

GROWERTALKS

Features

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Growing Know-How

Jennifer Zurko



Toucan Canna

By Rick Schoelhorn, New Products, Proven Winners

Canna lilies have been a mainstay in gardening for over a hundred years. They grow fast, flower all summer and provide a bit of tropical texture to retail shelves.

Pictured: Toucan Rose Canna

In the past, you got rhizomes as your starter material, and like all tractor-harvested plant parts, they were often riddled with virus. Rhizomes also had issues with uniformity; depending on the “eyes” on each rhizome, some would grow quickly while others lagged behind, leading a grower to have to repeatedly screen and sort the crop to get them to market. Well, those days are over now, and with the release of the Toucan series, you can now get a reliably uniform crop and virus-free plants with fast growth and early flowering. Changes in liner technology have made it easy to grow canna lily and add it to any bedding plant lineup.

The Toucan Cannas from Proven Winners come in four colors: Red, Yellow and Rose blooms on green foliage, and Scarlet blooms with purple leaves. They’re a crossover plant to the aquatic plant market—much like Graceful Grasses King Tut and Prince Tut Papyrus—and will tolerate having up to half their root system submerged. The coarse texture of the foliage is a great tropical accent in any mixed container and their tolerance of poorly drained soils makes them a great addition to any landscape where drainage can be a problem. Of course, the Toucan series will also work perfectly well on the level of irrigation growers apply to their regular bedding plant crops.

The Toucan series is compact, but generally too fast a crop for the 4- to 4.5-in. container market, though it can be grown as a quick crop. The challenge is getting it into flower before the plants outgrow the container, so it’s best grown in small pots once the weather is already warm and bright. In general, it’s recommended for either a gallon or larger containers, like 12- to 16-in. patio pots. The Toucan series is also excellent as the thriller in upright mixed containers. By summer’s end, the mature size is around 48 in., with an equal spread.

Fertilizer & watering

A balanced bedding plant fertilizer at a rate of 250 to 300 ppm as a constant feed is fine. Cannas require constant moisture (they're semi-aquatic in nature), so Toucan Cannas must be moist at all times. Reducing water is not a good way to control plant size, as it leads to lower leaf yellowing. In terms of fertility, maintain EC in the range of 1.0 to 2.56 and a pH of 6.0 to 7.5.

Production light levels

Best at high light levels around 5,000 to 8,000 foot candles. The higher light intensity promotes earlier flowering, keeps plants more compact, and encourages branching and stronger stems.

Production temperature

75 to 80F (24 to 27C) day and 65 to 75F (18 to 20C) night temperatures will give the fastest crops. Temperature can help control the crop, so toning with cooler production temperatures (as long as they're above 65F) can help control the crop by slowing growth.

Pinching and growth regulators

No pinching is needed at all with this crop, and given the correct light levels, branching is exceptionally good. If needed, a toning drench of 1 to 4 ppm paclobutrazol can be applied two weeks after transplant or anytime thereafter. Use care when drenching with plant growth regulators until you have some familiarity with how the crop will respond under your conditions and follow label instructions carefully.

Flowering

From planting to first flower under normal conditions is about 60 to 85 days. Flowering is controlled by temperature, light and nutrition.



Profusion Double Zinnias

By Ken Harr, Product Technical Manager, Sakata Seed

For growers, retailers, gardeners and landscapers alike, Profusion Double Zinnias show exceptional performance in uniformity, flower power and resilience, and draw praise for exceptional performance across the country, year after year.

Pictured: Profusion Double Zinnia Sunrise Mix

The extensive line-up of Profusion Double includes two All-America Selections award winners: Double Hot Cherry and Double Deep Salmon. Plus, with Double Yellow—one of Sakata's top-performing varieties—and the other varieties of Profusion Double, garden decorators and landscapers have a full choice of long-lasting, colorful blooms. Because of their extra petals and larger blooms, and their ability to cover aging flowers, mass plantings are dynamite when viewed from a distance or up close.

For growers, Profusion Double Zinnias offer great germination percentages at 90%+ with all varieties offered

in Slick Coated seed for efficient sowing. In combination, this one-two punch translates into more useable seedlings. Generally, a fast-turn crop, Profusion Double Zinnias can be sown, transplanted and finished in as little as seven to eight weeks in large packs, eight to 10 weeks in larger-sized containers and hanging baskets. Normally, zinnias are seen at retail once warm weather has arrived for the season, but don't underestimate Double Profusion's durability in the retail market. Profusions can be shipped with begonias, salvia and impatiens, resulting in extra sales with replenishment orders all but assured.

Growing tips

To ensure a successful crop, media pH during plug growth should be at 5.8 to 6.0. Radicle emergence will occur in as little as three to four days by keeping the media at moisture level 4 (wet, but not saturated) with 100% humidity.

Once the radicle emerges and cotyledons open, moisture levels can be reduced to a medium level (soil color changes from dark black to medium brown). Lower humidity levels over the plug trays to 40% and begin feeding with 40 to 50 ppm nitrogen with calcium and potassium nitrates (14-2-14 or 13-2-13-6 Ca-3Mg).

Profusion Zinnias are Facultative Short Day Plants (FSDP), which means growers should expose the crop to four hours of night interruption (10:00 p.m. – 2:00 a.m.) if daylengths are less than 11 hours to ensure vegetative growth. Bud initiation should take place 15 to 18 days after sow date; growers can bulk up seedlings and transplants with supplemental light achieving daily levels at 8 to 12 moles. At Days 21 to 28, increasing the moles of light to 12 to 15 and adding supplemental HID light will result in increased basal branching.

Some key cultural points are:

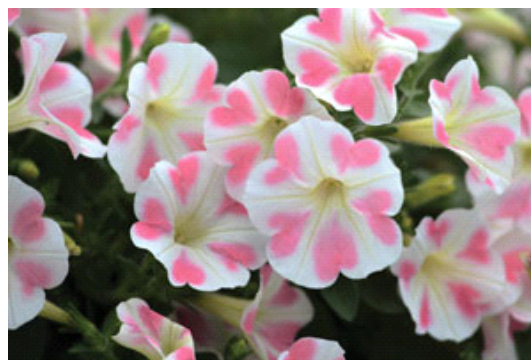
- Feed transplants with a balanced calcium nitrate-based fertilizer at 100 to 150 ppm
- Interveinal chlorosis on mature leaves indicates a lack of magnesium—supplement with magnesium sulfate (Epsom salts) at 16 oz./100 gal.
- Downward cupping of leaves can indicate too dry media or the E.C. is greater than 2.0
- E.C. should be 1.25 to 1.5 range

Growing Profusion Double Zinnias on the lean side, with less-than-adequate moisture levels, can cause them to flower prematurely. However, pushing the crop with excessive ammonia and phosphorous can also result in lush, vegetative growth with delayed flowering. Growers can guard against excessive growth with applications of B-Nine, A-Rest, Bonzi or Sumagic. Profusion Double Zinnias can also be controlled with a negative DIF at 5 to 15F.

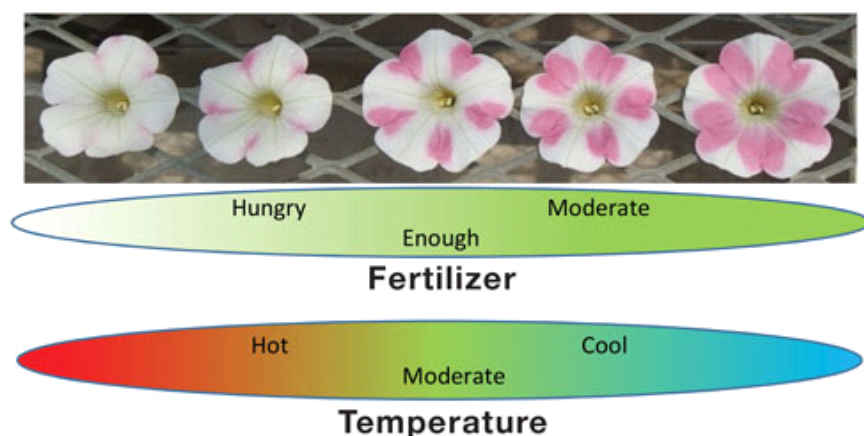
Surfinia Heartbeat Petunia

By Delilah Onofrey, Flower Power Marketing/Suntory Flowers

New from Suntory Flowers, Surfinia Heartbeat is an adorable novelty petunia. Elegant white flowers feature a pattern of five soft pink hearts.



The hearts grow with love, care and adequate fertilizer. While achieving this pattern will be no problem for commercial growers, if a consumer doesn't feed the plant for a couple of months in a hot summer, the pattern could disappear, which typically happens with many patterned flowers in extreme heat. Providing fertilizer packets could be a nice value-added or cross-marketing opportunity at retail.



Being in the Surfinia brand, you can expect the same outstanding garden performance Surfinia Petunias have been known for globally for more than 25 years. Surfinia Heartbeat has an attractive, compact mounding and trailing growth habit. It's charming in hanging baskets, containers and window boxes, and would make a delightful Mother's Day gift. Heartbeat also presents nicely in a 4-in. container, making it a cute gift for children to give to their moms.

In the South, where spring starts early, some growers are considering producing Heartbeat for Valentine's Day. Supplemental lighting will most likely be required for plants to be in full bloom in February. Heartbeat isn't considered daylength neutral until Week 15. Southern growers are also considering Heartbeat for October breast cancer awareness promotions. We look forward to seeing how these off-season promotions do.

General culture

Surfinia is a dream to root, taking three to four weeks on the bench. Rooted cuttings should be potted as soon as possible into 4- to 6-in. pots. One liner per pot is recommended, using a well-drained peat/perlite mix. Surfinia's branching habit makes an excellent 4-in. pot with a quick turn. Plants can be flowered easily and kept compact with plant growth regulators. Surfinia will require pinching to encourage the right habit and breaks to achieve a bushy, spreading plant. This should be carried out two weeks after potting, but Surfinia Heartbeat is a more naturally compact variety and less vigorous and aggressive than the classic Surfinias.

Crop timing

4-in. pots—Four to six weeks from one liner with one pinch

6-in. pots—Seven to eight weeks from one liner with two pinches

10-in. baskets—10 to 12 weeks with three liners and two to three pinches

Temperature

Crop temperatures should begin at 55 to 60F (12 to 15C). Then increase to day temperatures of 65 to 75F (18 to 23C) and maintain night temperatures at 55 to 60F.

Lighting

High light levels or full sun is encouraged.

Watering

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

Feeding

Surfinias 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. Maintaining adequate fertilizer is essential to create Heartbeat's heart patterns.

Growth regulators

Surfinia is responsive to daminozide (B-Nine), which can be sprayed at a rate of 2,500 to 5,000 ppm. With Heartbeat being naturally compact, it will require less than other petunias. A Bonzi drench can be applied at 1 to 3 ppm as needed. Traditionally, Surfinia grows rapidly in high light and high heat.

Insects and diseases

Key pests to monitor for include aphids, fungus gnats, shore flies, thrips and whiteflies. Diseases to prevent include botrytis, phytophthora, powdery mildew and rhizoctonia.



ColorRush Petunias

By Luís Muñoz, Culture Research Technician, Ball FloraPlant

For home gardeners, it's not difficult to find a pink petunia in stores. But to find one that has phenomenal landscape performance with blooms that last all summer long—now that's a bit harder to come by.

Pictured: ColorRush Pink and Blue Petunia

Ball FloraPlant has the answer with its new ColorRush series of garden landscape petunias. Notable for their

big-time vigor and even bigger garden success, these mounds of petunia blooms hold up to the heat and humidity of summer.

We've trialed ColorRush across the country: Florida, North Carolina, Illinois, central Texas and California. We watched both colors (Pink and Blue) bounce back from rain quickly, thrive in extreme temperatures and bloom continuously. With success like that, shoppers are sure to return again and again!

ColorRush petunias have nicely matched habits, making production planning easier. Here are a few tips for growing the best-looking plants for your customers.

Propagation

Choose a well-drained medium with an EC of 0.75 to 0.80 mmhos and a pH of 5.4 to 5.8. Stick cuttings within 12 to 24 hours of arrival. Cuttings can be stored overnight, if necessary, at 45 to 50F (7 to 10C). Soil temperature should be maintained at 68 to 73F (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 moderately wet and never saturated. This is critical to prevent iron deficiency and the associated chlorotic foliage that can develop.

Appropriate water management, air and light levels should eliminate the need for chemical PGRs. Avoid stretch by moving the crop to cooler air temperatures during the last weeks of propagation. No pinch in propagation is necessary.

Growing on to finish

ColorRush Petunias should be ready for transplant three weeks after sticking. Use a well-drained, disease-free, soilless medium. Maintain a media pH of 5.4 to 5.8. Night temperatures: 53 to 61F (11 to 16C). Day temperatures: 59 to 76F (15 to 24C). ColorRush Petunias should be grown under moderate light levels; 5,000 to 8,000 f.c. (50,000 to 80,000 Lux) is the ideal range. Low light levels promote stem stretch and reduced plant quality.

The medium should be allowed to dry between watering; however, periods of sustained wilting should be avoided. Petunias are susceptible to botrytis and root diseases—avoid high humidity, constantly saturated media and wet foliage.

ColorRush Petunias have a high feed requirement. Use constant feed with a balanced fertilizer at 225 to 300 ppm N with additional iron as needed. A full complement of minor elements should be provided to the plant. Regular leaching with clear water will help to reduce buildup of excess salts in media.

ColorRush Petunias are free-branching and do not require pinching. Pinching will delay flowering approximately three weeks.

Plants must be monitored regularly for early visual signs of upward pH drift (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 correct. Periodic application of acidic feed or drench applications of a

chelated iron product can be used to maintain appropriate pH levels.

An effective method of lowering pH is a soil drench of iron sulfate. The foliage must be rinsed immediately after treatment, since the iron sulfate solution can result in phytotoxicity to flowers and foliage.

Controlling growth

Use high light levels and cool temperatures to control growth. To control growth and improve flowering and habit, growers can use one or more applications of B-Nine (1,500 to 2,500 ppm) starting seven to 14 days after transplant. Mature plants that are approaching shipping size can be drenched with Bonzi (0.25 to 1.0 ppm) to significantly slow vegetative growth while allowing flowering to continue. NOTE: Use of PGRs can delay flowering one to two weeks. Avoid spraying once flower buds appear. In general, more frequent applications of any growth regulator at a lower concentration will produce the best results.

ColorRush For landscapers

The new ColorRush series will be very appealing to your landscaper customers. It’s a fantastic choice for filling large beds or exploding out of municipal containers and baskets. Since these customers will be interested in 4-in. (10-cm) or quart pot sizes, here are some tips to meet their needs:

An early Bonzi 5 ppm spray application in the liner stage, approximately eight days after stick, will effectively control early growth. To control finished growth in the 4-in. or quart pot, apply Bonzi 5 ppm soil drench approximately two weeks after transplant. Our trials found that this Bonzi drench was enough for the entire crop cycle and included a pinch at transplant.

ColorRush Crop Time from Unrooted Cuttings		
POT SIZE	PLANTS PER POT	CROP TIME (in weeks)
4-in.	1 ppp	9 to 11
6-in.	1 to 2 ppp	10 to 12
10 to 12-in.	4 to 5 ppp	11 to 14
Crop Time from Rooted Cuttings		
POT SIZE	PLANTS PER POT	CROP TIME (in weeks)
4-in.	1 ppp	6 to 8
6-in.	1 to 2 ppp	7 to 9
10 to 12-in.	4 to 5 ppp	8 to 11

Treatments above did not significantly reduce flowering compared to our control. Treatments above also did not significantly reduce growth habit in the landscape.



Bellini Crape Myrtles

By Kristen Pullen, New Product Development Technician, Star Roses and Plants

Star Roses and Plants, introducer of The Knock Out Rose, has released a new compact series of crape myrtles called Bellini. The series consists of two colors, Grape with purple blooms and

Raspberry with rose blooms. Both varieties flower the first year in containers and maintain an attractive compact and rounded habit in the landscape, reaching about 3- to 4-ft. wide and 3- to 4-ft. tall. Bellini Crape Myrtles exhibit excellent resistance to powdery mildew and are hardy to Zone 6.

Pictured: Bellini Grape (left) and Bellini Raspberry Crape Myrtle

With their first year flowering, Bellini Crape Myrtles work well as color items for 1-gal. container programs and can be scheduled for early flowering crops in April and May.

Media

Crape myrtles prefer moist, but well-drained, conditions. A composted pine-bark media works well in containers along with a weekly liquid feed of 20-20-20 at 150 ppm. Maintain a pH range of 5.5 to 6.2 and an EC range of 1.0 to 1.5.

Container size

These crape myrtles do well in 1- or 3-gal. containers. 72-cell liners are better suited for 1 gal. and 4-in. liners work well in 3 gal.

Potting

Be sure not to bury the crown of the plant and ensure that the roots are completely covered in the soil for good establishment.

Grow time

For a 1-gal. container from a pinched 72-cell liner: Pinch four weeks after transplant. Plants will take another six to seven weeks from their four-week pinch to be ready to ship. 4-in. liners can be used in 3-gal. containers. This eliminates the need for pinching and produces a full, budded plant in about 12 weeks.

Be sure to space containers on at least 12- to 14-in. centers. Proper spacing ensures the plants have room to grow out full instead of stretching and growing more upright. Container plants will remain in bloom for about four weeks. When pots go out of bloom, they can be trimmed and will re-flower in about six weeks.

Light intensity

For the most blooms, full sun is best in both production and garden settings. If producing an early-flowering container crop indoors during the colder months, 16 hours of light is best.

Temperature

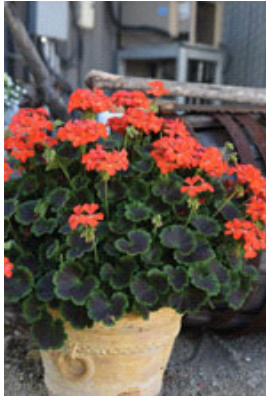
To keep plants actively growing and flowering, temperatures should remain at a minimum of 65 to 75F (18 to 23C). In colder climates, plants can be grown indoors at this temperature to produce early flowering crops in April and May.

Irrigation

In containers, maintain even moisture and be sure to avoid drying out when in bud and bloom to avoid flowers dropping quicker. In the landscape, water plants for the first two to three weeks for establishment. Crape myrtles like humid climates; after they're established they can tolerate a fair amount of drought.

Diseases and insects

Bellini Crape Myrtles have proven to be exceptionally resistant to powdery mildew.



Brocade Zonal Geraniums

By Emily Mason, Angela Mekjian & Tanner Douglas Cole, Dümmer Orange

Brocade Zonal Pelargonium are new and notable for their outstanding novelty foliage and garden performance. The Brocade series has recently been re-invigorated with four noteworthy additions. Salmon Night, Cherry Night, Fire and Fire Night are a perfectly matched quartet in habit and schedule, each with a unique foliage and flower color.

Pictured: Brocade Fire Night Zonal Geranium

Brocade geraniums from Dümmer Orange are the perfect addition to any program as an accent plant or in combination with other annuals. Brocade Fire and Brocade Cherry Night are All-America Selection (AAS) winners for the 2015 season, proving that they're not only beautiful, but robust and easy to grow as well.

Brocade unrooted cuttings are shipped from Floraplant, Mexico, or as a rooted liner from one of our North American rooting stations. Protocols set for the Dümmer Orange Green Care program ensure that Brocade cuttings are produced under strict phytosanitary protocols. These factors allow our production team to focus on delivering the best quality product every time.

Propagation and finish

Sticking: Unrooted cuttings should be unpacked from the box and removed from the bags immediately. If needed, cuttings can be held overnight in a cooler at 40 to 45F (4.5 to 7C) with a relative humidity close to 100%. Wetting the floor is an effective way to achieve this goal. A typical well-drained, peat-based media is preferred for propagation. Using a rooting hormone is beneficial. 100-count trays or strips are the optimum configuration for rooting pelargonium.

Moisture: Cuttings should be misted for the first seven to 10 days with just enough water to keep the leaves turgid. After transplant, liners should be well-watered and kept evenly moist until the roots reach the side of the pot. Once established, a wet-dry cycle is ideal, but pots should never be allowed to dry completely.

Preventing botrytis: During propagation, growers have found it to be very beneficial to apply a treatment of KIBA at 100 ppm combined with 2 ppm Fascination and Pageant at 4 oz./100 gal. (118 ml/379 l).

This application is most effective if made first thing in the morning at 1.5 oz./sq. ft. or about 2 gal./100 sq. ft. (7.6 l/9.3 sq. m) with mist held for as long as possible, allowing the product to dry on the leaves. If cuttings arrive warm or there are signs of botrytis, the rate of Pageant can be increased to 12 oz./100 gal. (0.35 L/379 l).

COMMON FUNGICIDE TYPES AND RATES FOR PELARGONIUM PROPAGATION

PRODUCT	RATE PER 100 GAL. (379 L)	MODE OF ACTION CLASS
Pageant Intrinsic	12 oz. (0.35 l)	11 + 7
Veranda O	8 oz. (0.24 l)	19
Daconil Weather Stik	16 oz. (0.47 l)	M5
26 GT	13 oz. (0.38l)	2
Degree	1.0 lb. (0.47 l)	17
Heritage	4 oz. (0.11 l)	11

To prevent botrytis at retail, avoid wetting foliage and flowers immediately before and during shipping. Maintaining adequate light levels, spacing and air circulation helps during finish and at retail.

Fertilizer & pH: Fertilize at 100 to 150 ppm nitrogen once roots emerge. This rate can increase to 200 ppm nitrogen after transplant. EC levels should be maintained around 1.5 to 2.0 mmhos/cm by saturated media extraction (SME). Brocade should be grown in pH ranges of 6.2 to 6.8 to ensure proper nutrient availability. Geraniums reduce media pH naturally, so regular monitoring is essential.

Particularly before shipping, plants should receive adequate applications of Ca and Mg to help create a well-shaped, profusely blooming plant with increased shelf life.

Temperature: During the rooting phase of production, temperatures should be maintained around 72 to 74F (22 to 23C). This can widen to 71 to 76F (22 to 24C) at transplant, then be adjusted to 70 to 75F (21 to 24C) days and 65 to 70F (18 to 21C) nights during finish.

Light: Light levels and root development have a direct relationship; as rooting increases, so should light.

DAILY LIGHT INTEGRAL TARGETS (photoperiod of 12 to 13 hours daily)

PRIOR TO ROOTING	AFTER ROOTING	AFTER TRANSPLANT
3 to 5 moles/day	5 to 10 moles/day	10 to 20 moles/day

Growth regulation: There are two options commonly used for holding trays prior to transplant; they must NOT be used in combination. The first is a weekly Cycocel (chlormequat) application at 500 to 700 ppm. The second option is to keep the cuttings dry in combination with cooler temperatures of 45F (7C).

At finish, Cycocel (chlormequat) is the preferred PGR, applied at 500 to 1,000 ppm as needed. When growing conditions are less than ideal, leaf petiole stretch and leaf size may need to be controlled. This can be achieved by adding B-Nine (daminozide) at 1,000 to 2,500 ppm to make a tank mix.

Florel (Ethephon) can be used at 350 to 500 ppm for improved branching. Depending on the climate and other conditions, allow six to 10 weeks after a Florel (ethephon) application for plants to flower.

Pot sizes and timing: Brocade unrooted cuttings are usually ready to transplant four weeks after stick.

Finish times depend on pot size and production region:

CONTAINER SIZE	PLANTS PER POT	TRANSPLANT TO FINISH (WEEKS)		
		NORTHERN	MID-ATLANTIC	SOUTHERN
4 in.	1	7 to 8	6 to 7	5 to 6
5 in.	1	9 to 10	8 to 9	7 to 8
6 in.	1 to 2	11 to 12	10 to 11	9 to 10
10 in.	2 to 3	11 to 12	10 to 11	9 to 10

Penstemon Cherry Sparks

By Karl Batschke, Perennials Global Product Manager, Darwin Perennials



Penstemon comprises a largely North American genus with over 250 species characterized by their five stamen flowers (“penstemon” comes from the Greek Penta meaning “five”). It can be found as far north as Alaska and as far south as Guatemala. This genetic diversity makes penstemon an ideal candidate for hybridization to suit consumer satisfaction and garden performance.

Penstemon Cherry Sparks is a beautiful, large-flowered interspecific hybrid that brings together flower size and hardiness in one grower-friendly package. It has double the flowering time for a longer shipping period and selling window. That also translates to more color in the garden. Hardy to USDA Zone 5 in well-drained soils and drought tolerant, it’s sure to be a consumer favorite as well.

Propagation

Propagation is done from unrooted cuttings. Use an IBA basal dip of 500 ppm IBA. Alternately, water-soluble IBA sprays of 300 ppm on Day 1 and Day 3 can be effective as well. Since penstemon cuttings can become dehydrated during shipping, we find best rooting success by using moderate mist levels for the first 24 hours to re-hydrate the cuttings and then quickly reducing mist over the next 10 days. Penstemon are generally considered to be light-to-moderate water-requiring plants, so be cautious about over-misting in propagation. Begin fertilization using 50 to 75 ppm N as callous begins to form, typically between Day 7 and 10 after sticking.

Cherry Sparks should be pinched 28 to 32 days after sticking to encourage uniform branching. Also, our research indicates that a 300 ppm spray of Configure applied just prior to pinch will further increase branching, but not eliminate the need for a pre-transplant pinch. Cuttings will be ready for transplant 40 to 45 days after sticking.

Finishing

Transplant liners into a well-drained soil media that’s been adjusted to a pH of 5.8 to 6.2 and an EC of 1.0 to 1.25 (SME). Penstemon are moderate feeders and tend to perform best when allowed to dry slightly between watering. Use constant liquid feed of 150 to 175 ppm N or incorporate CRF fertilizers at moderate rates to keep fertility in moderate EC ranges. If plants were stressed in the liner stage, they may require an additional pinch two weeks after transplant to promote uniform branching.

Penstemon Cherry Sparks grows best with an average day temperature of 65F (18C). Growth slows significantly when night temperatures fall below 45F (7C). Plants achieve their best habit and flower color when finished outdoors in full sun.

Cherry Sparks doesn’t require vernalization to flower and can be planted in early spring, as natural day

temperatures increase. However, it's an obligate long-day perennial plant. Natural flowering times would be late-May in the southern United States and mid-June in the north. We've had success forcing plants into bloom by using 14 hours of extended day lighting for eight weeks.

Typical finishing times in a 1-gal. container would be 10 to 12 weeks from a rooted cutting. Cherry Sparks is a sterile hybrid that doesn't set seed and will naturally re-flower on new shoots as old flower shoots expire. Plants can be re-set for flowering by shearing back old flowering shoots and will re-flower in approximately six weeks.

Plant growth regulators are generally not necessary; however, we've seen success with 2,500 ppm sprays of B-Nine or 5 ppm sprays of Sumagic.

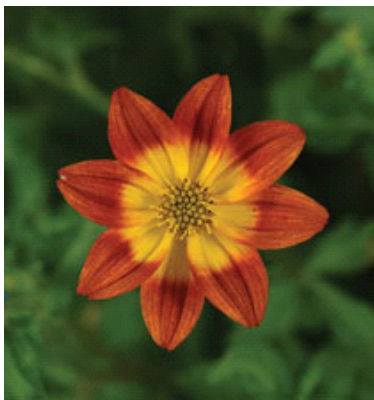
Insects and disease

Penstemon Cherry Sparks has proven to be very disease and insect resistant. We see little to no leaf spotting or mildew sensitivity. Watch for aphids when plants are coming into the bud stage and thrips after flowering begins. No reported pesticide sensitivities have been reported, but it's always a good idea to test new compounds before making full-crop applications.

Using the guidelines above, you're on your way to growing top-quality plants for your customers. Penstemon Cherry Sparks represents the latest in hybridization of this wonderful North American native genera and will provide excellent retail appeal and consumer satisfaction.

CROP SCHEDULE FOR UNROOTED CUTTINGS
(Spring planting is recommended)

Pot Size	Plants Per Pot	Crop Time (Weeks)
1-qt.	Not Recommended	
1-gal.	1 ppp	15 to 17
2- to 3-gal.	3 ppp	17 to 19



Producing Beautiful Bidens

By Mike Fernandez, North American Product Manager, Danziger “Dan” Flower Farm

Pictured: Blazing Glory Bidens

Once a novelty reserved for clever combinations, bidens have become a staple in baskets, beds and pots alike. These sun and heat lovers can also handle cold temperatures, making them an extraordinarily versatile option across many zones and climates. And their abundant flowering and diverse bloom array—large single or double flowers—gives them appeal to an amazing breadth of audiences.

The newest bidens offer excellent habits and colors, like Bidens Blazing Glory, which blooms abundantly with large red and yellow single flowers and stays more compact than ever. Mega Charm blooms early with big,

star-like yellow flowers on a mounded habit. Golden Empire offers the classic charm of large round blooms on an upright plant. And Gold Jingle vigorously produces medium-sized orange flowers in a tight mound.

Bidens are a relatively easy-to-grow crop with few particularities. For rooting non-rooted cuttings, stick one liner per cell. No rooting hormone is necessary. Propagation cycle will be approximately five weeks.

Use a well-drained, disease-free potting mix. Note: Media such as peat moss may retain excessive water. Provide an electrical conductivity (EC) of 0.80 and maintain pH at 5.8 to 6.2. Keep moist, but not over-watered, to prevent root damage.

Apply a preventive fungicide drench with a product such as Daconil on the day of sticking. Good control and optimum habit come with a follow-up plant growth regulator application (approximately 3,750 ppm B-Nine) the day after sticking. Plants will benefit from a second Daconil application in Week 2 for added protection. Follow label recommendations.

Feed with approximately 50 ppm nitrogen applied by mist in Weeks 1 and 2. Avoid over-misting and media saturation. Increase fertilizer to 65 to 80 ppm nitrogen in Week 3 and again in Week 4 to 100 to 200 ppm nitrogen by continuous feed. Avoid overfeeding. Feed programs should always be based on the needs of your water. In the garden, little to no fertilizer will be necessary.

Temperatures should be at approximately 72 to 74F (22 to 23C) during Weeks 1 and 2. As production progresses, plants will benefit from slightly lower temperatures, with greenhouses approximately 68 to 72F (20 to 22C) in Week 3 and even cooler in Week 4 at 65 to 68F (18 to 20C).

Pinch once, during Week 3. While not a requirement, plants will benefit from plant growth regulator applications. Consider a B-Nine/A-Rest tank mix as needed, following label recommendations.

Growing on

Transplant at approximately Week 5, approximately three cuttings per 10- or 12-in. basket. Maintain pH at approximately 5.8 to 6.2 and electrical conductivity (EC) at 1.0 to 1.2 for the remainder of production. Grow on at temperatures of 65 to 68F (18 to 20C). Provide a constant feed of 100 to 200 ppm nitrogen. Plants will be ready for sale at approximately Week 10.

Do not overwater bidens, as this can delay root development. At the same time, allowing bidens to dry out will damage flowers and foliage.

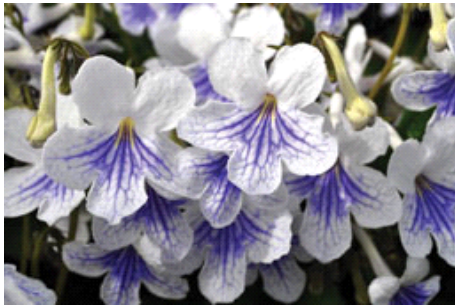
Bidens has few pests and diseases, with the exception of the possibility of botrytis during propagation. Monitor and scout vigilantly to prevent disease or insect activity.

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.

Ladyslippers Streptocarpus

By Randy Uhl, Technical Sales Support, Green Fuse Botanicals & Henry F. Michell Co.

Pictured: L



adyslippers White Ice Streptocarpus

The history of streptocarpus as a cultivated plant dates back to at least 1826 when a cousin to the current form was first introduced into the United Kingdom. Streptocarpus Ladyslippers exemplifies the best of modern breeding, boasting a much broader range of colors, compact leaves (not large, strap leaves) and more free-flowering varieties.

Green Fuse Botanicals positions the Streptocarpus Ladyslippers series as a “lifestyle plant,” meaning they flourish in the home near a window and can also be integrated into outdoor, shady areas for use in patio containers with additional shade-loving flowering plants and foliage.

Streptocarpus Ladyslippers are propagated from tissue culture to ensure disease-free plants and a programmable finish. Ladyslippers can be finished with a single liner in 5-in. (quart) and 6.5-in. (16-cm) containers or planting multiple liners in bowls or upscale ceramic containers, which will create a very impressive retail item.

Scheduling

Ladyslippers are sold year-round, but the emphasis is placed on spring finishing. A liner received in late October can be targeted for finishing for Valentine’s Day sales and liners received early February will finish easily for Mother’s Day sales.

A general production period for a 6.5-in (16-cm) container with a single plant or 8-in. (20-cm) container with two or three plants is 11 to 14 weeks from a 72-cell liner.

Light level and temperature

Streptocarpus is sensitive to high light levels and direct sunlight. The optimal light intensity is 1,000 to 1,500 foot candles, with slightly lower intensities from June through August. Fifty to 60% shade is recommended to reduce the risk of damage to the leaf surface due to high leaf temperatures—such damage would be indicated by yellowing of leaves or darkening and hardening of leaf margins. Also, during colder months, irrigation water temperature that’s significantly colder than the average leaf temperature can create unsightly yellowing or blotches.

Streptocarpus is perfect for a home living environment, as they prefer temperatures of 67 to 75F (19 to 24C). Warm day temperatures above 90F (32C) will stress plants, resulting in reduced flower size and flower longevity. Cooler temperatures will extend the crop time and invite other physiological troubles for roots and/or leaves.

Fertilizer and pH requirements

Streptocarpus Ladyslippers don't have specific nutritional needs and are easily grown at low nutrient levels. A fertilizer rate of 100 to 150 ppm nitrogen using a balanced formula is best for maximizing growth and shortening crop time. Use a nitrate-based fertilizer, limiting ammonium-based fertilizers. This feed regimen will help eliminate oversized leaves, which detract from the quality of the finished plants. Maintain EC at approximately 0.75 to 1.0. Streptocarpus is tolerant of a wide pH range, but 6.5 to 7.0 is most favorable.

Insects and disease

Proper growing conditions (adequate shade and suitable soil moisture) and good hygiene will ensure reduced plant stress, which will minimize the potential for insect and disease problems. The most common pests are aphids, thrips, whiteflies and mealy bug. Scout and spray as pests are found. In certain areas, cyclamen mite may also be a significant pest. For control of leaf spots and root diseases, monthly preventative sprays and drenches of a broad spectrum fungicide will control botrytis, pythium and other leaf and root disorders.

Other comments

When transplanting, take care to ensure that the top of the liner isn't buried, but is placed at a level equal to the surrounding soil. If the crown is buried, plant growth may be slowed or the crown may rot.

Research at Iowa State University by Christopher Curry and Nicholas Flax has shown that Ethephon (Florel) spray applications will delay flowering without reducing the number of flowers or flower size. A 200 to 500 ppm (two treatments at lower rates) spray application is our suggested rate to keep flowers from slowing plant progression and eliminate removing flowers buds by hand.



Funky Pink Begonia

By Jen Calhoun, Marketing Specialist North America, Benary

So what's your definition of Funky? Modern? Stylish? Slightly unconventional—or maybe just wicked cool? Well, at California Spring Trials this year, Benary introduced a new begonia that's all these things and more. Begonia Funky Pink is a breakthrough in begonia breeding that's sure to get your customers' attention.

Funky Pink has an amazing novel flower form that looks a little like a shredded Nonstop. The flower form, hot pink color and fun name will make Funky Pink memorable to your customers. The ease of growing, reliable germination and shipability will make it memorable to you.

Funky Pink is perfect for any size, from a quart to a premium hanging basket, but it also plays well in mixed containers. This spring, add some fun to your programs with new Funky Pink Begonia.

Scheduling

- Total crop time: Can vary by one to two weeks, depending on when they're grown
- 12-in. baskets: 19 to 20 weeks
- 10-in. baskets: 18 to 19 weeks
- 6-in. pots: 17 to 18 weeks
- Quarts: 16 to 17 weeks

Containers

- 12-in. baskets and pots: 5 plants
- 10-in. baskets and pots: 3 to 5 plants
- 6-in. pots: 2 plants
- Quarts: 1 plant
- When using multiple plants in a container make sure that the point of the leaf is pointing outward. This is the direction that the flowers will be formed.

During germination

- Minimal lighting is needed: 10 to 100 f.c.
- Do not cover seeds
- Maintain saturated media until germination is complete
- Light provided from an adjacent light source is enough
- Provide a daylength of 14 to 16 hours
- Use either daylength extension or night interruption
- Watch for excessive drying
- Watch for drying back during the night
- Moisture management and humidity control is critical during the early stages of production, especially until radicle emergence.
- Make sure to adequately water plug trays and never allow them to dry back before the pellets have dissolved or broken down

- Temperature management is important in keeping the media temperature at or above 70F (21C). The ideal germination temperature is 72 to 74F (22 to 23C) for the first 10 to 14 days until radicle emergence.

- Water with tempered water, at or above 64F (18C), to avoid lowering the media temperature too much
- Use care in watering newly germinated seedlings with too much water volume or too high of water pressure since seedlings have not rooted in and can easily be dislodged from the media.
- Use a media low in salts since begonia are sensitive to high salts. The media should have an EC less than 0.5.
- On Day 11, begin to dehumidify, reducing to 60%. This process should take place slowly by uncovering the seedlings and either misting or running the water booms quickly until the seedlings are established. Usually just for one to two days.
- On Days 12 to 14, start to reduce the moisture level to wet (4). Allow the media to approach moist (3) before re-saturating to wet (4). Booms can be run slightly faster to start to dry back the media.
- Early feeding on Day 12 with an ammonium-based fertilizer will expand the cotyledons and aid in the seedlings rooting in
- Suggested pre-blended fertilizers are a 20-10-20 or 17-5-17 at 50 to 60 ppm
- Additional micro-nutrient packages are beneficial since feeding is done at low rates
- By Day 21, begin a good wet-to-dry cycle to avoid algae growth and allow the seedlings to take up the fertilizer. Allow the media to approach moist (3) before re-saturating to wet (4).
- Provide horizontal airflow to allow the media to dry back between watering

Transplant ready

7 to 8 weeks from sow to a 288-tray; 9 weeks from sow to a 128-tray; 9 to 10 weeks from sow to a 72-tray

Media

Use a well-drained growing substrate; pH 5.5 to 5.8; EC 1.0 to 1.5.

Light

Continue with long days of 14 to 16 hours until the daylength is > 12 hours or mid-March. Provide 10 to 12 mols (30,000 to 35,000 lux) for optimum quality. If plants are placed under short-day conditions, growth will become uneven. Daylength extension is very important to continue vegetative growth. If light levels exceed 4,000 foot candles, provide shading to reduce the leaf temperature. Under high-light conditions, provide

shading to prevent leaf edge burn.

Temperature

After transplanting, 65 to 68F (18 to 20C) nights for the first 14 days or until the roots reach the bottom of the container. Thereafter, temperatures may be lowered to 61 to 64F (16 to 18C). An ADT (average daily temperature) of 67F (19C) will 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

Tips to be successful

- Daylength must be >13 hours, ideally 14 to 16 hours
- By March 21, lighting plants is not necessary!
- Tuberous begonias are salt sensitive-feed at lower levels of 125 ppm
- For high light conditions, feed 125 ppm with a 17-5-17 or 20-10-20 fertilizer
- Maintain light levels between 3,000 to 3,500 f.c.
- Plants that go from low light to high light may show leaf burn
- Provide a light shade in high-light conditions
- Tuberous begonias are very responsive to a DIF of 2 to 3F. Great growth regulation! **GT**