Scabiosa 'Butterfly Blue' is an appealing, free-flowering herbaceous perennial that is relatively easy to produce in flower. Part seven of our 13-part series on herbaceous perennials takes a look at Scabiosa columbaria.

OME species of herbaceous perennials have a rather long juvenile phase, during which they are incapable of flowering. Many herbaceous perennial species require a cold treatment, long photoperiod, or both for flowering, but a few species readily flower under a range of environmental conditions, and thus are easy to force into flower. Scabiosa 'Butterfly Blue' is one of these species.

'Butterfly Blue' produces delicate, 1 1/2-inch, round lavender-blue flowers on graceful, slender stems. Flowers rise above compact gray-green foliage to about 15 to 18 inches in height (Figure 1). Flowering in the garden begins in late spring and continues through summer, especially if spent flowers are removed. Because of its merits, it was selected by the Perennial Plant Association as the Perennial Plant of the Year in 2000. It is listed as cold-hardy to USDA Zone 6, but often survives in colder climates when protected.

Scabiosa 'Pink Mist' is a patent-protected cultivar that is very similar to 'Butterfly Blue,' except flowers are light pink. Based on our limited experience, it appears that 'Pink Mist' could be forced similarly to that of 'Butterfly Blue.'

Propagation

'Butterfly Blue' is propagated only by asexual techniques, including cuttings, tissue culture, and division. Rooted plugs can be purchased from a variety of wholesale companies. Perhaps the highest quality and most uniform plants are those produced from tissue culture, but these plants command a higher price. Field-grown, bare-root plants also produce large, attractive plants. Alternatively, rooting of cuttings is relatively easy if general cutting propagation protocols are followed. While the free-flowering nature of

Figure 1. Scabiosa 'Butterfly Blue' is an appealing, free-flowering herbaceous perennial that is relatively easy to produce in flower.
scabiosa is often considered a desirable characteristic, it can create a challenge when trying to maintain vegetative stock plants. Plants grown at cool temperatures with high light and short days develop as a rosette with greatly delayed flowering. Such conditions are conducive to production of vegetative cuttings.

To root cuttings, we recommend using a porous media, such as a 50% perlite and 50% peat mixture. During propagation, we suggest providing short photoperiods (less than 12 hours) to prevent elongated growth and promote branching.

**Plant Size**

Juvenility is not an issue with 'Butterfly Blue.' All plants that we have obtained flower when provided with an adequate growing environment. The larger the starting material, the larger the plant will be at flowering. Bulking plants under short daylengths (less than 12 hours) is necessary if the objective is to produce large containers (e.g., gallon pots) from rooted cuttings.

**Cold Treatment**

Cold treatment is not required for flowering. However, flowering is accelerated if plants are cooled, because plants grow and develop at very cool temperatures, such as 41°F (5°C). In our trials, plants developed about six or seven nodes (12 or 14 leaves) during a 15-week cold treatment, and subsequently flowered four to five weeks earlier than noncooled plants (Figures 2a and 2b). Because plants develop at temperatures just above freezing, it is important to provide light (at least 25 to 50 footcandles) if plants are kept in a refrigerated cooler. Flower buds may be visible near the end of an extended cooling period.

**Photoperiod**

Scabiosa 'Butterfly Blue' is a day-neutral plant without or following a cold treatment (Figures 2a and 2b) when forced at moderate growing temperatures such as 68°F (20°C). However, photoperiod has a pronounced effect on the growth habit and plant height. As the daylength increased from 10 to 24 hours, plant height at first flower increased three-fold, from approximately seven to 22 inches (18 to 56 centimeters). Some of...
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this stretch under long photoperiods could be attributed to incandescent lamps that were turned on at the end of the day to complete the photoperiod. Incandescent lamps emit a high proportion of far-red light, which is known to promote stem extension in many shade-avoiding plants.

Therefore, if compact plants are desired, provide naturally short photoperiods. We have some evidence that scabiosa is a long-day plant when grown at cool temperatures, but further experiments are warranted to support our observations.

**Media, Fertilization, And Irrigation**

Scabiosa grows best in a moist, moderately well-drained medium with a slightly acidic pH (5.8 to 6.5). In our trials, plant growth was poor when grown in an acidic (pH < 5.5) media, and was not as vigorous when grown at a high pH (> 6.8). Plants were of highest quality and greatest size when grown with a moderate fertility regimen (such as 100 to 150 ppm N, 5 to 20 ppm P, and 100 to 150 ppm K).

**Lighting And Spacing**

Scabiosa grows best with moderate to high light levels. In particular, flower number and size increase as light levels

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Figure 4. Progression of growth and flowering of three representative scabiosa 'Butterfly Blue' plants forced in spring 1996. Plants were cooled for 15 weeks at 41°F (5°C), then were transplanted into four-inch (10-centimeter) containers and forced at a constant 68°F (20°C). In this trial, no plant growth retardants were applied.
increase. In addition, plants grown in a high light environment are generally shorter than those grown under low light intensities. Thus, although supplemental lighting is not required, it can improve overall crop quality during cloudy, dark periods. Initially plants can be closely spaced, but as plants grow, adequate spacing will help prevent elongated growth.

**Plant Height Control**

'Butterfly Blue' remains naturally compact when forced under short photoperiods and therefore growth retardant applications may not be required. However, if plants are produced in small containers (less than five-inch pots), or under long photoperiods (greater than 14 hours), then use of a growth retardant may be necessary as flower stalks can excessively elongate.

In our experiments, spray applications (delivering two quarts per 100 square feet) of Bonzi (at 60 ppm) or Sumagic (at 15 ppm) were the most effective growth retardants tested (Figure 3). B-Nine at 5,000 ppm slightly reduced stem elongation. Rates of application may need to be adjusted depending on your growing environment. None of these chemicals had any effect on time to flower, flower size, or flower number. As with all plants, chemical applications are most effective when delivered just before or during the period of maximum elongation.

**Temperatures And Crop Scheduling**

Crop timing depends on the size and maturity of starting material.

### Formula For Success

1. Obtain uniform starting material.
2. The larger the starting material, the larger it will be at bloom.
3. Although not required, a cold treatment accelerates flowering.
4. Apply Bonzi or Sumagic sprays to control plant height if desired.
5. Cool forcing temperatures (<70°F, or <21°C) and high light levels increase plant quality.
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Scabiosa columbaria 'Butterfly Blue' Production Schedule

<table>
<thead>
<tr>
<th>Duration</th>
<th>Cultural practice</th>
<th>Temperature</th>
<th>Photoperiod</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 to 4 weeks</td>
<td>Take Cuttings: 72°F to 75°F (22°C to 24°C)</td>
<td>Short days (&lt;12 hours)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rooting</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

--OR-- Plant plugs or bare-root plants

<table>
<thead>
<tr>
<th>Variable</th>
<th>Bulk (optional)</th>
<th>Temperature</th>
<th>Photoperiod</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 weeks</td>
<td>Cold treatment: 35°F to 45°F (1°C to 7°C)</td>
<td>Natural daylength or 9 hours of light in cooler</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Begin forcing</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Visible bud to flower

- 63°F (17°C) 4 weeks to flower*
- 68°F (20°C) 2 weeks to flower*
- 73°F (25°C) 1 week to flower*

*Noncooled plants take approximately 4 to 5 weeks longer to flower.

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Disease And Insect Pests

We have not observed any major insect or disease problem with Scabiosa 'Butterfly Blue.'

Postharvest Concerns

'Butterfly Blue' has a long postharvest life if provided with adequate light levels. Although individual flowers last a week to 10 days at room temperature, plants in containers continually bloom, similar to those grown outdoors. In addition, plants that are cut back will re-bloom in about four to six weeks. Old flowers should be dead-headed as they detract from overall plant appearance.

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