ZINNIA ‘PROFUSION’

Carefree color all season long!
Zinnia Profusion is an interspecific hybrid between *Z. elegans* and *Z angustifolia*.

- Compactness and flower quality (*Z. elegans*)
- Vigor and disease resistance (*Z. angustifolia*)

**Types**

Profusion Single: 8 colors
Profusion Double: 7 colors
The Profusion Series, created by SAKATA, is known the world over for satisfying consumers’ demand for excellent garden performance…
Key Characteristics of Zinnia Profusion

- Wide weather tolerance performing well over a wide range of climates and soil types.
- Profusion is a facultative short day plant. Flowers initiate and develop quicker when the day length is less than 12 hours.
- To ensure sufficient vegetative growth, especially for larger containers, provide long day conditions (>14 hours) in the plug stage.
- Profusion does well with cal/mag fertilizers with periodic applications of magnesium sulfate at 1 lb./100 gallons.
- Profusion is also sensitive to boron deficiency, characterized by tip abortion, crinkled foliage and leaf edge necrosis. Apply 0.25 ppm Boron at each watering and maintain a pH at 5.5 to 6.2.
Producing consistent quality

- Optimum plug size is a 144 cell – 5 weeks
- Use a well aerated media with a pH between 5.5 and 6.2
- Prior to sowing, water the plug tray to the point of drip
- Sow the seed and cover with medium vermiculite
- Do not water after sowing or the day following sowing
- Then, water the seedlings as needed
- Germinate at 76°F
- Provide long days (>14 hours) in the plug stage to build plant body
- Fertilize with cal/mag formulations starting at 50-100 ppm N and working up to 150-200 ppm, and supplement with MgSO4 as needed
- Supply 0.25 ppm Boron at each irrigation to avoid deficiency
- Optimum media EC is 1.0 – 1.2 mmhos (1:2 slurry)
- Optimum production temperature is 65-70°F
- Provide high light at 5,000 – 7,000 foot candles
- Apply B-Nine at 0.25% - 0.35% as needed to tone the plants
- Not generally bothered by pests or disease
# Growing Protocol

<table>
<thead>
<tr>
<th>Pot / Container</th>
<th>Finish Time</th>
<th>Plug Stage</th>
<th>Plug Size</th>
<th>Photoperiod - Long Days</th>
<th>Transplant PPP</th>
<th>PGR*</th>
<th>Crop Time</th>
<th>Regional Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flowering</td>
<td>January to Mid April</td>
<td></td>
<td></td>
<td>as needed after plants are rooted and filled in</td>
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<tr>
<td>Cell Pack</td>
<td>April to August 4 weeks 200 &gt; 14 hours One/cell 0.25% B-Nine 8-9 weeks from sowing</td>
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<td></td>
<td>Sold Green</td>
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<tr>
<td>4 inch</td>
<td>April to August 5 weeks 144 &gt; 14 hours One 0.25% B-Nine 9-10 weeks from sowing</td>
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<tr>
<td>Quart</td>
<td>April to August 5 weeks 144 &gt; 14 hours One 0.25% B-Nine 10-11 weeks from sowing</td>
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<tr>
<td>6 inch</td>
<td>April to August 5 weeks 144 &gt; 14 hours Three 0.25% B-Nine 11-12 weeks from sowing</td>
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<tr>
<td>1 gallon</td>
<td>April to August 5 weeks 144 &gt; 14 hours Three 0.25% B-Nine 11-12 weeks from sowing</td>
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</tr>
<tr>
<td>8 inch</td>
<td>April to August 5 weeks 144 &gt; 14 hours Four 0.25% B-Nine 12-13 weeks from sowing</td>
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<td></td>
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</tr>
<tr>
<td>10-12 inch</td>
<td>April to August 5 weeks 144 &gt; 14 hours Five 0.25% B-Nine 12-13 weeks from sowing</td>
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</tbody>
</table>

**Nutrition**

50-100ppm N for stage 2, 100-150ppm N for stage 3 to 4 and 150-200ppm N after transplanting - Cal/Mag fertilizer, alternating with 20-10-20 as needed to control pH. Sensitive to boron deficiency, supply 0.25 ppm B at each watering.

**pH**

Optimum pH is 5.5 - 6.2

**E.C.**

1.0 to 1.2 mmhos (1:2 slurry) 1 part media mixed with 2 parts distilled water. Stir and allow mixture to stand for 30 minutes, filter and take reading.

In warm summer climates where the day temperature regularly exceeds 90°F and higher, applying short days (<11 hours) after the plants are established will shorten production time and promote a more compact plant.
Stage 1 – Sowing to radicle emergence (days 1-5)

- Plug Tray – 144*

- Well aerated media
  pH 5.5 - 6.2
  EC < 0.6 mmhos (1:2 slurry)

- Prior to sowing, water in plug tray to the point of drip.

- Sow seed and lightly cover with coarse vermiculite.

- *4 inch and larger, for cell packs use a 288 tray and plan on 4 weeks.
Stage 1 – Sowing to radicle emergence (days 1-5)

- Do not water in the tray following sowing or the day after sowing.

- Then, water the trays as needed to maintain even moisture, but not saturated.

- Maintain a consistent temperature of 76ºF

- Radicle emergence in 4-5 days.
Stage 2 – Cotyledons (days 6-12)

- Temperature:  
  70°F Day  
  65°F night  

- 3,000 - 4,000 foot candles to prevent stretching  

- Good air circulation  

- Fertilize with 75 ppm N using a well balanced Cal/Mag formulation (13-2-13-6Ca-3Mg).  

- Provide long days by extending the day length to 16 hours or with night interruption* (10pm-2am). Minimum 10 foot candles.  

*It is important to keep the night temperature at 62-65°F when using incandescent lights to prevent excess stretching.
Stage 2 – Photoperiod

• Zinnia Profusion is a facultative short day plant. A dark period greater than 12½ hours promotes flower bud initiation.

• To extend the juvenile phase and achieve optimum vegetative growth, apply long day conditions in the plug stage when sowing prior to April 1st.

• This is especially important for producing plants in larger containers.
Stage 3 – Development of true leaves (days 13-28)

• Fertilize as needed to maintain the EC at 1.0 – 1.2 mmhos (1:2 slurry).

• Watering just before wilt is recommended to avoid lush growth.

• Water thoroughly to prevent high EC (>1.5 mmhos).

• Water early in the morning to allow time for foliage to dry.

• If necessary, apply B-Nine (daminozide) at 0.25% / 2,500 ppm 17-21 days after sowing to check growth.
Stage 4 – Toning (7 days)

- Reduce the temperature to 62°F but do not go below 60°F.
- Fertilize every 2nd or 3rd watering to tone the plants and prepare them for transplanting.

Optimal plug with 2-3 sets of true leaves, good green color, good leaf expansion and juvenile development (non initiated).
Transplanting

- Well drained media.
- pH 5.5 – 6.2
- EC > 0.6 mmhos
- Set plugs slightly “high” to avoid stem rot.
**Fertilizer**

- Optimum EC is 1.0-1.2 mmhos.

- Fertilize weekly with Cal/Mag blends at 200-250 ppm N or as needed to achieve optimum EC.

- Sensitive to boron deficiency so target 0.25 ppm B at each irrigation.

- 15-3-20 Pansy Special is a good choice for constant liquid feed as it supplies higher amounts of minor elements at lower nitrogen rates (0.25 B at 125 ppm N). Also, higher potassium promotes strong and sturdy plants.
Temperature

- Optimal temperature is 65-70°F.
- Avoid temperatures below 60°F which invites disease.
- Above 75°F promotes plant stretching.
Phosphorus and macro element deficiencies

- Phosphorus, nitrogen and magnesium are mobile elements and a deficiency manifests in the lower foliage.
Zinc, calcium and minor element deficiencies

- Zinc along with all trace elements and calcium are immobile so a deficiency manifests in the upper foliage.
Boron deficiency

- Boron is necessary for calcium metabolism and translocation of sugars from leaf canopy to root zone.
- Within 24 hours of a deficiency damage is evident at root caps.
- Boron deficiency is characterized by leaf cupping and puckering.
- Boron is immobile so a deficiency leads to necrosis of upper leaf edges.

Leaf cupping and leaf puckering

Edge necrosis
Growth Regulation

- Water stress
- Calcium nitrate based fertilizer
- Proper plant spacing
- Reduced Humidity
- High Light (5,000 - 7,000 foot candles)
- B-Nine at .025 – 0.5% (2,500-5,000 ppm)
- Bonzi drench at ½ to 1 ppm
- Short day conditions (> 13 hours of darkness)
- Pinching
Zinnia Profusion

Photoperiod and height control.

• After transplanting, when the plants are established and filled in, an application of daminozide (B-Nine®) at 0.25% to 0.35% will tone the plants.
• In spring a negative DIF is effective in reducing stem stretch.
• During summer, when the temperature is elevated and the photoperiod is long, subjecting the plants to short days (<11 hours) will promote earlier flowering and compact plants.

• Pinching the plants after establishment is also an option to promote fuller pots.
Effect of photoperiod on plant and flower development

Short Day Plug
Short Day Finish

Long Day Plug
Short Day Finish

Long Day Plug
Long Day Finish
Effect of photoperiod on plant and flower development

Complete Short Days vs. Complete Long days

Finishing under long day conditions will require more attention to growth regulation.
Effect of pinching on plant height and branching

Unpinched vs. Pinched

Pinching significantly increases branching and reduces plant height.
Zinnia Profusion

Pinching after establishment will promote faster branching with less plugs needed per pot.

- 8 inch bulb pan
- 3 plants per pan
- Sow mid May
- Transplant mid June
- Pinch early July
- 1 application of 0.25% B-Nine
- Flower mid August

Natural photoperiod, Salinas, CA
Zinnia Profusion

Growing Profusion similar to a Chrysanthemum

For pots and color bowls Profusion can be grown similar to a pot mum.

<table>
<thead>
<tr>
<th>Method</th>
<th>Plug Time in Weeks*</th>
<th>Pot Size</th>
<th>PPP</th>
<th>Pinch</th>
<th>Day Length</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Five</td>
<td>8 inch</td>
<td>Three</td>
<td>3 weeks after transplant</td>
<td>11 hour day at pinch</td>
<td>Starting point for trialing</td>
</tr>
<tr>
<td>2</td>
<td>Five</td>
<td>8 inch</td>
<td>Three</td>
<td>3 weeks after transplant</td>
<td>11 hour day one week prior to pinch</td>
<td>Use if method 1 produces plants that are too vigorous</td>
</tr>
<tr>
<td>3</td>
<td>Five</td>
<td>8 inch</td>
<td>Three</td>
<td>3 weeks after transplant</td>
<td>11 hour day one week after pinch</td>
<td>Use if method 1 produces plants that are too compact</td>
</tr>
</tbody>
</table>

*Long day conditions
Zinnia Profusion

Profusion is as easy to grow as it is beautiful!

- Coated seed for improved sowing process
- Easy and rapid germination
- Grows easily with minimum care
- Does well over a wide pH and temperature range
- Can be easily controlled with B-Nine or photoperiod manipulation
- Not generally attacked by pests
- Highly disease tolerant, but will not tolerate wet feet or poor drainage
- Highly suitable as a pot, bedding and patio plant
- Drought and heat tolerant
- Unexcelled garden performance
- Available in single, double and knee high types
- Perfect for mass plantings
- Constant color all season long
- Consistent seed quality and availability
- All-America Selections and Fleuroselect Gold Medal Winner
Thank you!