GROWERTALKS

Paul's Pointers

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Do You Seek the Holy Grail?

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Many growers have asked me what the ideal environment is for growing perennials. Like many questions, I feel growers are looking for the Holy Grail or an end-all, be-all type of answer. The reality is there isn't one environment that's ideal for all perennials, locations and situations. Therefore, my response to this question is: It depends.

To come up with the best answer that suits a grower's particular needs, I must first ask them a few questions myself:

- What are you hoping to accomplish?
- Do you need to produce flowering plants?
- Do the perennials need to be marketable for a particular date or sales window?
- What type of quality attributes are you looking for?

Next, I'd have to learn their geographic location and what types of environments they have available for growing their perennials: heated greenhouses, unheated structures or outside sites. Finally, I can put it all together using their location and the environments they have available when they need the plants ready for sales and what stage of development their market requires to determine how to best utilize the facilities they'll be growing in or if additional environments are needed.

Heated greenhouses

There are several types of heated greenhouses ranging from individual freestanding structures to very large gutter-connected facilities. These structures can contain very minimal technology and environmental control systems to very sophisticated ones that provide very precise control of the environments.

Perhaps the largest advantage of growing perennials inside heated structures is the ability to use temperature to produce plants for early season sales. Some perennials have specific requirements such as vernalization (a cold treatment) for them to produce flowers. Assuming these requirements were provided, heated structures allow growers to produce plants nearly any time of the year (particularly useful for early season sales). Heated structures also tend to result in more uniform crops, as the temperatures are typically more consistent throughout the greenhouse.

There are a few drawbacks with heated structures. I'll start with the obvious: Heated structures require heat and heat requires energy and energy has a cost. There are many variables—such as geographic location, time of year, weather pattern and the crops being grown—that influence this cost. Then there's the cost of the structure itself and

the environmental control systems needed to manage these houses.

The plant quality achieved inside structures is usually good, but often lower than what can be achieved when growing plants outside (more on this below). However, having the ability to bring a plant to market earlier in the year usually outweighs these quality differences.

What causes plant quality to be reduced inside structures? Several factors, including higher humidity levels, more positive DIF (warmer day temperatures than night temperatures), higher plant densities and less air movement are the main ones that come to mind. Growing plants at wider crop spacings, purging the greenhouses to reduce humidity levels, implementing a negative DIF or DROP, and using plant growth regulators are methods many growers use to improve crop quality while growing perennials inside heated greenhouses.

Unheated structures

Several growers utilize unheated structures. In my mind, these are typically free-standing individual structures of various sizes that either don't contain a heat source or only have enough heat to keep the houses above freezing. Besides natural solar gain, there's no additional heat source available to promote growth. Variations of unheated houses include gutter-connected houses with minimal heat or retractable roof greenhouses. Besides being unheated, some of these facilities have limited abilities to provide ventilation.

The features I like with unheated structures are they typically have lower up-front expenses compared to heated structures and lower to no energy costs, allowing growers to cost effectively produce plants for the middle of the spring sales season.

If an unheated structure has great ventilation, the plant quality can be quite superb; however, if there's limited or almost no ability to manage cooling, plant quality can be erratic and will usually be less than what could be achieved in an outside environment. Again, the ability to have plants ready for the market earlier in the season usually outweighs any potential reductions in plant quality. The factors effecting plant quality in heated houses usually apply to unheated houses, as well.

One of the biggest drawbacks I see with unheated structures is growers have limited control of the environment, which leads to less control and predictability when it comes to the crops being grown within them.

Outside production sites

Outside sites are generally the most cost effective places to grow perennials. Growers don't have as much upfront expenses to create the growing spaces or the energy cost of producing perennials inside heated or minimally heated growing spaces. Again, one of the main benefits of growing outside is the plant quality is usually excellent.

With no heat, it should go without saying that plants grown outside will take longer to reach full size or to flower. Outside spaces can be utilized to provide mid-spring sales of early blooming perennials or late-season sales for mid - to late-flowering plants.

From a plant quality perspective, I typically observe the best quality when plants are grown under natural outside growing conditions. They usually appear more compact and toned compared with the same plant grown inside a structure.

Even though outside sites are cost effective and result in excellent quality, growers must accept that they'll lose a lot of control and predictability. Mother Nature does what Mother Nature does. Although temperature data and crop

history can help target crop timing to some extent, growers are still at the fate of the weather, as every year or growing season will be different.

The weather not only affects temperature, which is the driver of plant growth and timing, but growing outside has other weather-related implications such as frost, heavy rain, hail and high winds that could adversely impact perennial production.

Is there a Holy Grail?

Probably not. That doesn't mean that growers can't either utilize what they have to produce a consistent supply of perennials over time. If growers have heated, unheated and outside spaces available they can relatively easily offer a plant for nearly an entire growing season rather than just for a limited time when it's flowering in a single growing environment. For example, a spring flowering plant, such as aquilegia, can be grown in a heated house for early sales, an unheated house for mid-season sales and outside for late-season sales.

Rather than chasing the Holy Grail (which likely doesn't exist), I encourage growers to look at their sales needs and what growing facilities that have available to see if they can use what they already have to build a solid program. If they don't have the specific production areas they need, they can look at what type of growing space is necessary for them to achieve their goals. **GT**

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