

Crop: Gloxinia
Scientific Name: Sinningia speciosa (Gesneriaceae)

I. Introduction

- A. Gloxinia is native to Brazil. The first record of the plant occurred in 1785 and the plant was named in honor of P. B. Gloxin of Strassburg, Germany. It was called *Gloxinia speciosa*.
- B. In 1825, the plant was renamed placing it in the correct genus, *Sinningia*.
- C. Flowers of the species Gloxinia tend to have the throat of the flower hanging downward. Hybridization within *S. speciosa* and possibly other species has resulted in the erect flowering plant grown today.
- D. Gloxinia was primarily grown for the holidays Thanksgiving, Christmas and Valentine's Day. The recent increase in popularity has inspired some growers to produce them year around. They are also used as a "filler" crop in the summer by some growers.

II. Species, Cultivars, Breeding, Development

- A. The most popular flower color is the red or scarlet red.
- B. Earl J. Small Growers which specialize in selling gloxinia seedlings have a wide selection of cultivars - Improved Red Velvet, Royal Velvet, Pink Velvet, White Velvet, Fuchsia Velvet as well as others.
- C. Another available series of F₁ hybrid gloxinia is the Ultra series with a wide range of flower colors.
- D. Cultivars are available with single or double flowers.
- E. The major breed effort currently is to produce compact growing plants.

III. Flower Induction Requirements

- A. Flower induction occurs as the plants develop and grow.

IV. Environmental Requirements

A. Light

1. Optimum light intensity is 2,000 to 2,500 foot-candles ($400-500 \mu\text{mol s}^{-1}\text{m}^{-2}$) at noon.
2. Shading is necessary at light intensities above 3,000 foot-candles ($600 \mu\text{mol s}^{-1}\text{m}^{-2}$). Too high light intensities cause yellow or mottled foliage, hard growth or small gray-brown leaf spots.

B. Temperature

1. Gloxinia requires relatively high temperatures for optimum growth.
2. Minimum temperatures should be 18°C (65°F) night temperature and 24°C (75°F) day temperature. During the summer, the temperature can be allowed to raise to 24°C (75°F) night and 29°C (85°F) days.
3. Temperatures below 18°C (65°F) significantly delay flowering.
4. Never expose plants to temperatures less than 10°C (50°F) as chilling injury will occur.

C. Water

1. Gloxinia must be maintained in a moist condition.
2. Allowing plants to dry out during bud development can result in bud abortion.
3. Tempered irrigation water should be used in the winter in northern areas. Water temperatures below 10°C (50°F) can damage root system and the foliage.
4. Water should not be allowed to remain on the crown of the plant overnight as stem and crown rot can occur.
5. Overhead watering should be avoided as spotting of foliage can occur. Drip irrigation, capillary mats, or subirrigation work well.

D. Nutrition

1. Gloxinias are moderate feeders. A balanced fertilizer such as a 15-15-15 is recommended at 100 ppm N at every watering. Plants develop a deep, blue green foliage when over fertilizing.
2. Both NH_4 and NO_3 forms of nitrogen can be used, but high levels of NH_4 should be avoided.
3. Growing plants in a strict peat-lite mix can result in minor element deficiencies, especially boron.
4. Boron deficiency is recognized by easily noticeable deformities of young leaves (strap leaf, club shapes and oak leaf shapes).
 - a. A balanced trace element mix will correct the problem.
 - b. A weak Borax spray at 0.5 oz per 1000 gallons water will also correct a boron deficiency.

E. Gases

1. CO_2 at 900 to 1,200 ppm will accelerate flowering.

V. Cultivation

A. Propagation

1. Gloxinia can be propagated by seed, tubers, or leaf cuttings. Seeds are used commercially today.
2. Germination occurs at 21°C (70°F) in 2-3 weeks. Seed should be sown on a fine medium such as a peat-lite mix.
3. Everything should be sterilized to prevent damping off.

B. Medium and planting

1. A light, airy medium should be used for gloxinia.

2. Peat-lite mixes work well. The pH should be adjusted to 5.5-6.0.
3. Seedlings should be transplanted to 6 cm (2 1/4 inch) pots when plants are large enough to handle or about 6 weeks after sowing. Plant seedlings a little deeper than they were in the seed flat to prevent floppy growth.
4. When leaves touch each other in about 4 weeks, transplant to a finishing 13-15 cm (5-6 inch) azalea pot. Fast growing compact varieties can be produced in 10 cm (4 inch) pots.
5. If plants are bought from specialists, unpack, place them in a greenhouse and water lightly to encourage acclimatization. Plant within a couple of days.
6. Failure to plant within 5-7 days may be detrimental. Plants rapidly become stunted and may flower prematurely.
7. Pot the plants deep to prevent stretch and encourage plant stability.
8. Application of a fungicide drench immediately after potting is essential. A second application may be applied 4 weeks later for complete disease control that will last the entire production time.

C. Spacing

1. Pots can be grown pot to pot in the 6 cm (2 1/4 inch) pots.
2. Final spacing should be on 30 x 30 cm (12 x 12 inches) or 30 x 36 cm (12 x 14 inch) centers for 15 cm (6 inch) pots. This prevents leaf overlap which result in leaf rotting and plant stretch.
3. New compact varieties can be grown at a 23 x 23 cm (9 x 9 inch) final spacing.

D. Disbudding

1. The first one or two flower buds are sometimes removed before flowering. This allows a flush of 6-8 flowers to open at once.

E. Growth Regulators

1. B-Nine at 1,000 ppm applied 12-18 days after potting will reduce the length of the main stem and the petioles. A second application can be made 7 to 10 days later for plants grown under low light conditions (1,600-2,000 foot-candles, 300-400 $\mu\text{mol s}^{-1}\text{m}^{-2}$).

F. Other

1. Gloxinias grow best at high relative humidities. The high humidity helps prevent brittle leaves.

VI. Problems

A. Insects

1. Spider mites and cyclamen mites (evidenced by reddish brown leaves, stiffening of tiny center leaves and more hairy growing center) can be controlled by standard miticides. Preventative measures should be taken as cyclamen mite can be devastating.
2. Army worms and loopers occasionally are pests.

B. Diseases

1. Bud rot caused by *Botrytis* can occur. Increase air circulation and lower humidity.
2. Crown rot caused by *Pythium* or *Phytophthora* is the major disease. Use sterilized soil and appropriate fungicides.

C. Physiological Problems

1. Premature budding or blooming of small plants is stress related and can be caused by
 - a. Leaving plants in the 6 cm (2 1/4 inch) pots too long.
 - b. Allowing plants to dry out.

- c. Excessive heat.
 - d. Excessive high light.
 - e. Lack of nitrogen.
2. Buds turning black or brown is caused by
- a. Poor air circulation - Botrytis.
 - b. Over fertilization.
 - c. Low relative humidity.
 - d. Low temperature.
 - e. Irregular watering.
 - f. Low light.

VII. Harvesting, Handling and Marketing

- A. Gloxinia is sold in full bloom; the first bud or two is sometimes removed to allow a flush of buds to open at one time.
- B. Care must be taken during handling to prevent breaking of large brittle leaves.
- C. Decorative life of gloxinia is 2-3 weeks under 50 footcandles ($7-8 \mu\text{mol s}^{-1}\text{m}^{-2}$) of light. An increased light intensity of 250 foot-candles ($35 \mu\text{mol s}^{-1}\text{m}^{-2}$) or more increases the decorative life to 4 weeks or more.
- D. Plants should not be shipped at temperature at or below 10°C (50°F) as chilling injury can kill the plants.

VIII. Scheduling Growing Time for Cultural

Growing Time for Cultural Segment	Cultural Procedure	Temperature
	Sow seed	21°C (70°F)
2-3 weeks	↓ V	
	Germination complete	21°C (70°F)
4-5 weeks	↓ V	
	Transplant to 6 cm (2 1/4 inch) pots	18-21°C (65-70°F)
4-5 weeks	↓ V	
	Transplant to finish pots	18-21°C (65-70°F)
1-2 weeks	↓ V	
	B-Nine (optional)	18-21°C (65-70°F)
10-14 weeks 8-10 weeks for compact plants	↓ V	
	Flower	