



# SAKATA®

**Campanula Champion and  
Champion Pro**

*Plugs and Production*

# Campanula Champion series plug and culture



- Campanula Champion series requires less cooling to flower and expands the marketing window from December to June in northern latitudes with year-round production in equatorial regions.
- Long vase life and unique flower form makes it popular for mixed bouquets.

# Campanula Champion II Crop Schedule

Plug Stage	Transplant -Bulking	Flower initiation & development	Forcing	Crop Time
5 weeks	5 weeks**	6 weeks	2 weeks	19 weeks
68°F/20°C	55-60°F/13-16°C	50-55°F/10-13°C	59°F/15°C	
Short Days*	Short Days*	Long Days***	Ambient light	

**Long days are necessary for flower bud initiation and development. Continuing long days following initiation, although not necessary, does not delay flowering.**

\*12 hours or less

\*\*Maintain until the plants have 8-10 true leaves

\*\*\*4 hour night interruption or day length extension to 16 hours. Minimum 10 f.c. / 110 lux

# Germination

## Stage One (days 1 - 10)

- 288 plug cell
- Well drained media
- pH 5.8 to 6.2
- Lightly covered
- 65-68°F/18-20°C
- Sufficient moisture to melt the pellet
- Maintain 68°F for first 4 days for best emergence.





# Germination

## Stage Two (days 11-21)

- Place flats in cool greenhouse with good air circulation.
- Fertilize with 100 ppm Nitrogen from a well-balanced fertilizer.
- Maintain temperature of 68-72°F/20-22°C to avoid rosette problems.
- Requires short day conditions (<12 hours) to prevent premature flowering.



# Germination

## Stage Three days (21 - 30)

- The seedlings are beginning to fill in the tray.
- Fertilize as needed to maintain an E.C. of 0.7 to 1.0. mmhos (2:1 slurry).
- $\text{CaNO}_3$  based fertilizers build strong healthy plants.



# Germination

## Stage Four (days 30-35)

- Seedlings should now have 2-3 true leaves and are now ready to transplant into cut flower beds.
- Campanula has a strong tap root structure. Do not delay transplanting.



# Improving uniformity (Netherlands)



- 2 weeks before transplant the plugs are sorted by machine (length and width).
- Option to do selection by hand.
- Higher uniformity
- Tighter flowering window
- Less second quality plants



# Transplanting



- Good drainage and high in organic matter.
- Full Sun with good ventilation.
- Raised beds are recommended in heavy clay soils that lack organic matter to improve aeration and root penetration.



# Plant spacing



Single Stem Production

Single Stem\* 4 – 6 inches apart

Multi Stem\*\* 10 – 12 inches apart

\*single stem production will crop more quickly and is recommended for greenhouse production.

\*\*multi-stem production is best for outdoors or in a cold frame.

Use closer spacing with conditions of high light intensity, good air movement and soil rich in organic matter with high cation exchange.

# Campanula Production



- Optimum growing temperature of 55-60°F/13-16°C.
- Use a calcium nitrate-based fertilizer and maintain E.C. at .07 to 1.0 mmhos.
- Watch boron and iron levels.



# Boron deficiency



- Campanula is sensitive to boron deficiency which expresses itself as stunted growth, deformed leaves and edge burn.
- Maintain the pH between 5.8 and 6.2 and supply sufficient boron (0.25 ppm) at each irrigation.
- Balance calcium and magnesium levels.



# Support and Lighting



- Campanula Champion Series grows up to 40”(100 cm) tall and will need support to avoid plant damage.
- Campanula is long day responsive. Light from 10 pm to 2 am for 45 days when the plants have 8-10 true leaves, (4-5 weeks after transplanting).
- In northern latitudes transplanting after mid Feb. requires no lighting (long days).

# Rosette



- Inactive stage caused by stress, (uneven moisture, excess fertilizer, chemical damage, root damage, late transplanting, night temperature in excess of 77°F/25°C or insufficient light during the floral initiation stage). Maintain the day temperature below 82°F/28°C And the night temperature below 72°F/22°C.

# Importance of good drainage



- When soils that contain fine uniform particles (without a blend of large and small particle sizes) are irrigated, the soil aeration is reduced.
- A raised bed, together with incorporation of organic material, improves root penetration and aeration.



# Ideal Environment



- Campanula does best in a cool and bright location with good air movement.
- Ideally suited for growing in cold frames or tunnel houses.



# Crop Timing

## Northern Latitudes



- Campanula Champion Series flowers 130 - 140 days from sowing.
- Sow August to February for harvesting late December through June.
- Ideal to grow along with Snapdragons.

# Harvesting



- Cut stems when 2-3 buds are open.
- The top flower opens first and then the second and subsequent flowers open from the bottom up.

# Post Harvest Recommendation

- Place the stems in warm water (100°F/38°C) for 30 minutes to remove latex and improve water absorption.
- Initially, treat with STS for 2 hours followed by a commercial preservative containing both a bactericide and sugar for 24 hours.
- Store at 34-36°F/1-2°C for a maximum of 3 days.
- The consumer will achieve 20 days of vase life if the stems are cut again when received and recut again every few days with a change of water. A sachet of flower food should be included in the consumer packet.



Champion Pink

# Marketing



- Campanula Champion Series is usually sold in 5 stem bunches.
- High quality cuts command premium prices.