Campanula carpatica F_1

Pearl

Deep Blue

Item no.: CC2001P



- FastraX perennial: First year flowering without vernalization
- Significantly earlier flowering
- Short crop time
- Popular, hardy perennial
- Narrow flowering window

Crop Time	Spring: 20 - 24 weeks
Height ⌀	7 " / 18 cm
Width ⌀	7 " / 18 cm
Exposure	Sun - Partial shade
Seed Form	Pelleted Seed
Heat Zone	9-5
Hardiness Zone	3a-8a
Product Use	Pots, Hanging Baskets, Mixed Containers, Landscape
Family, Origin	Campanulaceae, Central Europe
Minimum Germ. Rate	80 %

TECHNICAL GUIDE

Campanula carpatica F_1 Pearl

Flowering

Flower initiation: Beginning from the initial sowing. Flower initiation occurs approximately days 42-48 when 6-8 true leaves are present unless kept under short days.

Flowering Type: FastraX perennial – first year flowering plants without vernalization. Obligate long day plant requiring a day length > 13 hrs. to initiate flowering.

Flowering Mechanism: Day length > 13 hrs. is required to initiate flowering. Supplemental lighting during germination will be beneficial but is not necessary.

Plug Culture

Germination: Maintain optimal conditions for seedling development, should begin on the day of sowing until root emergence. Expect radicle emergence in 10-12 days.

Cover: No cover is necessary.

Sowing method: Raw seed – sow 6-8 seeds/ plug; single pelleted seed-sow 2-3 pellets/plug.

Media: pH 5.5-6.2; EC 0.5 Sensitive to high salt levels during germination.

Temperature: Maintain 20-22 °C (68-72 °F) day temperature, 18 °C (64 °F) night temperature. The fluctuation between day and night temperatures will aid in the germination. By day 14 the temperature can be maintained at 17-20 °C (63-68 °F).

Moisture: Begin with a moisture level wet (4) for the first 8-9 days. On day 10, after radicle emergence reduce to a moist (3). On day 10 begin to alternate between a media moisture level moist (3) and a medium (2). Allow the media to approach a medium (2) before re-saturating to a moist (3). Never allow the media to dry out completely.

Humidity: 95-100 % until day 12, then reduce to 40-60 %. Provide proper ventilation and horizontal airflow to improve oxygen levels in the media.

Light: Requires light for germination. Supplemental lighting during germination will improve speed of germination and uniformity. During germination, and the first three weeks after germination provide a day length of 10-12 hrs.

Fertilizer: Sensitive to high EC in the early stages so maintain and EC less than 0.5 for the first 10-14 days until germination is complete.

Plug Bulking and Flower Initiation: Maintain optimal conditions during the vegetative stage from cotyledon expansion to flower initiation. This stage is when the seedling root to the edge of the plug and reach the 6-8 true leaf stage where flower initiation occurs.

Media: pH 5.5-6.2; EC 0.5-1.0 Use a well-drained

Light: Supplemental lightling is beneficial but keep the day length to 10-12 hr. to bulk the plants. Continue to keep the plants under short days for the duration of the plug production.

Temperature: Maintain 17-20 °C (63-68 °F) until roots are well established then lower the temperature to 16-8 °C (60-46 °F). In the last two weeks of plug production the temperature can be lowered further to 14-16 °C (57-60 °F) nights and 18-21 °C (64-70 °F) days.

Moisture: Alternate between moisture levels wet (4) and medium (2). Allow the media to approach a medium (2) before re-saturating to a wet (4). Try to maintain the moisture level at a moist (3) as much as possible. Never allow the plugs to dry out completely.

Fertilizer: Moderate fertilizer requirements using a regime that supplies slightly higher levels of potassium. Use a balanced fertilizer low in ammonium to prevent high nitrogen levels. If possible use a potassium based fertilizer (N: K2O-ratio: 1:1.5). Blended fertilizers that can be used are 11-7-23, 17-5-17 and 14-4-14. Begin feeding with low rates on approximately day 14-16 using 40-50 ppm nitrogen. As the plants develop further the rate can be increased to fertilizing weekly at 100 ppm nitrogen.

Growth Regulators: Sprays of B-Nine (daminozide) at 1,500-2,500 ppm are very effective in toning the plants and controlling grown. Cycocel (chlormequat chloride) spays at 300-500 ppm can also be used effectively. Campanula are sensitve to Bonzi (paclobutrazol and uniconazol).

Fungicides: Apply fungicides during long periods of low light and high humidity. Especially for soil born diseases.

Growing On
Media: pH 5.5-6.2; EC 1.0.

Light: In spring production after the plants are established in the final container, approximately 3-4 weeks after transplanting they can be given long days to bring them into flower. Continue to grow newly transplanted plants under short days until the plants fill approximately ¾ of the pot for 10 cm (4") pots or approximately 3-4 weeks after transplanting depending on the temperature. Supplemental lightling is beneficial but only use a 10-12 hrs. photoperiod. Campanula can also be grown in the summer and in the fall when the day length is becoming short (less than 12 hrs.). They can be moved into a greenhouse and use a long day treatment to bring them into flower. In this case provide a day length of 14-16 hrs. Either use day length extension or night interruption, lighting from 10 pm-2 am. They only require 10 ft. candles (100 lx) to initiate flowering. In spring production once flower buds are visable the long day treatment can be discontinued.

Temperature: Maintain 13-18 °C (56-64 °F). Once established in the final container the temperature can be lowered to 13-15 °C (56-58 °F) but the cooler growing temperatures will lengthen the overall crop time. Plants grown at the lower temperatures will have larger flowers. For the fasted finish grow at 18-19 °C (64-66 °F).

Moisture: The best approach is to water plants thoroughly to a wet (4) and then let them dry back alternating between moisture levels wet (4) and medium (2). Allow the media to approach a medium (2) before re-saturating to a wet (4). Avoid drying the media out completely since root damage can occur.

Humidity: 40-60 % humidity is ideal. Providing good ventilation and horizontal airflow will help lower the humidity and dry back the media, providing oxygen to the roots.

Fertilizer: Campanula require a light to moderate fertilization program. Use a balanced fertilizer low in ammonium to prevent high nitrogen levels. If possible use a potassium based fertilizer (N: K2O-ratio: 1:1.5). Blended fertilizers that can be used are 11-7-23; 17-5-17; 14-4-14. Either use a constant feed program at 50-75 ppm nitrogen or fertilize weekly at 150-200 ppm N. During finishing in the fall do not fertilize after mid-September.

Growth Regulators: Sprays of B-Nine (daminozide) at 1,500-2,500 ppm are very effective in toning the plants and controlling growth. Cycocel (chlormequat chloride) spays at 500-750 ppm can also be used effectively.

Fungicide: Apply fungicides during long periods of low light and high humidity. The most common problems are with soil born diseases and later with botrytis.

Common Diseases: Botrytis, pythium and rhizoctonia.

Pests: Primarily aphids, thrips and spider mites.

Post Harvest: Fertilize with potassium nitrate at 100 ppm 1-2 weeks prior to shipping.

Plug & Finished Crop Time
Plug Crop Time

288 tray: 8-9 weeks
128 tray: 9-10 weeks

Finished Crop Time

10 cm cm (4") pots: 12-14 weeks

15 cm (6") pots: 14-15 weeks

25 cm (10") baskets: 15-16 weeks

Expert Tip
Campanula Pearl can be grown in three different methods.

1. In the greenhouse and moved outdoors when well established.

2. In the spring utilizing the optimal conditions provided by the greenhouse.

3. In the summer outdoors with the possibility of forcing them in the fall. When producing them in the summer a higher quality can be achieved by providing a short day treatment to bulk the young plants before the long days. Use care in transplanting to make sure that the plants are not transplanted too deep keeping the media from settling around the crown of the plant. Transplant at the soil level of the plug. Use a moderate fertilization program in production avoiding high levels of ammonium. The total crop time is greatly influenced by temperature. Production at temperatures of 18-19 °C (64-66 °F) will give the shortest crop time. Bulk young plants under short days until plants are close to filling the finished container. When campanula are produced under long days the young plants can be bulked using a short day treatment of less than 12 hrs.

Moisture Codes

Saturated (5)	Water is easily observed when finger is pressed on cell. Water moves freely from the top of the plug to the bottom.
Wet (4)	Media looks black and is not glistening. The media feels wet to the touch but there is very little water movement.
Moist (3)	Water is not easily visible. When finger is pressed on the cell there is very little movement from top to bottom.
Medium (2)	Media is not black, but now looks medium brown. There is no water movement when pressed with finger.
Dry (1)	Media has changed color to a very light brown and is dry to the touch.

All information in our technical guide is based on our own trials and would therefore be as guideline only. Detailed cultivation aspects vary depending on climate, location, time of year and environmental conditions. Benary expressly disclaims any responsibility for the content of such data/information and makes no representation or warranty for the cultivation of any products listed. It is recommended that growers conduct a trial of products under their own conditions.

COLORS OF THE SERIES

Campanula carpatica F_1 Pearl



White
CC2002P



Deep Blue
CC2001P