IPM & IRM; More on Downy; Fall Echinacea Tips

Cultural and Technical Information for Greenhouse Professionals

GROWERTALKS MAGAZINE greenPROFIT MAGAZINE

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TECH ON DEMAND

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COMING UP THIS WEEK:

IPM & IRM Video
Nick's Tip: Downy Mildews (Pt. 2)
... More on Resistance
Home Trends
Fall Echinacea Culture
Finish Line ...

NEW Video + Podcast: IPM & IRM with Corteva's Broch Martindale

Just in time for warmer spring temps and the insect pests that seem to come along, I caught up with Broch Martindale, national nursery and strategic account manager at Corteva, to record a video and podcast.

THIS VIDEO centers on pest management in greenhouses and nurseries, but because Broch is a phenomenal educator and "coach," there are plenty of best management practices and training strategies mixed in.

We kick it off with a conversation about **XXpire**, an insecticide with two active ingredients that

provides control of **39 pests**—all while minimizing phytotoxicity risk and risk to beneficials and pollinators. Then the topic shifts to IPM and the steps greenhouse teams can take to create a holistic plan that leads to results.

Broch then dives into the importance of IRM—integrated resistance management—a topic that is becoming more critical each year and one that he has plenty of expertise in and experience to share. You'll want to listen all the way to the end of this episode and share it with your entire production staff.

As we try to do with much of our multimedia content, this video presentation is also available as a podcast for you to listen to on the go! Be sure to subscribe to the Tech On Demand podcast on your favorite app so you never miss an episode. And if you're not a regular listener, jump back into the archives and get caught up—there are more than 175 episodes as of today!

- **TECH ON DEMAND ON SPOTIFY**
- **TECH ON DEMAND ON APPLE PODCASTS**

Nick's Tip of the Week: Don't Get Down in the Downy Mildew Dumps (Part 2)

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, he's finishing up a two-part tip on downy mildew, a problem the Tech On Demand team helps growers deal with every year. Last week, he shared ID and life cycle info. This week, he's focused on management strategies.

PROBLEM: As I wrote last week, when the weather starts to turn warm and temperatures begin to spike, it's only a matter of time before our disease diagnostic lab at Ball starts to confirm downy mildew cases around North America.

NICK'S TIP: In order to prevent crop losses due to downy mildews (DMs), it's critical to start with a firm understanding of how they work. Before you read ahead, be sure to check out **last week's tech tip** if you didn't catch it on Friday!

Downy Mildew Management

Without question, the best first line of defense in the battle against DM is to **grow resistant varieties whenever possible!** Producing DM-resistant crops sets your customers up for success and reduces the risk of disease ripping through your greenhouse or garden center. The most significant DM-resistant crop on the market right now is bedding impatiens (such as Beacon and Imara). But plant breeders are constantly working on developing resistance in other crops affected by this group of diseases. So, start with resistant plants, but beyond that there are other best practices to follow:

Purchase seed and young plants only from trusted sources. *Plasmopara destructor* (the pathogen that causes impatiens downy mildew—IDM) is not seed-borne, so this means it can only be shipped to you from one place in the supply chain: infected young plants. Note: This does NOT necessarily mean your supplier sent the pathogen to you if IDM shows up in your impatiens. IDM infects hosts via airborne spores that can blow into your greenhouse and can survive in alternative hosts in the landscape, such as jewelweed (*Impatiens capensis* and *I. pallida*). This does, however, highlight the importance of buying plugs from reliable suppliers who implement preventative DM control measures during plug production.

Peronospora belbahrii, on the other hand, which causes basil downy mildew, can be seed-borne. To minimize the risk of bringing infected inputs into your greenhouse, only buy seed that has been tested for DM or plugs from young plant suppliers who only sow tested seed.

Implement preventative controls in-house. Even if you're growing DM-resistant genetics and you've sourced seed and young plants from reliable suppliers, you need to continue managing DM in susceptible crops on your benches. Downy mildews generally need cool temps (upper 50s to upper 60s F) and high relative humidity to infect and develop, so minimize the relative humidity in your greenhouse, avoid excessive wetting of foliage, and increase airflow through the crop canopy to minimize the risk of infection.

As hard as plant pathologists have worked to develop strategies to manage this tricky group of pathogens in ornamentals, one thing is clear: good cultural practices alone are almost never enough

to keep DM from striking. The best method for controlling DM in coleus, impatiens, basal and other crops is an integration of good production practices and an aggressive fungicide program, with thorough rotation of FRAC codes/MOAs being made between applications.

Many products are labeled for controlling DM, but not all fungicides are created equal. If you want to take a deep dive into which fungicides best control different DMs, check out THIS IR-4 REPORT, which contains recommendations based on almost 10 years of fungicide efficacy trials. Be forewarned: This report may be a little further down the rabbit hole than many of you may want to go, but there's excellent info to be found in the document.

Some Resources

For those of you who are looking to scratch the surface a bit more but not go overly deep, check out the following links to some user-friendly resources our Tech On Demand team put together on managing IDM and basil DM. And as always, don't hesitate to **REACH OUT** if you have any questions—DM is a tricky group of pathogens!

- At-Risk Crops: Impatiens (video with Dr. Will Healy)
- At-Risk Crops: Impatiens (PDF)
- At-Risk Crops: Basil (video with yours truly)
- At-Risk Crops: Basil (PDF)

More on Resistance Management (from the Sedan Floral Field Day)

As I mentioned earlier, Broch Martindale talked a lot about the importance of resistance management in the video and podcast we recorded recently, and as often happens (at least to me), a topic that comes up during one conversation soon reemerges in a different situation. I've heard this called "red Mini syndrome"—because supposedly, if you think about a red Mini Cooper, you will start seeing them on the road all the time. But I digress …

Sedan Floral's Jonathan Cude and me posing like an old-school *GrowerTalks* photo from the '50s.

Last week, I had the opportunity to visit Sedan Floral in Sedan, Kansas (on the border of Oklahoma and Kansas). They're a third-generation greenhouse covering about 50 acres and supplying finished plants (primarily annuals and vegetables) to independent garden centers and landscapers. I've known the owners, Jonathan and Ali Cude, for years and was psyched when they invited me to speak to a huge audience of more than 250 industry members at their Field Day, which was organized by Oklahoma State University Extension and ONLA.

I was excited to give a talk, because I like sharing my perspective on big-picture industry topics. But to be honest, I was really looking forward to hearing another speaker at the event, Dr. Raymond Cloyd, from the entomology department at Kansas State. I greatly respect Dr. Cloyd and how he takes a scientific approach to the management of insect and mite pests but always makes it understandable (and more importantly action-oriented) for the growers he works with. I consider him a horticultural legend.

Dr. Cloyd's topic was … you guessed it … resistance. The actual title of his talk was "Why Resistance Management is Important in Managing Insect and Mite Pests." He's an excellent presenter, and after explaining what exactly resistance is ("A *heritable change in the sensitivity of a pest population that is reflected in the repeated failure of a product to achieve the expected level of control when used according to the label recommendation for that pest species"—definition from IRAC),* he took the audience through biological factors that promote resistance and into the

importance of mode of action (MOA) and rotation programs.

Here are a couple of interesting facts Dr. Cloyd shared that I found fascinating and underscore how critical resistance management strategies are for every greenhouse. As he explained, there are few new active ingredients or new MOAs coming to market, so if we're to reduce the risk of resistance making our current chemistries irrelevant, we must changes our how we use our chemical controls.

- One of the earliest documented cases of resistance was published in the Journal of Economic Entomology in 1914—San Jose scale showing resistance to sulphur-lime.
- In the 1980s, Western Flower thrips were resistant to 13 insecticides. Now they're resistant to more than 150.
- In just three generations of a pest, the number of "resistant individuals" can increase from 4% of the population to 63%.

There's no way I can do the presentation justice in a newsletter. Instead, I will direct you to an article he wrote for *GrowerTalks* last year on the topic of resistance. In **RESISTANCE MANAGEMENT**, Dr. Cloyd discussed two approaches that many growers consider when implementing more-responsible pesticide and miticide programs: rotation and mixtures. He explained both from a research-based method and closed with his assessment that rotations are more effective for managing resistance *and* reducing costs.

Echinacea for Fall—Culture Notes

There's still time (but not much) to order echinacea liners for fall sales. Colorful echinacea grab attention at retail and tend to sell through very well. Darwin perennials technical expert and experienced perennial grower Chris Fifo is a big fan of Echinacea Sombrero, and he put together a concise list of cultural recommendations in a past **GROWERTALKS CULTURE NOTE**, which I'll excerpt below. Follow Chris's tips and tricks to nail the crop and generate tons of fall interest.

- Sombrero doesn't need a cold treatment to flower, and unlike other echinacea, it bulks up

well under long days. Combine this with their lengthy bloom time (even well past first frost), and they're easy to schedule for fall color without concern for them fading out.

- When purchasing liners, check with your supplier about any PGRs they may have applied to the crop. An application of Configure in the liner stage can be beneficial for branching. However, if applied within two weeks of transplanting, it can affect the speed of rooting out into the container.
- Transplant Sombrero liners one plant per pot into 2.5-qt or 1-gal. pots, or three ppp for 2- to 3-gal. containers (Maybe a deco pot? Maybe three different colors for a mix?). Media should be well drained with a pH of 5.8 to 6.2. (I don't like the pH dropping below 5.7.) Controlled-release fertilizer incorporated into the media is common; I would recommend a medium to higher rate. Top-dressing is also okay, but avoid application too close to the transplanted plug.
- These can finish relatively quickly: eight to 10 weeks for August flowering and 10 to 12 weeks for sales into October. For multi-plant containers, I would add another two weeks. With Sombrero having such a long bloom time, I like to be cautious and go with the longer scheduling.
- Echinacea are long-day obligate for flowering and there may be some premature budding. Look carefully for buds and remove these at transplant and during the first two weeks after. This will speed up the lateral branching and bulking.
- Once established, monitor the crop's nutrition; echinacea are relatively heavy feeders. (This is why I like controlled release fertilizer in the summer.) If applying liquid feed, use a well-balanced formulation at 150 to 200 ppm N. Under high light and temperatures, a formulation with some ammoniacal nitrogen will provide a deeper green color than a more nitrate-based fertilizer.
- Likewise, under high light, higher amounts of phosphorous are needed. Be aware of purpling on the lower leaves—this is an indication of deficiency and additional phosphorous should be applied, even if using controlled-release fertilizers.

One awesome resource available from Darwin to help you schedule echinacea (and a bunch more fall perennials) to hit your specific ship dates is a **FIRST-YEAR FLOWERING TOOL** that's simple to use and based on years of research. Give it a try and, like so many of your perennial-growing peers, you'll be hooked!

JZ on Home Trends

GrowerTalks' editor Jen Zurko recently attended the 125th Inspired Home Show at McCormick Place in downtown Chicago to look for new ideas and trends in household product lines ranging from glassware and cookware to cutlery and countertop appliances. She was interested see how those people use our products to promote their products.

Make sure you watch for the April issue of *GrowerTalks* and *Green Profit* for her full report, but she sent me the article and I clipped out a snippet for you to read early. Her visit to the show included the keynote presentation by Pantone Executive Director Leatrice “Lee” Eiseman that centered on the latest in color trends. Here are some of Jen’s takeaways from that talk:

- People are currently into blending patterns and colors in multiple ways, and getting inspiration from the past. Lee quoted Vanessa Friedman, fashion critic for *The New York Times*: “When people are uncertain about the future, they will look to the past.”
- Lee said that we can all agree that the future is up in the air, so she went through some color and fashion trends from each decade, starting with the 1950s, that are starting to become popular again (avocado-green appliances, anyone?).
- “Today’s consumer tastes are more eclectic than ever before,” said Lee, who showed examples of simple Hygge and Japangi styles to outlandish “Memphis style” décor (think the colors from the '80s). It really covers a wide spectrum.
- Consumers aren’t just being creative with their designs, but with their actual houses. Because of the low availability of housing, people are finding different things to make into a home. Not just tiny homes, but metal Quonsets, and even an old airplane and a helicopter! Lee called it “A variation of lifestyle.”
- The mixing of styles is showing in fabrics and textiles, too. She’s seeing linen and velveteen together, along with natural materials like wood, rope, rattan and re-used wire. “Nature and color together,” she said.
- Animal and bird themes are also pervasive in home décor. And pet accessories are starting to get more stylish. Everything from beds and bowls are getting fancier and more colorful. (I think my cat, Peanut, would love a pink faux fur bed …)
- Although Pantone still announces a Color of the Year, Lee doesn’t think there’s ever going to be one primary color trend ever again because there’s such a wide range of colors and textures. “There’s just too much out there,” she said.

Interveinal Necrosis on Dahlia

Here’s a dahlia issue the Tech On Demand team worked with a grower to address that I want to

share, so you will avoid the same problem.

Look at the marginal and interveinal necrosis on new growth and immature leaves in the photo below:

After chatting with the grower who experienced the symptoms, our experts felt this is likely calcium deficiency. The recommendation was to apply a foliar feed with calcium nitrate or calcium chloride

and to include CapSil or another surfactant to improve uptake. After this application, it's a good idea to continue feeding the dahlias with Ca based fertilizer.

For even more information on nutrient disorders associated with dahlia crops, check out **THIS VIDEO** from Dr. Brian Whipker at NC State, released by our friends at e-GRO.

Finish Line …

I used to mention this all the time in this newsletter, but I haven't for a while: The Tech On Demand team is truly grateful for all of your support and feedback!

Based on conversations and emails, it seems like we're hitting the mark pretty well with content and timeliness. For those of you who suggested topics to cover in future editions, I'm on it. It's a matter of lining up the right experts to tackle the challenges you proposed.

I want to reiterate that I'm only an EMAIL away (or a message on LinkedIn, Facebook or wherever you want to reach out) and I am always willing to chat. If you have go-to links for technical information, please pass those along, as well. Our goal here is to be collaborative and we want to do our best to aggregate resources so you don't have to waste time searching and can get back to business—the business of producing amazing plants!

Shoot me a message when you have time! I always love hearing from readers.

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

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