

## VIOLA WITTROCKIANA

### Delta™

**Minimum Germination Rate:** Mariposa 85%; Delta, Karma, Sky 90%

**Seed Product Form:** Raw, GoldSmart™ Primed

#### FLOWERING

**Time frame when plants are receptive to flower**

**initiation:** Days 12 – 28; 3 – 5 leaves present.

**Flowering Type:** Day-neutral plant – will flower regardless of daylength.

**Specific Flowering Mechanism:** High light and long days shorten time to flower.

#### PLUG CULTURE

**Germination:** Optimum conditions for seedling development that begins the day the crop is sown until cotyledon expansion. Expect radicle emergence in 2 – 4 days.

**Cover:** Cover seeds lightly with coarse vermiculite to maintain moisture levels.

**Media:** pH: 5.5 – 5.8 Higher pH levels will encourage Thielaviopsis outbreaks and boron deficiencies which may cause tip abortion and stunted growth. EC: <0.5

**Light:** Light is not necessary for germination. If utilizing a chamber, providing a light source of 10 – 100 foot candles (100 – 1,000 lux) will improve germination dramatically compared to seed germinated in the dark.

**Moisture:** Saturated (5) for days 1 – 4 or until radicle emergence. On days 5 – 9 reduce moisture to moist (3). Reduce further beginning day 10 to medium (2).

**Humidity:** 100% until radicle emergence then reduce to 40 – 70%.

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

**Temperature:** 65° – 68°F (18 – 20°C) until radicle emergence. Then reduce gradually to 62° – 65°F (17° – 18°C) as seedlings mature.

**Plug Bulking/Flower Initiation:** Optimum conditions during the vegetative period, beginning at cotyledon expansion, needed for the root to reach the edge of the plug cell AND to make the plant receptive to flower initiation.

**Media:** pH: 5.5 – 5.8. EC: 0.5 – 1

**Light:** 2,500 – 3,500 foot candles (25,000 – 35,000 lux).

**Temperature:** 65°F (18°C) nights; 65° – 70°F (18° – 21°C) days. On established seedlings, reduce night temperatures to 59°F (15°C) to initiate early flowering.

**Average Daily Temperature (ADT):** 67°F (19°C)

**Moisture:** Alternate between moisture levels wet (4) and medium (2). Allow media to approach level (2) before re-saturating to level (4).

**Humidity:** 40 – 70%

**Dehumidify:** Provide horizontal airflow to aid in drying down the media through evapotranspiration under cool, low light conditions.

**Fertilizers:** Feed established seedlings with a calcium-based fertilizer (14-4-14) at 50 – 150 ppm nitrogen. Use the lower rates on younger seedlings. An ammonium

concentration >5 ppm nitrogen will cause seedling stretch.

**Growth Regulators:** Pansies can be treated when the first true leaves are fully developed. Apply B-Nine (daminozide) at 2,500 – 5,000 ppm. Pansy also responds to negative DIF treatments, A-Rest (ancymidol) or Bonzi (paclobutrazol).

#### GROWING ON

**Transplant Ready:** 5 – 7 weeks from sow in a '288' tray.

**Finish Bulking/Flower Initiation:** Optimum conditions during the vegetative period, beginning at transplant, needed for the root to reach the edge of the container AND to make the plant receptive to flower initiation.

**Media:** pH: 5.5 – 5.8;

EC: Avoid EC above 1.5. Pansy roots are sensitive to ammonium salts.

**Light:** Provide 3,500 – 4,500 foot candles (12 – 15 total mols or 35,000 – 45,000 lux) to hasten flower induction. Supplemental lighting under low light conditions at 350 – 450 foot candles (35,000 – 45,000 lux) will enhance shoot and root growth.

**Temperature:** 68°F (20°C) days or as cool as possible during warm weather conditions. During the cool season, a night temperature of 59°F (15°C) will promote early flowering. Temperatures below 59°F (15°C) will promote a hardier plant, but will increase crop time and delay flowering.

**Average Daily Temperature (ADT):** 67°F (19°C)

**Moisture:** Alternate between moisture levels wet (4) and medium (2). Allow media to approach level (2) before re-saturating to level (4).

**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 at 100 – 150 ppm nitrogen with a calcium-based fertilizer (14-4-14). During cool weather production, ammonium-based feeds may encourage root rot problems. High nitrogen concentrations may promote stretching.

**Nutrition:** Malformed and puckered leaves indicate calcium deficiencies. To prevent this, fertilize with calcium nitrate or add calcium sulfate to the growing media before transplant. Boron deficiencies can be distinguished by tip abortion, upper leaf stunting, puckering and thickening of leaves, along with shortened internodes and/or a gnarled mass of lateral shoots. Boron deficiency is more prevalent during warm weather with frequent watering. pH levels below 6 will ensure boron is more readily available to the plant. A one-time application of Solubor will help overcome these problems. NOTE: An overdose of Bonzi (paclobutrazol) may also produce symptoms similar to boron or calcium deficiencies.

**Growth Regulators:** Apply B-nine (daminozide) at 2,500 – 5,000 ppm. Also responds to negative DIF treatments, A-Rest (ancymidol), Bonzi (paclobutrazol),



Sumagic (uniconazol) or B-Nine/Cyocel (chlormequat chloride) tank mix.

**Techniques to Enhance Post Harvest Quality**

**When to Treat:** 1 – 2 weeks prior to finish or shipping

**Growth Regulators:** Spray B-Nine (daminozide) at 2,500 – 3,500 ppm

**Fertilizer:** Potassium nitrate at 150 ppm nitrogen

**Common Diseases:** Alternaria Leaf Spot, Downy

Mildew, Thielaviopsis Root

Rot, Cercospora Leaf Spot

**Common Pests:** Aphids

**PRODUCT USE**

Packs, pots, containers, mass plantings

**GARDEN SPECIFICATIONS**

**Light:** Full sun

**USDA Hardiness Zone:** 4

**AHS Heat Zone:** 9 – 1

**Delta** 4 – 6" (10 – 15 cm) 6 – 8" (15 – 20 cm)

**Pansy SCHEDULING in Weeks**

**Total crop time**

10 – 12 for fall market; 11 – 13 for spring market

10 – 12 for fall market; 12 – 14 for spring

market 10 – 12 for fall market; 12 – 14 for

spring market 11 – 13 for fall market;

11 – 13 for spring market

**'288' plug crop time** 5 – 6 5 – 6 5 – 6 5 -6

**Transplant to finish crop time**

**Packs** 4 – 5 4 – 5 4 – 5 5 – 6

**4" crop** 5 – 6 5 – 6 5 – 6 6 – 7

*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.*

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