



# Turn For The Better

BY DAVID FRABOTTA  
SENIOR EDITOR

**I**t's easy to take chemicals for granted. Superintendents use pesticides like Subway uses bread. They are so intertwined into daily operations that many wouldn't be able to do their jobs well without them, at least not well enough to satisfy fickle golfers.

But superintendents are walking a tightrope. Heightened government scrutiny, local watershed regulations and pathogen resistance threaten the status quo, especially for fungicides. Add the fact that research and development can be slow considering the approval process, and the short list of options to fight turf pathogens could get shorter without diligent management.


"If we manage and rotate our modes of action, then our products will stay viable," says Rick Fletcher, director of product development for Cleary Chemical. He spoke to superintendents during the Ohio Turfgrass Foundation Conference and Show in December.

Academic research muddies the debate around fungicide management. By now, most superintendents are familiar with the widely disputed theory established by Michigan State University researcher Joe Vargas, who says turf managers should use only one fungicide until it no longer works, then switch to another product until disease pathogens show signs of resistance, then switch products, and so on.

That flies in the face of conventional wisdom, turf school curriculum and management practices of most superintendents (please, if anyone out there uses the Vargas method, call me. We'd love to talk about how it works, and so would our readers). Although few superintendents use the Vargas approach, it might be starting to gain some theoretical acceptance.

*Continued on page 62*

Fungicide rotation  
and frequent  
applications at  
low rates can  
keep pathogens  
from flourishing



The Bent Creek Country Club sprays greens with low rates every week, and it treats tees and fairways every 14 to 21 days.

*Continued from page 60*

“By changing in a rotation, all you have ended up with is something that is resistant to everything,” says Kent Turner, superintendent of Brookside Country Club in Canton, Ohio. “Or you can use just one until it is done. It’s against contrary belief, but it tends to lead more toward the medical side (like antibiotics).”

While the theory makes sense, Turner tends to rotate chemistries and tank mix. His 85-year-old Donald Ross course has seen its share of chemicals, and not all of them work anymore.

“Thiophanate-methyl does not work on dollar spot here, but we still use it for anthracnose. (Triadimefon) is another one that does not work a day for dollar spot,” Turner says.

They might not work like they used to, but Turner still throws some down during high-stress times of the summer to try to instigate some residual effects, especially since the Environmental Protection Agency’s rules to limit chlorothalonil products went into effect. (Visit [www.turfgrasstrends.com](http://www.turfgrasstrends.com) and

### How Long Does it Take for Resistance?\*

- Benzimidazole: 2-3 years
- Dicarboximide: 3-5 years
- DMI: 3-5 years
- Strobilurins: 2-3 years
- Phenylamides: 2-3 years
- Phosphonates: not yet
- Chloronitriles, Dithiocarbamates: not yet

\*Agricultural examples

Source: Rick Fletcher, Cleary Chemical Corp., 2005

search “chlorothalonil” for a guide to EPA restrictions.)

“It does require more strategy with the new regulations,” he says. “The strobilurin-type fungicides have certainly helped with anthracnose for people who had resistance with (thiophanate-methyl). It would be nice in the future if some of the pharmaceutical companies could come up with another contact fungicide for dollar spot (to augment chlorothalonil applications). But it appears that there isn’t a lot in the pipeline because the EPA seems to be stricter on contacts.”

Part of the reason the EPA is so tough on products approved for turf is because it opens the door for residential applicability, which means children could be exposed to chemicals. For example, the EPA finally approved Syngenta’s new insecticide Meridian for turf in February even though the chemistry had been approved in ornamentals since 2003.

### Common practices

Many superintendents have adopted a fungicide program that focuses on prevention to combat the chlorothalonil restrictions.

Jim Nicol, the certified superintendent of Hazeltine National Golf Club in Chaska, Minn., sprays fungicides every two weeks to stay atop the course’s anthracnose problem. He typically applies a sterol inhibitor with a contact, then he rotates his chemistries about every third application, beginning in early April.

“There are some pathogens that some chemistries work better on than others,” Nicol says. “So we rotate between contacts and systems depending on specific pathogen pressure, and we are always tank mixing at the lower rates for synergistic values.”

Frequent applications at low rates keeps the Canterbury Golf Club in Beachwood, Ohio, relatively disease free, too. Certified superintendent Terry Bonar says dollar spot is a pesky pest almost all summer.

“Dollar spot is a lot harder to get rid of than it is to keep out,” Bonar says. “So we use very low rates every week almost without fail.”

Bonar begins his program in early April with an iprodione application for leaf spot

*Continued on page 64*

It's important to experience and understand soil tests so the necessary fertilizers can be used to keep turf healthy.

*Continued from page 62*

and sometimes an application of triadimefon if weather permits.

But Bonar's favorite preventive by far is chlorothalonil, which he applies at a fraction of the labeled rate (about 0.7 of an ounce) once his program is in full swing in early May through September.

"You don't find much resistance with contacts," he says.

Bonar sprinkles in a triadimefon application (a systemic) on June 1 and July 1 to help prevent anthracnose, and he'll combat brown patch outbreaks with a strobilurin.

The remarkable thing is that Canterbury sprays tees, greens and fairways on each application. It sounds expensive, but Bonar says he's able to keep his budget in control by using low rates to prevent disease instead of reacting to outbreaks with curative sprays at higher rates. About \$35,000 covers his expenses.

"I'll bet I don't have the highest fungicide budget (in the area) but because we spray at light rates every week, we can put down four applications to their one application."

Similarly, Jim Loke, certified superintendent of Bent Creek Country Club in Lancaster, Pa., begins his program fungicide program in March, and he rotates applications between a contact, systemic and sterol inhibitor for about three months.

"Then beginning in June, I begin tank mixing a contact with a systemic or a contact with a sterol inhibitor pretty religiously," Loke says. "On my greens, I spray low label rates on a seven-day period. And tees and fairways are sprayed on a 14- to 21-day cycle following the same chemistry of rotation."

But Loke says it's important to know why you are spraying certain chemicals. His program appears to be a bit like a shotgun approach: scattering all types of materials in hopes that one will work. But it's really more like a revolver: using specific chemistries to combat known disease pressures in conjunction with turf health and soil composition.

"Interpreting soil test results takes time and experience, and it's important to begin that process and really become educated and

### Aligning the Right Chemistries

Currently, there are 37 different modes of action to manage diseases. Turf managers could be increasing the odds of pathogen tolerance if they fail to select chemistries that complement each other. Luckily, there's a resource to ensure fungicide mixes are synergistic.

The Fungicide Resistance Action Committee (FRAC) was created to help crop producers manage disease resistance. The major chemical manufacturers support it, and it provides use guidelines, information about product modes of action, resistance updates, persistence of resistance isolates and descriptions of the FRAC code displayed on most products. The FRAC codes are numbers and letters used to distinguish the fungicide groups according to their cross-resistance behavior.

It also archives research and provides forums on fungicide families and specific chemistries.

Visit [www.frac.info](http://www.frac.info) for more information.

experience what fertilizers are necessary and important to keep the soils healthy and therefore keep the grass healthy," he says. "That's really evident when dealing with basal anthracnose; fertility seems to be the most important element in healing, repairing or preventing basal anthracnose."

Technical aspects of a spraying program can have significant effects on product efficacy as well. Tires lose air, and nozzles clog and wear, which makes it important to calibrate equipment before each use to obtain desired spray volume and results. Also note that manufacturers recommend that golf courses limit the number and timing of treatments and maintain recommended dose rates and intervals.

Certain chemistries and chemistry combinations work better depending on the season and disease pressure.

And some chemistry might not work well at all. Nicol says he remembers benomyl being heralded as the silver bullet for turf disease. It was a cure-all for a while — about a year. Then, it didn't work on anything.

"I wouldn't jump on any bandwagon right away," Nicol says. "I'd let a little time go by before you can really evaluate what's better than the other." ■