

Guardian Series F₁ Delphinium: Cut Flower Culture

Stands Above the Rest in Uniformity, Programmability & Versatility... Will Change the Way You Grow Delphiniums!

- A breeding breakthrough...very uniform blooming within each variety, particularly under short days.
- The extreme uniformity of **Guardian** delphiniums permits greenhouse production, tunnel production or production as a field crop.
- Earlier...approximately 6 weeks faster from transplant to bloom versus open-pollinated varieties.
- Highly programmable...just like F₁ hybrid lisianthus or snapdragons, harvests and transplants can be scheduled for optimum marketing flexibility.
- Thinner, stronger stems allow **Guardian** varieties to tolerate postharvest handling with far less stem breakage than other delphiniums.
- Call your local distributor or PanAmerican Seed at 800 231-4868 to order **Guardian** seed and plugs.

Delphinium elatum

Approximate seed count: 9,300 to 15,000 S./oz.
(325 to 525 S./g)

Plug Production

Media

Use a well-drained, disease-free, soilless medium with a medium initial nutrient charge and a pH of 5.8 to 6.2.

Sowing

A medium cover of coarse vermiculite is strongly recommended. Germination takes 7 to 8 days.

Temperature

Maintain 68 to 70°F (20 to 21°C) through germination and cotyledon emergence.

Delphinium in general does not show uniform germination. Seeds within a plug tray germinate over a 3 to 4-day window. Leave the plug trays in the germination chamber for an additional period of 2 to 3 days after the first sign of germination for best results. Move the plug trays out of the germination chamber at "open cotyledon" stage.

Stage 2 and 3 plugs can be grown at 65 to 70°F (18 to 20°C) days and 60°F (15°C) nights. A week before transplant (end of Stage 4), plugs can be grown at cooler temperatures for toning. Daytime temperatures

of 65°F (18°C) and nighttime temperatures of 60°F (15°C) are recommended.

Light

Light is not required for germination, but will be an added advantage.

Humidity

Maintain 95 to 97% relative humidity until cotyledons emerge. Chamber germination will result in better results. Maintaining high humidity during Stage 1 (sow to radicle emergence) is critical for germinating this crop.

Fertilizer

Begin fertilizing at week 3 with 50 ppm N twice a week. After a week, increase the nitrogen rate to 100 ppm twice a week until finish. Maintain EC less than 0.75 until week 3. Increase EC to 1.0 until finish for the best results. A pH range of 5.8 to 6.2 is optimal during plug production.

Growth Regulators

Growth regulators are not recommended for cut flower plug production.

Tip

It is important to avoid transplanting plugs that have become rootbound, as they may flower prematurely.

Growing On to Finish

Density

Guardian delphinium has a recommended density of 4 plants/net ft.² (40 plants/net m²) for an Autumn transplant.

Support Netting

One layer of support netting using 6 in. by 6 in. squares (15 cm by 15 cm) is recommended for all production locations.

Height

Guardian delphinium height ranges from 30 to 39 in. (75 to 100 cm). **Guardian** plants will be taller when

grown under greenhouse conditions, and somewhat shorter under field conditions.

Media

Use a well-drained, disease-free media, with medium initial nutrient charge and a pH of 5.8 to 6.5. It is advisable to disinfect the production location at least once per year, prior to transplanting.

Temperature

Maintain 54°F (12°C) during the first 2 weeks after Autumn (Fall) transplant. Raise day temperature to 59°F (15°C) after 2 weeks. Maintain minimum night temperature of 60°F (15°C) and day temperatures of 65 to 70°F (18 to 21°C). Under northwestern European conditions, temperatures may rise during sunny days when light levels increase. Be aware of leaf burn in periods of variable weather (alternating from cloudy to sunny days).

Light

No supplemental lighting is required.

Fertilizer

When growing in the greenhouse, begin fertilizing 1 week after transplant with 150 ppm N, applied once a week. If grown outside, additional fertilization may be required. Maintain an EC of 1.5 and a pH of 5.8 to 6.2 after transplant until finish.

Shading

50% shade cloth or an equivalent amount of shading compound may be necessary during periods of high light or high temperature.

Crop Scheduling

Sow to transplant

Plugs require 6 to 7 weeks in a 200-cell plug tray.

Transplant to finish:

Autumn (Fall) greenhouse production: approx. 13 weeks

Autumn (Fall) field production: approx. 16 weeks

Spring greenhouse production: approx. 11 weeks

Spring field production: approx. 13 weeks

Note: Early Blue will flower approximately one week prior to Blue, and will finish at 90% of the height of Blue.

Harvest Maturity

Guardian delphiniums should be harvested when approximately one-third of the flower spike exhibits color.

Postharvest Temperature Management

Precool to 33°F (1°C) prior to shipping for best postharvest quality and vase life.

Ethylene Sensitivity

Guardian delphiniums should be treated with an ethylene inhibitor prior to shipment.

Common Problems

Insects

Watch for fungus gnats during plug production. Western Flower thrips can spread Tospovirus. Leaf Miner occasionally tunnel through delphinium leaves.

Diseases

Pythium root rot: Can be a problem during Stage 1 and 2 of plug production, and also after transplant.

Powdery mildew: Can be a production issue during vegetative or reproductive growth.

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