Overwintering Perennials, Cooling Fall Crops; Managing Mites

Cultural and Technical Information for Greenhouse Professionals

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TECH ON DEMAND

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3 August Audio Files Podcasts

If you're a regular listener to the Tech On Demand podcast, you know that every month I record a few audio-book-style episodes where I read articles from *GrowerTalks*, *Green Profit* and *Inside Grower*. I pick articles that I think deserve some additional spotlight, ones that cover timely and relevant topics, or when the authors take interesting angles on important industry issues.

The three most recent Audio Files from August cover the importance of research funding, findings from a study that help quantify improvements gardening makes on human wellbeing, and a double feature on just how critical a website and online sales platform is these days.

Audio File 78: A Resilient Industry Requires More Than Basic Inputs—written by Laura Barth, research coordinator at the American Floral Endowment.

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Audio File 79: From Home Gardens to Market Insights—written by Celina Gomez, associate professor of horticulture at Purdue University.

LISTEN | READ

Audio File 80: Adapt or Die: Reconnect Your Website and Connect Online Shopping to Your Store—written by John Stanley, Sid Raisch and Dries Jansen.

LISTEN | READ RECONNECT | READ SHOPPING

There are now more than 265 Tech On Demand podcast episodes in the archives, covering a huge range of topics related to the professional greenhouse, garden center, landscape, nursery and CEA markets. Jump back in to get caught up or take a minute to subscribe—that way you'll never miss an episode.

- **APPLE PODCASTS**
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Lastly, huge thanks to PROSPIANT and MYCORRHIZAL APPLICATIONS for helping sponsor Tech On Demand podcast episodes! It really means a lot to me that companies believe in the power of new media. That goes for all of the newsletter advertisers and video sponsors, as well!

Koppert Corner: Summer Spider Mite Control

Each month, I connect with my friend Heidi Doering, a technical services expert at Koppert, as she shares tips and technical information that she runs across during her many visits to client sites across the nation. This week, she's explaining why two predatory mites are used to battle spider mites.

(EDITOR'S NOTE: I completely blew it last week and accidentally ran the July Koppert Corner article on Lewis mites for the second month in a row. I suppose as far as topics go it's a good one to double up on, but that was not my intent. So this month you get a double dose of biosolutions wisdom from Heidi.)

Unrelenting summer heat came early to many regions of the U.S. this year and created optimal conditions for spider mite development, especially in dry and arid areas. It's worth taking a minute to spotlight two workhorses of the predatory mite world that make spider mite control possible during hot summer months.

We use two types of predatory mites to manage spider mites—a specialist and a generalist:

Type I—Specialist
There is one commercial species in this category, ***Phytoseiulus persimilis*** **(Spidex Vital/Spidex)**. She's a focused specialist, attacking and consuming all life stages of spider mites in the family Tetranychidae. These include two-spotted spider mites, carmine spider mites and Lewis mites. *P. persimilis* is most effective and can reproduce within the temperature range of 59-90F. Warmer temperatures above 77F with relative humidity below 70% negatively impact the predatory mite's egg-hatching rate. It is important to note that when the humidity at the boundary layer (the space between the leaf surface and the air) remains higher than the surrounding air, it creates a microclimate. In that space, *P. persimilis* can still work successfully when the temperatures are outside of the optimal ranges.

Type II—Generalist
Neoseiulus californicus **(Spical)** reproduces best on and prefers a diet of two-spotted spider mites (TSSM), but can also feed on Lewis mites, carmine mites, and russet mites and survive on other mite species, small insects (such as thrips) and pollen. She tolerates high temperatures over 100F but won't lay eggs or develop a population in crops at extreme temperatures. *N. californicus* also works under cooler temperatures than P*. persimilis but* is unable to lay eggs and develop at temperatures below 50F. Relative humidity below 70% has a negative impact on population growth; however, *N. californicus* is better able to successfully reproduce under warm and dry conditions than is *P. persimilis.*

These two predatory mite species can be applied together. They can also be applied along with predatory mites that target thrips and whitefly, as these species are not antagonistic toward their Type III comrades.

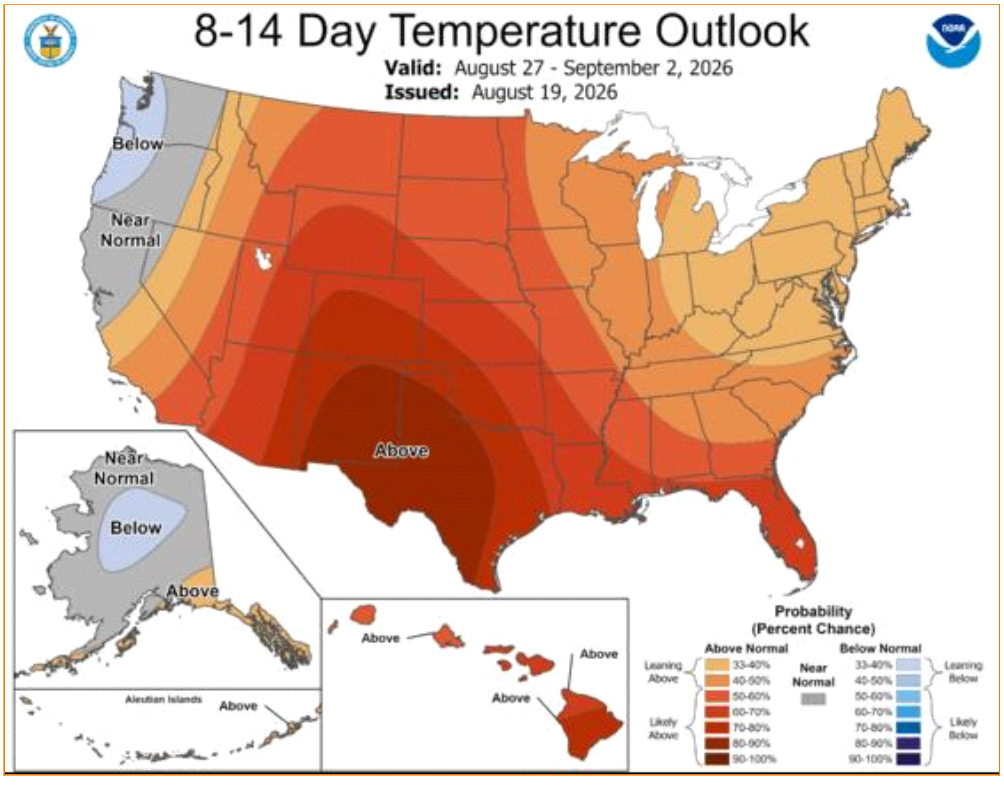
Choosing a Type I or II predatory mite species to manage spider mites is fairly straightforward; however, deciding which Type III generalist predatory mite species to use to treat for Western flower thrips is more nuanced. I'll cover that next month!

Contact a Koppert Technical Consultant if summer heat has you at your wit's end managing spider mites!

Nathan's Tip of the Week: Cooling Fall Crops

Usually, I work with my buddy Nick Flax, a technical services expert at Ball Seed, to share a concern that's come up during one of his numerous calls with growers across North America. This week, Ball's culture research manager Nathan Jahnke is jumping in to cover a super-timely topic: dealing with temp swings.

PROBLEM: Temperature can be a finicky thing this time of year. Myself, I'm loving the mid-70s here in Illinois, while some people would prefer a warmer end-of-summer experience. So what do the temperature outlooks look like in your area over the next few weeks? I was surprised to see that NOAA is predicting most of the U.S. will experience above-average temperatures over the next two weeks.



NATHAN'S TIP: In general, many plants do not thrive above 85F, but even temperatures above 75F can slow flowering or coloration on some of our fall crops. Here are some key points to

remember:

Chrysanthemums are thermophotoperiodic. This means they have a temperature and daylength factor influencing flower timing. Temperatures between 65 and 70F will hasten flower development. Last year, many parts of the Midwest (and elsewhere) experienced heat delay due to higher temperatures. This year in Illinois, I'd expect to see flowering on time or slightly earlier due to our temperatures being close to that sweet spot of rapid development. More southern states may experience some heat delay. Here's a **GOOD ARTICLE** from the experts at MSU to reference.

Cabbage and Kale color up best when temperatures are around or below 55F. That coloration can also be influenced by fertilization and plant growth regulators. Our friends at e-GRO covered this in an **ALERT.** (Shout out to our guy Josh Henry for collaborating with Brian Whipker on this one when he was a student at NC State!)

Pansy flower size and number is greatly impacted by temperature. If you're looking for many, large flowers for fall sales, try to target a negative DIF (warmer nights and cooler days) with temperatures no higher than 65F during the day.

What can you do about warm temperatures right now?

Shading is an option if you have enough light (DLI) to ensure quality growth. Energy curtains, 30-50% shadecloth and whitewashing are all options. If shading, keep in mind that the amount of evaporation from your soil and the water use of the plant could change as well. Your irrigation strategy may then need to be adjusted while keeping the target EC levels of the crop. Shading may need to be removed at some point to maintain light levels as daylength continues to shorten and temperatures cool into the fall.

Syringing is a common method used to cool plants. This is a fine spray of water across the top of the crop and is commonly used over poinsettias around the time of transplant to minimize temperature impacts on branching, especially when temperatures are above 85F. This method can be used in many other plants as well. *Only syringe when there is a high enough temperature to evaporate the water.*

The evaporation of the water off the leaf surface is what cools the plant. Keep in mind that prolonged periods of leaf wetness will create a conducive environment for pathogens like *Botrytis*. **Never purposely let plants go to bed with wet leaves.**

While not always an option for outdoor production, increasing air movement can also help.

Overwintering Perennials Checklist

For the 2025 *GrowerTalks* Guide to Perennial Plant Production, I created a best-practices checklist to help you and your team optimize approaches to overwintering perennials. It's on page 9 of **THIS GUIDE** if you want to print it out and post it for your crew.

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), allowing them enough time to establish good roots before winter. Some (like Helleborus and Hosta) 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 such as Echinacea, Asclepias and *Phlox paniculata* 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). Following this tip, some crops will require more cold protection than expected.

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, do not remove foliage until it has 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 heathy, new roots to develop. A broad-spectrum drench is a best practice to prevent crown rots for all perennials as they are going dormant.

Managing temps: Actively managing ventilation (automatically with environmental control systems or manually by opening vents or end doors on Quonset structures) 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 are 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—to avoid issues related to pathogens or rodents catching you off guard. Check the crown and roots of your plants 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.

Thrips & Botrytis Info Libraries Online

At the beginning of this newsletter, I shared a podcast based on an article written by Laura Barth at American Floral Endowment (AFE) that looked at the importance of funding and supporting industry research. Well, here's a perfect example of that sentiment put into action!

A few years ago, AFE launched two libraries of research-based information on critical pests and diseases our industry deals with every season: thrips and *Botrytis*. These resources are fantastic and can be applied in any and every business across our industry.

Here's the background: According to our friends at AFE, in 2017, a special research campaign was established to address the control and management of Thrips and *Botrytis*. Losses from these pests affect all segments of the industry every day, and Thrips and Botrytis are challenging to control using currently available pesticides and management strategies. AFE's goal of reaching $1.5 million in pledges was met in 2019 with contributions from 24 industry leaders and organizations to support new and innovative research to address these challenges.

As a direct result of this industry-wide campaign we now have these two libraries!

- **THRIPS RESOURCES**
- ***BOTRYTIS* RESOURCES**

Within each, you'll find seemingly countless resources *in English and Spanish* covering dozens or more topics, from scouting and identification to very specific preventative measures and controls. I can't even begin to list them all. You'll have to click the links above to check them out.

Botrytis on Mums

What a segue! Speaking of *Botrytis*, let's talk garden mums in Week 34 in areas (like the Midwest) that have been experiencing jungle-like climates this summer. Daytime temperatures are still fairly hot across North America during the daytime, but nighttime temperatures will hopefully start to come down soon—fingers crossed. The Tech On Demand team put together some timely tips for mum growers.

While *Botrytis* pressure tends to be minimal during the hottest summer months, when temperatures fall into the optimal range for disease (about 68–75F; 20–24C) and relative humidity is high, it strikes with a vengeance. Keep the following in mind to ensure those mums that look good this week retain peak quality at finish and don't fall prey to *Botrytis* in these final weeks before sale.

Remember that *Botrytis* needs free moisture or very high relative humidity and moderate temperatures to proliferate. Spores are everywhere, so pathogen exclusion is not possible. Use best-practices like drip irrigation and positioning plants in east-to-west rows to maximize air flow through your crop and reduce leaf wetness/time-to-dry. When a mum crop is mature, both the canopy and spacing between plants in your production area are tight. Restricted air flow creates "dead air" in the canopy and between plants, which helps this pathogen thrive. Whenever possible, increase spacing and encourage more air flow between plants to push humidity out of the canopy—especially after a rain event or if you irrigate overhead. Scout for disease low in the crop canopy.

While *Botrytis* causes problems when buds start to open and moisture gets trapped between petals, infection often goes unnoticed deeper in the mound before color begins to show. When this occurs and is not managed quickly, disease takes out foliage toward the bottom of the plant and allows spore concentration to increase. This encourages reinfection of tissues higher up on the plant and spreads disease to adjacent plants very easily. If you have not applied a foliar fungicide in recent weeks, it would be wise to do so in the next week or so. Good canopy penetration with a foliar spray is difficult on mature mums, but it is critical to keep *Botrytis* at bay on lower parts of the plant

Use of translaminar or systemic fungicides is a good insurance policy, but it takes time for active ingredient to translocate throughout a plant, so there is no replacement for good spray coverage. If your mums have started to crack color or are in full bloom when *Botrytis* symptoms become evident, be sure to check labels for cautionary statements about flower discoloration. *Fungicides containing chlorothalonil, for example, can discolor flowers when applied, so pick your fungicides carefully.*

Finish Line ...

Wow! That was a ton of info this week. I'll keep this closing short and sweet.

The *Ball Culture Guide* has long (since 1989) been the definitive guide to seed germination for growers, and the newest edition continues that service, with germination and scheduling information for almost 400 popular bedding, potted, foliage, cut, perennial, herb, vegetable and ornamental grass crops. It's 340 pages of must-have cultural information for anyone growing from seed.

Here's how you can **ORDER IT**.

I'll talk to you next week!

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

Bill Calkins
Editor—*Tech On Demand*

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