Poinsettia Prop; Mums & High Heat; Agrivoltaics

Cultural and Technical Information for Greenhouse Professionals

GROWERTALKS MAGAZINE greenPROFIT MAGAZINE

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TECH ON DEMAND brought to you by GROWERTALKS

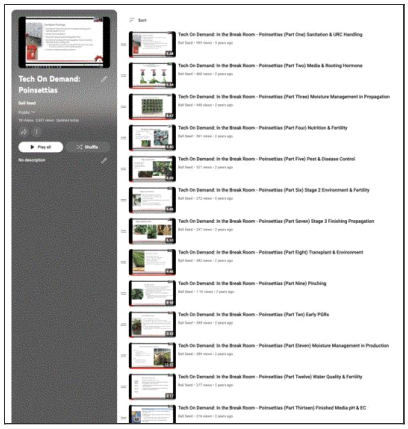
COMING UP THIS WEEK:

Prep for Poinsettia Prop
Nick's Tip: Mum Heat Wave
Pinch or No Pinch?
Solar Panels for Hort?
Clean Those Nozzles!
Finish Line ...

Poinsettia Primer—3 Videos to Kick Off the Season

Poinsettia cuttings are shipping fast and furious. If you've been a loyal newsletter reader for the past couple years, then you know what's coming ... poinsettia culture help!

For the foreseeable future, I'll be sharing weekly tips from experts around the industry and the companies that breed and supply our industry's key seasonal crop. There's no lack of crop culture info and research out there, but hopefully finding it in one place, delivered conveniently to your inbox, helps you and your team keep your crop on track.



Here's an awesome resource: With the help of poinsettia experts from Selecta One, the Tech On Demand team created a huge playlist of poinsettia production videos that takes you step by step through the production season, from greenhouse prep and sanitation all the way to shipping—more than 35 short videos, all organized into one handy **PLAYLIST.**

Now's the time to get started on the first three videos, which will only take about 25 minutes total to watch. Feel free to share them with your team to help get everyone in the poinsettia mindset:

- Part One: Sanitation & URC Handling—Cleaning up facilities (start clean, stay clean); cooling cuttings and handling protocols; media management.
- Part Two: Media & Rooting Hormone—More media management; Stage 1 (stick to callus); rooting hormone research and application.
- Part Three: Moisture Management in Propagation—Stage 1 environmental protocols;

making moisture a priority; optimizing irrigation in the first weeks of propagation.

Nick’s Tip of the Week: Growing Mums in High Heat

Each week, I’ll work with my buddy Nick Flax, a technical services expert at Ball, to share a concern that’s come up during one of his numerous calls with growers across North America. This week across much of North America, temperatures are shooting sky high, and Nick has been taking calls and answering emails and texts from growers dealing with stressed garden mums.

PROBLEM: Different regions in North America have experienced some extremely high temperatures this summer, which can spell trouble for garden mums. This week’s tip is for any of you who might be wondering what to do to beat the heat that’s hammering your mum crop. Mums can’t head to the mountains or the lake to cool off, but there are strategies you and your team can turn to when the sun is blazing.

NICK'S TIP: A lot of research has focused on flowering heat delay, but let's dig into other production concerns and discuss the pros and cons of strategies to manage these in extreme heat scenarios.

Quick Plant Physiology Review

All plants have optimal temperature ranges for growth and development, both of which slow or can be altered when temps are outside of this range. For garden mums, the optimum range for vegetative growth is about 65 to 75F (18.3 to 23.9C). When temps are below the low end of this range, vegetative growth slows, and flowering induces (this is why crown budding occurs in summer after a few cold nights). Above the maximum in this temp range, flowering delay (a.k.a. heat delay) can occur, but vegetative growth slows or stops completely once temps reach a certain threshold.

Growth & Development Concerns

Above about 86F (30C) is where growth and development of mums really start to grind to a halt. Stomata (gas exchange sites on leaves) close, and chlorophyll, enzymes and other organelles can start to degrade. This means the internal "bio-machinery" of your crop is getting damaged and shutting down. When temps exceed the upper 80s F (30 to 32C) for extended periods, be sure to take the following steps:

- Shade your mums (not to be confused with the term “shaded mums” – i.e., induce early flowering using blackout cloth) if growing in a greenhouse. Aluminized shade cloth will help reflect the heat load and help reduce the chances of physiological injury. Black shade netting over the top of your greenhouse or applying a white shading compound will also help reduce temps. If growing mums outdoors, shading options are limited. Shade cloth *above* the crop will be helpful, but black shade netting siting right on top of plants will likely increase the temperature due to the black material absorbing heat *AND* restrict air flow.
- Consider doing a few canopy “cool-down” sprays during the day. While there isn’t really any research that supports the effectiveness of this strategy in mum production, the physics behind evaporative cooling (phase change of water from liquid to gas absorbs heat) are undeniably true. If shading is not an option for your crop, trying this may be a better option than doing nothing and letting your mums cook in the extreme heat.

If you attempt this strategy, spray down plants with cool water using the finest droplet size you can. Smaller droplets will evaporate more readily—even if humidity is high—and reduce the addition of water to the growing media.

If it’s rained recently, additional misting will not be very effective and may just increase the risk of foliar disease, so *only attempt this on dry, sunny days.*

- Because increased foliar wetness increases the risk of disease, be sure to reapply foliar protectants at appropriate labeled intervals when the air temp cools down.
- Elevated temperature also means water in the growing media will be taken up and/or evaporate more quickly. Avoid letting plants dry down to the “flagging” or true wilting point under extremely high temps, or roots may be damaged, and recovery delayed.
- Time your irrigations carefully. Mums do not like having soggy soil, so while you may feel that watering three or more times per day is helping keep your crop cool, you may be causing more problems by starving the roots of oxygen. However, waiting until soil is at a moisture level 2 (on the 1–5 scale; 1 = air dry, 5 = saturated) or lower under extreme heat may make it impossible to keep up with the plants demand + evaporated water loss and result in irreparable wilting. Start on the wetter side and carefully increase time between irrigations to allow *some* dry-down. For example, wait until plants are *at least* at a moisture level 3 before watering again, rather than re-watering at level 4 or higher.

Disease Concerns

Stressed plants are always at higher risk for infection by different pathogens. Most diseases that impact garden mums prefer moderate to warm temperatures, but a couple of pathogens can cause major problems under extreme heat conditions. Also, damage incurred during extreme heat events can prime your crop for infection once temperatures return to normal, so be prepared.

Bacterial soft rots such as *Dickeya* and *Erwinia*/*Pectobacterium* often prefer hot temperatures and high moisture levels. If you start to see leaves and shoots browning and collapsing quickly, and symptomatic tissue has a strong, nasty odor, one of these bacteria is likely the culprit. Remove affected plants ASAP (throw away media, containers and all—***do not compost them***) and apply a registered bactericide to reduce spread.

Get your disease prevention tools ready and consider doing some early, preventative applications of root zone protectants as soon as temperatures start returning to normal.

For a refresher on some of the main diseases that affect garden mums and best practices for managing them, check out the **BALL MUMS** page. Scroll down to the Getting Ready for Garden Mum Season section near the bottom and look for the briefs on *Pythium*, *Fusarium*, *Botrytis* and bacterial leaf spot.

More from Nick: Pinch or No-Pinch Garden Mums

Looking ahead in garden mum season, I wanted to quickly address (once again) the pinch/no-pinch question, since both methods are still pretty common. Some of this depends on space and labor availability, and there are plenty of resources available to guide your decision.

Planting and pinching schedules depend on ship dates and flowering windows, but here's a general guideline for those of you who pinch your crop:

- Plant your mums around the first week of June to mid-June (right now!)
- Do your first pinch approximately two weeks after planting, when the roots hit the bottom and sides of the pots and about two inches of new growth have occurred.
- Make the second pinch when the breaks following your first pinch are about three inches long.
- Flowering will occur sometime between September 10 and October 10, depending on the variety.

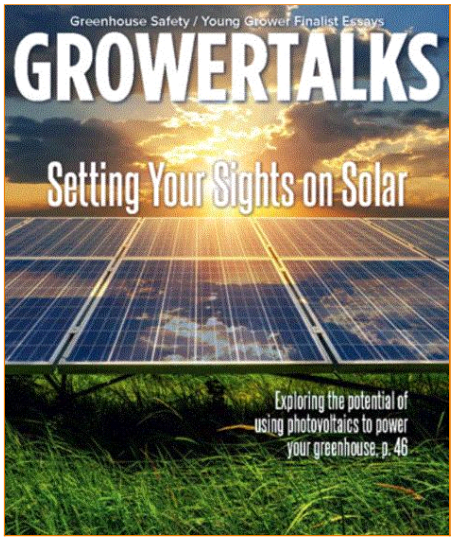
When it comes to making the pinch or no-pinch decision, I will defer to Dr. Royal Heins, who covered the topic in detail in *GrowerTalks* a decade ago. He wrote:

Essentially, all mum cultivars can be produced non-pinched in larger pots under normal day conditions. Most garden mum suppliers will indicate in their cultivar listings which cultivars perform well in a non-pinch production schedule. However, production of non-pinched blackout mums is less common, but not impossible. Genetics play a large part in the successful production of blackcloth non-pinched mums. There can be more than one reason a cultivar doesn't perform well as a non-pinched plant produced under blackout conditions, but the typical reason is that the plant doesn't branch properly to form the "mounding" habit typically desired for a finished flowering garden mum.

In the **FULL ARTICLE**, Royal goes into more detail and shows photos of both methods. Dr. Heins also discusses manual versus mechanical pinching (mowing) and advocates for the no-pinch method, which is much more common these days thanks to cutting-edge genetics introduced by most mum breeders and suppliers.

Editor's Note: *Any time we raise this discussion, I get emails suggesting "very few growers still pinch mums" and although this is true, plenty do … so we cover it in the newsletter every couple years.*

Solar Panel Opportunities for Horticulture



When the June issue of *GrowerTalks* arrived this month, the cover immediately caught my attention. Looking more closely, I realized it was an image of solar panels, so I flipped to the **COVER STORY** to find out more.

When I think of solar panels, the traditional opaque versions come to mind, and installing something that blocks the sun over a crop that depends on sunlight isn't really practical. But after reading the article, I learned there are also semitransparent and transparent solar panels, which offer far more realistic opportunities in the greenhouse space.

Scientists refer to solar panels as photovoltaic panels (PV), and the three researchers who collaborated on this article have been studying PV panels and how our industry might incorporate them. Another thing I learned reading this article is that there's a subset of research into PV panels termed "agrivoltaics"—the practice of creating dual-purpose agricultural and solar energy production. It broadly refers to the co-localization of PV panels into agricultural spaces used to grow crops or food for animal production.

I encourage you to read the story, because it helps define different types of PV panels and how they impact light quality and spectrum passing through the materials. More importantly, the researchers share ways PVs can potentially be incorporated into greenhouse structures and opportunities that might be gained. *Think about a future when transparent solar panels could serve as "energy curtains" while also creating electricity to power fans and pads!*

Shout out to Eric J. Stallknecht (Virginia Tech), Richard R. Lunt (Michigan State) & Erik S. Runkle (Michigan State) for bringing this topic to the table and leading exploration into PV possibilities in horticulture. The June article is part one in a two-part series—so watch for the next article, which will dig deeper into how semitransparent and transparent PVs could affect greenhouse crops.

Quick Tech Tip: Clean Your Nozzles & Filters

When the Tech On Demand team visits greenhouses, our experts often take a look at some general maintenance protocols and help growers establish best practices with their teams.

One of the more common things our experts see is dirty filters on booms. Usually, the indicator is algae on the outside of the nozzle, which prompts removal to look deeper into the issue. Blocked boom filters can lead to the spread of algae, as well as inefficient irrigation.

Your best strategy is to regularly clean your boom nozzles to reduce the risk of algae spread and increase uniform watering—both good for the crops. *Between seasons (like right now) is a great time to do this kind of maintenance.*

After cleaning, you'll most likely find fewer boom passes will be needed to apply the same amount of water. Look at these photos … after cleaning, this grower needed only three passes compared to four before the filter was cleared out.

Finish Line … The Kids Are Alright

June tends to be the month when I try to focus on summer family activities after I clock out from work. My wife, Jennie, (middle school math teacher) and our teenage daughters (Emma and Paige) are out of school, and we usually plan our summer vacation for June and hit the road for a couple weeks exploring National Parks or relaxing on a beach.

This year was different. From June 9 to 17, Emma and I headed 1,000 miles south in Ford Transit vans to Biloxi, Mississippi, joining 72 other high school students and 23 other adult leaders for our church's Senior High Service Trip working with an organization called Back Bay Mission. Our projects ranged from siding houses and framing new builds to serving meals at a day shelter and helping clean Back Bay's facilities. It was hard, hot work, but the value of serving others and learning ways everyone can make a positive difference in the world can't be understated.

I have to say … I always hear snarky comments about today's young people, but watching them in action, giving selflessly, for a week of their summer vacation gave me a lot of faith in the future.

It's hard to believe June is in the home stretch and July is knocking on the door. For me, it will be a busy month full of work trips and industry events. I'm excited for **Cultivate '24** presented by AmericanHort kicking off July 13 in Columbus, Ohio. It's the main national trade show and conference where our industry gathers to network, learn, find new products and connect or reconnect with peers to recap the year and plan for the next. If you're not registered, now's the time!

At the very end of July is possibly my favorite hort-related event of the entire year: **Ball Seed Customer Days** in West Chicago, Illinois. Yes, I'm biased … but I promise you, it's a fantastic event. Ball has acres of gardens all planted up and primed to inspire. This year's Customer Days will be held Thursday, July 25 and Friday, July 26 and is open to the trade only. Register at the link above. I look forward to seeing you in The Gardens at Ball!

Until next week … stay cool and keep those mums and poinsettias on track.

Please feel free to send your comments, constructive criticism and topic ideas to me at bcalkins@ballhort.com.

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Editor - Tech On Demand

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