GrowerFacts

PanAmerican Seed™

Echinacea PowWow

(*Echinacea purpurea*)

Germination

Approximate seed count (raw): 7,400 to 7,600 S./oz. (260 to 270 S./g)

Key flowering facts:
- First-year-flowering perennial.
- Vernalization: not required but beneficial as flowering will occur 2 to 3 weeks earlier following a minimum of 10 weeks cold treatment.
- Flower timing:
  - Sown in January as Spring production, will flower naturally in middle to late June.
  - Sown from July to early September for overwinter production, will flower late May to early June of the following year.
  - Plants from overwinter production will flower slightly earlier than Spring-sown plants. Plants may also exhibit more branching and shorter flower stems.

Plug Production

Media
Use a well-drained, disease-free, soilless media with a pH of 5.8 to 6.2 and a medium initial nutrient charge (EC 0.75 mmhos/cm).

Sowing
Sow 1 seed per cell in 288 or larger plug tray. In Europe, 264-cell trays can be used. Covering seed with vermiculite is recommended.
Stage 1 – Germination begins at Day 4 to 5 continuing through Day 14

Soil temperature:

- Maximum and fastest germination occurs at 77° F/25°C.
- At 68°F/20°C, maximum germination is achievable; however, it is not as rapid as at 77° F/25°C and requires 3 to 5 additional days to complete Stage 1.
- Slower, less synchronized and more uneven germination is possible at temperatures below 65° F/18°C.
- Temperatures of, or exceeding, 86°F/30°C may lower final germination rates.

Light: Optional.

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

Humidity: Maintain 95%+ relative humidity (RH) until radicles emerge.

Stage 2
Soil temperature: 71 to 73°F (21 to 22°C)

Light: Up to 2,500 f.c. (26,900 Lux)

Moisture: Reduce soil moisture slightly (level 3 to 4) to allow the roots to penetrate into the media.

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

Stage 3
Soil temperature: 68 to 70°F (20 to 21°C)

Light: Up to 2,500 f.c. (26,900 Lux)

Moisture: Allow media to dry further until the surface becomes light brown (level 2) before watering. Keep the moisture level to wet-dry cycle (moisture level 4 to 2).

Fertilizer: Same as Stage 2.

Growth Regulators: Generally not needed

Stage 4
Soil temperature: 65 to 67°F (18 to 19°C)

Light: Up to 5,000 f.c. (53,800 Lux) if temperature can be controlled.

Moisture: Same as Stage 3.

Fertilizer: Same as Stage 2.

Photoperiod
PowWow Wild Berry and White are short day-long day plants. Therefore, best flowering occurs either with short day then long day conditions or a constant 13 to 14 hours daylength.

In short day-long day conditions, short day (9 to 10 hours) can be provided either in the large plug/liner stage after 2 true leaves or can be provided post-transplant. The duration of the short day conditions is

6 weeks.

In conditions where short days cannot be provided, these are the recommended sow dates:
Latitude lower than N35°: no limits
N36° – N40°: no later than Week 9
N41° – N45°: no later than Week 8
N46° – N50°: no later than Week 7
N51° – N55°: no later than Week 6

Growing On to Finish

Container Size
1801 or 304 tray: 1 plug per cell

4.5-in. (11-cm) square/quart pots: 1 plug per pot

6-in. (15-cm) or gallon (18-cm) pots: 1 plug per pot

Media
Use a well-drained, disease-free, soilless media with a pH of 5.5 to 6.2 and a medium initial nutrient charge (EC 0.75 mmhos/cm). For overwinter production, bark media is recommended for better drainage purposes to protect plants from root rot due to being too wet.

Temperature
Nights: 50 to 60°F (10 to 15°C)
Days: 60 to 75°F (15 to 24°C)

Note: To keep plant growing, keep daily average temperature above 55°F (13°C). Otherwise, plants will stop growing.

Light
Maintain light levels as high as possible while maintaining moderate temperatures.

Irrigation
Maintain media moisture. Avoid both excessive watering and drought.

For overwinter production, keep plants on the dry side during cold periods as overwatering could result in plant loss from root rot.

Fertilizer
Apply fertilizer at rate 3 (175 to 225 ppm N/1.2 to 1.5 mS/cm) using predominantly a nitrate-form fertilizer with phosphorus and high potassium. Maintain the media EC at 1.5 to 2.0 mS/cm and pH at 6.0 to 6.5.

For a constant fertilizer program, apply fertilizer at rate 2 (100 to 175 ppm N or 0.7 to 1.2 mS/cm) while maintaining the above recommended EC and pH ranges.

Growth Regulators
For height control: Echinacea is responsive to tank mix of B-Nine/Alar (daminozide) 2,500 ppm (3.0 g/l 85% formulation or 4.0 g/l of 64% formulation) mixed with Cycocel (chlormequat) 500-750 ppm (4.2-6.4 ml/l 11.8% formulation or 0.67-1.0 g/l of 75% formulation). PGR application can be applied at the point when stem starts elongation, about 4 weeks after transplant. If necessary, repeat the application 2 weeks later.

Optional PGR treatments: 1 to 2 applications of B-Nine at 3,500 to 5,000 ppm (4.1 to 5.9 g/l 85% formulation or 5.8 to 7.8 g/l of 64% formulation) or Sumagic (uniconazole) at 20 ppm (36.4 ml/l 0.055% formulation) spray also work well.

NOTE: Higher PGR rates may cause plant height to be less uniform. It is recommended using lower rate with multiple applications.
In northern Europe conditions: 3,200 ppm B-Nine/Alar (3.8 g/l 85% formulation or 5.0 g/l of 64% formulation) works well.

Pinching
Pinching is not needed.

Spacing
Space plants when foliage is touching.

Crop Scheduling
Sow to transplant (288 cell plug): 5 to 6 weeks

Transplant to flower: 13 to 17 weeks
Under proper daylength and temperature range from 60°F (15°C) to 68°F (20°C)

Total crop time: 18 to 23 weeks
Under proper daylength and temperature range from 60°F (15°C) to 68°F (20°C)

Common Problems
Insect: Aphid, Fungus gnat, etc.

Disease: Powdery mildew

PanAmerican Seed™

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

™ denotes a trademark of and ® denotes a registered trademark of Ball Horticultural Company in the US. It may also be registered in other countries.
©2014 Ball Horticultural Company

Garden and Landscape Information

- PowWow Echinacea is first-year-flowering perennial in USDA Hardiness Zones 4 to 10.
- Plant in full sun after all danger of frost has passed.
- Space plants at 12 to 18 in. (30 to 45 cm) apart in well-drained soil.
- After plants are established, PowWow echinacea is quite drought tolerant.
- Garden height is shorter than other seed propagated echinacea at 16 to 20 in. (40 to 50 cm) tall and a spread of 20 to 22 in. (50 to 55 cm) in the first year.

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.

PanAmerican Seed™

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

™ denotes a trademark of and ® denotes a registered trademark of Ball Horticultural Company in the US. It may also be registered in other countries.
©2014 Ball Horticultural Company