GROWERTALKS

Features

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When Negatives Can Be a Positive

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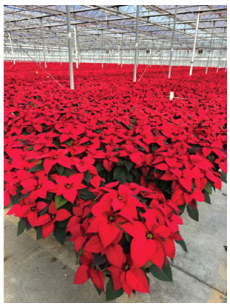

Visiting growers every summer and fall during poinsettia production, I get to witness the challenges growers face when finishing a poinsettia crop. For many growers, poinsettia production represents about a five- to six-month crop time and the longest crop they'll finish in a year. With a long crop time there are more opportunities for mistakes, but also time to correct course as issues arise. A mastery, or at least a proficiency, in many growth strategies allow for a grower to select the correct "tool" from their "toolbox" no matter the situation that arises in the fall to achieve their desired goal for their poinsettia crop.

Examples of using positive DIF to fill out 10-in. containers.

Our evolving fall temperatures around North America have created new issues for growers in managing poinsettia growth, requiring the use of PGRs in the months of September and October, even in Northern regions of the continent. But just because our autumns are warmer across vast regions, doesn't mean we shouldn't utilize temperature control methods for managing growth popularized from Michigan State University research of the late 1900s in DIF and DIPs.

Using temperature differential (DIF), the difference in the average daytime temperature minus the average nighttime temperature, when our weather and greenhouse structure allows, is an excellent tool for managing growth. Even when a true negative differential (-DIF) cannot be achieved, a morning dip in temperature prior to and after sunrise (DIP), can take some of the vigor out of growth, resulting from a flat or positive differential (+DIF) day. Morning DIPs will not provide as much growth control as a negative DIF, but a DIP can be achieved in more regions across North America and/or instituted earlier in the season versus negative DIF. Typical negative DIFs or DIPs are 5 to 10F (3 to 6C).

As with any "tool" growers utilize, there are positives, potential negatives, and risks to using DIFs and DIPs. An effective DIP and negative DIF reduces internode stretch on varieties of poinsettia regardless of their vigor. Both strategies on compact varieties may not be needed in a larger pot size if a grower is behind on the height targets on a compact/low vigor variety or is utilizing a lower-vigor variety in a larger pot size (8 to 10 in. or larger). The major risk of a morning DIP is to drop so low that dew point is hit in the greenhouse and bracts have moisture on them.

The nature of a DIP or negative DIF, in the mid 50Fs (below 14.5C) also lowers the temperature of the greenhouse

to an environment where Botrytis thrives. The drier west has less of an issue with this than the naturally more humid east and Central Plains, and it really depends on the current weather pattern for the day, week or season. Closer to finish and shipping in November/December, this leads to increased risk of Botrytis on the bracts and in the interior of the plant. If dew point is hit on the morning of an overcast day, plants can sit with moisture on them for several hours, also reducing transpiration (reduction in transpiration = less growth/color progression). The closer the bracts are to full color and cyathia open, again, the risk of Botrytis increases.

There's also the phenomenon of traditional white poinsettias that will yellow or "cream" more when kept at lower temps (low 60sF/below 17C). If keeping a lower night temp (low 60sF) and still using a DIP or negative DIF, the color can change more versus a no DIP/negative DIF house. But traditional whites will do this anyway at lower temperatures, which isn't really caused by the DIP or negative DIF. Most growers tend to accept the slight color change and run a warmer night, with a DIP or negative DIF if they have some white poinsettia-only zones. White poinsettias are also typically more susceptible to bract Botrytis, thus the risk of disease is greater if bracts end up with moisture on them due to an over-aggressive DIP that hits dew point.

Why would a grower use a lower-vigor variety in a larger pot? With poinsettias, vigor and pot size aren't the only considerations when making genetic selections—response to heat delay (a topic for another article), response to PGRs, stem strength, root durability ... and that doesn't even include the aesthetic qualities that our customers see when they purchase poinsettias from their preferred outlet! Whether using a lower-vigor variety in a larger pot, achieving a large finished height regardless of vigor or growing on normally after a period of time that limited growth due to too much heat, positive DIF is a strategy to elongate internodes and stretch growth.

Many times, in August and September growers use positive DIF without even thinking about it—also because we have no true control of our temperatures no matter what structures we're growing in at that time of year. Depending on the fall temps, Northern growers have an opportunity late September/October to purposefully use positive DIF. Southern growers generally see a ~20F positive DIF without even trying. This leads to excessive soft growth that needs to be countered with PGRs. Soft, stretchy growth can lead to increased disease risk and/or breakage at time of ship.

A couple scenarios

A customer needs quicker progression of color, keeping bracts warm day and night, but still desires a little temperature growth control either because it's too late for PGR applications or their greenhouse systems don't allow for micro Bonzi drenches. This is when a morning DIP is used and the greenhouse allowed to warm up naturally during the day.

On a rainy, wet day, achieve the DIP, but eliminate the DIP two hours after sunrise and for higher humidity late-stage finishing/holding. Use the heating system to keep day temps slightly elevated and running closer to a flat/zero DIF, burning off some of the moisture in the air, followed by later purging in the greenhouses prior to sunset or the closing of a heat curtain.

> ### In summary of DIF & DIPs
>
> **Negative:** Potential to increase disease risk and/or create weak/soft growth.
> **Risks:** DIPs or negative DIF: Hitting dewpoint on leaves.

> **Positive DIF:** Cooler nights building up humidity in a greenhouse, reducing transpiration and/or reducing the progression of color. Soft growth.
> **Overall positive:** Management of growth without PGRs (and during periods where PGRs can't be applied without negative consequences).

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