

## Pansy Whiskers

(*Viola x wittrockiana*)

### Germination

- Time of radicle emergence (3-7 days)
- Soil temperature 65-75°F (18-24°C).
- Reduced germination will occur if temperature is consistently above 80°F.
- Keep media very moist, near saturation.
- The seed should be covered lightly with coarse vermiculite.
- Light is not necessary for germination until radicle emergence.
- Soil pH 5.5-5.8 and soluble salts (EC) less than 0.75 mmhos/cm (2:1 extraction).
- Pansy is very sensitive to high salts, particularly high ammonium, during germination.
- Keep ammonium levels less than 10 ppm.

### Plug Production

#### STAGE 1 - Time of radicle emergence (3-7 days)

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#### STAGE 2 - Stem and cotyledon emergence (7 days)

- Soil temperature 62-65°F (16-18°C).
- The cooler the temperature, the slower and more toned the plant growth.
- Reduce moisture levels once radicle emergence occurs! Allow the soil to dry out slightly before watering for best germination and rooting.
- Keep soil pH 5.5-5.8 and EC less than 0.75 mmhos/cm.
- Keep ammonium levels less than 10 ppm.
- Begin fertilizing with 50 75 ppm N from 14 0 14 or a calcium/potassium nitrate feed once cotyledons are fully expanded.
- Alternate feed with clear water.
- Irrigate early in the day so foliage is dry by nightfall to prevent diseases.

#### STAGE 3 - Growth and development of true leaves (14-21 days)

- Soil temperature 60-75°F (16-24°C).
- Allow the soil to dry thoroughly between irrigations but avoid permanent wilting to promote root growth and control shoot growth.
- Maintain soil pH 5.5-5.8 and EC less than 1.0 mmhos/cm.
- Increase feed to 100 150 ppm N from 20 10 20 alternating with 14 0 14 or other calcium/potassium nitrate fertilizer.
- Fertilize every 2 3 irrigations.
- If using 15-0-15 supplement with magnesium 1 2x during this stage, using magnesium sulfate (16 oz/100 gal) or magnesium nitrate. Do not mix magnesium sulfate with calcium nitrate as precipitate will form!
- Alternate feed with clear water to control plant height.
- Use DIF when possible, the first 2 hours after sunrise, to control plant height.
- A-rest, B-Nine, and Bonzi are all effective at controlling height on pansies.

#### STAGE 4 - Plants ready for transplanting or shipping (7 days)

- Soil temperature 55-65°F (13-18°C).
- Allow soil to dry thoroughly between irrigations.
- Maintain soil pH 5.5-5.8 and EC less than 0.75 mmhos/cm.
- Fertilize with 14 0 14 or calcium/potassium nitrate feed at 100 150 ppm N as needed.

### Growing On to Finish

#### TEMPERATURE

**Night:** 60-65°F (16-18°C)

**Day:** 65-75°F (18-24°C)

Pansies prefer cool weather and will tolerate a light frost.

#### LIGHT

Maintain light levels as high as possible while maintaining moderate temperatures.

#### MEDIA

Use a well-drained, disease-free soil-less medium with a medium initial nutrient charge and a pH 5.5-6.2.

## FERTILIZATION

- Fertilize every other irrigation with 15-0-15 alternating with 20-10-20 at 150-200 ppm nitrogen.
- Maintain medium electrical conductivity around 1.0 mmhos/cm (using 1:2 extraction)

## CONTROLLING HEIGHT

- Once plants are rooted to the sides of the containers they can be allowed to wilt prior to irrigation to provide some height control.
- Height can also be controlled by withholding fertilizer, especially phosphorous and ammonium-form nitrogen.
- Pansy are responsive to day/night temperature differential (DIF), and are shorter with a negative DIF.
- A-Rest (8-19 ppm, B-Nine (2,500 – 5,000 ppm), or Bonzi 5- 20 ppm) can be used to control height of pansies. Tank mixes of A-Rest (2-4 ppm) + B-Nine (2500 ppm) or B-nine (2500 ppm) + Cycocel (1,500 ppm) are also very effective in controlling plant height. The use of Bonzi is effective when temperatures are high and plants are growing aggressively. Using Bonzi during cool temperatures is not recommended since plants may not grow out rapidly enough.

## Post Production Care

### TEMPERATURE

**Night:** 60-65°F (16-18°C)

**Day:** 65-75°F (18-24°C)

- Optimum conditions may be difficult to maintain, especially if plants are displayed outside.
- Using a negative DIF will help keep the plants short and of high quality.

### LIGHT

Pansies prefer cool locations with full sun to part shade. Partial shading is recommended for retail display.

### WATER

Do not over water. Because pansies grow in cool, shady areas, they don't transpire as quickly and less water is needed.

