



PLANTPEDDLER

The Company Growing For *You*

CULTURE & PRODUCTION TECHNIQUES For Hiemalis Begonias

The following guidelines are intended to provide you with direction in developing or improving your Begonia production. Adjustments may be made for your location, facilities, production style and market.

Why Begonias?

The Hiemalis Begonia (Begonia X Hiemalis), also known as Rieger Begonia, is a proven crop for progressive growers. New Hiemalis varieties are easier to grow, more versatile and available in a wide range appealing colors. Post harvest shelf life is lengthy at retail level and for the consumer. Combine this with simple cultural techniques utilizing vigorous Strip-Eze™ rooted cuttings, and you can make quick profitable turns.

The big news is Plantpeddler Begonias aren't just for indoors! They are an outstanding outdoor upgrade to the common or unproven. With crossover versatility Begonias bring a new level of performance in medium to low light conditions.

Begonia Versatility!

Pick a pot, basket or tub; pick a size, shape and form. Pick any time of the year! You can grow Begonias. Most varieties are adaptable to all sizes for all uses. That's versatility!

Plantpeddler leads the world in color range and stability, ease of production, year round finishing, and enhanced resistance to disease.

Production of Finished Plants: Modern Begonia culture is still being defined. As a year-round finisher; Hiemalis Begonias respond on queue to structured production routines. Conversely, you can produce excellent crops for Spring and Summer markets using very simplistic "nearly-natural season" culture. Match technique to your desired results, facilities, location, and skill level. Don't over complicate it.

Flowering & Photoperiod Response:

Historically, Begonias have been treated as a photo-day sensitive crop. Although long-day/short-day treatment can be utilized to precisely program plants into bloom, day length control is not essential when considering your production objectives.

Generally, depending upon the location of your facility, flower induction can be improved with the use of blackcloth. Critical "night-length" for flower induction is 14 hours of darkness for a period of 10-14 days (winter) to 14-21 days (summer).

Recent research has indicated that Hiemalis Begonias can be triggered into flowering through multiple means of induction. Based on research regarding long-day leaf count, flower induction occurs within 4 to 6 leaf tiers. Our case studies have revealed that moisture stress, low fertility, thermal shock, and even growth regulators trigger floral induction.

Production Options: The growth of Begonias consist of three phases. Phase I is vegetative growth period or "start" while Phase II is flower initiation (or induction) with flower development defining Phase III. Manipulating the length of time Begonias receive while in Phase I will facilitate the production of plants with proper size and balance at finish.

Suggested crop timing:

3.5" - 4.5", 1 ppp, 6 - 9 weeks non-pinched
6" - 6.5", 2 - 3 ppp, 9 - 12 weeks non-pinched
7" - 8", 3 - 4 ppp, 9 - 12 weeks non-pinched
10" & up, 4 - 5+ ppp, 10 - 14 weeks non-pinched

Arrival: Unpack and inspect immediately. Water Strip-Eze™ liners with clear water and plant as soon as possible. If plants appear to have cold damage, hold in a cooler at 35-42F for up 24 hours before unpacking to minimize damage.

Media: Begonias prefer a well-drained soilless medium that has good water retention. If grown too dry they may develop glossy leaves. Starting medium pH should be 5.5 to 6.0 and contain a balanced starter charge.

Potting: Like all Begonia family members, Hiemalis are "one-sided" meaning all vegetative growth and flowers will face one direction. When growing multiple plants per pot it is very important that all the flat sides face each other in the center of the container. This makes a significant improvement in quality. For ease of planting, Plantpeddler Strip-Eze™ liners are "pre-turned" in the strip.

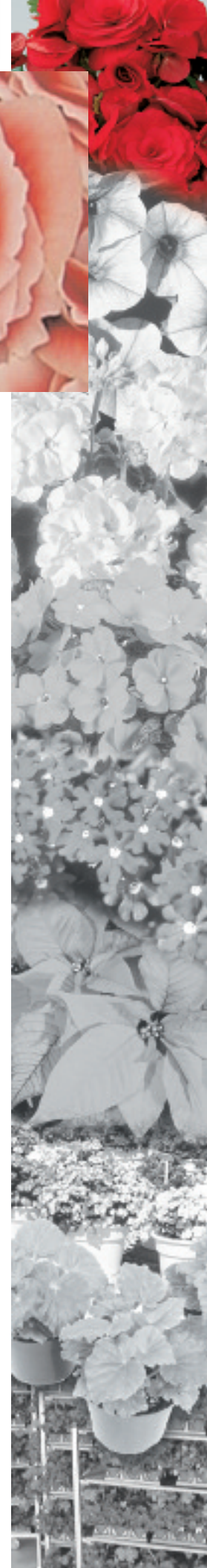
Start Conditions: For best results, start crops under long-day conditions (16-to 21 hours per day), HID recommended. Begin flower induction when plants are two-thirds of finished size. For top quality, when producing under short-day treatment it is important to return plants to long-days after induction. This advice breaks from many North American production routines.

Environmental Conditions:

To optimize your production consider the following:

1) Light and Temperature: Light requirements vary inversely with temperature. When temperatures are 62-65F optimum light level is approximately 3000 ftcd, at 70-72F grow at 2000 ftcd. At temperatures above 80F reduce light levels to 1500 ftcd or less.

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Optimum temperatures: Phase I growth (long-day start period) maintain 70 to 72F night temperature. In Phase II and III reduce night temperature to 64-66F to flowering. A cooler 62F at the end of finish will intensify flower color.

During low light and to extend day length use supplemental HID lighting to accelerate growth. Recommended levels range around 500 to 600 fctd for 20 to 22 hours per day (except Phase II).

Indicators of stress from high light are sunscald, reddening or darkening of the leaves, cupping of leaf margins, hard growth, and loss of vigor.

2) Water & Fertilization: The Hiemalis Begonia's fine roots are sensitive to high soluble salts. Desired EC's are between 1 to 2 mmhos/cm (saturated paste extract method). Leach with clear water during production if soluble salt tests indicate that EC is too high.

3) Humidity Control: Plantpeddler Begonias possess improved disease resistance.

Environmental conditions with high humidity foster softer growth and increase potential for disease development. Control disease with proper spacing, HAF fans, heating/ventilating moist air. Grow with dry foliage to reduce incidence of disease. Use fungicides only when necessary.

4) Pinching: Pinching may delay flowering up to two weeks, but builds fuller and larger plants. Use a very soft pinch, removing about 1/2" of the apical growing tip, approximately 2 weeks into Phase I.

5) Flower Bud Removal: If early flower buds are seen during Phase I (start), it is very important that these cymes be removed as early as visible. Removal will help maintain vegetative growth and vigor. On larger containers, it is likely that some bud removal needs to occur at the end of Phase I. If you consistently see premature flowering the plants are likely being stressed during the early growth stage. Troubleshoot all factors that might induce stress including: Cool temperatures, negative DIF, high light, short day length, high or low fertility, moisture stress and over application of growth regulators.

6) Spacing: During Phase I, grow plants pot tight. As plants mature in Phase II & III, proper spacing helps prevent undesirable weak stems and disease. When crowded, Begonias stretch rapidly.

7) Height Control: Media moisture stress, DIF (including cool mornings), chemical control, extended use of short-days can all be used to control height. Typically, summer production and smaller pot sizes require use of growth regulator applications.

Height control begins when plants are established in final containers with active new growth. Based on plant response, treatments can continue until visible bud.

Use of growth regulators vary by cultivar and cultural conditions. The established growth regulator of choice is Cycocel (500-1000 ppm spray). Avoid spraying lateral shoots. A-Rest, Sumagic and Bonzi are also effective at low rates. Use on a trial basis to determine rates. Late growth regulator applications may inhibit flower cyme elongation.

Crop Protection: Overall, Begonias are relatively disease and pest free. Production of healthy vigorous plants and the use of IPM have greatly reduced reliance on chemical control agents.

Plantpeddler is not in the business of making chemical recommendations. Before using, be sure that they are registered for use in your state. Please, consult your area extension specialists and other experts before making application. Always read and follow label directions.

1) Insect Pests: Begonia Mite and Cyclamen Mite have become a major threat to production. Due to the microscopic nature of these mites, scout crops for distorted leaves and flowers. Subsequently, if you observe hard growth, check undersides of leaves for a brown rash. Rogue and destroy heavily damaged plants. Treat remaining crops with approved pesticide.

Similar to the damage mites can create, thrips can cause substantial economic loss. This may be compounded with vectoring of viral diseases. Treat aphids as needed. Use IPM and sticky cards to monitor all pests.

2) Diseases: The most common Begonia diseases are powdery mildew and Botrytis. Improving the environment is the first step in controlling these diseases.

Monitor root health and treat as needed. Be especially alert of Pythium infections. For control of root related diseases, do not use "Subdue" or "Subdue MAXX" because phytotoxicity from these fungicides have been reported.

Although incidence is rare in US production, major threats of economic loss can occur from Bacterial Blight and a new strain of Fusarium. These diseases are highly contagious and there is no cure. Immediately rogue diseased plants. Confirm your findings with lab tests.

Post Harvest: Market plants at stage 1.5 to 2.5 (when approximately 25 percent of the flowers are open). Hiemalis Begonias are cold sensitive and should not be shipped or stored below 50F. Maintain plants at 60 to 75F in display. Flowers are sensitive to ethylene. For indoor display a minimum of 100 fctd is recommended for continued bloom. Keep old flower cymes and leaves groomed.

