

Cultural Information for:	Danova	Annual
Common Name:	Primrose	
Botanical Name:	Primula acaulis	
Seed Count:	33,000 / ounce	1,150 / gram
Optimum Germination Temperature:	64-68°F / 18-20°C	
Optimum Growing Temperature:	50-59°F / 10-15°C	

Plug Culture – 8 weeks (288 12 x 24 tray)

Stage 1 (days 1-14) Select a sterile substrate containing a high amount of organic matter and a pH between 5.5 - 5.8 and EC <0.6 mmhos (2:1 dilution). Primula seed requires light for germination but a light cover of vermiculite is recommended to maintain sufficient moisture. Optimum germination temperature is 64-68°F/18-20°C. Temperatures above 68°F/20°C reduce total emergence. Maintain high humidity levels and either place the flats in a germination chamber or shaded greenhouse to provide cool conditions.

Stage 2 (days 15-29) When the cotyledons are fully expanded, reduce humidity levels but do not allow the plants to dry out. Target 60-62°F/16-17°C to prevent stretching. A light mist 2-3 times per day is beneficial. Primula leaves are very sensitive to strong light (>3,000 foot candles/32,000 lux). To avoid leaf burn, shade the plugs from intense sunshine. During periods of high temperatures the plants grow very slowly. Fertilize with 50-75 ppm Nitrogen to strengthen the plants. Select a well-balanced calcium nitrate based fertilizer to produce strong and healthy seedlings.

Stage 3 (days 30-48) The first true leaves have formed. For high quality plugs it is necessary to maintain cool temperatures and sufficient humidity. Fertilize the plants with 100 ppm N as needed to maintain EC between 0.75-1.0 mmhos (2:1 dilution).

Stage 4 (days 49-56) The plants have 3-4 true leaves and are now ready for transplanting. Applying 200 ppm N a week before transplanting helps the plants make the transition from the plug tray to the final container.

Transplant to Flowering – 22 Weeks

Pots: Transplant Danova plugs into 4-5 inch/10-12 cm pots using a well-drained sterile media. Optimum pH is between 5.5 - 5.8.

Temperature: Maintain a day/night temperature of 72-65°F to promote vegetative growth and build plant bulk.

Light Level: A maximum light level of 3,000 foot candles / 32,000 lux is recommended for Primula production.

Fertilizer: A well-balanced calcium nitrate-based formulation is recommended. Apply 100-150 ppm N as necessary to maintain an EC between 1.0–1.2 mmhos (2:1 dilution).

Vernalization: When the plants have 6-10 leaves and a well-established root system, maintain a temperature below 50°F/10°C for 7 weeks to initiate flower buds. When flower buds are visible (but not before) the temperature can be increased to 53-57°F/12-14°C to force flowering.

Note: Although Primula Danova will initiate flowers at a higher temperature (55°F/13°C), targeting 45°F promotes the greatest uniformity. Exposing plants to temperatures above 55°F/13°C confuses the plants resulting in devernalization (vegetative growth and bud abortion).

Schedule in Weeks	Plug: 64-68°F 18-20°C	Vegetative: 59-65°F 15-18°C	Initiation: 39 - 45°F 4 - 7°C	Flowering: 53 – 57°F 12- 14°C
Danova	8	4	7	3

Production Points: In general, Primula is not attractive to insects, but aphids, thrips, white fly and cut worms are the major concerns. Problems with fungus gnats or shore flies are common during the germination and plug stage. Primula requires cool conditions and high humidity to produce high quality plants. However, these conditions favor the development of botrytis. Good sanitation, watering early in the day and good air movement all help to control and prevent this disease.

Growth Regulation: In general, Primula growth is controlled with fertilizer and cool temperatures. If necessary, the following chemical growth regulators are effective. Do not apply below 41°F/5°C. To avoid over-regulation, multiple applications at lower rates is best. Do not apply after flower bud set.

Chemical	Rate
B-Nine (daminozide)	2,500 – 5,000 ppm (0.25 – 0.5%)
Bonzi (paclobutrazol)	5-10 ppm foliar spray 0.5-1.0 ppm drench

“All information given is intended for general guidance only and may have to be adjusted to meet individual needs. Cultural details are based on North American conditions and Sakata cannot be held responsible for any crop damage related to the information given herein. Application of recommended growth regulators and chemicals are subject to local and state regulations. Always follow manufacturer’s label instructions. Testing a few plants prior to treating the entire crop is best.”