



## Isabella™

### CAMPANULA LONGISTYLA

**Minimum Germination Rate:** 85%

**Seed Product Form:** Pelleted, raw

### FLOWERING

**Time frame when plants are receptive to flower initiation:** Beginning from initial sow date.

**Flowering Type:** Obligate long-day plant. Long days are required for flowering.

**Specific Flowering Mechanism:** Daylength >12 hours. Irradiance will hasten flowering.

### PLUG CULTURE

**Germination:** Optimum conditions for seedling development that begins the day the crop is sown until cotyledon expansion. Expect radicle emergence in 6 – 8 days.

**Cover:** Do not cover the seed after sowing as this will inhibit germination.

**Media:** pH: 5.5 – 5.8; EC: <0.5

**Light:** Light is necessary for germination. If utilizing a chamber, providing a light source of 10 – 100 foot candles (100 – 1,000 lux) will improve germination and reduce stretch.

**Temperature:** 62° – 65°F (16° – 18°C). After several sets of true leaves have developed, reduce to 58° – 60°F (14° – 16°C) nights, 65° – 70°F (18° – 2°C).

**Moisture:** Wet (4) until radicle emergence. On day 9, begin alternating between moisture levels moist (3) and medium (2). Allow media to approach level (2) before re-saturating to level (3).

**Humidity:** 100% until radicle emergence, then reduce to 40 – 70%. Provide horizontal airflow to aid in drying down the media through evapotranspiration, allowing better penetration of oxygen to the roots.

**Plug Bulking:** Optimum conditions during the vegetative period, beginning at cotyledon expansion, needed for the root to reach the edge of the plug cell. To avoid premature flowering, the daylength must be kept <12 hours.

**Media:** pH: 5.5 – 5.8; EC: 0.5 – 1.0 Campanula are sensitive to high salts.

**Light:** Provide short days. Exposing very young, immature plants to long days will cause premature flowering on small plants. If flower initiation is induced too early, the plant will never size up properly.

**Temperature:** During initial root development grow at 62° – 65°F (16° – 18°C). After roots are established temperatures can be reduced to 58° – 60°F (14° – 16°C) nights and 65° – 70°F (18° – 21°C) days.

**Moisture:** Alternate between moisture levels moist (3) and medium (2). Allow media to approach level (2) before re-saturating to level (3).

**Humidity:** 40 – 70%

**Dehumidify:** Provide horizontal airflow to aid in drying down the media through evapotranspiration, allowing better penetration of oxygen to the roots.

**Fertilizers:** 75 – 150 ppm nitrogen with a calcium-based fertilizer (13-2-13 or 14-4-14) as needed.

**Growth Regulators:** Isabella is responsive to B-Nine (daminozide) or Cycocel (chlormequat chloride) sprays or drenches. Apply at a reduced rate during the plug stages.

*Note: These suggestions are only guidelines and may have to be altered to meet individual grower's needs. Check all chemical labels to verify registration for use in your region.*

### GROWING ON

**Transplant Ready:** 22 – 26 weeks from sow in a '288' tray.

**Finish Bulking:** Optimum conditions during the vegetative period, beginning at transplant, needed for the root to reach the edge of the container.

**CAUTION:** Isabella is a long-day plant. To keep the crop in a vegetative phase, short days must be provided. A vegetative phase is desirable when a fuller plant is needed. Keep plants vegetative until leaves have reached the rim of the container for optimum sizing. Once initiated, the crop may not size up properly for larger containers. Do not expose to mum lighting.

**Lighting:** Short days are necessary to keep Isabella vegetative so it will size up properly.

**Media:** pH: 5.5 – 6; EC: 1. Campanula is sensitive to high salts. Leach occasionally to reduce EC levels if necessary.

**Temperature:** At transplant, grow crop on at 58° – 60°F (14° – 16°C) nights, 65° – 70°F (18° – 21°C) days. Once active root growth begins, night temperatures may be dropped to 50° – 55°F (10° – 13°C).

**Moisture:** Alternate between moisture levels moist (3) and medium (2). Allow media to approach level (2) before re-saturating to level (3).

**Humidity:** 40 – 70%

**Dehumidify:** Provide horizontal airflow to aid in drying down the media through evapotranspiration, allowing better penetration of oxygen to the roots.

**Fertilizers:** Feed as needed to encourage growth. Under high light conditions, apply an ammonium-based feed (17-5-17) at 100 – 150 ppm nitrogen. Under low light conditions, apply a calcium-based feed (14-4-14) at 100 – 150 ppm nitrogen. Under high light and long or extended days, an ammonium-based feed (20-10-20) at 100 – 150 ppm nitrogen is preferred.

**Growth Regulators:** Isabella is responsive to B-Nine (daminozide) or Cycocel (chlormequat chloride).

**Finish Flower Initiation:** Optimum conditions to make plant receptive to flower initiation.

**NOTE:** Long-day treatments begin when the leaves have reached the edges of the container, otherwise the plant will be scarce on foliage. It takes about 5 – 6 weeks to fill out a 4" pot; and about 6 – 7 weeks to fill out a 5 – 6" pot.

**Daylength and Light:** A daylength of 14 – 16 hours is necessary to initiate blooms. Long days can be created with either interrupted nights or extended days. Long day treatments must continue throughout the remainder of the production schedule to promote additional flowers. Regardless of container size, it takes approximately 6 – 8 weeks from start of long-day treatments until first flower. Keep plants actively growing and avoid stress throughout production.

**Common Diseases:** Pythium, Rhizoctonia, Botrytis

**Common Pests:** Thrips, Spider Mites

PRODUCT USE	GARDEN SPECIFICATIONS
Pots, containers, rock gardens	<b>Light:</b> Partial shade to full sun <b>USDA Hardiness Zone:</b> 11 <b>AHS Heat Zone:</b> 9 – 1

	Garden Height	Garden Width
<b>Isabella</b>	8 – 10" (20 – 25 cm)	6 – 8" (15 – 20 cm)

### CAMPANULA SCHEDULING IN WEEKS

	Isabella
<b>Total crop time</b>	17 – 24
<b>'288' plug crop time</b>	6 – 8
<b>Transplant to finish crop time</b>	
<b>4" crop</b>	11 – 14. Vegetative phase is 5 – 6 weeks followed by long day treatments for remaining 6 – 8 weeks.
<b>6" crop</b>	13 – 16 weeks. Vegetative phase is 7 – 8 weeks followed by long day treatments for remaining 6 – 8 weeks.