

Begonia L.

Hiemalis Begonia, Rex Begonia, Tuberous Begonia, and Wax Begonia

Begoniaceae

- 1000 species
- topical and subtropical
- both hemispheres
- perennial and herbaceous to shrub-like
- stems are erect, trailing, or modified into rhizomes or tubers
- leaves vary in size, form, texture, color patterns

The genus is monoecious with unisexual flowers appearing in the same inflorescence

Staminate (male)
flower

Pistillate (female)
flower

Begoniaceae

- Over 10,000 hybrids
- Species are classified according to their root systems
 - Fibrous
 - Rhizomatous
 - Tuberous(but all species have fibrous roots)

Hiemalis Begonia

- Elatior begonia
- Rieger begonia
- Winter flowering begonia
- Formerly known as *B. x elatior*
- Hybrids of crosses among *B. socotrana* (winter-flowering) and various Andean hybrids (large double flowering)

Breeding

- New cultivars released annually
- Breeding for:
 - LD flowering & not going dormant or tuberizing below 65° F
- All new cultivars in the U.S. are selected to flower under LD at temperatures greater than 65°F

Propagation

- Stem and leaf cuttings, seed or *in vitro*
- terminal vegetative stem cutting with one expanded leaf is most common
- Stock plants are kept vegetative by 16-hr LD at 64-68°F
- Rooting in 3 - 4 weeks with medium temperature of 70 -72°F with rooting hormone
- Best to direct stick in final container

A seed propagated series called Charisma is available.

There are 1.85 million seed/oz.!

Charisma 'Deep Rose'

Flowering Control and Dormancy

- Obligatory SD plant at >75°F
- At lower temperatures flower initiation can slowly occur under LD
- At 75°F the critical maximum photoperiod for flower initiation is 12-13 hr for most cultivars
- In winter, plants must be given a 14-hr photoperiod at temperatures >65°F or the plants will tuberize and go dormant

Production Schedule from terminal cuttings for 4-inch

<u>Cultural step</u>	<u>Production Time (weeks)</u>	<u>Temperature °F (air)</u>	<u>Photoperiod</u>
Direct stick	3-4	70-72 (medium)	LD
Remove from propagation	0-2	65	LD
Floral initiation	2	68-70	SD
Floral development	4-6	64	LD
Hardening	1	59-63	LD
Total	10-15		

Light

- Leaf injury can occur under high light levels and an interaction with temperature exists
- Tolerant light levels for each temperature are:
64°F-3000 fc 70°F-2000 fc 81°F-1500 fc

Water and Nutrition

- Fibrous root system needs to be uniformly moist at all times
- Avoid water or condensation on foliage
- Use automatic watering
- 100 - 125 ppm N CLF but cease for 1 week during SD to reduce vegetative growth

Height Control

Cycocel is used as a foliar spray in summer 1 week after SD commences and in winter at the start of SD. Too late will reduce inflorescence elongation and flowers develop below the foliage

Cycocel
damage on
leaves

Spacing, Pinching and Disbudding

- Space pot to pot until end of floral initiation phase
- Space plants during the final 5 to 8 weeks
4-in. are spaced 2 plants/ ft²
6-in. are spaced 10 X 10-inch
- Remove most vigorous shoots with a soft pinch at the end of propagation in summer or 2 weeks after propagation in winter
- Remove large leaves to open up the plant

Insects, Diseases, and Disorders

- Thrips, mites, aphids, and foliar nematodes
- Bacterial soft rot (*Erwinia* sp.), Botrytis, Powdery Mildew and root and stem rot
- Edema - rupturing and corking of epidermal cells - What other crop get this?

Tuberous Begonia

Tuberous begonias are derived from several species from South America and are mainly Andean in origin.

Tuberous Begonia hybrid designates the large flowered summer blooming begonias.

The unisexual inflorescence consists of one large single or double male flower up to 6-inches wide with two smaller female flowers 1 to 2-inches wide on either side.

Male
flower

Female
flowers

Seed Hybrids available since 1975

- 'Nonstop'
- 'Memory'
- 'Fortune'
- 'Illumination'
- 'Ornament'
- 'Panorama'
- 'Pin-Up'

Unfortunately climate restricts both tuber production and specimen plant growth in the Midwest and southern areas of North America, although plants from the newer hybrid seed lines are more tolerant of warmer temperatures.

Flowering is dependent upon the continuous formation of new leaves, as flowers are initiated in the leaf axils. Both leaves and flowers are initiated under a 12-hour or longer photoperiod. At <12-hour photoperiod, tuber formation is accelerated.

At high temperatures, shoot growth is promoted, at low temperatures tuberization and ultimately dormancy are promoted.

Pot and force at 55-60°F under LD for 16 weeks

Other cultural considerations

- Night interruption or daylength extension are needed to ensure 14 to 16 hour photoperiod if the natural daylength is shorter.
- The very fine root system is easily damaged from high soluble salts, excessive drying out or excessive moisture.
- The N level at each fertilization should not be over 150 ppm.
- Top quality 10-in. pots can be pinched 2 to 3 weeks after transplanting leaving four nodes with leaves.
- Poor or abnormal growth of shoots can result from SD photoperiods which induce tuber growth not shoot growth.

Begonia semperflorens-cultorum hybrids Wax begonia

Wax Begonia Facts

- This group originated from several species.
- Wax begonia seedlings were introduced into Europe at the Berlin Botanical Garden from Brazil by accident as a weed in the soil.
- There are 2.5 million seed per oz.
- Seed is tiny and can be purchased pelleted for mechanized seeders.

Wax Begonia Morphology

- Fibrous roots
- Succulent stems
- Glossy ovate leaves
- Leaves range from green to red, bronze-red, or green and white variegated

More Wax Begonia Facts

- Moisture, light and warm medium temperatures (78-80°F) are needed for seed germination.
- Plugs are ready for transplanting or marketing in 8 to 9 weeks.
- Wax begonias are day neutral and need no specific photoperiod or temperature for flowering.