

Minnesota State Florists Bulletin



April 1, 1977

The following articles on campanula, cineraria and calceolaria are adapted from talks presented by Dr. Roar Moe at the North Central Florists' Convention in Minneapolis, March 5 and 6. Dr. Moe, a member of the Department of Horticulture and Glasshouse Crops, Agricultural University of Norway, is currently spending a 1-year leave at Michigan State University.

CAMPANULA ISOPHYLLA MORETTI CULTURE

This campanula has become an important pot plant in Scandinavia. The primary cultivars are the white-flowered "Alba" and the blue-flowered "Bla" which were found in Skjold Nursery, Tonsberg, Norway. It is grown in 4- and 4 1/2-inch pots for spring sale and in hanging baskets for indoor or outdoor summer use.

Propagation

Propagation of these selected cultivars is by cuttings. Stock plants are kept vegetative by maintaining short 12-hour days. Root formation and root growth are greatly inhibited on cuttings on which flower buds have developed, even when cuttings are treated with an IBA (root promoting auxin) solution.

The use of high intensity light (cool white fluorescent) at 10-12 watts per square foot and injecting additional CO₂ (900 ppm) in the atmosphere is recommended in fall and winter for stock plants to increase cutting production, quality, and dry weight (40-60%). In a controlled study, plants supplied with 200 footcandles of light and no extra CO₂ produced 100 cuttings contrasted to 366 cuttings from plants grown in 1000 footcandles and 900 ppm CO₂. Cuttings in the latter treatment also rooted quicker, produced significantly more roots and greater subsequent growth. The light-CO₂ treatment lessened the time required for propagation and vegetative growth from 15-16 to 8-9 weeks.

Increasing the temperature from 15°C (59°F) to 21°C (69.8°F) stimulated rooting and further growth. Best rooting at 15°C was at 500 footcandles, and at 21°C an intensity of 250 footcandles was preferable. An air temperature of 18°C (64.4°F) and a medium temperature of 21°C (69.8°F) is recommended. Supplementary lighting also stimulated lateral shoot breaks.

Cuttings are usually taken in fall and winter. Once again rooting was significantly improved by dipping the base (1/3 - 1/2 inch) in a 1000 - 1500 ppm IBA solution for 5 seconds. A sterile rooting medium of 3 parts perlite and 1 part moss peat is recommended: rooting requires 17-18 days.

Pot in an open, well-drained growth medium. Campanula is sensitive to overwatering. Grow the plants at 18°C (64.4°F) after potting for 6-9 weeks until the start of long days.

Flower Formation

Heidi (1962) reported that campanula was a long day plant. A 14-18 hour daylength (depending on temperature) is required for flowering, once the plants are an adequate size. A daylength of 18-24 hours may be used. Hildrum (1969) found that fluorescent light at 1.5 - 2 watts per sq. ft. was necessary to avoid plant stretch experienced if incandescent lamps were used. A return to short days before flowers open causes bud blast.

Temperature during long days is significant. As the temperature was increased from 12°C (53.6°F) to 24°C (75°F), days to flower were lowered by almost 50 percent. Great night and day temperature fluctuation induced excessive stem stretch and poor plant quality. A constant 18°C (64.4°F) is recommended.



Growth Retardants

B-Nine is more effective than Cycocel. Hildrum (1969) recommended the use of 2500 - 5000 ppm B-Nine. The cultivar Alba is more vigorous than Bla, thus Alba has a greater need for treatment. Plant stretch from the use of incandescent lighting can be overcome with the application of B-Nine. Spray application is recommended 1 week after start of short days.

Summary

1. Grow stock plants at 15^o-18^oC (59^o - 64.4^oF) in 12-hour days using cool white fluorescent at 100 - 150 footcandles (to extend the day to 12 hours) and a 900 ppm CO₂ level.
2. Root cuttings treated with 1000-1500 ppm IBA in an 18^oC (64.4^oF) air and 21^oC (69.8^oF) medium temperature in 18 days.
3. After potting, grow in natural photoperiod for 6-9 weeks at 18^oC (64.4^oF).
4. Grow to flowering in long 16-18 hour days (use 1 1/2 - 2 watts fluorescent light per sq. ft. as necessary) at 18^oC (64.4^oF) constant temperature. Apply B-Nine spray at 2500-5000 ppm, 1 week after start of short days.