilizer containing trace elements. A calcium nitrate-based blend such as 15-3-20, works very well to build strong, compact plants.

Reduce fertilizer applications as the plants begin to bulk up and fill out the trays. When applying fresh water (no fertilizer), continue to supplement with trace elements, especially boron. Always monitor the soil pH and maintain levels between 5.5 and 5.9. Ideally, viola trays should be given higher light levels to control stretch. Reduce temperatures into the low 60s and continue to provide good air movement to assist in establishing well-toned plugs.

Maintain light levels up to 7,000 foot candles/75,000 lux, while watching for heat and water stress. PGRs that can be utilized to control stretch include B-Nine (daminozide), Cycocel (chloromequat) and A-Rest (ancymidol). Always follow label directions and, to avoid over-exposure, a trial application over a small lot is recommended to look for any adverse reactions. To determine if PGR applications should be done, watch the internodes on a daily basis. If there's the slightest hint of internodal stretch, apply a PGR spray.

Transplant to finish

ColorMax plugs should be transplanted into a well-aerated media mix with a pH of 5.5 to 5.9. Ensure the plugs aren't set too deep to prevent stem rot, and non-uniform plants and blooming at finish. The ideal day temperatures should be in the 62 to 68F (17 to 20C) range, with night temps at 50 to 55F (10 to 13C). Fertilize with 100 to 200 ppm N from a well-balanced fertilizer to ensure a healthy start. After transplanting, violas are still sensitive to boron deficiency, so continue adding boron into the stock tanks.

While providing all the ideal environmental inputs of temperature, light, moisture management levels and fertilizer, PGR applications may still be necessary in any geographical location. B-Nine, Cycocel, A-Rest and Bonzi (paclobutrazol) may be used on viola crops. Extra care should always be taken not to overdose the crop, as stunting of the plants can and will occur if overexposed with excessive rates. Always follow label directions.

Insects & diseases

The most common pests that can be seen on viola crops include fungus gnats, shore fly, thrips, spider mites and whitefly.

Major root diseases include Pythium, Phytophthora and Thielaviopsis. Thielaviopsis or Black Root Rot is often associated with high temperatures and high pH levels. Research indicates the disease is checked when the soil pH is 5.5 or lower. High ammonium levels should be avoided, as this can encourage the onset and spread of Thielaviopsis. Good sanitation practices and attention to proper moisture management levels works very well in preventing most incidences of diseases.

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Surfinia Sumo Petunias

By Delilah Onofrey

For Suntory Flowers, this has been the summer of Surfinia Sumo—the new super-sized vegetative petunias under the famous Surfinia brand. Growers throughout North America got to see how the Sumos compare to both the classic trailing and more compact Surfinia varieties when they visited summer field trials.

While the original Surfinia trailing series was more prostrate and spread horizontally, Surfinia Sumos have a vigorous, mounding habit that's very full. Growth is more upright before plants expand horizontally and trail. Starting this fall, growers will have five choices in Surfinia petunias—classic trailing, mounding/patio, compact Bouquet, Summer Double and now the super-sized Sumos! The first three vibrant colors are Sumo Pink *(pictured)*, Sumo Plum and Sumo Bold Lilac.

Cultural tips

For propagators, Surfinia is a dream to root—3 to 4 weeks on the bench. Surfinia will require pinching to encourage the right habit and breaks. This should happen two weeks after potting.

Watering is key, as overwatering will lead to root rot. A little-and-often regime is encouraged when plants are very young.

Provide high light levels. Crop temperatures should begin at 55 to 60F (13 to 16C), then increase to 65 to 75F (18 to 24C) during the day and reduce to 55 to 60F (13 to 16C) at night.

Crop timing

- 4-in. or 6-in. pots—7 to 8 weeks from one liner with two pinches
- 10-in. baskets—10 to 12 weeks with three liners and two to three pinches

Feeding

Surfinia petunias are heavy feeders and the use of slow-release fertilizer is recommended as they grow in addition to liquid fertilizer. Keep pH between 5.5 and 5.8. Additional applications of micronutrients are recommended.

Growth regulators

Surfinia is responsive to daminozide (B-Nine), which can be sprayed at a rate of 2,500 to 5,000 ppm. Conduct trials to see varietal differences in response. A Bonzi drench can be applied at 1 to 3 ppm. Apply as needed. Surfinia grows rapidly in conditions of high light and high heat.

Insects & diseases

Key pests to monitor for include aphids, fungus gnats, mites, shore flies, thrips and whiteflies. Diseases to prevent include Botrytis, Phytophthora, Pythium, Powdery Mildew and Rhizoctonia.

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Interested in more production advice for all your Suntory Flowers varieties? Download the free Grower's Guide app for iPads in the iTunes app store or from the link at www.suntorycollection.com. It's on the YESS page—Your Easy Suntory Solution.

Delilah Onofrey supports Suntory Flowers marketing in North America. She can be reached at (440) 522-1447 or donofrey@gmail.com.

Big EZEE Geranium

By Emily Mason

Big EZEE is the latest geranium introduction from Dümmen group's Red Fox brand. Available for Spring 2015 in four colors, Big EZEE features a number of innovations in response to grower needs.

First, Big EZEE is a true series. All four varieties time well together. Blooming and retail-readiness are very consistent, making it easier to plan the crop for on-time delivery to customers.

Second, Big EZEE features a compact, rounded habit, along with robustly heavy branches. These tough branches support its large umbels and the overall habit ensures ease of shipping to retail. It also means the plants arrive to customers in an appealing, display-ready condition.

Third, the four colors available for 2015—Red *(pictured)*, Neon, Fuchsia Blue and Pink—have proven to be gardener favorites over the decades. And it bears repeating that the umbels are quite big.

Finally, Big EZEE has been thoroughly tested by growers, who have found its zonal/interspecific breeding to be an effective combination, resulting in easy-to-grow properties. PGRs aren't needed, as it's naturally compact—another grower-desired attribute. It also has been successfully placed in combinations with other genera, such as Peppy Petunias and YOLO Lobularia.

Scheduling Big EZEE depends on a grower's region. One can bring this product to market from early spring (February) in the south to mid-summer (July) in the north. Big EZEE is suitable for 6-in. pots to 12-in. baskets. Big EZEE is available as an unrooted cutting, callused cutting and as a rooted liner. It's covered by the Red Fox True Grower Guarantee.

Propagation

- If starting with unrooted cuttings, use the same 3-week rooting schedule as for a zonal geranium.
- Rooting hormone treatment at time of stick is recommended.
- A spray application of Florel (ethephon) at 350 ppm when liners are rooted (12 to 21 days after sticking) will improve branching, control growth and remove any early flower buds

Potting liners

- Use a geranium rooting medium with a pH of 6.0 to 6.4.
- Water in well after transplant and maintain even moisture until liners are established and roots are growing out of the liner towards the sides of the pot.
- Pinching isn't necessary.

Temperature

Big EZEE should be grown at 70 to 75F (21 to 24C) day/65 to 70F (18 to 21C) night temperature.

Light

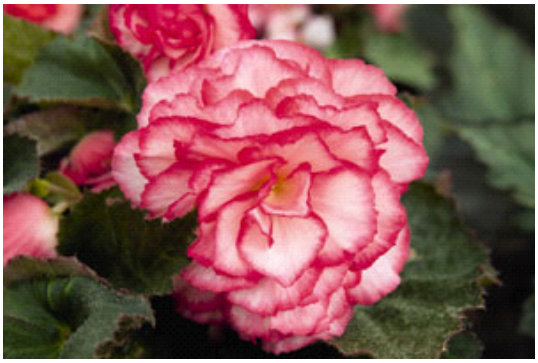
Big EZEE should be grown in full sunlight (4,500 to 7,000 foot candles) with adequate spacing. Low light will slow flowering and cause weak, stretched growth.

Fertility

Big EZEE requires moderate-to-heavy fertility. Maintain a root medium EC 2.0 to 2.5 (SME) using a Cal/Mag fertilizer, with an ammonium-containing fertilizer used periodically. Maintain a root medium pH of 6.0 to 6.4.
PGR

Additional spray applications of Florel aren't necessary, as this series is bred for strong basal branching. However, a light application to maintain the plant's vegetation can be beneficial for larger pot production. Florel delays flowering of geraniums, therefore, all Florel applications should be discontinued eight weeks before sales. Cycocel and Citadel aren't necessary for Big EZEE production.

Emily Mason is Brand Manager for Dümmen/RED FOX.



Nonstop Begonias

By Jen Calhoun

Let's face it—consumers love huge flowers. Nothing delights a group of Mother's Day shoppers more than a full drip line of colorful baskets with huge double blooms like Nonstop begonias. But sometimes it's not easy to get those huge attention-grabbing blooms consistently. So what's the secret? Here are a few tips from the experts at Benary:

First, let there be light!

Tuberous begonias are very light sensitive. If plants are grown under short days, the growth can become uneven and the bloom size will be smaller. Day length extension will speed up flowering and improve the overall plant quality. Some growers find day length extension complicated, but actually it's quite easy.

Most growers prefer using day length extension so they can see when the lights come on versus in the middle of the night when nobody's around. You just need to extend the day length so that it's greater than 12 hours

(preferably a 14-hour day length). This can be accomplished with a light level greater than 10 foot candles or something similar to mum lighting.

Night interruption can also be used. Usually with night interruption the lighting is on for just 4 hours from 10:00 p.m. until 2:00 a.m.

High light levels can also be a problem. If light levels exceed 4,000 foot candles, we recommend that you provide shade to reduce the leaf temperature. This will prevent leaf edge burn and keep your crop looking great.

Now, how's your temperature?
After transplanting, tuberous begonias prefer warmer temperatures to get established in the container. Keep night temperatures around 65F (18C) with an ADT (average daily temperature) of 67F (19C) to give the fastest finished crop. Temperatures below 57F (14C) will result in tuber formation and a delay of the crop. A DIF of 2 to 3F will result in a more compact crop requiring little to no growth regulators.

A common myth is that begonias need to be grown super dry.
Although the roots are sensitive to over- watering, actually growing too dry just after transplanting can delay your crop significantly, shrink flower size and even stunt the plant so that it's unsaleable. After transplanting, you should water them in well, then begin a good wet-to-dry cycle. Letting them dry back between watering will force the roots to the bottom of the pot or baskets and give better aeration to the roots. Allowing plants to dry back too much can result in root damage. Humidity also affects overall moisture. During this stage, a humidity level of 40% to 60% is ideal. Providing good ventilation and horizontal airflow will help lower the humidity and dry back the media, providing oxygen to the roots.

But the most important tip to huge flowers is fertilizer!
To increase the flower size, just raise the moisture and fertility slightly once buds are formed. Alternate between a calcium-based feed 17-5-17 and an ammonium-based feed 20-10-20, feeding at 100 to 150 ppm. Under high light conditions, you can use a constant feed of 20-10-20 at 100 to 150 ppm, but if the plant growth is soft and plants seem "stretchy," revert back to a calcium-based feed. Keep the media EC at 1.5. An application of potassium nitrate can help to keep the plants more compact. Stunted, chlorotic plants with marginal leaf burn indicate a lack of calcium and magnesium. Epsom salts can also be utilized effectively.

Spacing the plants will increase overall plant quality. Don't cultivate too wet since the roots are sensitive to over watering. Keep humidity levels low to avoid problems with powdery mildew. When transplanting with multiple plants in a pot or basket, make sure that the points of the leaves face outward since this is the direction that the flowers will be produced.

Post-harvest to maintain keeping quality
Fertilize with potassium nitrate at 100 ppm 1 to 2 weeks prior to shipping. Lowering the temperature to 61F (16C) will help to tone the plants before shipping.

Finished Crop Time:
4-in. pots (1 ppp)—7 to 8 weeks from a 288 tray

6-in. pots (1 to 2 ppp)—8 to 9 weeks from a 288 tray
10-in. baskets (3 to 5 ppp)—11 to 12 weeks from a 288 tray

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

Belarina Primula

By Jeremy Windemuller

Belarina Primulas burst forth in spring with their sizable double blossoms in a rainbow of colors, flowering profusely throughout the spring season atop compact mounds of bright green foliage. Since the flowers are sterile, the plants are particularly long blooming. Though they're hardy to Zone 4 in the landscape, be sure to grow extra for combination containers and windowsill pots.

Potting and timing

Start Belarina Primulas from a 72-ct plug, potting them up in early to mid-fall using one plug per 1 quart or 4.5-in deep pot or five plugs per 12-in. bowl. Use a well-drained growing media that also has good water-holding properties, such as a peat/bark/perlite mix with a pH of 5.8 to 6.2. Plants should take 7 to 9 weeks to root out and bulk up in their containers before going winter dormant. It's best to grow primulas indoors to be able to control the growing environment.

Cultural recommendations

Fertility Belarina Primulas are light feeders. Feed them 75 to 100 ppm Nitrogen in a constant liquid feed. They can be sensitive to salts, so be sure to avoid salt levels greater than 4.0 using the pour-through method.

Moisture It's important to keep Belarina Primulas moist throughout the growing process. Moderate-to-moist soil is best. Be sure to irrigate in the morning to allow the dense, rugose foliage to dry by evening. Keep humidity levels low with good airflow through the greenhouse to prevent disease.

Lighting Belarina Primulas initiate flowering under short days (8 to 10 hours). It's best to bulk plants up in early fall while it's still warm enough for the roots and foliage to fill out the containers fully. No supplemental lighting or shade is needed.

Temperature When bulking plants up in early fall, provide rooting temperatures of 65 to 72F (18 to 22C). Colder temperatures will cause the plants to flower too early. Once the plants are finished, hold them in a cold 35 to 40F (2 to 4C) greenhouse until you want to initiate flowering. Though vernalization isn't required, you'll still need to hold the plants cold to inhibit flowering until you're ready to sell them.

Pests and diseases

A few pests—such as aphids, thrips, spider mites and slugs—can occasionally affect a crop of primulas. Scout regularly for these pests and treat as needed. Also, watch for botrytis and powdery mildew, both of

which can be avoided by watering in the morning, keeping humidity levels low and maintaining good airflow throughout the greenhouse during production.

Finishing tips

Spacing is very important when growing a crop of Belarina Primulas. Provide ample space between each pot to prevent the loss of the lower leaves on each rosette. Do not trim the foliage back before plants flower. They won't re-flush new foliage until they're finished flowering because they're semi-evergreen. The flowering period of Belarina Primulas is about two months under normal cool spring conditions.

Forcing naturally

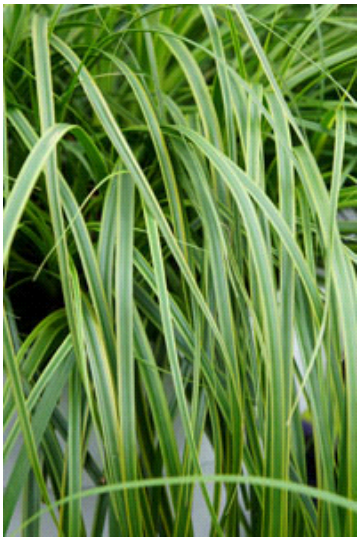
Since Belarina Primulas are one of the first perennials to bloom in spring, many growers allow them to come into flower naturally as their greenhouse temperatures warm to above 45F (7C). Under such conditions, flowering will initiate in 3 to 5 weeks. No supplemental lighting is necessary; natural lighting under clear plastic is best.

Forcing for spring holidays

Belarina Primulas are the perfect plant to force for Valentine's Day and Easter sales. In northernmost zones, they may even work for Mother's Day sales. When forcing for spring holidays, the flower quality will be much better if plants are forced at lower temperatures for a slightly longer period than if they're forced under warm temperatures for a shorter period. For best results, force plants at 45 to 55F (7 to 13C) for 3 to 5 weeks to bring them into bloom. No supplemental lighting is necessary; natural lighting under clear plastic is best.

Jeremy Windemuller is a grower and trial manager for Walters Gardens, Inc. in Zeeland, Michigan.

Charismatic Carex



By Josiah Raymer

The carex category truly encompasses all, with something for every taste, style and preference. Marked by its huge variation in varieties, carex features bold variegation, fine texture and a palette of unusual copper colors.

But perhaps its greatest appeal comes from the extreme versatility it offers in cultural requirements—wet to dry, shade to sun and more. That, in turn, offers great flexibility in use, from restoration projects to landscapes and containers to cut flowers. Try them at pond edges or incorporate them into combinations for even more appeal.

Here are a few of our current favorites:

- *Carex appalachica,* an American native whose fine-textured green foliage forms graceful clumps
- *Carex davalliana*, with its graceful, uniform, fescue-like clumps of slender, dark-green foliage
- *Carex oshimensis* EverColor Everlime *(pictured)*, a superb ground cover and container plant

showcasing distinctive green foliage with lime margins

- *Carex oshimensis* EverColor Eversheen, a freshly lime-yellow striped selection great for containers and landscapes
- *Carex petriei*, with fine, pink-highlighted bronze foliage that forms small, neat-but-relaxed, vase-shaped upright clumps
- *Carex remota*, whose cascading clumps of slender green leaves are tipped with buff flowers
- The huge variety of carex's selection makes broad-sweeping cultural strategies challenging, but here are a few tips for producing these great grasses:
- Planting & growing on
- Plant one liner per 1-gal. pot. Plants will finish for spring sales in approximately 8 to 12 weeks depending on variety.
- Pinching and plant growth regulators typically aren't needed.
- Maintain greenhouse temperatures at 60 to 70F (16 to 21C) during the daytime and 50 to 60F (10 to 16C) at night.
- Provide high light levels (5,000 foot candles or more) for full sun varieties. Shade lovers should be in the 2,000 to 4,000 foot candle range. Supplemental lighting generally isn't necessary.

Media, pH, fertilizer, watering

- Provide a well-draining commercial media and maintain pH at 5.8 to 6.2. Electrical conductivity (EC) should be approximately 1 to 1.5 mS/cm using the 2:1 extraction method.
- Grow plants evenly moist and avoid overwatering.
- Fertilize with a constant liquid feed at medium levels of 150 to 200 parts per million of nitrogen. As an alternative, you could use a slow-release fertilizer instead of scheduled fertilize applications.
- Pest management
- Generally, pests and diseases aren't a problem, provided standard sanitation practices are included in the production plan.
- Ensure a good preventive program is in place, including managing humidity levels and maintaining good air circulation.
- Apply a broad-spectrum fungicide drench at liner planting. You may follow a monthly broad-spectrum fungicide control program, though breeding for better disease resistance has greatly reduced the need for fungicides.

Josiah

Raymer is head grower and general manager for Emerald Coast Growers, one of the country's largest ornamental grass producers.

4 Luck Trifolium Clover

By Randy Uhl

Trifolium, also known as White Clover, is native to Europe and parts of Asia and Africa. As residents of North America, we're very familiar with this plant, since it's infiltrated most of the pastures and large grass landscapes from coast to coast. 4 Luck Trifolium is very hardy in cold climates (Zone 4), but also very heat tolerant—maintaining good plant growth in temperatures above 100F (38C). It performs as an excellent groundcover because the stems will develop from the plant base under the soil, filling a small area in a single growing season. With that stated, trifolium is not categorized as an invasive plant.

4 Luck Trifolium is an excellent component plant for containers with a great amount of diversity in colors. It grows low and spreads, then with maturity cascades over the edge of containers and baskets. Garden height is 4 in. (5 cm) with a spread of 10 to 14 in. (25 to 36 cm). 4 Luck Trifolium will create unique and beautiful spring/summer containers showcasing bright-colored leaves of red, burgundy, white and chartreuse that's durable in wet or dry regions. 4 Luck can also be used for fall/winter mixed planters containing pansies, violas, snapdragons and other cold-tolerant plants.

The term "trifolium" is derived from the Latin word "tres" or three and "folium," meaning leaf. Green Fuse's series is called 4 Luck due to the propensity to develop four leaves per stem versus the usual three. There were two varieties of 4 Luck introduced at the 2014 California Spring Trials—Green Glow *(pictured)* and Red -Green. The Green Glow variety would be the perfect item to produce for Saint Patrick's Day with its green and white tones and four-leaf stems.

Finishing culture

Crop planning from cell packs
Pot size: 3-in. pot (7.6 cm) Plants per pot (ppp): 1 ppp Crop time (weeks): 7 to 9
Pot size: 4.5-in. pot (11.4 cm) Plants per pot (ppp): 1 ppp Crop time (weeks): 9 to 11
Pot size: 6-in. pot (15 cm) Plants per pot (ppp): 1 ppp Crop time (weeks): 11 to 13

For the 2014/15 production season, only rooted liners will be available for purchase. Liners will be available in 102-cell trays (51 split tray) and 200-cell trays for those who wish to maximize shipping costs and receive a larger number of units.

Fertilizer and soil requirements

Growers will develop the best finished plants when 4 Luck Trifolium isn't completely happy with their environment. Intensity of leaf color increases with moderate-to-low fertility. A suggested fertilizer rate is 100 to 125 ppm Nitrogen, using a balanced feed including minor elements. This low fertilizer rate will maintain proper growth and foliage color. Calcium and Potassium-based fertilizers are ideal so plants don't develop too large of leaves and become soft and "weedy." Also, allow the soil to dry slightly between irrigations, since allowing the soil to completely dry can damage and burn younger leaves.

4 Luck Trifolium will tolerate a wide pH range—6.2 to 7.2—and is tolerant of clay soils.

Temperature requirements
Temperatures minimums: 45 to 60F (7 to 16C) nights; 60 to 68F (16 to 20C) days
Cooler night temperatures will intensify leaf color and keep stems shorter to maintain a mounded plant form.
Light requirements High to medium-high. A bright growing condition allows leaf colors to intensify.

Pinching requirements 4 Luck Trifolium is well branched and naturally compact when pinched at least once to break the apical dominance. Soft pinch the rooted cuttings leaving 4 to 5 nodes on the stem. A suggested second pinch develops a thicker canopy and shapes the plant for a high-quality finished container.

Growth regulators High light is the best control of plant height, but if a growth regulator is required, B-Nine is the most economical PGR. Spray B-Nine at 2,500 to 5,000 ppm. Other PGRs can be used to control plant size, but we suggest applying at lower rates on a trial basis.

Insects & disease Spider mites, slugs, whitefly and caterpillars. Rhizoctonia and pythium are of primary concern. Proper air movement and preventative drenches are recommended.

Randy Uhl is technical sales support for Green Fuse Botanicals in Santa Monica, California and Henry F. Michell, Co. in King of Prussia, Pennsylvania.

Nesia Nemesia

By Chanochi Zaks

Your grandmother may fondly remember nemesia as a lovely addition to her spring and fall garden. But granny's never seen varieties like the latest, as breeding takes this popular annual to earlier and longer bloom times.

Great for early spring sales, nemesia can be grown under cool conditions, plus they flower under the short days common to spring. Use them to jump-start sales toward a healthy season that continues on through summer and into fall.

Colors of the Nesia Nemesia include Banana Punch (pink and yellow), Dark Blue, Dark Magenta, Dark Pink, Fantasy (purple and white), Fantasy Pink (pink and white), Lemon (light yellow), Magenta, Pink Spirit, Tropical (light orange and pink) and White. The newest, Nesia Sunshine *(pictured)*, features large, beautiful flowers in vivid yellow over shiny green foliage.

Rooting & planting
Root for about 14 days at temperatures of 68 to 72F (20 to 22C). Mist with 50 ppm nitrogen. Pinch once in trays, about 10 days before liner planting or about 10 days after planting and establishing.

For a 4-in. (10-cm) pot, use 1 plant per pot. Plants will be ready for sale (from a rooted cutting) within 5 to 6 weeks. Use 1 to 2 plants per 6-in. (15-cm) pot and plants will be ready in 7 to 8 weeks. For 10-in. (25-cm) hanging baskets, use 3 to 5 plants. They'll be ready in 9 to 11 weeks.

Drench with a broad-spectrum fungicide at liner planting.

Media, pH & EC

Use a well-drained, disease-free potting mix. Maintain pH at 5.5 to 6.0 and keep electrical conductivity (EC) at 0.6 to 0.9.

Temperature

Provide daytime temperatures of 65 to 72F (18 to 22C) and nighttime temperatures of 60 to 65F (16 to 18C). They can be grown cooler, but time will need to be added to finish.

Light intensity

Nemesia varieties prefer full sunlight to partial shade, minimum 5,000 foot candles (50,000 Lux).

Fertilizer

Provide a constant feed with a balanced fertilizer (100 to 150 ppm nitrogen) that contains average levels of micronutrients with a slightly increased level of iron.

Irrigation

Nemesia prefers moderate water levels. Allow soil to dry slightly between irrigations.

PGRs

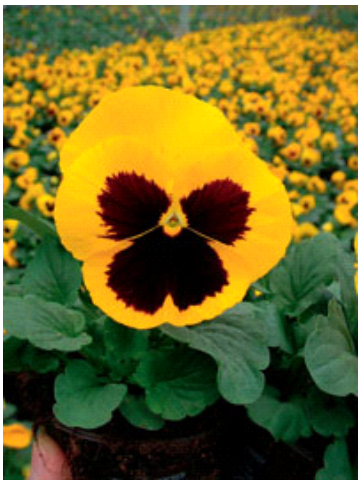
PGRs can be considered optional for nemesia. They aren't necessary under high-light intensities. Apply one to three sprays of Alar (B-Nine) at 2,500 to 3,750 ppm according to required plant size.

Pest control

Maintain a preventive program that includes good air circulation and moderate humidity levels. Monitor and scout vigilantly to prevent disease or insect activity.

In particular, watch for insects including whiteflies, aphids and thrips. Monitor for diseases including botrytis, pythium and rhizoctonia. Nemesia is sensitive to several viruses; therefore, it's essential to start with virus-free material.

Chanochi Zaks is vice president of marketing for Danziger "Dan" Flower Farm. He can be reached at chanochi@danziger.co.il. For more information on nemesia or any of Danziger's products, call (972) 3-9602525, email danziger@danziger.co.il or visit www.danziger.co.il.



Fantastic Fall Pansies

By Amy Briggs-Macha

The fall season has arrived and that means one last push of bedding plant production for the year with fall pansies! Now's the time to focus on the details to ensure finishing a high-quality pansy crop for the market. Many factors play a part in producing fantastic finished pansy crops, including variety selection, scheduling, fertilization and nutritional monitoring, PGR applications and disease control.

Variety selection

With advances in plant breeding, there are many different series of pansies available for growers. Selecting the right series for the type of production is critical for success.

In the large-flower class, the Delta Premium Pansy series offers superior heat tolerance and outdoor performance for fall production. Early flowering with a narrow flowering window, even under short day lengths, Delta Premium has large flowers that hold up well at retail. Delta Premium pansy is ideal for high-density production in packs and small pots.

In the huge-flower class, the Colossus Pansy series is a great choice for growers facing warm temperatures during summer and early fall production. Colossus has a flat, compact habit that resists stretching and was bred for hot growing conditions. This series is ideal for the first fall pansy turn, especially in the Southeastern U.S. Use Colossus for a quick fill in large packs, quarts and color bowls.

For large premium containers and hanging baskets, the WonderFall Trailing Pansy series is the perfect choice because of its mounding and trailing habit. WonderFall can also be used in quart and gallon size pots for landscape use, as its natural spreading habit fills in garden beds quickly. With 11 colors available in the series, WonderFall Pansies offer the best color selection and plant habit, largest flowers and powdery mildew tolerance in the trailing class of pansies.

Culture notes

Scheduling During the warmer temperatures in late summer and early fall, expect pansy crops to finish 1 to 2 weeks earlier than spring production. During fall production under short days and at an average daily temperature of 65F (18C), transplanting 288-cell plugs, schedule 5 weeks for pack material, 5 to 6 weeks for quart and gallon production, and 7 to 8 weeks for larger containers and hanging baskets.

Fertilizer and nutritional monitoring The first two weeks after transplanting are critical to the success of the finished crop. Improper fertilization and moisture management can lead to crop failure. Pansies should be fed with calcium nitrate-based fertilizers at 100 to 150 ppm nitrogen. Avoid media EC above 1.5 mS/cm, as pansies have sensitive root systems that are prone to root rot disease. Media pH should be between 5.4 to 5.8 for optimum growth and nutrient uptake. Weekly monitoring of media EC and pH will help prevent significant production issues.

Monitor pansy crops closely for signs of nutrient deficiencies. Boron deficiency is the most significant

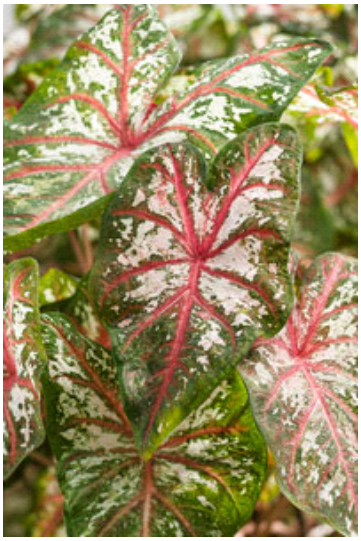
problem in pansy production, resulting in stunted, unsaleable plants. Boron deficiency tends to occur more often in fall production due to the increased level of irrigation in the warm, late summer months. The media pH should also be kept under 6.0 to ensure boron is readily available for uptake by the plant.

PGRs Well-timed PGR applications at appropriate rates are a must for high-quality fall pansy crops. Care should be used to avoid high application rates to prevent stunting from PGR sprays. Foliar sprays once plants have established in the finished container will help prevent stem elongation and floppy plants. Bonzi sprays at 2 to 5 ppm, B-Nine sprays at 2,500 ppm to 3,750 ppm, and A-Rest sprays at 3 to 6 ppm are all effective on pansy. To hold plants prior to shipping, use a tank mix spray of B-Nine plus A-rest or a low concentration drench of Bonzi at 0.1 to 0.25 ppm. Application rates will vary depending on temperatures, container sizes, variety selection and location.

Disease prevention Root and stem rot diseases pose the biggest threat to pansy crops. Early infections that go undetected will adversely affect the growth and quality of the plants, often resulting in severe losses. Proper cultural practices and using effective fungicides as a drench to the potting media is important for preventing infection by pathogenic agents, such as Rhizoctonia, Theileviopsis, Pythium and Fusarium spp. Certain fungicides are only specific for certain species of fungi; reading the fungicide label before drenching is recommended. The application of a fungicide drench should be applied 4 to 7 days after transplanting.

A successful preventive disease control program requires knowledge of the pathogens affecting pansies, as well as a management strategy utilizing a rotation of fungicides with different modes of action. Heritage fungicide, Daconil fungicide, Medallion WDG fungicide, Hurricane WDG fungicide and Subdue Maxx fungicide provide the protection to control diseases that threaten pansies. Be sure to check the fungicide label for proper use, rates and application timing.

Amy Briggs-Macha is Customer Solutions Technical Lead for Syngenta Flowers, Home and Garden.



Artful Caladium Collection

By Dr. Rick Schoelhorn

The Artful Caladium collection is a new crop for the Proven Winners line and, as with any tropical plant, there are some twists and turns to its production. They're extremely easy to grow if you remember three things: temperature management, watering management and fertility management. We'll get into that in a bit more detail, but remember these three points!

Artful Caladiums can offer growers a unique product line, especially for rejuvenating late spring sales and extending sales into the summer months. For southern growers, they make an easy, quick crop for filling in bench space and have huge consumer appeal. Tropical textures, fast turnover and great

color—and once you understand the basics of growing caladiums the Artful collection is very easy! The collection includes two
colors:

Artful Fire & Ice *(pictured)*—A vivid white with red veins in the leaves and a thin green margin to each leaf; a bit larger than most caladiums, but outstanding performance in trial gardens both in the ground and in containers. The stems are longer and the plant makes an outstanding larger container or landscape item. Garden height: 18 to 30 in. (45 to 76 cm).

Artful Heartfire—A rich, strong red leaf with a green margin. Again, this cultivar was selected for having the best performance over the widest range of conditions. Heartfire is more the traditional caladium in terms of size, but with large thick leaves and strong stems for great impact. Garden height: 15 to 20 in. (38 to 20 cm).

Production guidelines
pH: 6.5 to 5.5
EC: 0.6 to 0.9
Fertilization: Low to moderate. 150 ppm weekly is all that's needed after leaves have emerged; prior to leaves emerging no fertilizer is required. White portions of the leaf will brown if there's too much fertilizer.
Light requirements: Moderate (2,500 to 4,500 foot candles of light)
Water categories: Moderate to Moist
Rooting out temperature: 70 to 85F (21 to 29C)—ALWAYS keep temperatures above 65F (18C)
Growing on temperature: 70 to 85F (21 to 29C)
Holding temperature: 70 to 85F (21 to 29C)

Planting and timing information
Finishing times

	Spring-Summer Sales	
Container size	# tubers/pot	Time to finish
4-5 in. and Quart Pot	1	3 to 4 weeks
6 in. and Gallon Pot	1	3 to 4 weeks
8 to 10-in. Pot	2 to 3	5 to 6 weeks
10 to 14-in. pot	3 to 5	5 to 6 weeks

Pinching and growth regulators
Generally not needed. Soil drenches work best, but over application is especially a risk in cooler situations. Caladiums are sensitive to chemicals, so only use them if you have a problem.

Pest and disease management
There are few problems from good quality tubers, but the main issue will be with root rots—especially when soil temperatures are too low and plants are wet.

Spring outdoor finish
Not recommended, except in extremely southern U.S. production situations.

Temperature
First some basics: Caladiums are tropical tuber crops; they grow when temperatures are high (soil

temperatures above 65F/18C) and go dormant, or the growth may be stunted, when temperatures are low (below 50F/10C). The Artful collection is sold as dormant tubers and tubers need to be kept above 50F/10C (though 60F/16C would be better) even before planting. Don't make the mistake of storing them in a refrigerator as you would bulb crops. You should also make sure that you're ordering tubers when you're ready to plant. Early shipments and early production run the risk of getting chilled in transit or on the bench. Once chilled, it's very difficult to get a quality crop.
When planting tubers, make sure your rooting area is warm! Growers in the northern United States and Canada will need to use either bench heating/soil heating and/or a plastic tent to retain heat, or wait for late spring when greenhouse temperatures can be kept above 75F (24C) day and 65F (18C) night. Tubers should only be covered with 1.5 to 2 in. (2.5 to 5 cm) of well-drained potting media. Deeper planting increases crop time and risk of problems if temperatures aren't kept high.

Remember that it's always a good idea to treat newly planted crops with a preventative broad-spectrum fungicide at planting. This helps to remove any pathogens in the media and provide some protection when conditions may be less than ideal.

With tubers planted and temperatures in the correct window, you enter a phase called "spiking." During this phase, the growing points on the tuber form "spikes," which are actually the new leaves tightly wrapped. The spiking phase goes fastest between 75 to 85F (24 to 29C). Once the spikes have come through the soil, you only have a few days before the leaves begin to unroll and care should be taken that these unrolling leaves aren't damaged. So many growers space their plants as soon as spikes emerge, plants (especially 4.5-in. and quart-sized containers) kept too close together can stretch and give a spindly appearance. Spacing gives each plant a bit more light and a denser structure. In most cases, it's easier to grow the Artful collection in gallon or larger containers, so that they don't require the extra spacing labor.

Essentially plants are saleable when leaves unroll, making it a very quick crop when temperatures are maintained. When shipping, consider sleeves for the pots, as leaf damage in transit can also affect crop quality.

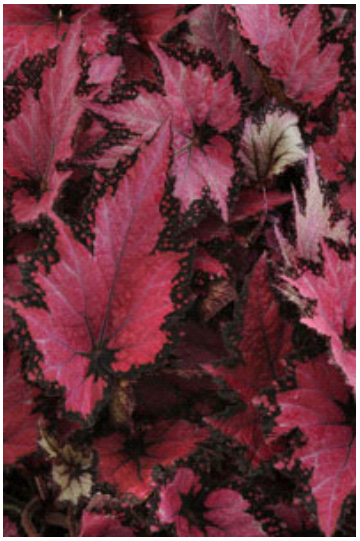
Watering
Since caladiums are tropical by nature, they like water. They need to be kept moist, but not waterlogged, and don't allow drying to the wilting point because they'll drop leaves rather than hold them. So maintaining an even soil moisture is critical to a quality crop. This is another argument for growing in larger pots, since they'll tend to stay evenly moist longer than a smaller container.

Fertilization
As bedding plant producers, we get a little caught up in forcing plants with fertilizer, and just like perennial crops, caladiums don't need a lot of fertilizer. They carry most of their nutrients (like a slow-release fertilizer) in the tuber itself. So for the first few weeks after planting, you should only use clear water and switch to a 150 ppm liquid feed (1 time a week) only after leaves have unrolled.

Get a bit of tropical color and texture into your mix for 2015. All tubers are No. 1 grade and a great way to define your growing palette or your retail presence. The Artful collection has already received lots of accolades in public and private trials. Follow the production guidelines and add some easy impact to your

sales next year!

Dr. Rick Schoelhorn handles new products for Proven Winners.



Jurassic Rex Begonia

By Kevin Roethle

Rex begonias have long been known as a unique and colorful option for deep shade gardens. Their bold foliage offers many potential uses—from solo and mixed shade containers for the outdoors to classical interiorscape displays. New from Ball Ingenuity is the Jurassic Rex Begonia series. This is an improved option for growers and retailers to create an easy-to-finish, programmable rex begonia crop. There are five impressive varieties in the series—each with eye-catching colors and leaf patterns. *(Jurassic Rex Begonia Pink Shades pictured)*

In addition, Jurassic Rex Begonias have been bred and selected in North America under cool temperatures and consistently grow under cool temperatures compared to other commercial rex begonias. The Jurassic series offers these exciting traits for the grower:

- Jurassic Rex Begonias finish up to two weeks faster than other rex begonias.
- Jurassic Rex Begonias continue to actively grow under cooler temperatures.
- Jurassic Rex Begonias are uniform—a true series—which is different from most rex begonia collections.

Growth habit & container size

The varieties in the Jurassic series have vigorous, upright growth. As the plants continue to grow, they continue to mound. Jurassic was bred to be vigorous. This allows the crop to finish quickly and provides maximum performance for the gardener. The ideal production container size for Jurassic Rex Begonias is a 6 -in. (15-cm) container and larger.

Light levels

During the winter months, most growers won't need to worry about shading. After transplant from liners, grow with 800 to 1,000 foot candles. Growing on, the ideal light levels are between 1,200 to 1,800 foot candles. During the late spring and summer months, shading will be required for ideal production conditions. Higher light levels can cause leaf coloring to fade and, in intense situations, the plant can burn. Under too-low light situations, the plants can stretch and lengthen the crop time. The use of HID lights can shorten the crop time.

Temperature

All rex begonias should not be allowed to get below 60F (16C), with the ideal night temperature about 70F (21C). Jurassic Rex Begonias have been selected under cooler temperatures and can handle night temperatures in the lower 60s. Day temperatures can handle 75 to 80F (24 to 27C), however, should not be allowed to exceed 90F (32C).

Media & nutrition requirements

Jurassic Rex Begonias generally require low fertilizer. Feed with a balanced fertilizer at rates of 100 to 150 ppm Nitrogen. Maintain an EC between 1.1 and 1.9 and make sure to prevent salt buildup. Rex begonias have a fine root system. Plant in a porous media and allow the media to dry out between watering. In general, rex begonias don't like to have consistently saturated media. However, don't allow the plants to dry to the point of wilting either. If possible, use a media with a pH between 5.7 and 6.4.

Pests and diseases

A general pest scouting system should be in place, watching particularly for aphids, fungus gnats, thrips and mealybugs. Ensuring air movement around the pots will help prevent diseases, such as botrytis, pythium and phytophthora. It may be advisable to use a preventative fungicide program.

Transplanting

Jurassic Rex Begonias are available as 72 liners. When receiving liners, it's important to plant the liners even or slightly above the soil line. The crown of the plant should not be buried.

Scheduling

Pot size: 6-in. container Plants per pot: 1 ppp Crop time (weeks): 8 to 14
Pot size: 8-in. container Plants per pot: 2 to 3 ppp Crop time (weeks): 10 to 16

Note: Exact scheduling will depend heavily on light and temperature conditions.

Kevin Roethle is Head of New Product Development for Ball Ingenuity, where third-party exclusive plants are trialed and supported by Ball Seed. For more information about Ball Ingenuity, visit www.ballseed.com.

Foxlight Digitalis

By Karl Batschke

First impressions are important, and the new Foxlight series from Darwin Perennials looks like candy on the vine! There are three striking colors to fill the series: Plum Gold, Rose Ivory and Ruby Glow *(pictured).* They're boldly appealing for impulse displays at retail, especially as a thriller in mixed containers. We recommend growing Foxlight in 1- to 2-gal. sizes. They're supplied as rooted cuttings from Ball Seed.

Growing on to finish

Media

Use media with good aeration and drainage. Foxlight prefers a medium that's high in organic matter. A pH of 5.8 to 6.2 is optimum.

Temperature

- Nights: 55 to 60F (13 to 16C)
- Days: 60 to 65F (16 to 18C)

Temperatures below those recommended will slow plant growth significantly. An average daily temperature of 60 to 65F (16 to 18C) is optimal, but plants will tolerate a wide range of temperatures. Vernalization isn't required for flowering.

Light

Foxlight will perform best under moderate to high light levels of 3,000 to 5,000 f.c. (30,000 to 50,000 Lux). Plants will flower naturally beginning in late April and May. Extended day lighting of 14 hours can be used to flower plants earlier. Best plant quality will be achieved when grown outdoors in full sun.

Watering

The media should be allowed to dry moderately between watering and never saturated. However, plants shouldn't be allowed to wilt at any time, particularly when flower stems are elongating. Leach regularly to avoid the buildup of high soluble salt levels.

Fertilizer

Use a balanced fertilizer at a rate of 125 to 150 ppm. Periodic use of a calcium-based fertilizer should help optimize the nutrient levels. Low calcium levels can lead to bud abortion and lack of flowering. Monitor pH levels to ensure proper calcium uptake.

Pinching

Foxlight Digitalis can be grown as a pinched or non-pinched crop. Non-pinched plants will flower 3 to 4 weeks earlier than pinched plants and non-pinching is recommended for 2.5-qt. to 4-qt. container sizes. For larger containers, pinch Foxlight once as soon as the plants are well rooted in the final container. Leave a minimum of 8 to 10 leaf nodes. Pinching will maximize branching and create a more full plant. Under most conditions, Foxlight will not require growth regulator treatments. Responsive to B-Nine/Cycocel at 1,500/800 ppm as soon as the flower stem develops, if needed.

Crop scheduling

Spring planting is recommended for this crop. Plants can be fall-planted in temperate climates. Finished plants should be established prior to Week 45 for best results when fall-planted.

- 1-gal., 6-in. (15-cm) pot, 1ppp, 12 to 14 weeks
- 2 to 3-gal. (25 to 30-cm) pot, 3 ppp—no pinch, 1 ppp with a pinch; 12 to 14 weeks without pinch; 16 to 18 weeks with pinch **GT**

Karl Batschke is Global Product Manager for Darwin Perennials in Elburn, Illinois. To learn more, visit www.darwinperennials.com.