perennial solutions

By Paul Pilon

Campanula carpatica Pearl

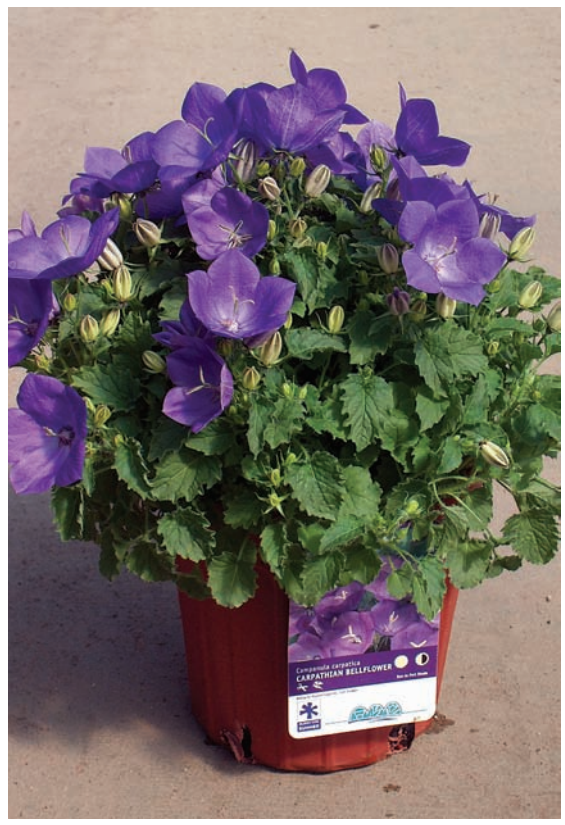
This naturally compact campanula also flowers 1-2 weeks earlier than other campanulas.

With their ease of production and showy displays, *Campanula carpatica* cultivars have become very popular in today's landscapes. The varieties within the Pearl series are excellent F1 hybrids with compact growth habits that form small floriferous mounds reaching 6 inches in height. The Pearl series is available in two colors — deep blue and white — that naturally bloom from June to August.

Campanula carpatica, also known as bellflowers, are commonly used as accent plants, border plants or potted house plants and in rock gardens and container plantings. They are produced across a wide portion of the United States, throughout USDA Hardiness Zones 3-9 and AHS Heat Zones 9-1. The common name Carpathian bellflower or Carpathian harebell is derived from their native origin, the Carpathian Mountains of Eastern Europe. In Latin, the name campanula means "little bell" and refers to the bell shape of the flowers.

The Pearl series has many distinguishing characteristics. It has a very compact and uniform growth habit. Plants bear deep-blue or white, cup-shaped flowers on short stems held above serrated, triangular-shaped leaves with wavy edges. Besides being more compact than other *Campanula carpatica* cultivars, the Pearl series flowers 1-2 weeks earlier as well.

The Pearl series is also heat tolerant, retaining its habit and flower size well during the summer. With these characteristics, it is well suited to production in small containers and marketing alongside bedding plants.



Pearl has a compact growth habit that forms small floriferous mounds. (Photos courtesy of Sawyer Nursery)

Propagation

Pearl is propagated from seed. Since light is required for germination, do not cover the seed with germination mix or vermiculite after sowing. The seed flats should be moistened and moved to a warm environment where temperatures can be maintained at 65-70° F for germination. Many growers utilize germination chambers during this stage to provide uniform moisture levels and temperatures.

Seedlings will emerge over a period of time ranging from 10 to 18 days after sowing. Following germination, reduce the moisture levels somewhat, allowing the growing medium to dry out slightly before watering to help promote rooting. Fertilizers are usually applied once the true leaves are present; apply 100 ppm nitrogen every third irrigation or 50 ppm with every irrigation using a balanced water-soluble source. It is recommended to maintain short days or photoperiods of less than 13 hours throughout all plug stages to keep plants in the vegetative state. When plugs are grown at 65° F, they are usually ready for transplanting in 9-11 weeks.

Production

For container production, Pearl is suitable for 1-qt. to 1-gal. containers. When planting large containers, such as 1-gal. or larger, I recommend ➧

planting at least two plug cells per container to properly fill out the pot. Bellflowers perform best when they are grown in a moist, well-drained medium with a slightly acidic pH of 5.8-6.2. Most commercially available peat- or bark-based growing mixes work well provided there is adequate drainage.

Plugs should be planted so the original soil line of the plug is even with the surface of the growing medium of the new container. Planting the crown too deep will lead to crop variability and losses. After planting, I recommend drenching with a broad-spectrum fungicide such as Banrot (The Scotts Company LLC) or a combination of Subdue MAXX (Syngenta Professional Products) with Cleary's 3336 (Cleary Chemical Corporation). The best quality is achieved when plants are grown in full sun or in greenhouses with high light intensities.

Pearl's deep-blue flowers are held above serrated, triangular-shaped leaves.

Campanulas can be grown using fertilizers with light to moderate fertility levels. Fertility can be delivered using water-soluble or controlled-release fertilizers. When using water-soluble fertilizers either apply 100-150 ppm nitrogen as needed or feed with a constant liquid fertilization program using rates of 50-75 ppm nitrogen with every irrigation. Growers commonly apply time-release fertilizer as top-dressing onto the media surface using the medium's labeled rate. Controlled-release fertilizer can also be incorporated into the growing medium prior to planting at a rate equivalent to 1 lb. of nitrogen per yard of growing medium.

Campanulas require an average amount of irrigation, as they do not tolerate really wet or overly dry conditions. Root zones that remain waterlogged tend to get root rot pathogens and can quickly lead to crop losses. Overly dry growing conditions greatly reduce crop quality and delay flowering. When irrigation is necessary, water plants thoroughly, then allow the soil to dry slightly between waterings.

Campanulas can generally be grown free of insects and plant pathogens. Occasionally, aphids, spider mites, thrips and whiteflies may appear, causing only a minimal amount of crop injury. The primary diseases growers should watch for are Botrytis and crown/root rots caused by the pathogens Pythium and Rhizoctonia. None of the aforementioned insects or diseases requires preventative control strategies. Growers should have routine scouting programs to detect insect presence early and to determine if and when control strategies are necessary.

Pearl has a naturally compact growth habit and will usually not require plant growth regulators. Under certain growing conditions or high plant densities it may be necessary, although not common, to use chemical plant growth regulators. Most commercially available growth regulators are effective at controlling plant height of Pearl. In fact, plants are sensitive to several of them, Bonzi (Syngenta Professional Products) and Sumagic (Valent U.S.A. Corporation) in particular. The application of these products could lead to overgrowth regulation and plant stunting. For toning and shaping purposes, one application is often adequate.

Forcing

The Pearl series is well suited for forcing into bloom throughout the year. When producing blooming plants is the goal, a few requirements should be met in order to pro-

Pearl retains its habit and flower size, even in the heat.

duce uniform, consistent, high-quality flowering plants.

Pearl does not have a cold requirement that must be met prior to forcing. It will easily bloom from plants started by seed during the first growing season without providing vernalization. Campanulas do not have a juvenility period and have been observed flowering with as few as 10 leaves present. The primary factor for flowering is day length. Growers should be aware of several considerations regarding photoperiod.

Under long-day conditions or day lengths greater than 14 hours, flower induction and formation begins. In some cases, flowering occurs before the containers are filled out, or "bulked up," forming small unsalable blooming plants. Bulking promotes lateral branching, fills out the pot and results in high-quality, attractive plants with a number of flowers at the time of sale.

Allow a period during production where the days are naturally short, and the plants will remain vegetative, allowing them to bulk up prior to exposing them to conditions that promote flowering. During the times of the year where day lengths are naturally long, growers should consider providing short days by blocking out all light.

Campanulas are obligate long-day plants and will not flower under short days. As long as the photoperiod is less than 12 hours, campanulas will remain compact, non-flowering rosettes. Provide a minimum of 14-hour photoperiods or 4-hour night interruptions until the flower buds are visible. To obtain long days, growers should deliver a minimum light intensity of 10 foot-candles when using night interruption. To improve the quality and appearance of the crop, long days should not be provided until the plants are bulked up and have at least 15 leaves.

Once flower buds are visible, the lighting can be eliminated, and plants can be produced under natural day lengths to finish the remainder of the forcing. After visible bud, production under naturally short days decreases the overall height of the plant by reducing plant stretch. Incandescent light sources will also cause undesirable internode elongation, increasing the plant's overall height and appearance. When possible, use cool-white fluorescent, high-pressure sodium or metal halide lamps to provide photoperiodic lighting.

The time to bloom after the proper photoperiod is provided is a function of temperature. Pearl grown at 68° F will take 8-9 weeks to reach flowering, while plants grown at 60° F will flower in approximately 12 weeks. The size of the flowers is larger when they are forced at cooler temperatures. To obtain the best plant quality, I recommend producing bellflowers at 65-68° F where possible.

Availability

Campanula carpatica Pearl series is available as seeds, plugs or finished containers. The seed is supplied by Ernst Benary of America and is available through many seed distributors. Plugs can be acquired from many perennial plug producers or plant brokers. Finished containers may be purchased from many reputable companies across the country. GPN

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