MAGAZINE • SINCE 1937

# GROWERTALKS

SPECIAL PERENNIAL SECTION!

## GUIDE TO PERENNIAL PLANT PRODUCTION:

# Overwintering & Bulking

## OVERWINTERING VS. FYF PERENNIALS:

# What's Right for Me?

Success can be achieved growing perennials traditionally—fall planted and overwintered—or using first-year flowering strategies. The trick is knowing your crops and leveraging resources.

**BY CHRIS FIFO**

**Top: A strong perennial root system ready for vernalization.**

**Bottom: First-year flowering Veronica Skyward shows optimum performance—accurately scheduled for retail.**

With my roots in growing perennials for the majority of my career—and much of that time growing liners for overwintering—I used to cringe when I heard the industry refer to "annualizing" perennial production. After all, the cold-treated perennial plug was the bulk of our business, and if someone wanted to grow a perennial like an annual, that would cut into our sales.

But now, being on the breeder and promotional side of the industry, I have a completely different perspective. This notion of "annualizing" perennials, I feel, is responsible for the explosion in perennial popularity. And advancements in breeding have made it much easier to grow and schedule perennials to full flower *without the need for overwintering*.

But vernalized liners, spring-planted perennial liners and fall-planted/overwintered finished containers are all still very popular programs.

Three different philosophies for growing a flowering crop of perennials might lead you to wonder, "Why would I choose one program over the other? When should I overwinter and when should I annualize?" Let's dig into it a bit.

### An argument for overwintering crops

While much work has been done on perennials, there's a set of perennials that breeders haven't yet cracked the code on for juvenility and that require vernalization for full flowering. Most of these are early spring flowering crops, including phlox, iberis, aubrieta and aquilegia. These are best overwintered in finished containers.

For successful vernalization with the least amount of loss, growers need to allow plenty of time in the fall to get a full, well-rooted container. This means transplanting in July to September, depending upon your region. This often catches growers off guard. Taking advantage of summer temperatures, light levels and photoperiod gives the greatest maturity. Once we get into September, these advantages are quickly lost for some perennials.

In addition to these perennials that require vernalization, many growers choose to grow their entire perennial program with traditional scheduling. There are definite advantages to doing this, such as: ▶


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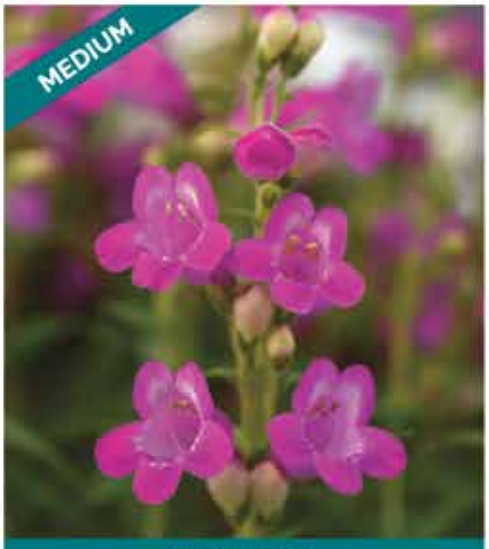


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- Many perennials will have greater vigor, fill the pots better and have superior flowering (such as *Salvia nemerosa*).
- Some will flower earlier after vernalization (such as achillea, monarda and penstemon).
- Often, there's more labor and space available for summer planting.
- Come next season, the perennial program is in the ground, allowing growers to focus on annuals needing to be planted.

While many perennials will continue to grow and mature as long as temperatures are suitable, you need to be aware of long-day perennials. These *must* be fully mature and established before Week 38. At this time, they'll begin to go dormant from short days and no more top growth can be achieved under natural conditions. Instead they'll begin to draw energy from the leaves into the crown and roots. (Note: This is why you shouldn't trim the foliage until the plant is completely dormant.)

Keep in mind that even the best growers will experience losses in overwintering. This is obviously one of the greatest disadvantages. Also, it's often difficult to schedule spring flowering using this method. Fall-planted perennials will generally come out of dormancy and flower when they want to, which may make it difficult to hit the desired foot traffic at retail.

## Why choose vernalized?

Another opportunity to get some of the advantages of overwintering without the risk and time is to start with a vernalized liner. This is a great option for many varieties.

When starting with a vernalized liner, size matters. The larger the better for the best and fastest finish. I usually recommend 50-plug or larger. It's important that it's completely dormant at the time of planting. For one thing, there's much less risk of cold damage in January and February when these would normally be shipped. Plus, once the liner breaks dormancy the clock is ticking towards flowering. If you begin to get too much growth in the liner it will have a difficult time filling out the container before going to flower.

Another advantage of the vernalized liner is that it's relatively easy to schedule for flowering. Some suppliers offer this information along with cultural recommendations for success. This usually involves breaking dormancy quickly with warm temperatures (65F/18C-plus) and using long-day lighting on necessary varieties (long-day perennials, as mentioned earlier).

Vernalized liners will often cost a bit more due to the production time involved, but I feel it's often worth it. Be aware of some of those early spring bloomers, though. Some tend to go to flower so quickly they may not fill out a trade gallon pot very easily. Or consider a hybrid program where you fall-plant early spring items and use vernalized liners for the rest.

## A case for FYF

Which brings us to the more modern approach to perennial production—first-year flowering (FYF). This program has revolutionized perennial production and the perennial market, in general. Advancements in breeding techniques have not only brought better-performing perennials to the consumer and landscape markets, but it has also brought great benefits to the growers.

*Author's note: One thing I'd like to point out about perennial breeding is that it's still done by traditional methods, not via GMOs. We make educated crosses of two plants, collect and grow the seeds, then evaluate what we get. By repeating this process over and over breeders are able to continuously select for specific traits. One of our breeders commented, "It's like a treasure hunt looking for that one plant with the perfect habit and performance."*

Yes, it's a slow process. But once found, that perfect plant can be cloned relatively quickly via tissue culture and—voilà!—we have a new perennial for the market.

Plant vigor is a primary goal in breeding for FYF. Since many perennials have more vigor after overwintering that needs to be matched without chilling. *Check*.

Since many perennials have greater flower power after overwintering that needs to be matched without chilling. *Check*.

Since many perennials flower earlier after overwintering that needs to be matched without chilling. *Check*.

And, since it can be difficult to control the flower timing with a fall plant, we need to make it easy for growers to schedule their perennials to flower from an actively growing liner. This is high priority for all parties involved in bringing new FYF perennials to market. We all know color sells, so we have to have the color when we have the foot traffic.

To make it easier for growers to accomplish this, a vast amount of culture and scheduling trials are done prior to introducing a new FYF perennial. This involves planting the same age liners every two to three weeks and collecting data for spring, summer and fall flowering.

The most important flowering information and timing gathered is what I would call "retail ready." For many perennials, that's at about 50% full flower.

For years, this valuable data has been provided to growers via grower facts sheets or technical/cultural documents from breeders for each variety. But this has proven to be quite inconvenient when it comes to an entire perennial program.

To ease the burden of having to check all of those sheets to schedule a program, this data for first-year flowering perennials from Darwin Perennials and PanAmerican Perennials has now been compiled into an online tool called FirstYearFloweringTool.com.

This easy-to-use tool will help you choose FYF perennial varieties for your needs, help you schedule for the week you want them to flower and provide all of the cultural information necessary to grow a premium quality perennial program.

*Check.*

Whichever production route you choose for your perennial program, don't forget to consult resources to avoid unforced errors and to have peak perennial color when your customers are looking for it. ■

*Chris Fifo is a product representative for Darwin Perennials and PanAmerican Seed Perennials.*

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VERNALIZING PERENNIALS:

# A Grower's Guide to Successful Overwintering

Hostas in production emerging after winter.

BY DREW KOSCHMANN

For many perennial growers, planting late in the summer is a strategic move to meet the high demand of early spring sales. Whether supplying landscapers or filling garden center shelves, the goal remains the same: deliver healthy, robust plants just as customers begin preparing their gardens.

Over the years, I've learned that producing top-quality perennials for landscape and retail performance involves more than planting and waiting. You need a strong understanding of plant physiology, a commitment to environmental management and a solid overwintering strategy.

At Walters Gardens in southwest Michigan, we face the challenges of a highly variable winter climate, with daytime highs occasionally in the 50sF (10sC) and nighttime lows plunging into the teens. Our December through early March temperatures generally hover between the mid-30s and low-20sF (single-digits to low-teens C), making precise preparation crucial for minimizing winter losses. To help ensure perennial success throughout the cold season, we've spent decades honing the following best practices.

## Focus on scheduling

Scheduling is the backbone of any successful perennial program. When plants remain in containers too long, they may develop oversized canopies and become prone to disease, particularly Botrytis. Conversely, planting too late often leads to poor root and crown development, which in turn increases the risk of overwintering losses.

The key is to understand the specific vernalization requirements for each genus. Vernalization—the cold period many perennials require to trigger flowering—varies widely across species. Our in-house trials department works closely with our research and development team to identify the optimal cold period for each new variety. For instance:

- Leucanthemum, veronica and some Lavandula varieties benefit from at least eight weeks of cold treatment.
- Dianthus typically needs around six weeks for consistent flowering.
- *Campanula glomerata* may require 10 to 15 weeks to fully vernalize.

Using this data, we set our production goals accordingly. For varieties that require vernalization, we aim to finish plugs by late October and place them into environments maintained at about 36F (2 C). This setup is cold enough to initiate vernalization, but warm enough to keep irrigation systems from freezing.

## Stay vigilant about climate control

Transitioning plugs from warm to cool environments requires you to closely monitor and fine-tune climate control. At Walters Gardens, we face several common challenges including:

- Condensation drips that over-saturate soil and damage root systems in species like Lavandula, heuchera, agastache and dianthus.
- Gaps in greenhouse film that introduce cold drafts and uneven drying.
- Poor airflow, which exacerbates humidity and fosters disease—especially in crops like primula, heuchera and monarda.

To counteract these issues, we use anti-condensate greenhouse films and install horizontal airflow (HAF) fans to maintain uniform air distribution and reduce condensation. Our Priva systems are programmed to purge air whenever humidity exceeds 80%.

We also use advanced Priva systems—including Maximizers, Compass and Connext models—to maintain stable greenhouse climates. Our growing team typically sets a 4 to 6F differential between heating and venting temperatures—heat at 36F (2C), vent at 42F (5C). This helps stabilize temperature fluctuations, reduce disease pressure and manage humidity. ▶

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Overwintering perennials involves more than just enduring the cold. Have a plan to monitor moisture to avoid over- or under-watering.

## DON'T OVERLOOK THE DETAILS

These additional overwintering considerations can make a big difference in overall success.

- **Rodent control:** Use bait stations year-round. Mice can cause serious damage, particularly to astilbes, irises and ornamental grasses.
- **Weed and moss management:** Apply ¼ to ½ in. of rice hulls on pot surfaces to prevent the growth of winter weeds like chickweed, bittercress and bluegrass. We also spot-treat liverwort with 70% alcohol.
- **Disease scouting:** Botrytis and other fungal diseases thrive in cold, humid conditions. We apply fungicides every two weeks during winter and rotate FRAC codes to prevent resistance. Common active ingredients include chlorothalonil, iprodione, fludioxonil and fenhexamid—with calcium chloride often added for nutrient support.
- **Late frosts:** In early spring, when removing greenhouse coverings, be alert for frost forecasts. Instead of re-covering with plastic, use lightweight frost blankets to protect sensitive foliage.

Mice can cause serious damage in perennial crops. Be sure to use bait stations throughout the year.

For growers without automated systems, passive cooling—such as adjusting doors or vents manually—can help, though it requires vigilance.

## Prepare plugs for spring success

Once plugs are placed into cold storage by early October, nutrient management becomes essential. As days grow shorter and cooler, high salt levels can lead to root burn. At Walters Gardens, we proactively lower soluble salts to around 1.0 (measured via the pour-through method). Closer to spring, we gradually increase EC levels to 1.5 to 2.0 to support new growth.

## Get your trimming timing right

Trimming back perennials can be beneficial, *but only when you do it at the right time.* Plants overwintered in protected spaces like cold frames may retain their foliage longer than those in open fields, so timing should account for energy transfer from leaves to roots.

Here are some general guidelines:

- Trim hostas in the nursery or field in mid-to-late November. In greenhouses, you may need to wait until late December to trim.
- Late winter is the best time to cut back brunnera, delphinium, echinacea and non-evergreen ferns.
- Evergreen varieties like hellebores, dianthus and heuchera are lightly trimmed or not trimmed at all. Instead, we manage their growth through proper airflow, scheduling and occasional use of PGRs.

## Properly manage moisture

To standardize moisture management across our growing team, we use a 1 to 5 scale to assess moisture levels (5 = saturated, 1 = dry and wilting), so:

- In warmer greenhouses, plants like echinacea and heuchera follow a 4 to 2 watering scale.
- In colder structures, the range shifts to 3 to 1.5.

Team communication is vital in this approach. Use signage and review moisture targets regularly to avoid under- or over-watering. In unheated hoophouses, check moisture often. A helpful trick I learned from a previous employer involved alternating watering between the edges and center aisle every few days to even out soil moisture. We also use foam rolls on the outside of houses to minimize airflow and retain heat—an inexpensive yet effective insulation tactic.

Successfully overwintering perennials involves more than just enduring the cold—it's about proactive planning, detailed scheduling and environmental awareness. By understanding each crop's vernalization needs and maintaining ideal conditions throughout the winter, you can minimize losses and boost plant quality in spring. ■

*Drew Koschmann*
*is Director of Greenhouse for*
*Walters Gardens.*

OVERWINTERING

# Checklist

Follow these best practices to optimize your approach to overwintering perennials.

COMPILED BY
BILL CALKINS

- ☐ **Timing:** Many perennials will benefit from sizing up or bulking before they're overwintered. Most perennials have relatively quick bulking periods (six to eight weeks); some have longer bulking periods and should be planted in the late spring or early summer the year prior to expected sell dates. Long-day perennials need to be fully rooted and mature by Week 39 (12-hour photoperiod).
- ☐ **Understand cold hardiness:** Check tags and remember to add one hardiness zone to the listed zone (a Zone-5 plant in the landscape is a Zone-6 plant in a container).
- ☐ **Moisture control:** Dormant perennials won't take up much water, but keeping the substrate moist (NOT overly wet) will help protect roots from freezing. Aim for moist bottoms and dry tops.
- ☐ **Feeding perennials before overwintering:** Although perennial plants won't take up nutrients when dormant, fertility shouldn't be at zero. Plants with some feed before overwintering tend to look better in the spring.
- ☐ **Trimming or removing foliage in the fall:** Perennials can be trimmed as necessary, *but do not trim too late into the fall.* Allow at least four weeks of growth before dormancy. As perennials go dormant, don't remove foliage until it's completely died back.
- ☐ **Fall fungicide drenches:** If you notice unhealthy (brown, mushy) roots before preparing perennials for overwintering, consider a broad-spectrum fungicide drench *before the weather gets cold* to allow healthy, new roots to develop.
- ☐ **Managing temps:** Actively managing ventilation can delay de-acclimation and reduce temperature fluctuations. Aim to keep the temperatures around freezing (30 to 35F/-1 to 2C) inside structures. A best practice is to avoid freeze/thaw—if frozen, stay frozen.
- ☐ **Protective blankets:** Allow perennials being overwintered to experience as much cold as possible and cover with blankets as late as you can. Blankets should only be used during the absolute coldest times in winter.
- ☐ **Rodent control:** Rodents can cause a lot of damage to perennial crops being overwintered. Take the necessary precautions with single-dose baits, but be sure to keep them away from pets or other nearby animals. Some growers have had success with repellants as long as they're regularly reapplied.
- ☐ **Winter inspections:** Your perennial production team should take an active approach to overwintering and keep an eye on crops, even in winter. Weekly inspections are ideal. Check for signs of disease. Watch for signs of animals feasting on foliage. If you're using blankets, you'll need to pull them back from time to time to inspect plants closely. ■

# Bulking Best Practices for Perennial Growers

**BY THE THINKPLANTS TEAM**
(ANIK GRAVES, ZOLTAN KOVACS & JOEY WISEMAN)

Bulking is an essential stage of perennial growth. Whether you're growing first-year flowering perennials or vernalizing and overwintering your crops, developing a healthy root system and vegetative growth (or "bulk") is necessary to ensure a healthy, even finished crop.

Aubretia Axcent grown from pre-vernalized 32-cell liners.

**Figure 1.** Syngenta Flowers culture guide—Aubretia Axcent.

| SCHEDULING SIZE | Crop Time BULK | VERN. | FINISH | PLANTS PER POT |
|---|---|---|---|---|
| 1.0 quart (4.5 to 5 in.) | 5-6 weeks | 7-8 weeks | 5-6 weeks | 1 ppp |
| 1.25 to 2.5 quart (5.5 to 6.5 in. trade gallon) | 6-7 weeks | 7-8 weeks | 6-7 weeks | 1 ppp |

*Estimated finish crop time is from transplant of a 105-cell tray and finished at an average daily temperature (ADT) of 64F (18C).*

Longer bulking periods have been shown to increase stem count, flower bud counts and improve the evenness of perennial crops. It used to be that most perennials were grown a full season prior to retail sale due to older genetics being slower to grow and requiring some amount of cooling and vernalization in order to flower consistently. Many crops are still overwintered in this fashion, including popular items such as astilbe, hosta, hemerocallis and Helleborus. Alpine varieties such as saxifraga, iberis and aubretia similarly require bulking and vernalizing in order to flower in the spring.

With newer breeding focusing on first-year flowering (FYF) and shorter crop times, the necessity of vernalizing perennials has dropped considerably and the bulking period is often shortened. *These shorter crop times don't eliminate the importance of the bulking period, though.* Bulking occurs faster and in the same season as flowering, giving you less time to correct issues in your crops.

## Planning

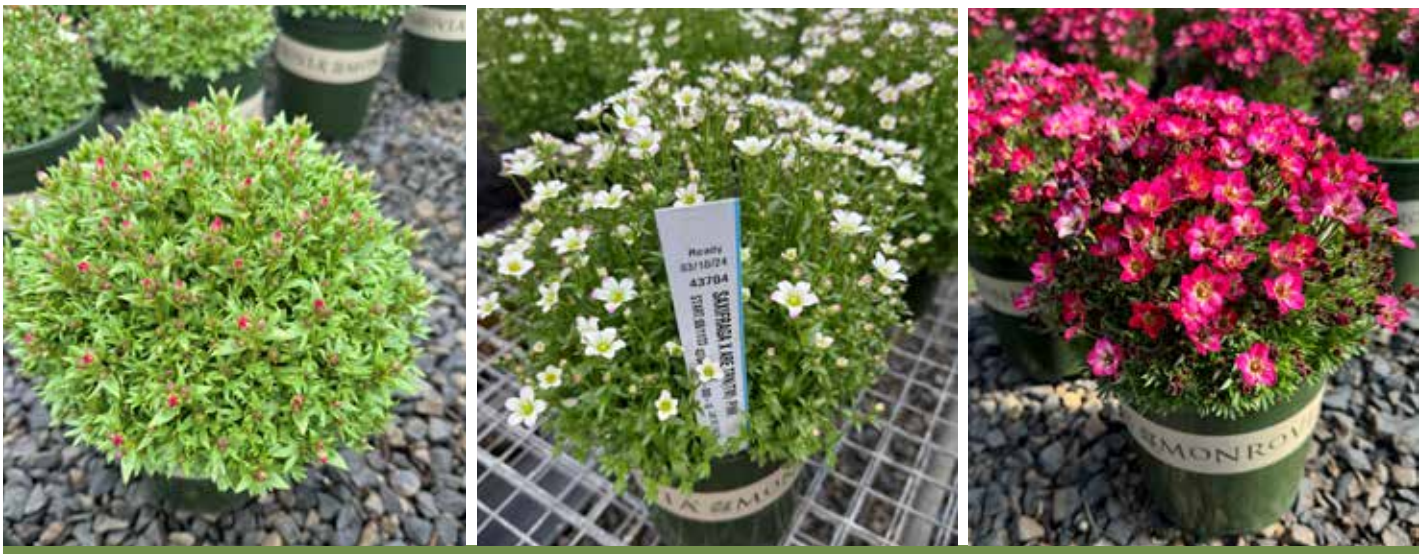
In order to plan your bulking period, you need to determine which category your perennials fall into: slower crops (such as lithodora, saxifraga, aubretia, etc.) that require bulking and cooling in order to grow a full-size, retail-ready plant, and short crops (such as coreopsis, gaillardia, salvia, etc.) that are first-year flowering and can be grown in one season.

Slower crops follow a more traditional growing schedule where transplanting occurs in late summer or fall. Determining your ideal planting date is very important. As usual, you can work back from your target sell date with the finish time, vernalization time and bulking time to find your transplant date.

For example, with this Aubretia Axcent guide from Syngenta Flowers (Figure 1), a target sell date of Week 15 in 2026 would suggest a transplant date of Week 47 in 2025. We always suggest adding three to four weeks to this calculation to account for unexpected weather events, especially when overwintering outdoors in an uncontrolled environment. With this schedule, an ideal transplant date would be Week 43 to 44 for a Week 15 finished crop.

During bulking, it's important to understand the fertilizer and electrical conductivity (EC) requirements of your crop and ensure they receive the correct nutrient levels to grow and prepare themselves for winter dormancy. Proper EC levels will support vegetative growth and root development, reducing your risk of winter losses. Be sure to consult the culture guides for your perennial varieties for up-to-date breeder recommendations.

Preventative disease management during bulking will set you up for success through the winter and into spring. Consider implementing daily scouting routines during bulking to monitor for flareups of bacterial or fungal issues. These issues can be quick to spread during dormancy and are easier to treat during the bulking period. You can also consider cleaning the plants to remove dead or damaged tissue prior to dormancy and planning two to three ▶



Saxifraga Touran perfectly bulked through the winter and ready for full bloom in the spring.

applications of an all-purpose fungicide to help keep your plants healthy through dormancy.

If the timing on these slower perennial crops is too long for your facility to handle, there are reliable ways to shortcut this residency time. With genus that require vernalization (such as saxifraga or aubretia), you can opt to purchase larger pre-vernalized liners and transplant in the spring for same-season sales.

This principle also applies to quicker crops and FYF varieties. Opting for a larger input size, such as 20- or 30-cell liners rather than 102- or 50-cell liners, can yield a quicker-turn crop. For example, a 288-cell Digitalis Dottie plug takes 11 to 12 weeks to finish from transplant (Figure 2). By purchasing a 126-cell or 72-cell plug, you can shave weeks off of your crop time.

## Execution

Bulking FYF crops comes with its own set of challenges. While the goal of bulking slower crops is to prepare them for dormancy, quick-turn crops require bulking time to size up the plant and establish healthy roots prior to flowering. FYF perennials, such as Coreopsis Solanna and Gaillardia Gusto, have crop times of only eight to 10 weeks from transplant to finish. This gives you a quick-turn crop, but less time in production will mean less time to assess and correct nutritional, bacterial or fungal issues before shipping.

**FIGURE 2.** Syngenta Flowers culture guide—Digitalis Dottie.

| SCHEDULING<br>SIZE | *Crop Time* | PLANTS PER POT |
|---|---|---|
| 1.0 quart (4.5 to 5 in.) | 11-12 weeks | 1 ppp |
| 1.25 to 2.5 quart (5.5 to 6.5 in. trade gallon) | 11-12 weeks | 1 ppp |

*Estimated finish crop time is from transplant of a 288-cell tray and finished at an average daily temperature (ADT) of 62F (17C).*

One easy way to help support rapid plant growth during bulking is to use a lighter soil mix. Traditional, heavier perennial soil mixes aren't suitable for faster FYF crops and may result in higher losses. Planting in lighter soil can help speed up root growth and reduce total losses.

Using soil with slow-release fertilizer is excellent for slow crops or to increase customer success in the garden, but is unnecessary for first-year flowering perennials. Whether or not your soil mix already contains slow-release fertilizer, first-year flowering perennial crops benefit from liquid fertilizer applications. This allows you to closely monitor the soil EC and tailor the applications to suit your crops, which is the best way to ensure your perennials are getting all the nutrients they need to successfully bulk and bloom on time.

Not all crops have the same EC requirements, even within the same genus. For example, *Phlox subulata* performs best in 1.2 to 1.6 EC soil conditions while *Phlox paniculata* prefers 2.0 to 2.4 EC. (Always consult the breeder's growing guides when crop planning.)

Greenhouse-grown crops are easier to time due to the ability to control the temperature and environment. If growing outdoors, add a few weeks of crop time to account for uncontrollable weather patterns.

Whichever type of perennials you choose to grow next season, be sure to take into account the importance of the bulking period. By ensuring that your plants are properly cared for during bulking, you're setting yourself up for a more even, healthy finished crop come spring. ■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*By* JIM NAU

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# Getting Beyond the Juggling Act

A case for perennial early season color.

BY KATIE MILLER

Erysimum WallArt Trio Mix

Lavender La Diva Berry Bountiful

Success in the business of growing is rooted in balance—juggling costs, labor, weather and market timing. At the center of that balancing act is plant selection: having the right product available at just the right moment to capture consumers' attention.

In an effort to look beyond the traditional spring rush, perennials are emerging as a reliable option when it comes to seasonal color and giving the customer a sense of long-term value. This can be especially fruitful for growers targeting early season color sales.

The path to early season success begins long before the first bloom. From the first stages of planning and seasonal forecasting to starting plants in the summer heat, transplanting into finished containers by September and managing through winter weather into February or even March, growers who plan ahead can reap the rewards of vibrant perennials at retail just as consumers begin to shake off winter's chill.

Many color growers kick off the early spring season with cool-weather annuals like pansy and *Primula acaulis*—but why stop there? Elevate your early spring program by adding perennial color that not only compliments traditional offerings, but also boost sell-through at a time when shipments can lag. Perennials bring unmatched consumer value with their staying power, making them an easy upsell for retailers looking to capture a higher price point. And in a season when most landscapes are still dormant, adding variety to the selection of color and texture is nothing short of inspiring.

At Dümmen Orange, our perennial genetics are built for impact—especially in the early season. We focus on varieties that deliver bold, eye-catching color when consumers are craving it most, helping growers kick off the season strong with high-quality, retail-ready plants. Here are just a few of our must-have categories:

- **Aubrieta Rock On series:** Required vernalization to bloom, extremely cold-hardy plants that can bloom as early as February.
- ***Phlox subulata* Spring series:** Requires vernalization, 12 colors to choose from in the core series all bloom within seven days. Hardy groundcover during the rest of the season, ideal for full sun locations.
- **Iberis White Shadow:** Vernalization improves bloom count, White Shadow blooms later than other iberis, allowing for sales up to four weeks later.
- **Saxifraga Scenic series:** Required vernalization from bloom, delicate flowers in spring with four colors to choose. Evergreen groundcover for shade.
- **Erysimum WallArt:** Grow cool for the best habit, five colors and compact habit make these an easy choice for Easter programs.


Viola Spring Morning Sunny Purple


Saxifraga Scenic Red

- ***Lavandula stoechas* La Diva Berry Series:** Benefits from cool growth to maximize blooms. Extra-large flags in bold pinks and purples give these a WOW factor!
- **Viola Spring Morning series:** Grows well in cool conditions. This all-new series of perennial viola maximize flower power in the early days of spring well into the heat of summer before flushing with more color in the fall as nights cool off.

## Start strong: Fall sets the stage for early season success

At Dümmen Orange, we know that great early season perennials start long before spring. The fall season is a pivotal starting point for overwintering crops that bloom early. The goal is to establish strong, healthy root systems that can withstand the winter conditions and help the plants perform in the earliest days of spring. September and October are the ideal time to transplant these crops from the rooted liner into the finished container. In order to get the flowers at the right time on crops requiring vernalization, a cold period of temperatures ranging from 35F and 45F (1C to 7C) is needed for six to eight weeks.

## Placement matters

After transplanting, placement is everything. It's typical when overwintering finished perennials for vernalization to set them down pot tight in an open field or cold frame where they can be covered with frost cloth when needed, but allowed to go dormant. However, due to the planned sales dates for early season color it's crucial to meet the cooling need, but also protect evergreen foliage from damage—be it excessive cold, moisture or disease. Having a growing space that can be heated if necessary and allow the grower to control the amount of water the crop is exposed to makes for a higher quality product when it's time to deliver.


Phlox Spring Blue

Right after transplant until temperatures drop is the key period for proper nutrition. In some cases, growers may opt for the use of a slow-release fertilizer in their soil mix to sustain the plant through rooting. As temperatures drop, so does plant activity—making them more vulnerable to excess water, which can lead to fungal infections, crown rot or root loss. Even under cover, dry-down cycles should be carefully managed to avoid oversaturation and to support nutrient uptake.

For crops that have satisfied their cold requirement, the earliest signs of spring begin—often in early February depending on region. As buds begin to form at this stage, nutritional needs begin to shift. As plants wake up, reintroducing fertilizer in a controlled manner supports strong, healthy growth. However, excessive nitrogen too early can lead to stretched plants with weak habits.

## Retail-ready color

By late February and into March, the pressure is on. This is the window when early season perennials need to shine. Whether you're delivering to garden centers, mass merchants or direct-to-consumer markets, color and quality are king. Plants should be well-rooted, showing strong bud set, compact growth and clean foliage ready to burst into color as light levels increase. Dialing in irrigation and feeding at this stage supports flowering and sets your crop apart.

Our early season perennials offer more than just blooms—they offer opportunity. Dümmen Orange genetics bring together timing flexibility, market extension and consumer appeal in a competitive market that helps growers extend their season, meet shifting retail windows and deliver products consumers cannot resist. With strong planning and careful culture, you open the door to a colorful, high-value season. ■

*Katie Miller is Regional Product Manager—Perennials for Dümmen Orange.*

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# Managing Weeds in Perennial Production

Weed control in perennial production is both an art and a science

**BY BROCH MARTINDALE**

What you don't want to see—weeds like bittercress germinating in containers. A well-executed preemergence program can help prevent germination and make for an easier spring season.

With profit margins tightening and labor costs continuing to rise, growers must efficiently manage weeds to maintain high-quality crops and reduce losses. Herbicides play a critical role in this effort, particularly preemergence herbicides, which form a chemical barrier in the soil to prevent weed seeds from germinating. For many greenhouse growers, however, the use of herbicides can be intimidating and may be something they haven't experimented with at all.

When properly used, these tools can significantly reduce weed pressure throughout the growing season and even into winter, ensuring cleaner crops, fewer labor inputs and better plant performance.

## Weed challenges in perennial production

Weeds not only compete with crops for water, nutrients and light, but can also serve as hosts for pests and diseases—negatively affecting the appearance and saleability of the final product.

Perennials, unlike annuals, are grown over extended periods—often through multiple seasons—making them particularly vulnerable to multiple flushes of weed growth. This extended production cycle requires long-term weed management strategies.

In container production, the compact spacing of perennials makes hand-weeding inefficient and labor-intensive. Left unchecked, even a small weed infestation can escalate quickly, compromising crop health and increasing production costs. This is where preemergence products—such as Snapshot, Gallery and Dimension specialty herbicides—come in as foundational tools.

## Snapshot: Broad-spectrum and long-lasting

Snapshot (trifluralin + isoxaben) is one of the most widely used preemergence herbicides in ornamental horticulture. It offers broad-spectrum control of over 100 broadleaf and grassy weed species, including oxalis, spurge and bittercress. These weeds, while present throughout the production cycle, will really be challenging in the spring on overwintered material. This often takes labor away from producing and shipping plants, and moves it to labor-intensive hand-weeding.

Snapshot offers a range of benefits to perennial growers, including:

- Broad crop safety: Snapshot is labeled for use on a wide range of perennials and ornamental plants, making it a go-to for mixed production nurseries.
- Long-lasting control: Depending on rate and conditions, Snapshot can provide six to eight months of weed control.
- Versatile timing: Snapshot can be applied in early spring or late summer to address both warm- and cool-season weeds.

Snapshot works by inhibiting root development in germinating seeds, which makes precise application timing essential—ideally before expected germination windows. The granular formulation is easy to apply in container yards, hoophouses and field settings.

### Gallery: Specialist for broadleaf weed control

Gallery (isoxaben) is a preemergence herbicide with excellent control of broadleaf weeds and minimal activity on grasses. It's a valuable addition when grassy weeds aren't the primary concern, but broadleaf control is critical.

The key advantages of Gallery include:

- Selective control: Gallery has excellent activity against chickweed, spurge, oxalis, henbit and other problem broadleaves.

- Long residual: Gallery provides four to eight months of control, depending on rate and environmental conditions.
- Tank-mix and rotation-friendly: Gallery can be used in rotation with grass-controlling preemergence herbicides, such as Dimension, to achieve broad-spectrum control.
- Flexibility: Gallery can be used on the ground bed to prevent weeds between pots.

Because Gallery is gentle on a wide range of ornamentals, it's especially useful in sensitive or high-value crops for which broader-spectrum herbicides might pose a risk.

### Dimension: Pre- and early postemergence power

Dimension (dithiopyr) offers a unique advantage in that it provides both preemergence and early postemergence control of annual grasses, particularly crabgrass—a notoriously difficult weed in container production.

Dimension offers perennial growers:

- Dual action: Dimension controls weeds before they emerge and can kill crabgrass in early stages of development.
- Compatibility: Dimension can be used safely in many established perennials and ornamentals.
- Flexibility: Dimension can be used on the ground bed in combination with Gallery to prevent weeds between pots.

### The role of late-season preemergents

One of the most overlooked, yet essential, strategies in perennial weed management is the application of preemergence herbicides in late summer or early fall. This is the time when many cool-season weeds—such as henbit, chickweed and bittercress—begin to germinate. If left unchecked, these weeds can overwinter and explode in early spring, creating a mess just when growers are busiest preparing for sales.

Late-season applications of Snapshot, in particular, are highly effective at suppressing winter annuals. When activated with the right irrigation amount, they create a solid defense barrier during the off-season when hand-weeding is least desirable.

### Best practices for preemergence herbicide use

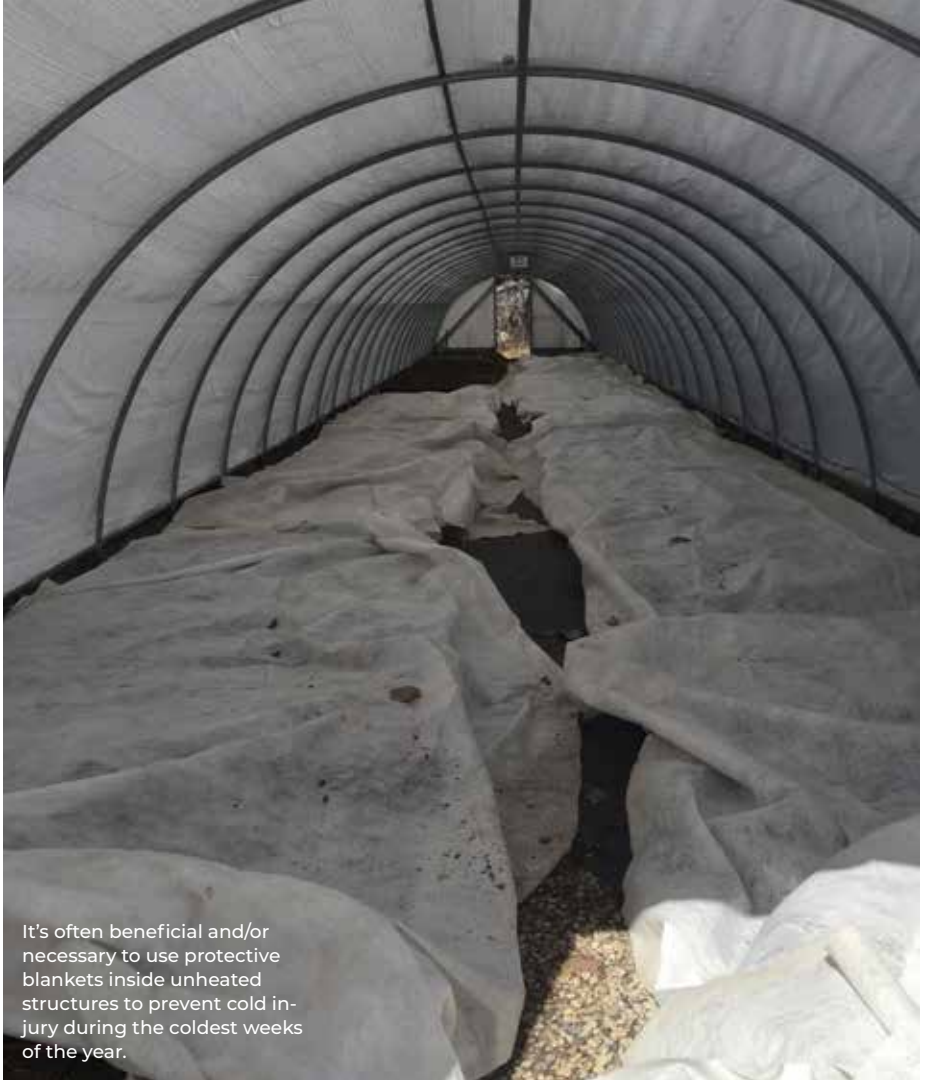
To get the most from herbicides such as Snapshot, Gallery and Dimension, growers should adhere to best practices, including:

1. **Apply to weed-free soil.** Preemergence herbicides don't kill existing weeds; they stop new ones from germinating. Clean beds or containers before application.
2. **Watering in.** Preemergence herbicides need to be activated by water—usually within 24 to 48 hours of application. This can be through irrigation or rainfall.
3. **Reapply as needed.** Depending on environmental conditions and herbicide longevity, reapplication every three to six months may be necessary.
4. **Know your crop tolerances.** Always check the label for crop safety, as not all herbicides are safe for all perennials.

### Conclusion

Weed management in perennial production is a multilayered challenge, but preemergence herbicides, such as Snapshot, Gallery and Dimension, provide a powerful foundation. By strategically applying these products—especially during critical periods like early spring and late summer—growers can prevent most weed germination, reduce labor costs and produce higher-quality plants. ■

*Broch Martindale is National Nursery & Greenhouse Strategic Account Manager for Corteva.*



It's often beneficial and/or necessary to use protective blankets inside unheated structures to prevent cold injury during the coldest weeks of the year.

# Cold Has a Purpose

Understanding how vernalization and dormancy impact perennial plant quality is critical. Similarly, cold protection strategies can make or break your crop—especially in colder regions.

**BY PAUL PILON**

As I get older and spend less time outdoors during the winter months, I don't like cold nearly as much as I did in my younger years. Besides enjoying the seasonal changes and the snowy landscapes, my tolerance and appreciation of cold temperatures has definitely lessoned over the years. However, one thing I do appreciate about the cold is the benefits it has on perennials.

## Vernalization

Many perennials either benefit from or require cold in order for them to flower or to bloom more profusely. Vernalization is the word commonly used to describe this cold requirement. Many perennials have an obligate cold requirement, meaning they won't flower unless the plants receive a cold treatment. Numerous perennials are cold-beneficial or flower best (more blooms per plant, more uniform flowering and/or faster flower times) when they've been vernalized. Other perennials will bloom without receiving this cold treatment.

In the landscape, perennials naturally receive this cold treatment during the winter months (especially in the northern states) while they're dormant. Research shows plants will become vernalized when exposed to various durations of temperatures at or below 40F (4.4C). The majority of perennials will become vernalized after receiving a minimum of 1,000 hours (six weeks) of continuous cold exposure.

It's beneficial to remove the protective blankets in the early spring to allow the plants to grow, however, it's recommended to remove the protective blankets in a manner that they can be quickly reapplied to the crops (after they've deacclimated or are actively growing) if cold spells occur.

I typically aim to provide at least 10 weeks of cold—this helps compensate for fluctuating temperatures and for periods the temperatures are above 40F. It's not harmful and can actually be beneficial to provide more cold than the minimal amount a plant requires. *In fact, providing longer durations of cold should be your goal.*

## Dormancy

From an over-simplified perspective, dormancy is a resting phase for perennials. During these resting phases, there are many physiological processes within the plant, such as vernalization, that allows the plant to grow and flower better following a dormancy period. Dormancy is also a method for plants to protect themselves from becoming damaged or killed from exposure to freezing temperatures.

A plant enters dormancy gradually over a period of several weeks as the days become shorter and the temperatures become cooler. This process is called acclimation. Perennials become acclimated to the temperatures they're exposed to and a plant's specific ability to tolerate cold will vary from location to location. For example, an echinacea acclimated in Minnesota will be able to withstand colder temperatures than the same echinacea acclimated in South Carolina.

Unfortunately, once a plant gets acclimated, it doesn't mean it will tolerate cold temperatures throughout the entire dormancy period. Over time, plants lose their ability to withstand cold temperatures (deacclimation); this is especially common in the late winter as the daily temperatures tend to fluctuate more. When deacclimation occurs, plants are susceptible to cold temperatures, especially when the temperatures suddenly drop to below freezing.

Once perennials enter dormancy, they have to remain dormant for a period of time before they can perceive the environmental cues (namely warm temperatures) for them to begin growing. *When* plants break dormancy is a function of time and cold temperatures. Similar to vernalization requirements for flowering, each perennial has its own required duration of cold needed to break dormancy.

Fortunately, the same temperature and duration rules typically apply to both vernalization and dormancy; most perennials require a minimum of 1,000 hours (six weeks) of temperatures below 40F. If you don't really have good control of temperatures, consider allowing for 10-week-long cold periods to ensure the cold period is long enough to achieve both the vernalization and dormancy requirements. This usually satisfies the plants' cold requirements for dormancy.

## Providing cold

I've made references that the processes of vernalization and dormancy can be accomplished when providing six to 10 weeks below 40F, but how important are these temperatures? Don't get hung up on the absolute temperature of 40F; this is the temperature at which much of the vernalization research was conducted. It's not necessary to concentrate on delivering this specific temperature.

Plants can be vernalized at colder temperatures with acclimatization. Temperatures around (or even slightly below) freezing are better during the overwintering period. These colder temperatures ensure the plants go into a deeper dormancy, making them less susceptible to deacclimation or getting cold injury.

The important details when it comes to providing cold during dormancy are to take active measures to maintain temperatures below 40F, while also providing adequate cold protection from temperatures below freezing.

## Cold protection

One of the most important aspects of successful overwintering is to provide adequate protection from the cold. *The main goal of overwintering is to ensure the survival of the root system.* The amount of protection to provide will vary widely by geographic location, with southern growers needing little to no additional protection and northern growers needing extensive amounts of cold protection.

Overwintering plants inside structures provides several degrees of cold protection. I usually anticipate structures will provide temperatures about five to 10 degrees warmer than outside. In many locations, growers use blankets to provide cold protection for their perennials. Depending on the type of blanket used, they can provide approximately five to 10 degrees of protection.

## Late-winter cold protection

Perennials are most susceptible to cold injury during the late winter and early spring. As days become longer, periods of above-freezing temperatures are more common and wide temperature fluctuations between day and night occur frequently. *When this occurs, perennials become deacclimated.* Once plants begin to deacclimate, they're more sensitive to cold exposure and can become severely injured or die. The majority of cold damage and plant mortality occurs in the late winter as the result of deacclimation.

I recommend growers take active measures in the late winter to maintain plants in a dormant state by delaying deacclimation and reducing fluctuating temperatures. White poly on the outside of a structure can help reduce temperature fluctuations within the house during the day. Even with white poly, it'll be necessary to manage the ventilation either automatically (with environmental control systems) or manually (by opening vents and/or end doors on freestanding structures). Aim to keep temperatures inside structures around freezing (30 to 35F/-1 to 2C). Evaluate weather conditions daily and manage houses accordingly.

Plants will begin to deacclimate at some point in late winter. They may still appear dormant, but can be very susceptible to below-freezing conditions once they're deacclimated. At some point, the goal shifts, as you'd like to keep the houses cool, but once the plants become deacclimated, it's important to not only keep them cool, but to keep plants above *freezing* to prevent cold damage from occurring.

When the outside temperatures are expected to be well below freezing, consider using minimum heat (30 to 35F) and/or protective blankets inside structures to provide protection during cold spells.

## Bundling up this cold conversation

Clearly, cold plays a valuable role in perennial production. For most perennials, vernalization is either highly beneficial (or even required) to optimize flower development. When it comes to dormancy, delivering the right amount of cold is important to allow plants to wake up uniformly. Fortunately, the cold requirements or *how* cold is provided to satisfy the vernalization and dormancy requirements can be considered one and the same. At a minimum, aim to provide six weeks at temperatures below 40F. And 10 weeks is almost always better than six.

To enter dormancy (the acclimation phase) it's important to gradually expose plants to colder and colder temperatures. Once they're dormant, it's important to keep them acclimated to cold, while protecting plants from extreme cold. In late winter, it's not uncommon for plants to deacclimate to cold from their exposure to fluctuating and warmer temperatures. During this period, keep temperatures cold (but not below freezing) and be prepared to provide cold protection even if you don't see visible signs that dormancy has been broken (active growth) and when below-freezing temperatures are expected. ■

*Paul Pilon is editor-at-large of the Perennial Pulse e-newsletter and Director of Growing at Opel Growers in Hudsonville, Michigan. He can be reached at paul@opelgrowers.com.*

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