Crop	Pansy
Series	Majestic Giants II, Grandio, Dynamite, Ultima and Grandissimo
Botanical name	*Viola wittrockiana*
Plant type	Annual & Biennial
Seed type	Raw
Seed count	700 seeds / gr
Germination	20ºC - 7-10 days light favored
Growing	13-18ºC
Optimum pH	5.5-6.0

Plug Culture: 4 weeks (288 cell tray)

Stage 1 (days 1-6) Sow Pansy seed into a 288 plug tray using a well-aerated long fiber peat plug mix. Lightly cover with either medium or coarse vermiculite. After sowing, water the plug trays well and maintain a soil temperature between 18-20ºC. The use of primed seed and a germination chamber with a fine mist system to maintain 100% relative humidity is ideal.

Stage 2 (days 7-14) If using a germination chamber, be sure to remove pansy plug trays when the seed coat is cracked. When green begins to appear in the tray, lightly fertilize with 75 ppm nitrogen from a well-balanced fertilizer. To avoid boron deficiency, target boron at 0.25 ppm in the fertilizer (including any amount in the water source). Maintain temperatures as cool as possible with good airflow. Supply a certain amount of light. After the initial feed, begin fertilizing with 200 ppm nitrogen from a well-balanced fertilizer containing trace elements. A calcium nitrate based fertilizer works well to build strong compact plants.

Stage 3 (days 15-25) Reduce fertilizer as plants begin to fill trays. When applying fresh water, (no fertilizer), still apply trace elements; especially boron, and keep water alkaline to maintain soil pH between 5.5 and 6.0. Fertilizer concentrations can be reduced to 150 ppm but maintain trace elements at full strength; especially boron at 0.25 ppm. Ideally, pansy plug trays should be given higher light levels to control stretch. Moving plants outdoors under a saran house will reduce temperatures and provide optimal air movement. It requires a bit higher light levels than stage 2 but avoid heat and water stress. If plant height control is needed, plant growth regulators with active ingredients such as daminozide, chlormequat and ancymidol are effective. Begin spraying when the leaves are large enough.

Stage 4 (days 26-30) Plug trays are approaching market size, feed every 2nd or 3rd watering, alternating with acid, if needed, and trace elements to maintain soil pH and trace element supply; especially boron. During periods of hot and humid weather, or before shipping seedlings in a box or truck, treat to control anthracnose. Do not delay transplanting which delays flowering and reduces quality.

Transplanting to finish: 6-8 weeks

Media: Transplant seedlings into a well aerated soil mix. Avoid planting the seedlings too deep to prevent stem rot.

Temperature: Optimum day temperature is 18-20 ºC with nights at 10-13ºC.

Fertilizer: Fertilize with 200 ppm nitrogen from a well-balanced fertilizer to ensure a healthy start. Pansies are sensitive to boron deficiency characterized by deep green foliage, crinkled foliage and tip abortion. It is recommended to supply 0.25 ppm of boron at each watering. Be sure to check the boron level in your water supply to avoid oversupplying this microelement. Pansy special fertilizers are formulated with higher microelements and highly recommended.

Plant growth regulators: Providing optimum temperatures, high light, good ventilation and low phosphorus promotes compact plants. If needed, plant growth regulators with active ingredients such as daminozide, chlormequat and ancymidol are effective. Avoid spraying too early before the plants are filled in as some of series set buds early; especially during periods of high light, long days and warm temperatures.

Pests: major pests include caterpillar, cut worm, cabbage looper, fungus gnat, slug, shore fly, spider mite and thrips.

Disease: Major root diseases include pythium, phytopthora and thielaviopsis. thielaviopsis or black root rot is often a problem early in the season when temperatures are high. Research has shown that the disease is checked at a pH of 5.5 or lower. Avoid high ammonium levels and the use of the chemical mefenoxam / metaxyl which encourage the development of this disease. Anthracnose or leaf spot can be a problem during periods of high heat and humidity. Good sanitation and moisture management works well to prevent most of these diseases.

Crop Time*

Container	Plants per pot	Comment
10 cm	1 per pot	10-11 weeks
15 cm	3 per pot	11-12 weeks

*For flowering under high temperatures and high light conditions, reduce crop time by 1-2 week.
**Grandissimo series is the earliest flowering, Grandio, Dynamite and Ultima series are flowering 1-2 weeks later, then Majestic Giants II series is flowering 1-2 weeks later than Grandio.