

# GROWERTALKS

## Cover Story

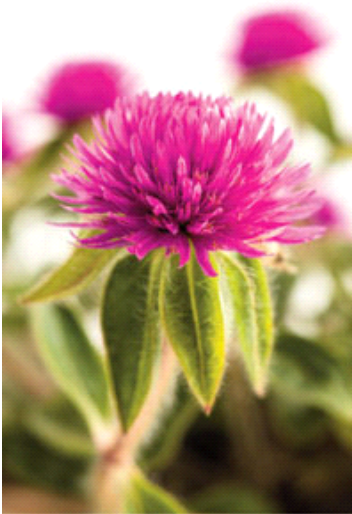
9/25/2013

## Culture Club

Jennifer Zurko

### Add a Little Zazzle to Your Lineup

By Siena Randall



I'm sure by now you've heard the buzz about the alluring Pink Zazzle (*Gomphrena hybrid*) recently introduced at the California Spring Trials. It's a breakthrough in the breeding of gomphrena that has it all: great branching; heat tolerance; low water requirement; it's daylength neutral with eye-catching color; jumbo-sized, long-lasting flowers; has both indoor and outdoor potential; and, most importantly, consumer appeal. But the question still remains—how do you grow it? The good news is that it's not as complicated as one might think. In fact, it's what many growers are looking for: a crop that requires minimal fertilizing and watering and doesn't need growth regulators.

**A High-Value Crop:** Perhaps before you can begin to understand what Pink Zazzle is you must first understand what it's not. It's not a quick-turn 4-in. annual bedding plant and it's not a hardy perennial. So what is it? It's a re-blooming plant that thrives in warm weather and high-light conditions. It should be grown as a premium garden plant or a long-lasting specialty pot crop. However, before you decide to incorporate Pink Zazzle into your production plan, keep in mind that it should be positioned as a premium or specialty item with a higher price point.

**Scheduling as a Specialty Pot Crop:** There are multiple opportunities for this plant at retail and, as we've all experienced, timing is everything at retail. Consumers are programmed to shop by holiday. For the purpose of capturing those shopping opportunities and offering a product appropriate for the season, we recommend scheduling your Pink Zazzle crops to be ready at retail for Valentine's Day, Easter, Mother's Day, during the month of October for Pink Days promoting breast cancer awareness, and the New Year. Schedule your finish time two weeks prior to the sales window. Pink Zazzle has long-lasting blooms and a variable bloom cycle.

**Scheduling as a Premium Garden Plant:** Pink Zazzle makes a superior garden plant. Schedule your spring crops to finish late spring through late summer where night temperatures are consistently above 45F

(7C).

**Potting and Timing:** Pink Zazzle is supplied as a pinched 50-cell liner and is best sold at retail in a shallow 6-in. pot or larger. Finishing a shallow 6 in. to 8-in. requires one 50-cell liner and will take 10 to 12 weeks in the spring/summer or 12 to 14 weeks in the fall/winter. Finishing a 10 in. to 12-in. pot requires three 50-cell liners and will take 12 to 14 weeks in the spring/summer or 14 to 16 weeks in the fall/winter.

**Soil pH/EC:** An aerated, well-draining soil will offer the best results for Pink Zazzle. pH should be kept at 6.5 to 7.0 Keep EC at 1.0 to 1.5 mS/cm.

**Fertilization:** Light constant feed between 75 to 100 ppm. Once cumulative salt levels reach or exceed 1.5 mS/cm, leach with clear water as one of the scheduled irrigations.

**Watering Requirements:** Pink Zazzle should be watered on a moderate-to-dry schedule during production. This crop can be easily over-watered; therefore, water management is extremely important. Avoid overwatering, especially during months with lower light levels.

**Light Requirements:** 6,000 fc or higher recommended. During short days (Weeks 46 to 13), daylength extension lighting is required to ensure 16 hours of daylength to encourage vegetative growth.

**Temperature:** Begin the rooting out process at 65F (18C) (nighttime temperatures). Once roots begin to establish, maintain growing temperatures between 60 to 65F (15 to 18C). Pink Zazzle may be held at 55F (12C). Prolonged cool temperatures below 45F (7C) in damp conditions will cause crops to decline.

**Pinching:** Pinching is recommended to help achieve uniform branching and flowering. Perform a soft pinch two to three weeks after transplant. If you're finishing in a container larger than a shallow 8-in., repeat pinching three weeks later.

**Growth Regulators:** The best height control for Pink Zazzle is accomplished with maintaining high light levels. However, if lighting conditions aren't ideal and additional height control is needed, daminozide (B-Nine) can be used as instructed on the product label. Other PGRs may cause plant damage.

**Pest and Disease Management:** For best root development use a preventative drench of Subdue and Clearys at liner planting. Avoid soggy, wet soil to prevent fungus gnats. Monitor closely for thrips and maintain preventative sprays as needed.

**Tagging and Branding:** EuroAmerican, the exclusive supplier of Pink Zazzle, offers it as a plant with a stand-alone brand. It's sold with a custom Pink Zazzle branded stake tag. EuroAmerican is working to develop unique point-of-purchase concepts, including pot wraps, rack signage, bench tape and more. There's no branded container requirement and growers have the option of purchasing a pixie-type tag.

*Siena Randall is Director of Program Development & Marketing for EuroAmerican Propagators in Bonsall, California.*

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## A Purrfect Catmint

*By Dr. Rick Schoelhorn*

Nepeta, aka catmint, is one of those easily grown perennials that aside from Walker's Low has been long neglected in terms of new breeding. We're very happy to have a new compact form of this popular perennial with the release of Cat's Meow. The ease of production will appeal to both annual and perennial producers, and a compact form is always easier for the grower. Our trials also showed excellent performance and flowering from Florida north to the Great Lakes and west to the California Coast in production and in the landscape. Plants are both heat and humidity tolerant for consumers, opening the market to a larger

segment than previous cultivars.

### Basic Cultural/Growing Information

**pH:** 6.0 to 6.5

**EC (2:1 Extraction Method):** <0.6. Pour-through method (1.5 to 2.0).

**Fertilization Recommendations:** 75 to 150 ppm. Avoid fertilizing too heavily, as you'll get weaker growth at the expense of flowering. Don't run on the same bench as annuals requiring 250 to 300 ppm—keep these at a lower fertility than annuals.

**Growing Media:** A peat bark soil mix is best, with excellent drainage. A lot of annual potting soils are too dense; make sure your potting soil has good drainage.

**Growing Temperatures:** Day—65 to 72F (18 to 22C); Night—55 to 65F (12 to 18C)

**Holding Temperature:** 50 to 60F (10 to 16C)

**Light Levels:** High (4,000 to 5,000 foot candles); Cat's Meow is a long-day flowering plant, so daylength should be more than 16 hours to induce uniform flowering.

**Water Requirements:** Slightly dry to moist; avoid soggy conditions. Again, too much water leads to poorly toned growth, as well as increasing likelihood of crown or root rot.

**Planting and Timing Information:** Spring through summer finish (Southern growers will see shorter production times than what's listed). From a rooted liner:

- Finish Time 4 in. to 5 in.: 5 to 6 weeks
- Finish Time 6 in./gallon: 7 to 10 weeks

- Finish Time 8 in.: 10 to 12 weeks
- Finish Time 10 in. to 12 in. (3 liners per pot): 10 to 12 weeks

**Vernalization:** Cat's Meow is cold beneficial, but vernalization isn't required for flowering. For best flowering, get liners rooted into their final containers and place outside when temperatures are above freezing or keep in a cold greenhouse at 40 to 50F (4 to 10C) until you're ready for active growth. Southern growers should be planting Cat's Meow in early spring for best flowering, though even late spring plants will flower well. Flowering will begin 6 to 8 weeks after daylength is more than 16 hours.

**Pinching/Growth Regulators:** Use watering and good air circulation, as well as good spacing, to help control and tone growth.

**Pinching:** For most growers a pinch at transplanting will suffice, but if plants begin to get leggy, a second pinch (2 to 3 weeks after planting) will help to bulk the plant overall, as well as increase the number of flowering stems. Bare root plants usually do not require a pinch.

**Plant Growth Regulators:** Because Cat's Meow is naturally a much more compact grower than Walker's Low, it likely won't need growth regulators at all if grown under the proper conditions. If conditions are cloudy or plants are tightly spaced, a spray of 30-ppm paclobutrazol at 7- to 10-day intervals should be adequate to control elongation.

**Pest and Disease Management:** Generally pest free, but it's possible to have aphids, leaf hoppers, slugs/snails, spider mites or whiteflies. Environmental stresses like overwatering, low light levels or poor air circulation increase the chance of insect infestation.

Plants that go through the night with wet foliage are more prone to foliar diseases, so avoid afternoon watering and allow foliage to dry during the day. Powdery mildew, leaf spot, and stem or root rots can be avoided if the growing environment is correct.

Low vernalization requirement-perennials offer a potentially big boost in profits to traditional annual producers, however, growers need to be aware of four key differences, before adding any perennials into their traditional annual production:

**Cut your fertility**—Annuals are usually grown between 150 to 300 ppm N; perennials do best with half that concentration (75 to 150 ppm N). Over-fertilizing delays flowering, can induce rosette formation and increases the need for plant growth regulators. Make it easy on yourself and fertilize less!

**Most perennials are less tolerant of hot greenhouses**—Many annuals can be fairly flexible in hot, low air movement greenhouses, but perennials do better under cooler conditions. So use your cooler greenhouses to your advantage or move plants outside as soon as temperatures permit for best results.

**Keep light levels high!**—Again, annuals offer some flexibility to lower light conditions, but with perennials, that first growth in spring has to have good strong light or the plant will be challenged through the rest of the crop cycle. Bright light levels are the key to a high-quality crop.

**Pay attention to daylength requirements**—Cat's Meow requires days to be more than 16 hours in length. Even if all other conditions are optimal, you can grow great plants, but they won't flower under short days. With all perennials, make sure to factor this key aspect into your production.

Cat's Meow will be an easy crop to master in production; it really is a very simple crop to produce. The ability to have a retail-ready 4 in., quart or gallon of blue flowers in spring into summer is a huge plus on the garden center bench. To bring plants into flower earlier try using night interruption lighting about 7 weeks before you want plants to be salable. Later in the year, you'll find it just as easy to grow Cat's Meow in the greenhouse or outside, as it's very flexible in mid-spring to summer conditions. Don't forget to try it in some combinations as well!

*Dr. Rick Schoelhorn handles new products for Proven Winners.*

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## **Divine New Guinea Impatiens: Easy to Grow and IDM Resistant**

*By Sonali Padhye and Terry Howe*

New Guinea impatiens (*Impatiens hawkeri*) is impatiens downy mildew (IDM) resistant according to the International Seed Federation's Vegetable and Ornamental Crops Section. With 25 years of breeding and research experience, PanAmerican Seed leads the seed New Guinea impatiens market with the Divine series. The photo on

page 48 shows healthy Divine New Guinea impatiens in the foreground and IDM-infected and defoliated standard impatiens (*Impatiens walleriana*) in the background.

The Divine series is versatile in application and easily fits a wide range of container programs from 306-packs (photo at right) to hanging baskets. With tried and true landscape performance in shade to part-shade, Divine New Guinea impatiens provides the ultimate shade solution for IDM-infected landscapes.

Divine series offers a wide palette of color choices with 11 varieties and five mixes. Varieties include 2014 new introductions Blue Pearl, Burgundy, Scarlet Bronze Leaf and White Blush.

From scheduling to sowing to shipping, growing Divine is really easy.

**Germination:** Sow 1 seed per cell in 288-cell or larger trays. Maintain at 74 to 77F (23 to 25C) with saturated media (moisture level 5) during stage 1 for rapid and synchronized germination. Covering the seed with vermiculite is not necessary if high relative humidity is maintained. Germination is completed in 6 to 8 days. Note that recommended stage 1 conditions are similar to petunia rather than standard impatiens.

**Plug Culture:** During stages 2 to 4, decrease temperature to 70 to 74F (21 to 23C) and cycle moisture levels between 3 and 5. While constantly saturated media causes rapid stem elongation, New Guinea impatiens cannot tolerate wilt. Fertigate with 65 to 75 ppm N with a constant liquid fertilizer and supply 8 to 10 ppm phosphorous constantly to avoid deficiency resulting in foliage purpling. Plug crop time is 5 and 6 weeks for 288- and 128-cell trays, respectively.

**Plug PGRs:** Apply PGRs if needed at 3 to 4 weeks from sowing, either when cotyledons are 0.2 in. or at first true leaf. Trial daminozide

(B-Nine or Dazide) spray between 1,250 to 2,500 ppm and repeat as needed. Paclobutrazol (Bonzi, Paczol, Piccolo, etc.) spray is also effective between 1 to 2 ppm. Negative DIF and DROP are also effective for height control of New Guinea impatiens.

**Finishing:** Pinching isn't required and only delays flowering. To promote compact and toned growth after transplant, use lower constant liquid fertilizer rates of 75 to 125 ppm N; use lower rates at low average daily temperatures (ADT) and higher rates at high ADT. Supply 12 to 15 ppm phosphorous constantly to avoid deficiency and maintain pH above 5.8 to avoid micronutrient toxicity. Maintain EC below 1 mS/cm and sodium levels below 50 ppm.

Finish at an ADT between 68 and 74F (20 and 23C). Flowering is delayed under cooler temperatures and above 85F (29C). Divine New Guinea impatiens is day neutral and a high DLI of  $\geq 10$  moles·m<sup>-2</sup>·d<sup>-1</sup> increases number of flowers and branches per plant.

**Finish PGRs:** May not be needed when grown at a lower EC with moisture cycling and negative DIF or DROP. If needed, paclobutrazol spray at 2 to 10 ppm or drench at 0.25 to 0.5 ppm within a week from transplant is effective. Daminozide spray at 2,500 ppm is also effective. Trial PGRs before applying to the entire crop, especially if using low-rate paclobutrazol drenches due to the possibility of stunting with higher rates.

For more information on Divine crop culture, visit Divine Grower Facts at [www.panamseed.com](http://www.panamseed.com).

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## Growing a Marvelous Crop of Midnight Marvel Hibiscus

*By Jeremy Windemuller*

Growers looking for a high-margin, quick-turn perennial with outstanding impulse appeal should consider hardy hibiscus. Hibiscus are in their prime at the height of summer, blooming with dinner plate-sized red, pink, white or lavender flowers. Some cultivars, like the top-selling Midnight Marvel, also offer attractive deep purple foliage. Hibiscus is very easy to grow if you follow the program described below. If plants are grown outdoors in full sun, are widely spaced, kept evenly moist and grown warm, the

crop will be spectacular.

**Potting and Timing:** It's highly recommended for growers to start with bareroot plants when growing finished crops of hibiscus. They finish quickly into beautiful, large, flowering plants that garner a higher retail price. Suppliers typically ship bareroot hibiscus in March and April. Pot one bareroot plant per 3-gal. container in a peat/bark soil mix with a pH of 6.0 to 6.5. Place the dormant plants directly outside after the last frost date and place on drip irrigation, taking care to space the pots a minimum of 18 in. apart. Allow 12 to 14 weeks for plants to finish. If starting with 72-ct plugs, pot one plant per 2-gal. container in April for sales 16 to 18 weeks later or pot in late summer for sales the following year. Actively growing 72-ct plugs should be grown in the greenhouse until they are rooted out and then moved outdoors when nighttime temperatures remain above 55 to 60F (12 to 15C).

### Cultural Recommendations

**Moisture:** Moisture is one of the most critical things to watch when growing hibiscus. Never let the plants dry out. Yellowing leaves and buds, and the ensuing leaf and bud drop, indicate that the plants are too dry. Drip irrigation is highly recommended.

**Fertility:** Since they're very fast growers, hibiscus require ample amounts of fertilizer. Feed plants with a constant liquid feed of 150 to 200 ppm nitrogen at every irrigation or incorporate a medium rate of controlled release fertilizer at potting. An EC rate of 2.5 to 3.5 using the pour-through method is best.

**Lighting:** Hibiscus requires very high light intensities to initiate flower production and to produce the proper foliage pigmentation. Midnight Marvel has deep purple-black foliage when grown outdoors, but will be green if grown indoors under UV inhibitor plastic. Grow hibiscus in full sun outdoors or, if necessary, in greenhouses with very high light intensities. Long days are required for flowering.

**Temperature:** Hibiscus is a crop that must be grown warm and thrives in heat. Best growth and development occurs when temperatures are 68F (20C) or higher. Cool temperatures will result in very slow growth and chlorotic foliage. Growing plants outdoors in summer is ideal as long as they can be kept moist.

**Pests and Diseases:** The most common pests to attack hibiscus are Japanese beetles, sawflies, spider

mites and whiteflies. Scout regularly for pests, treating as necessary. Plant diseases are quite rare on this crop.

### Finishing Tips

**Controlling Size:** After potting, pinch the top growth back once to 3 to 5 nodes for bareroot plants or 4 to 5 nodes for plugs. Plants grown from plugs may require additional pinching. For bareroot plants, drench the entire plant with 1 ppm uniconazole (Sumagic) one week after pinching. Allow 6 weeks from the time of the last pinch to flower. Spacing plants very well is essential to creating well-rounded finished plants.

**Forcing:** Hibiscus requires long days for flowering. It's very costly to force them into bloom earlier than their natural cycle. It's recommended that growers allow these plants to flower naturally beginning in midsummer to maintain their margin on the crop.

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

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## The Art of Rack Shipping Rudbeckia

*By Danny Brooks*

Consumers love the fresh, high-impact color of rudbeckia, but sometimes getting them to retail can be a challenge. In the garden, rudbeckia like Denver Daisy and Prairie Sun can reach the stately height of 24 to 30 in. So how do you shrink down that height in production so that they can be rack shipped without pounding them with PGRs? At Spring Trials this year, Benary introduced some research about manipulating

daylength to control the height of rudbeckia without sacrificing the flower size.

- Seed Form: Coated seed
- Sowing Method: 1 to 2 seeds per plug; can be sown directly into final pot

**Plug Production:** To produce full, well-branched plants, keep plug trays under short days (less than 12 hours of light) until all plants being transplanted have at least seven true leaves. It's the time frame when the plant is receptive to flower initiation. Once they have seven true leaves, the plants are sufficiently mature to initiate flowers when long-day conditions are applied. Now you can apply long days more than 13 hours to initiate flowers and transplant to the finished container.

### Crop Time:

**Plug crop**—288 tray: 5 to 6 weeks; 128 tray: 6 to 7 weeks

**Flowering pots**—12 to 21 weeks depending on species and on the season. After transplanting, long days



and high light will shorten the production time.

**Spring**—Denver Daisy: 14 to 18 weeks; Prairie Sun: 15 to 21 weeks

**Summer**—Denver Daisy: 12 to 14 weeks; Prairie Sun: 13 to 15 weeks

#### **Germination:**

**Stage I and II**—14 to 21 days at 68 to 72F (20 to 22C)

**Stage III and IV**—10 to 14 days at 64 to 68F (18 to 20C)

Requires light for germination. Before sowing treat substrate with fungicide. Cover seed lightly with vermiculite after sowing. Avoid direct sunlight by shading seeds after sowing.

**Sowing Media:** Media with very low soluble salt levels; pH: 5.8 to 6.2. Keep soil slightly moist but not wet.

**Plug Culture:** Media should be slightly less than saturated in Stage I. From Stage II, reduce the soil moisture, but the plug should not dry out. Don't let soluble salt level rise above 0.75 EC. The roots are sensitive to high salt levels in substrate. Start fertilization at 50 to 75 ppm nitrogen in a well-balanced formula.

During Stage III and Stage IV, fertilization levels can be increased to 150 ppm.

**Watering and Fertilization:** Rudbeckia prefers moderate, but consistent, watering so avoid over-watering and drought stress. Drought stress can cause necrosis of leaf edges. Avoid overhead irrigation and watering late in the day to reduce the risk of Botrytis, especially under cool growing conditions.

Denver Daisy requires only moderate fertilization. Fertilize the crop weekly with 100 to 150 ppm nitrogen with a well-balanced fertilizer mix.

#### **Spring Production**

**Photoperiod/Light:** Denver Daisy and Prairie Sun, like most rudbeckia, are long-day plants. Once seven true leaves are showing, a minimum of 13 to 14 hours of light (daylength) is recommended for flower initiation. Over 15 hours of light (daylength) can cause stem elongation and make it difficult to control height. High light levels throughout production will improve the plant quality. In winter and early spring, additional assimilation light (long days) is required for pot plant forcing.

Both Denver Daisy and Prairie Sun are responsive to night interruption and short days can be used very effectively to control the plant growth and habit. Seven days after transplanting into the final container, initiate short days (optimally 10 hours) for 7 to 14 days, depending on the amount of height control you want. Seven days will result in approximately a 30% height reduction and 14 days will reduce the height to about 50% of its normal height. Then simply return to long-day conditions (14 to 16 hour) again. This will result in a nicely compact plant with no PGRs. Cooler temperatures during the finishing stages also improve plant quality.

#### **Summer Production**

**Photoperiod/Light:** Production of rudbeckia in the summer months can be challenging. Unfortunately, high temperatures, especially night temps, and longer daylengths (more than 15 hours) can cause stem elongation and make it difficult to control height. Growth regulators are the most common recommendation for controlling height. Instead, we recommend applying a short day/black cloth when growing for late summer/early fall production.

If you're unable to obtain a plug that has had this short-day treatment, you can try the following methods to insure a nice full plant with plenty of color:

- After transplant, begin short days for approximately 2 to 3 weeks to allow plant to "bulk up," then transfer to natural daylength. A drench application of paclobutrazol at 2 ppm at this stage works best and will ensure a controlled stem length and fuller plant.
- If unable to supply plants with short days, trim all visible buds about 3 weeks after transplant, as this will allow the plants to become full.

**Plant Growth Regulators:** Denver Daisy/Prairie Sun are responsive to many different PGRs and treatments. The trick is not what to apply, but when to apply them. If you apply too soon, you can delay the bloom by as much as two weeks. The best time to apply is just after the bloom has initiated, but a bud has not yet formed. When applied correctly, the result is beautiful! Nice short peduncles; a beautiful, well-branched habit; and the flower size and finish time will be completely unchanged. Here are some suggestions:

- Bonzi drench at 1 to 4 ppm
- Sumagic—10 ppm spray
- Bonzi—30 ppm spray to glisten
- Configure—200 ppm spray to glisten
- B-Nine—250 to 5,000 ppm spray

Other Cultural Tips: Keep humidity low and provide good ventilation.

*Danny Brooks is product support specialist and culture advisor for Ernst Benary of America. He can be reached at [dbrooks@benary.com](mailto:dbrooks@benary.com)*

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## Maximizing Majestic: Producing the Newest Pennisetum

*By Josiah Raymer*

Pennisetum Majestic bears long, broad leaves of rich purple-red that flow gracefully. This ornamental Napier grass' color deepens in even the brightest sun and the strongest heat and humidity. Part of the Royal Collection, Majestic reaches approximately 6 ft. tall. Like the rest of the court, it has great pennisetum characteristics, like exceptional

vigor, while boasting the look of phormium.

Emerald Coast Growers worked closely with Dr. Wayne Hanna at the University of Georgia to select this newest addition to the collection for its lovely color, form and disease resistance. One of the Royal Collection's biggest attributes is its ability to produce vast amounts of gracefully arching blades that become richer and more regal as the season progresses.

The stateliest of the group are Prince (5 ft. to 6 ft.) and Princess (2 ft. to 3 ft.) with their long, dappled foliage that won't flop, staying nicely upright. The second generation includes Princess Caroline, with wide, brilliant purple leaves and a 3-ft. mature height, and Princess Molly, with slim, burgundy leaves and only a petite height—under 2 ft. in size. First Knight rounds out the table with the family's deepest, darkest, blackest purple foliage, sharply upright blades and a versatile height of 48 in. to 54 in.

Like its peers, Majestic can be grow anywhere in the country, though it won't flower except in total frost-free areas. Thriving in full to partial sun, it's excellent in pots, landscape plantings and mixed containers. Majestic displays excellent heat and drought tolerance and is hardy in USDA Zones 7 to 11.

**Liner Planting:** Growing medium should be fertile and well drained. Choosing one with 10% to 15% pine bark can be beneficial.

Maintain soil pH at approximately 5.8 to 6.2 and soil EC (electrical conductivity) at 1 to 1.5 mS/cm using the 2:1 extraction method.

Majestic will finish in an average of 8 to 10 weeks in a 1-gal. pot. Plant 1 to 2 per 1-gal. pot. When scheduling, consider minimizing holding time, as finished plants can outgrow their containers.

**Growing On:** Allow plants to dry between ample waterings. As Majestic gains size in the container, it can be a heavy water user. Be careful not to overwater.

Grow under high light (5,000 foot candles or more) with 70 to 80F (21 to 26C) days and 55 to 65F (12 to 18C) nights. For increased growth, supplemental lighting can be beneficial. A good goal is a photoperiod of 12 or more hours. Keep nights above 45F (7C).

To encourage new tiller development, consider cutting back the largest tillers two weeks after planting. Majestic generally doesn't need plant growth regulators.

**Feeding:** In containers, fertilize twice a month, and in landscape plantings, fertilize monthly, both with a well-balanced fertilizer.

Provide a constant feed of 65 to 75 ppm of phosphorus, 125 to 165 ppm of potassium and 250 to 300 ppm of nitrogen. Alternatively, use a periodic feed of 100 to 150 ppm of phosphorus, 200 to 300 ppm of potassium and 300 to 400 ppm of nitrogen.

**Another option to consider:** using a slow-release fertilizer as an alternative to the scheduled fertilizer

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.

Monitor for aphids, mealybugs, spider mites, root and crown rot. 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.*

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## Time for a Close-Up: What Starcluster Pentas Needs to Thrive in the Spotlight

*By Karl Trellinger*

The Starcluster pentas series has an appeal that's hard to match. A member of the GoldFisch Heat Lovers program, Starcluster is an attractive plant that's specifically bred for hot, summer conditions. Its well-branched, vigorous habit is suitable for 6-in. containers or larger, while it's also been tested in-ground to ensure success in the landscape with a height of 18 in. to 24 in. and a width of 14 in. to 18 in. Additionally, its bloom-window uniformity allows for bench-run shipping of the entire series. Available in White, Rose, Red and Lavender, it's a great focal point for full-sun mixed containers.

We know it isn't always easy introducing a new series into your growing operation, but learning about the ideal growing environment can only help. Below are some key production tips for both propagation and finishing that will help you produce great-looking, award-winning plants for retail.

### Propagation Stage

**Misting:** To avoid wilting, the unrooted cuttings should be misted heavily during the first two days and nights. After day two, lightly and frequently mist the leaves without saturating the media to promote rooting. Don't let the cuttings dry down severely. Gradually reduce the misting frequency and aim for a total mist time of 8 to 10 days; misting at night should only last the first 4 to 5 nights. Starcluster pentas are relatively slow to root and will need about 4.5 to 5 weeks of rooting time (for 100 to 105 size plugs) to be ready for transplant.

**Fertilization and Media:** Once roots begin to form, start fertilizing periodically with 100 to 150 ppm N using a high-nitrate fertilizer (15-5-15, 14-4-14, etc.). Maintain media EC between 1.0 to 1.2 mS/cm (in a saturated media extract, SME) and pH above 6.0.

**Temperature and Lighting:** Keep media temperatures between 72 to 74F (22 to 23C) during the rooting process to allow for ideal callus and root development. Temperatures can be dropped slightly as plants become fully rooted and are ready for transplant. Provide Starcluster pentas with 1,500 to 2,000 foot candles of light (5 to 7 total mols/day) for the first two weeks to reduce stress and minimize water loss from the cuttings. After roots are formed and vegetative growth begins, you should increase light to 3,000 to 3,500 foot candles (10 to 12 mols/day).

### **Finishing Stage**

**Moisture:** Maintain moderate moisture (level 3) until established, and then begin a wet/dry cycle (keeping levels between 2 and 4) to promote root growth and prevent algae, fungus gnats and shore flies. To prevent root damage and predisposing the plants to root rot pathogens, avoid drying out or oversaturating growing media. Don't let plants wilt consistently, as this can lead to severe leaf scorch and poor growth.

**Fertilization and Media:** You should try to keep media pH between 6.4 to 6.8. Pentas are susceptible to iron and manganese toxicity when media pH drops below 6.0. Maintain media EC between 1.5 to 1.8 mS/cm using an SME technique. It's important to test media and tissue regularly and adjust fertilization as needed.

For optimum growth, fertilize regularly at 150 to 200 ppm N using a high nitrate Cal-Mag fertilizer type (15-5-15, 14-4-14, 17-5-17, etc.). Avoid using highly acidic fertilizers. Supplemental magnesium can be provided periodically if needed using 1 to 2 lbs. of magnesium sulfate per 100 gal. to avoid lower leaf interveinal chlorosis.

**Temperature and Lighting:** Pentas are facultative long-day plants, flowering faster under long days than shorter ones. During the finishing stage, provide 3,500 to 4,500 foot candles of light (12 to 15 total mols/day) over a 13 to 14-hour period to hasten flower induction. Supplemental lighting at 350 to 450 foot candles under low light conditions will enhance shoot and root growth. Starcluster pentas are heat-loving plants and thrive under warm temperatures. Make sure to keep temperatures at a minimum between 65 to 68F (18 to 20C) at night and 70 to 75F (21 to 23C) during the day. Daily temperatures below 62F (16F) will delay development and increase crop time.

**Common Pests:** You should scout regularly for thrips, whiteflies, aphids and spider mites and look for signs of injury. Under sub-optimum growing conditions, pentas should also be scouted for diseases, such as Pythium root rot, Rhizoctonia root and stem rot, Fusarium wilt and Botrytis stem and leaf blight.

For complete Starcluster pentas culture, please visit <http://tsl.syngenta>.

*Karl Trellinger is with Syngenta Technical Services.*

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## Kick Off Spring with Senetti

*By Delilah Onofrey*

Looking for premium plants to kick off your spring season? Senetti, a collection of breakthrough pericallis hybrids from Suntory, is the perfect choice. In addition to thriving in temperatures as low as 35F (1C), Senetti provides high color impact when we need it the most in vivid blues, magentas, violets and stunning bicolors.

Before reclassification, Senetti was known as a cineraria hybrid, but these plants are nothing like a typical seed cineraria grown as a houseplant. Senetti's large, daisy flowers bloom from early spring until summer. Bloom count can be as high as 200 on a plant grown in a 10-in.

pot.

When the first flush of flowers starts to fade, plants can be cut back 50% to rebloom, extending consumer enjoyment. You could sell Senetti as an indoor blooming potted plant that can be planted outdoors.

Senetti season kicks off as early as January in the South and then in March and April up North. Once summer gets underway with temperatures in the 80s, Senetti will stop flowering. But a plant purchased in March could be cut back in late April for a fresh reblooming before summer heats up.

Senetti is available in 10 gorgeous colors, including the new Super Blue. Baby Senetti, a more compact series, comes in five colors, including the new Magenta Bicolor.

**Temperature:** Production is ideal in a cool and airy climate, 35 to 40F (1 to 4C). This will produce a tough, toned, finished plant. Ventilation should be used when temperatures reach 48 to 50F (8 to 10C). Keep humidity low.

**Light:** Senetti is a day-neutral plant. Light levels of 5,000 to 6,000 foot candles are ideal. During days of high light levels or in the autumn months, when plants are being rooted, additional shade may be needed. Shading during the last three weeks of production may cause internodes to stretch. In periods of long days and high light, shade will be required to the level of 40% over the crop. This is likely to be when plants mature in the spring, or in early fall, when plants are newly potted.

**Feeding:** After the initial transplant, provide Senetti with a strong application of 250 ppm nitrogen with 20-10-20 during the first four weeks of production. Senetti is also a heavy iron feeder, so keep soil pH between 5.5 and 6.0 with a monthly drench of STEM from Peter's Excel for additional micronutrients. Senetti's vigorous root system will require a lot of water on bright and warm days. This should be done with clear water only. Three weeks prior to sale, switch to a phosphorous fertilizer (10-30-20) to support flower production.

**Managing Growth:** If our rooted liners don't come as pinched and breaking plants, do a single pinch. Plants will naturally break and produce well-shaped plants. Senetti is very responsive to B-Nine (daminozide), which

can be used at 2,000 ppm every 14 days, depending on the crop timing. Florel (ethephon) can also be used at the rooting stage to promote lateral shoots.

**Pests and Diseases:** Aphids are the Number 1 pest for this crop, but spider mites and whiteflies can also be present during production. Scout for thrips as flowers develop. Powdery mildew can be an issue during the cool crop production, so keep humidity levels low in the greenhouse. A preventive drench with Subdue MAXX and Cleary's every eight weeks will prevent root rot.

For more information about Senetti, visit [www.senetti.com](http://www.senetti.com) and [www.suntorycollection.com](http://www.suntorycollection.com).

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## SuperCal: A Super Class of Petunia

*By Bob Croft*

SuperCal is a new class of petunia with two great parents (*petunia x calibrachoa*) that combine to create a remarkable plant. Their exceptional garden performance demonstrated in trials throughout North America have earned SuperCal the title “All Weather Petunia.”

SuperCal is less likely to show iron chlorosis due to high pH, and has a very strong root system that helps leaves stay greener under stressful conditions. Excellent vigor, large flowers and ease of growing make SuperCal ideal for baskets, beds, borders and mixed containers. The unique flower colors are intense and the blooms hold up well, even under severe rainy weather. Vibrant flowers contrast nicely with lush green, non-sticky foliage to maintain a fresh, clean look without additional maintenance.

All of these traits synergize into exceptional garden performance, enhancing your customer's experience. SuperCal thrives under cool environments and conditioned plants can tolerate temperatures of 28 to 30F (-2 to -1C) with no damage to the foliage. As the heat of summer rises and takes its toll on most cool-season

annuals, consumers will find that SuperCal outperforms traditional calibrachoa and petunias with stronger blooming power.

Many growers have experience with producing SuperCal in hanging baskets and mixed containers and are also looking to produce plants in smaller pots to meet market demand. Sakata has created the following guidelines to assist growers with producing high-quality 5-in./1-qt. pots.

**Variety Selection:** SuperCal Artist Rose, Blushing Pink, Blue, Cherry, Violet (trailing type) and Vanilla Blush are recommended for quart production due to plant habit and less need for supplemental lighting.

## **Production**

### **0 to Transplant:**

- Direct stick cuttings into an 84 to 102-cell tray filled with a sterile, well-drained and porous media. Moisten the soil prior to sticking. (Do not soak the soil). (pH 5.0 to 6.0)
- Keep media on the moist side, but not saturated, as excess moisture slows rooting.
- Under less-than-ideal conditions, consider using a rooting hormone with up to 2,500 ppm of IBA. Mixtures that also include up to 500 ppm of NAA work as well.
- Bottom heat enhances root development. Maintain soil temperature between 68 to 72F (20 to 22C).

### **1 to 4:**

- Cuttings should require mist for 5 to 7 days and then only as needed to help keep cuttings turgid and prevent wilting.
- Maintain moderate humidity (50% to 60%) and light levels around 1,500 to 2,000 fc.
- A preventative soil drench for pythium may be applied to assist with root development.
- After 3 to 7 days from sticking, remove from mist and apply a tank mix spray of 500\* ppm Florel (ethephon) and 1,250 to 2,500 ppm B-Nine. Apply early in the day to allow maximum absorption.

\*A lower rate of 250 ppm Florel and 1,250 B-Nine is recommended on Vanilla Blush.

### **5 to 10:**

- Pinch liners if excess stretch has occurred during propagation and transplant into 1-qt. pots filled with a sterile, well-drained and porous media. (pH 5.0-6.0)
- Maintain temperature 70 to 60F (21 to 16C) (day/night) and relative humidity around 50% to 60%.
- Increase light level to 3,500 to 5,000 fc (avoid growing baskets overhead).
- Allow media to dry in between irrigations to tone plants and maximize uptake of nutrients.
- Following root establishment, use constant liquid feed at 100 ppm N with a full minor complement\*\*. (Cal-Mag/low ammonium fertilizer such as 15-5-15 works best.)
- Supplemental applications of magnesium sulfate (MgSO<sub>4</sub>) at 8 oz. in 100 gal./ 60 g in 100 l every 2 weeks are recommended to promote a deep green leaf color.
- Target the EC level at 1.0 to 1.5 mmhos (2:1 slurry).
- As plants begin to fill in (7 to 8 weeks after sticking), apply B-Nine spray at 2,500 ppm to help maintain a bushy habit. A second application may be required 2 to 3 weeks later.

\*\*Fe 1 ppm, Mn 0.5 ppm, Zn 0.5 ppm, B 0.25 ppm, Cu 0.25 ppm, Mo 0.1 ppm

**Finish (11 to 15):**

- A Bonzi (paclobutrazol) drench at 2 to 5 ppm works well to finish the plants and prevent excess stretching 1 to 2 weeks prior to shipping.
- Maintain average daily temperatures of 65F (18C).
- Be sure to tone plants with high light (more than 5,000 foot candles), but maintain the fertilizer at full strength to keep the foliage dark green and healthy.

**Additional Notes:**

- Start with a uniform cutting about ½ to ¾ in. (1.25 to 2 cm) long and 2 sets of leaves.
- Pinching—Some additional shaping of plants may be needed to provide an ideal finished plant.
- Temperature—Cooler temperatures (55 to 60F/13 to 16C) combined with high light (more than 5,000 fc) produce high-quality plants. However, crop time will be longer by a few weeks with significant lower average daily temperatures.
- The use of a retractable-roof greenhouse for full-light exposure during the day and frost protection at night is ideal.
- PGRs—Florel must be applied early in the crop (at least 8 weeks prior to shipping) to prevent flower delay. **GT**

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