# Matrix® $F_1$ Series Large-Flowered Pansy

*This "Grower Friendly" Series Offers a Completely Uniform Crop from Start to Finish!*

■ Each variety in the **Matrix** series is bred for a uniform plant structure, making it easier for growers to deliver an appealing product at retail.
■ **Matrix** Pansies feature superior branching noticeable in the plug stage. The branches quickly cover the soil before flowering.
■ Short, stretch-resistant stems hold the large flowers above the foliage.
■ Each variety flowers within a 7-day window to 25% color and can be shipped at the same time if sown together.
■ Schedule **Matrix** after **XXL** pansies during your main pansy transplants.
■ Supplied with a **90%+ Yield Potential** rating.
■ Contact your local distributor or call PanAmerican Seed at 800 231-4868 for ordering information on **Matrix** Pansy.

*Viola x wittrockiana*
Approximate seed count: 21,428 S./oz. (750 S./g.)

## Plug Production

### Plug Tray Size
Use 288-cell plug trays. Finish time is about 5 weeks.

### Media
Use a well-drained, disease-free seedling medium with a pH of 5.4 to 5.8. Avoid plug media mixes with a high initial nutrient charge. Keep phosphorus levels as low as possible to avoid initial stretch.

### Sowing
A medium covering of coarse grade vermiculite is recommended to help maintain high humidity around the germinating seed for better germination performance. Takes 3 to 4 days to germinate.

For optimal germination performance, maintain the plug media at "wet" moisture levels, i.e., the media is glistening, but water will not ooze out from the bottom of the tray and will penetrate only slightly from the top around the fingertips. Avoid germination temperatures above 70°F (21°C) to prevent seedling stretch.

**Stage 2 timing:** 10 days
**Stage 3 timing:** 14 days
**Stage 4 timing:** 7 days

### Temperature
**Germination:** 68°F (20°C)
**Stage 2:** 65 to 70°F (18 to 21°C) days; 60°F (15°C) nights
**Stage 3:** 65°F (18°C) days; 60°F (15°C) nights
**Stage 4:** 60°F (15°C) days; 55°F (13°C) nights

### Water
Beginning at Stage 3, reduce the moisture level in the media once the seedlings are established. Stage 4 plugs can be grown under wet/dry cycles to tone the seedlings and avoid soft growth.

### Light
Light is not required for germination. Quality seedlings can be produced with light levels up to 3,000 f.c. (30,000 Lux).

### Humidity
Maintain 95 to 97% relative humidity.

### Fertilizer
Beginning at Stage 3, start fertilizing the seedlings twice a week with 50 ppm N, increase the nitrogen concentration to 100 ppm after a week, and continue this program until finishing the plugs. Maintain an EC of 0.5 to 0.75 mmhos/cm and a pH of 5.4 to 5.8 at Stage 2; at Stage 3 and 4, EC and pH values can be at 1.0 and 5.6 to 5.8, respectively.

A high pH (greater than 6.0) can induce boron deficiency and also encourages fungal black root rot, caused by *Thielaviopsis sp.*

### Growth Regulators
A foliar spray of A-Rest at 10 ppm is recommended for plug production. One application is sufficient when the first set of true leaves is fully developed (when plugs are approximately 3 weeks old). If necessary, the foliar spray can be applied a few days earlier than week 3.

**Note:** Transplant the plugs "on time" to avoid initiation in the plug stage. Plugs that are initiated will not fill out the finished container well at the time of flowering.

## Growing On to Finish

### Container Size

606 jumbo cell packs, 1801 packs and 4-in. (10-cm) pots.

### Media

The level of starter nutrient charge incorporated into the growing mix influences crop quality. Too low a starter charge can result in a pansy crop that will flower before enough foliage has grown to fill the packs/container. Incorporate a medium level of supplemental nutrient charge in the growing media mix to encourage good foliar growth before the crop flowers.

### Temperature

Provide day temperatures of 60 to 65°F (15 to 18°C) and night temperatures of 50 to 55°F (10 to 13°C) for greenhouse production.

### Light

No supplemental lighting is required.

### Fertilizer

A week after transplant, begin fertilizing with 150 ppm N once a week when grown in the greenhouse. Additional fertilization may be needed if grown outside. Maintain an EC of 1.5 and a pH of 5.6 to 5.8 after transplant until finish. If the media pH is greater than 6.0, then take corrective measures.

### Growth Regulators

The use of plant growth regulators on pansies is largely dependent on day/night temperatures, location and time of year. If the day/night temperatures are optimal, i.e., not too high for pansy production (days in the 60s°F (16 to 20°C) and nights in the 50s°F (11 to 15°C), then foliar sprays of A-Rest at 10 to 20 ppm, applied 2 to 3 times beginning a week after transplant with 7 to 10 days interval, will work. When grown under warmer day/night temperatures, tank mix foliar sprays of B-Nine at 5,000 ppm and Cycocel at 500 to 1,000 ppm, or a tank mix foliar spray of B-Nine at 5,000 ppm and A-Rest at 5 to 10 ppm applied 2 to 3 times beginning a week after transplant with 7 to 10 days interval will also work. Trials grown in Northern Europe have responded favorably to foliar applications of B-Nine in the range of 3200ppm, applied 2 to 3 times after transplant.

Temperature is the best natural growth-controlling factor. Minimal to no plant growth regulators are needed when the crop is produced at lower temperatures during the Spring.

To produce the best-quality pansies, grow them outside beginning a week after transplant under cold frame-type conditions. Optimal outside growing temperatures are 60 to 70°F (15 to 21°C) days, and nights in the low 50s°F (11 to 15°C) for the first few weeks. Pansies can also tolerate lower night temperatures – in the 40s°F (5 to 9°C).

### Crop Scheduling

**Sow to transplant:** 5 weeks in a 288-cell plug tray
**Transplant to finish in 606 jumbo cell pack:** 4 to 8 weeks seasonally
**Total crop time to flower:** 9 to 13 weeks seasonally

### Common Problems

**Insects:** Fungus gnats and shore flies can be problem pests during plug production. Aphids, thrips, mites and whiteflies can be a problem during finishing stages.

**Diseases:**
Damping-off, black root rot, foliar leaf spots and *Botrytis* blight are common.

PanAmerican Seed™

PanAmSeed.com

PanAmerican Seed Co.
622 Town Road
West Chicago, Illinois USA 60185-2698
630 231-1400
Fax: 630 231-3609

PanAmerican Seed Europe BV
Lavendelweg 10
NL-1435 EW Rijsenhout, Holland
+31 (0)297-383038
Fax: +31 (0)297-383036

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