

Cool Wave™ F₁ Spreading Pansy

Viola x wittrockiana

Approximate seed count: 21,200-32,600 S/oz.
(750-1,150 S/g)

Plug Production

Media

Use a well-drained, disease-free media. A pH range of 5.4 to 5.8 and EC less than 0.75 mmhos/cm (2:1 extraction) is recommended. Keep the phosphorus level as low as possible to avoid initial stretch.

Sowing

Plug Tray Size

Should be produced in a 128-cell size tray (105, 128, 144 or equivalent) with 1 seed per cell (a larger cell size will promote branching early on and reduce the total crop time). Cool Wave pansies can also be produced in a 288-cell size tray; however the larger size will promote stronger lateral growth and quicker finish, with more flowers. Smaller plug sizes restrict the plant growth and increase the crop time.



288 Plug (left) vs. 105 Plug (right) from same sowing date

A medium covering of coarse-grade vermiculite is recommended at sowing to help maintain humidity around the germinating seed for better germination performance.

Stage 1 – Germination takes approximately 3 to 4 days.

Germination temperature: 65 to 70°F (18 to 21°C)

Light: Light is not required for germination.

Moisture: Keep the soil wet (level 4) during Stage 1

Relative humidity: Maintain 95 to 97% relative humidity until cotyledons emerge.

Stage 2

Temperature: 65 to 72°F (18 to 22°C) days;
60°F (16°C) nights

Light: Can be up to 2,500 f.c. (26,900 Lux).

Media moisture: Keep the media medium (level 3) to medium wet (level 4).

Fertilizer: Apply fertilizer at rate 1 (less than 100 ppm N/less than 0.7 mS/cm EC) with a nitrate-form fertilizer with low phosphorous.

Stage 3

Temperature: 65 to 70°F (18 to 21°C) days;
60°F (16°C) nights

Light: Can be up to 2,500 f.c. (26,900 Lux).

Media moisture: Keep the media medium wet (level 3) during Stages 3 and 4.

Fertilizer: Increase the fertilizer rate to 2 (100 to 175 ppm N/0.7 to 1.2 mS/cm EC). Maintain a media pH of 5.4 to 5.8 and EC at 0.7 to 1.0 mS/cm (1:2 extraction). A higher pH (greater than 6.2) can induce Boron deficiency.

Stage 4

Temperature: 62 to 67°F (16 to 19°C) days;
55°F (12°C) nights

Light: Light levels can be up to 5,000 f.c. (53,800 Lux) if temperatures can be maintained.

Fertilizer: Same as Stage 3.

Plant Growth Regulators

When compared to standard pansies, Cool Wave pansies require fewer PGRs, or under ideal conditions they require no PGRs, in the plug stage. This is to ensure that the spreading habit isn't delayed or stunted.

If needed, treat with a foliar spray of A-Rest (ancymidol) at 5 ppm (19 ml/l of 0.0264% formulation) or half the rate normally used on your pansies, applied once when the first set of true leaves is fully open.

Northwestern Europe: If needed, treat with a foliar spray of B-Nine/Alar (daminozide) at 1,280 ppm (1.5 g/l of 85% formulation or 2 g/l of 64% formulation) applied once when the first set of true leaves is fully open.

Transplant the plugs "on time" to avoid flower bud initiation in the plug stage.

Growing On to Finish

Container Size: 306 packs, 4.5-in. (10.5-cm) pots, quarts, 6-in. (15-cm), and 10 to 12-in. (25 to 30-cm) or similar size hanging baskets.

Media

Use a well-drained, disease-free media with a pH of 5.4 to 5.8 and a medium initial nutrient charge.

Temperature

Night: 55 to 60°F (12 to 15°C)

Day: 62 to 70°F (16 to 21°C)

For a faster finish and to increase spread which is particularly important for Spring production, grow in a warmer zone for the first several weeks after transplant at 55 to 60°F (12 to 15°C) night temperature. This will encourage lush, vigorous growth and quicker spread. When your plants have reached the desired size, cool down your zone gradually over a few days to your more normal pansy growing conditions. The cool temperatures will tone the plants and encourage more blooms.

Light

Keep light levels as high as possible while maintaining appropriate temperatures.

Fertilizer

Cool Wave pansies require more fertilizer than is usually recommended for standard pansies. For best results starting a week after transplant, apply nitrate-form with low phosphorus fertilizer at rate 4 (225 to 300 ppm N/1.5 to 2.0 mS/cm EC) every other irrigation.

For constant feed programs, apply fertilizer at rate 3 (175 to 225 ppm N/1.2 to 1.5 mS/cm) using predominantly nitrate-form fertilizer with low phosphorus. If needed, alternate with a balanced ammonium and nitrate-form fertilizer to encourage growth and balance the media pH. Maintain the media EC at 1.50 to 2.00 mS/cm and pH at 5.4 to 5.8. If the media pH is greater than 6.2, take corrective measures.

Irrigation

Maintain optimal media moisture, i.e. not too wet or not too dry.

Plant Growth Regulators

Since this is a spreading type pansy and mostly grown in larger containers such as hanging baskets, minimal to no plant growth regulators are needed.

If needed, you can use tank mix foliar sprays of B-Nine/Alar (daminozide) at 5,000 ppm (5.9 g/l of 85% formulation or 7.8 g/l of 64% formulation) and Cycocel (chlormequat) at 500 ppm (4.3 ml/l of

11.8% formulation or 0.7 ml/l of 75% formulation) to control plant growth.

Northwestern Europe: Temperature control is the best natural growth-controlling factor. Minimal to no plant growth regulators are needed when the crop is being produced at cooler temperatures especially during Spring production.

If needed, apply a tank mix foliar spray of B-Nine/Alar and Cycocel (chlormequat) once after transplant. Apply B-Nine/Alar (daminozide) at 1,280 ppm (1.5 g/l of 85% formulation or 2 g/l of 64% formulation) and Cycocel at 750 ppm (6.4 ml/l of 11.8% formulation or 1 ml/l of 75% formulation) as a tank mix.

Pinching

Pinching is not recommended.

Crop Scheduling

Sow to transplant:

Summer/Autumn: It takes approximately 5 to 5.5 weeks to finish a 105, 128, or 288-cell size plug.

Winter/Spring: It takes approximately 5.5 to 6 weeks to finish a 105, 128, or 288-cell size plug.

Transplant to finish:

Crop scheduling from a larger cell plug 105, 128, 144, etc.*		Weeks from transplant to finish	
Container	Plugs per pot	Autumn	Spring**
4 ½ in. (10.5 cm), Quart	1	4 to 5	6 to 7
6-in. (15 cm), Gallon	1	5 to 6	6 to 7
10-in. (25-cm) basket	3	6 to 7	8 to 9
12-in. (30-cm) basket	4	6 to 8	8 to 10
*Cool Wave Pansies benefit from a larger size plug; larger plugs promote quicker growth and allow the laterals to initiate and spread in the plug stage saving time in the finished crop.			
**Note: Spring crop time varies depending on temperatures used. If growing frost-free, plan longer crop times.			

Crop scheduling from 288 plug or similar size.*		Weeks from transplant to finish	
Container	Plugs per pot/cell	Autumn	Spring**
306 pack (or equivalent)	1	4 to 5	6 to 7
4 ½ in. (10.5 cm), Quart	1	5 to 6	6 to 7
6-in. (15 cm), Gallon	1	6 to 7	8 to 9
6-in. (15 cm), Gallon	3	5 to 6	6 to 7
10-in. (25-cm) basket	4	7 to 8	9 to 10
12-in. (30-cm) basket	5	7 to 9	9 to 11
*Cool Wave pansies can be produced from 288 size plugs; however the larger plug sizes will promote stronger lateral growth and quicker finish, with more flowers. Smaller plug sizes restrict the plant growth and increase the crop time.			
**Note: Spring crop time varies depending on temperatures used. If growing frost-free, plan longer crop times.			



288 Plugs (left) vs. 105 Plugs (right) from same sowing date

Note: Overcrowding plugs can result in a more mounded basket that will not trail over the sides as much.

Northwestern Europe: Total crop time to finish in 4.5-in. (10.5-cm) pots for Autumn production can be approximately 14 weeks from sowing. With Autumn sowings for Spring production when growing frost free, plan 21-22 weeks from sow for Spring production. If producing in bigger containers such as hanging baskets, then it may take approximately 3 weeks additional crop time to finish.

Common Problems

Insects: Check/monitor for fungus gnats and shore flies during plug production and for aphids after transplant.

Diseases: Damping-off & black root rot.

Regular scouting for powdery mildew and preventative measures are recommended.

Note: Growers should use the information presented here as a starting point. Crop times will vary depending on the climate, location, time of year, and greenhouse environmental conditions. Chemical and PGR recommendations are only guidelines. It is the responsibility of the applicator to read and follow all the current label directions for the specific chemical being used in accordance with all regulations.

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