

Firing Up Perennials - Beyond 2000

By **ART CAMERON, BETH FAUSEY, ROYAL HEINS, and WILL CARLSON**

“THERE'S no denying that perennials are hot!" we wrote in our first article in this series more than five years ago. And little has changed, except that more and more herbaceous perennials are being sold in flower.

Perennials are not only beautiful in the garden, but they also can be irresistible when flowering in a container.

Flowering perennial sales have risen dramatically the last few years. The current challenge is providing a uniform crop of superior quality plants to garden centers and retail nurseries. High quality plants in bloom command a premium price that more than compensates for increased production costs. A flower is a powerful sales tool.

In addition to the more than 30 perennial articles we published in GG, we have tested hundreds of other perennials, many of which hold great promise for forcing in a container. In the tables that follow, we list the herbaceous perennials from our studies that are suitable for controlled growth and flowering. These studies haven't been as in-depth as those we've previously published, but we're certain this information will be useful to you as a starting point for further trials and research.

Not all of the perennials we've tested have proven suitable for container production. Some that haven't made the grade include *Dianthus deltoides*, *Helenium autumnale*, *Lewisia cotyledon*, *Monarda didyma*, some *Penstemon* spp., *Potentilla*, *Sidalcea*, and *Solidago*. Some container production limitations include growth variability, bad-smelling foliage, floppy growth habit, incomplete flowering, and poor flower quality. Producing these perennials in larger containers may be the solution, and further information is needed on flower induction requirements.

The following tables provide general information needed to grow a wide range of perennials for scheduled sales during the growing season. Remember certain groups of perennials have similar flowering requirements. **GG**

Perennials that force in six weeks or less at 68°F

■ assuming that induction requirements have been met

Achillea 'Moonshine'
Aquilegia flabellata 'Mini Star' and 'Cameo'
Aquilegia x hybrida Many to choose from
Campanula 'Birch Hybrid'
Gaura lindheimeri 'Whirling Butterflies'
Heuchera sanguinea 'Bressingham Hybrids'
Oenothera fruticosa 'Youngii-Lapsley'
Salvia nemorosa 'May Night'
Salvia x superba 'Blue Queen'
Saxifraga umbrosa 'Aureo-punctata' and 'London Pride'
Scabiosa caucasica 'Butterfly Blue'
Tiarella wherryi

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Formula For A Successful Forcing Program

1. Select superior perennials that look good in containers and perform well in the garden.
2. Know your starting material. The size and character of your starting material will impact the plant's final quality.
3. Provide the right amount of cold - between 32 to 41°F, in most cases. Plants may not perceive adequate cold with naturally occurring warm fall and spring temperatures.
4. Provide proper cultural conditions during the cold treatment. Most perennials require some light during the cooling process.
5. Provide proper cultural conditions during production: monitor and control pH (5.8 to 6.2) and salts (EC of 1 to 2); use a well-aerated soil mix; maximize light quantity; and grow with an average daily temperature in the 60s for best quality.
6. Check for buds to gain information on the marketing window.
7. When possible, market perennials when they first flower so customers can enjoy them longer. This also helps ensure a shorter plant.
8. Many fantastic perennials are grown not for flowers, but for foliage. Hostas, heucheras, lamiums, artemesias, and vincas can strengthen interest and salability of any perennial collection.
9. Keep your eyes open! There's an increasing number of fantastic perennials available these days. Give some a try. You may just like them.
10. Increase your marketing window. Perennial sales aren't limited to spring, and many growers have marketed perennials right through the summer and into the fall.

Table 1.

Herbaceous Perennials for a Forcing Program

Perennial Species	Appropriate Container Size	Cold Duration (<45° F)	Long Days Required	Weeks to Flower at 68°F	Garden Rebloom Potential the 1st Yr.	Comments
<i>Achillea</i> 'Moonshine'	5-inch and up	No	Yes	4	Yes	Very nice garden perennial, very showy in color in a container. 'Anthea' and 'Coronation Gold' have similar flowering requirements. 'Moonshine' is perhaps best for visual impact in a container.
<i>Achillea millefolium</i> 'Fireland,' 'Galaxy,' 'Paprika,' 'Terra Cotta,' 'Apple Blossom'	5-inch and up	For some	Yes, for most	6-9	Yes	Generally very good garden perennials that look fantastic in containers. Flower colors on these selections are showy. Some get tall and top heavy for smaller containers.
<i>Anemone hephehensis</i>	5-inch and up	6+ weeks	Yes	13	Yes	Very nice garden perennial, but slow in the greenhouse with some variability. Other hybrid anemones are also great as pot plants. Flower longevity during retailing can be a problem. Best as summer-produced crop for late summer and fall sales.
<i>Aquilegia flabellata</i> 'Cameo'	3- to 4-inch	6 weeks	No	4	No	A cute dwarf columbine - only grows to six inches tall with sturdy, leathery leaves. Needs about six weeks bulking in the pot or large plug cell before cooling, or else finished plant is very small.
<i>Aquilegia flabellata</i> 'Mini Star'	4- to 5-inch	6 - 9 weeks	No	4	No	A great dwarf Columbine, growing to about eight to 10 inches. It's a long bloomer with lavender/blue flowers. A great potted perennial. It needs some bulking before cooling, although not as much as 'Cameo.'
<i>Aquilegia x hybrida</i> 'Crimson Star'	5-inch and up	6 - 9 weeks	No	5	No	Striking crimson and white flowers are eye-catching, especially for hummingbirds! Nice fragrance and dense foliage. Plants are best overwintered in a pot or large plug (50-cell and up) due to juvenility factor.
<i>Aquilegia x hybrida</i> Musik series 'White'	5-inch and up	6 - 9 weeks	No	5	No	This columbine has pure white, fragrant flowers. Looks great in a pot. Plants are compact (12" tall) with dense foliage. Due to juvenility factor, plants are best overwintered in a pot or large plug (50-cell and up).
<i>Aquilegia x hybrida</i> Songbird series 'Bluebird'	5-inch and up	6 - 9 weeks	No	5	No	A taller columbine with large, showy, blue and white flowers. Nice fragrance. Due to juvenility factor, plants are best overwintered in a pot or large plug (72-cell and up).
<i>Ameria x hybrida</i> 'Dwarf Ornament Mix'	4-inch	10 weeks	No	12	Little	Variable when started as seedlings. Flowered inconsistently in our trials, but it's very nice when it does flower. Some amerias are already marketed as pot crops in Europe. Great potential with further work.
<i>Asclepias tuberosa</i>	5-inch and up	No	Yes	8	Yes	Keep under LD continuously from seed to final product. Do not expose to short days or it will go dormant within a short period. Pinch to promote branching. Do not overwater. Susceptible to some vascular wilts.
<i>Aster dumosus</i> 'Purple Dome'	5-inch and up	10 - 15 weeks	No	8	Perhaps if spring produced	Great potential but had some variability.
<i>Astilbe chinensis</i> 'Superba'	5-inch and up	10 weeks	No	7 to 9 depending on cultivar	Little	Don't let it dry out. Most astilbes are not as good in pots as in the garden. They are very popular with the gardening public.
<i>Astilbe chinensis pumila</i>	4-inch and up	15 weeks	Yes	11	Yes	A dwarf astilbe with showy blooms. More tolerant of sun and drought than arendsii hybrids, but still relatively sensitive.
<i>Campanula</i> 'Birch Hybrid'	4-inch and up	6+ weeks	Yes	6	Yes, if it's not too hot in the garden	A great pot plant. With extended chilling, it becomes day neutral. It also benefits from supplemental light.
<i>Campanula carpatica</i> 'Blue Clips,' 'White Clips,' other cvs.	4-inch and up	No	Yes	7	Yes	A great pot plant. Fast, easy, colorful, and popular in Europe. This should become an important pot crop in the U.S. Growers will sell all they force.
<i>Coreopsis auriculata</i> 'Nana'	4-inch and up	6 weeks	No	4	Yes	Easy to flower, but tends to be pretty small. It doesn't give the profusion of flowers of the other coreopsis, but it's nice.
<i>Coreopsis grandiflora</i> 'Baby Sun'	4-inch and up	10 weeks	Yes	7	Yes	Nice as a small pot crop. Expect very good sales. Has great rebloom potential.
<i>Coreopsis grandiflora</i> 'Early Sunrise'	5-inch and up	No	Yes	7	Yes	No cold needed for this coreopsis. Looks good in a container, very easy to force, and has a great rebloom potential.
<i>Coreopsis grandiflora</i> 'Sunray'	5-inch and up	10 - 15 weeks	Yes	7	Yes	Has a great color, and is very good in a forcing program. It fills larger containers with no problem, and has a great rebloom potential.
<i>Coreopsis verticillata</i> 'Moonbeam' and 'Zagreb'	4-inch and up	No	Yes	8	Yes	Bulk it under short days or use larger plugs to get bigger final product. Cold isn't necessary for flowering, but can be held at cool temperatures. Force at cooler temperatures for best results.
<i>Delphinium</i> 'Blue Mirror,' 'Belladonna' and others	4-inch and up	5 weeks	No	9	Yes, if in a cool garden	A great pot plant, though it can be difficult to grow well. Some of the smaller delphiniums have weak stems. Force at cooler temperatures if possible, and let plants dry out before watering.
<i>Echinacea purpurea</i> 'Magnus' and 'Bravado'	5-inch and up	No	Yes	14	Yes	Sells quickly when in flower, but too tall for most containers. Florel has helped in preliminary studies. Larger containers are more appropriate. Has a long postharvest life. The 1998 Perennial Plant of the Year.
<i>Gaillardia x grandiflora</i> 'Goblin' and 'Baby Cole'	4-inch and up	10+ weeks	Yes	7	Yes, if deadheaded	This plant could be great if there was less seedling variation. Can't count on 100% flowering in our experience. Breeders need to work on this one.
<i>Gaura lindheimeri</i> 'Whirling Butterflies,' 'Sisky Pink,' and others	5-inch and up	No	Yes	6	Yes	Very good in a container, especially when combined with Purple Fountain Grass. Has a fantastic rebloom potential, propagates easily, and comes back into flower quickly.

(continued on page 142.)

Perennials appropriate for production in three- to four-inch pots

■ These are smaller-sized plants

Aquilegia flabellata 'Cameo' and 'Mini Star'
Armeria x hybrida 'Dwarf Ornament Mix'
Delphinium 'Blue Mirror' and other dwarfs
Saxifraga - many to choose from

Perennials appropriate for production in four-inch pots and up

■ Many of these can be easily adapted to larger containers either by increasing the number of plugs per pot and/or using larger starting material.

Astilbe chinensis pumila
Campanula 'Birch Hybrid'
Campanula carpatica 'Blue Clips' and 'White Clips'
Coreopsis grandiflora 'Baby Sun'
Coreopsis verticillata 'Moonbeam'
Delphinium 'Blue Mirror' and other dwarfs
Gaillardia x grandiflora 'Goblin' and 'Baby Cole'
Geranium dalmaticum
Heucheras - many to choose from
Lavandula angustifolia 'Hidcote,' 'Munstead,' and others
Leucanthemum x superbum 'Snow Cap' and other dwarfs
Saxifraga umbrosa 'Aureo-punctata' and 'London Pride'
Scabiosa caucasica 'Butterfly Blue'
Sedum 'Autumn Joy'
Tiarella wherryi

Perennials that force in seven to 10 weeks at 68°F

■ assuming that induction requirements have been met

Asclepias tuberosa
Aster dumosus 'Purple Dome'
Astilbe chinensis 'Superba'
Campanula carpatica 'Blue Clips' and 'White Clips'
Coreopsis grandiflora 'Sunray,' 'Baby Sun,' and 'Early Sunrise'
Coreopsis verticillata 'Moonbeam'
Delphinium 'Blue Mirror' and 'Belladonna'
Gaillardia x grandiflora 'Goblin' and 'Baby Cole'
Geranium dalmaticum
Hemerocallis 'Stella De Oro'
Hosta 'Tokudama,' 'Francee,' 'Golden Scepter,' and 'Golden Tiara'
Lavandula angustifolia 'Hidcote' and 'Munstead'
Leucanthemum x superbum 'Snow Cap'
Lobelia x speciosa 'Compliment Scarlet'
Penstemon digitalis 'Husker Red'
Veronica longifolia 'Sunny Border Blue'

Perennials suitable for five- to six-inch pots, one-gallon, and up

Achillea 'Moonshine,' 'Terra Cotta,' and many others
Anemone hupehensis and cultivars
Aquilegia x hybrida 'Musik White'
Aquilegia x hybrida Songbird series and 'Bluebird'
Aquilegia x hybrida 'Crimson Star'
Asclepias tuberosa
Aster dumosus 'Purple Dome' and related
Astilbe chinensis 'Superba' and cultivars
Coreopsis grandiflora 'Sunray'
Coreopsis grandiflora 'Early Sunrise'
Echinacea purpurea 'Magnus' and 'Bravado'
Gaura lindheimeri 'Whirling Butterflies' and 'Siskyou Pink'
Gypsophila paniculata 'Double Snowflake' and others
Hemerocallis 'Stella De Oro' and others
Hibiscus moscheutos 'Disco Belle Hybrids'
Hosta 'Francee,' 'Tokudama,' 'Golden Tiara,' 'Golden Scepter,' and more
Lobelia x speciosa 'Compliment Scarlet' and others
Oenothera fruticosa 'Youngii-Lapsley' and others
Pennisetum setaceum 'Rubrum' and other cultivars
Penstemon digitalis 'Husker Red' and other species
Perovskia atriplicifolia
Rudbeckia fulgida 'Goldsturm'
Salvia nemorosa 'May Night'
Salvia x superba 'Blue Queen'
Sedum 'Autumn Joy'
Stokesia laevis 'Klaus Jellito' and others
Veronica longifolia 'Sunny Border Blue' and 'Red Fox'

No Cold Treatment Required

■ In some cases these can tolerate cold storage

Asclepias tuberosa
Campanula carpatica 'Blue Clips' and 'White Clips'
Coreopsis grandiflora 'Early Sunrise'
Coreopsis verticillata 'Moonbeam'
Gaura lindheimeri 'Whirling Butterflies'
Hibiscus moscheutos 'Disco Belle Hybrids'
Hosta plantaginea 'Royal Standard'
Pennisetum setaceum 'Rubrum'
Sedum 'Autumn Joy'

Cold treatment of four to six weeks

Achillea 'Moonshine'
Aquilegia flabellata 'Cameo'
Campanula 'Birch Hybrid'
Delphinium 'Blue Mirror' and 'Belladonna'
Geranium dalmaticum
Hosta - most cultivars
Leucanthemum x superbum 'Snow Cap'
Lobelia x speciosa 'Compliment Scarlet'
Penstemon digitalis 'Husker Red'
Perovskia atriplicifolia



Table 1.		Herbaceous Perennials for a Forcing Program (cont'd)				
Perennial Species	Appropriate Container Size	Cold Duration (<45° F)	Long Days Required	Weeks to Flower at 68°F	Garden Rebloom Potential the 1st Yr.	Comments
<i>Geranium dalmaticum</i>	4-inch and up	6 weeks	Yes	7	No	Nice plant and a great garden performer in Michigan. It has pink, showy flowers on a small plant. It's easy to flower, but needs to be bulked before cold.
<i>Gypsophila paniculata</i> 'Double Snowflake'	5-inch and up	12 - 15 weeks	Yes	12	No	It likes a larger container, and has a great impact in the garden center. It may need staking.
<i>Hemerocallis</i> 'Stella De Oro'	5-inch and up	15 weeks for bare root crown	No	8	Yes	This sells quickly, even in bud. This has a great name recognition.
<i>Heuchera sanguinea</i>	4-inch and up	10 weeks	No	6	Depends on cultivar	Flowering heucheras seem to be underrated these days. Flowering forms have a great potential as a pot crop.
<i>Hibiscus moscheutos</i> 'Disco Belle Hybrids'	5-inch and up	No	Yes	12 or 9 at 75°F	Yes	This is best if grown at higher temperatures (one of the few), shorter if grown under water stress, and it needs adequate light for flower buds to continue developing. Seed supply has been limited.
<i>Hosta</i> 'Tokudama'	5-inch and up	6 weeks	Yes	6-8	Yes	Nice in 5-inch pot, as are many other hostas. Thick leaves give these plants substance. Flowers are a bonus, but not a necessity for hostas.
<i>Hosta</i> 'Francee,' 'Golden Tiara,' and 'Golden Sceptor'	5-inch and up	3 weeks	Yes	8	Yes	Petite size is good for borders or edging. Starting material should be larger than a one-eye division for adequate size.
<i>Hosta plantaginea</i> 'Royal Standard'	5-inch and up	No	Yes	14+	Yes	Very fragrant! A taller species in need of a 1-gallon container. This has some potential as a pot crop although it's slow to flower.
<i>Lavandula angustifolia</i> 'Hidcote' and 'Munstead'	4-inch and up	10-15 weeks	Yes	7	Yes	Cut plants back at planting. Larger plants are better for forcing. 'Hidcote' has nice dark blue flowers on a short plant. Other species of lavender may not be hardy, but can be very showy in containers.
<i>Leucanthemum x superbum</i> 'Snow Cap'	4-inch and up	6 weeks	Yes	7	Limited	A nice, short, showy cultivar with uniform flowering. One drawback is it smells. Other traditional cultivars are very tall and floppy in containers.
<i>Lobelia x speciosa</i> 'Compliment Scarlet'	5-inch and up	6 weeks	Yes	9	Limited	Great red flowers, but tall and still needs effective PGRs. It has sold very well in flower in Michigan the last few years.
<i>Oenothera fruticosa</i> 'Youngii-Lapsley'	5-inch and up	3 weeks	Yes	5	No	This and other fruticosa types are very showy in bloom. It has good postharvest life as potted plant in the interior environment.
<i>Oxalis crassipes</i> 'Rosea'	5-inch and up	No	Yes	5-6	Yes	It's probably a zone 6-7 perennial and has great potential as a hanging basket plant. It performed well in our trials and seems to be sterile.
<i>Pennisetum setaceum</i> 'Rubrum'	4-inch and up - versatile	No	Yes	11	Zone 9 perennial	Great tender perennial, but not winter hardy. A very showy plant that walks out the door in flower even with substantial price tags.
<i>Penstemon digitalis</i> 'Husker Red'	5-inch and up	9 weeks	Yes	7	Limited	Nice, but maybe not that nice. Clonal material is superior to seed. It's a past Perennial Plant Of The Year.
<i>Perovskia atriplicifolia</i>	5-inch and up	5 weeks	No	11	No	It's a very good perennial in gardens! It can get tall in a container. Sumagic is quite effective for height control. 'Filagran' is a nice cultivar.
<i>Phlox paniculata</i>	5-inch and up	No	Yes	10	Yes	Garden phlox are still very popular with consumers. Start with disease-free material and pinch to promote branching. It can come straight from rooted cuttings.
<i>Physostegia virginiana</i>	5-inch and up	10+	Yes	10	Yes	It can be tall and leggy, so select compact cultivars for container culture. It will spread quickly in the garden, and deadheading is necessary for continuous bloom.
<i>Platycodon grandiflorus</i> 'Sentimental Blue'	5-inch and up	No	Yes	11	Yes	Nice, dwarf, naturally compact cultivar with blue flowers. Pinching produces fuller plants.
<i>Pulmonaria</i> cvs.	4-inch and up	Yes	No	2-3	No	Really not grown as much for flowers as for foliage. New cultivars hit the market daily. There are some great cultivars to choose from.
<i>Rudbeckia fulgida</i> 'Goldstum'	5-inch and up	10 weeks	Yes	13	Yes	A great perennial with lots of color. Too tall for many growers when in full flower.
<i>Salvia nemerosa</i> 'May Night'	5-inch and up	9 weeks	No	4	Yes	A nice plant and a past PPA Perennial Plant Of The Year selection. It's easy to force and likes lots of light.
<i>Salvia x superba</i> 'Blue Queen'	5-inch and up	9 weeks	Yes	5	Yes	A nice and easy forcing perennial, and is uniform with proper cooling. Blue flowers make a colorful impact.
<i>Saxifraga arendsii</i> 'Triumph'	4-inch and up	9+ weeks	Yes	4	No	A great plant for 5-inch pots. It benefits from about 6 weeks bulking prior to cold, and prefers well-drained soils.
<i>Scabiosa columbaria</i> 'Butterfly Blue'	4-inch and up	No	No	5	Yes	Another great PPA Perennial Plant Of The Year selection for 2000. It looks good in a container and is day neutral, so doesn't need lighting. It will rebloom when cut back, and flowers faster if cold treated.
<i>Sedum</i> 'Autumn Joy'	2-inch and up	No	Yes	12	Yes	Looks nice in a container. If planted in flower in May, you can have new blooms by fall. It makes an interesting 2-inch novelty plant as rooted cuttings.
<i>Stokesia laevis</i> 'Klaus Jellito'	5-inch and up	10+	Yes 12-13 hours	10	No	A great pot plant and best for large containers. Flowers close in evening, which limits indoor home use.
<i>Tiarella wherryi</i>	4-inch and up	15 weeks	No	2	Yes	An easy, long-blooming perennial that is nice in a pot. It's also a great shade plant in the garden.
<i>Veronica longifolia</i> 'Sunny Border Blue'	5-inch and up	10+	No	9	Limited	A nice perennial but has problems with diseases, especially powdery mildew.