

The Ugly Truth About

Phytotoxicity

It's not a big problem, but it can turn your beautiful golf course into a wasteland of brown turf if it happens. Experts offer common-sense tips to avoid the problem

BY FRANK H. ANDORKA JR. MANAGING EDITOR

John Gurke, certified superintendent of Aurora (Ill.) CC, knew he was in trouble when he toured his golf course in June 2000. Instead of looking lush green, he found his *Poa annua*-bentgrass combination fairways turning the color of burnt straw. He admits it scared him.

"It was something I definitely didn't want to see," Gurke says. "As I watched the grass turn brown, I remember asking myself, 'Where was it going to stop?'"

Gurke immediately dropped to his knees to examine the fairways closely. To his relief, he discovered the turf was not dead. Green growth flourished underneath the ugly tips. Reassured that he didn't have a permanent crisis on his hands, Gurke set out to correct the problem — and to find out what caused it in the first place.

He examined his records in his office and discovered the dilemma. In an effort to reduce the overall number of applications of chemicals, Gurke says he combined three different products that accidentally created a "hot" application.

"Superintendents are always trying to combine products for economic purposes, and most of the time they work," Gurke says. "This time, the combined product was hotter than I thought it would be, which led to fairly widespread tip burn. It looked terrible, but we could fix it by applying fertilizer to grow it out of the damage."

Gurke's notes to himself in his log that day? "Smoked 'em good!"

The general consensus among the experts is that phytotoxicity like Gurke's isn't widespread, but every superintendent will experience it at least once in his or her career. It's easy to see when the turf is damaged (it often turns the color of burnt straw), but the key is identifying correctly what caused it.

The experts say there are three common culprits in cases of phytotoxicity. If the turf is injured in a clear pattern, chances are that the superintendent (or his chemical appli-

cator) caused the problem. Another common cause is mis-mixed chemicals. Thirdly, freakish weather patterns can also waylay the best-laid plans of superintendents. Fortunately, most problems can be avoided if some common-sense tips are adhered to when chemicals are applied.

What to look for

As one USGA Green Section agronomist wag put it, "Grass doesn't naturally die in straight lines." If the dead turf forms



a distinct pattern, superintendents can rest assured the problem was in the application or the applicator.

"If you see something that looks like a pattern, it's time to check your records to see what you sprayed," says Darin Bevard, a USGA Green Section agronomist based in West Chester, Pa. "It's definitely an 'uh-oh' moment."

Bevard says superintendents should look for discolored turf. If they're lucky (as Gurke was), the phytotoxicity will be limited to the leaf tips. He also recommends looking for wilt and lack of vigor. Armand LeSage, certified superintendent at Lake Arrowhead (Calif.) CC, says superintendents can tell if they're experiencing phytotoxicity if nothing they do with water, fertilizer or iron brings the turf back.

"It's not as if I see this on all my visits," Bevard says. "It's a one in 20 occurrence — 5 percent of my visits each year. I don't see true catastrophes more than twice a year. But when it happens to you, it will seem like a catastrophe whether it is one or not."

LeSage offered this tongue-in-cheek consolation to his colleagues who experience severe phytotoxicity, "At least you don't have to worry about disease because the turf is too dead to be a host for the pathogen."

Though there are occasional cases of phytotoxicity caused by other pesticides, by far the majority of cases are caused by misapplied herbicides, says Matt Nelson, a USGA Green

Section agronomist in its Twin Falls, Idaho, office. "More often than not, it's an herbicide applied at the wrong rates at the wrong time," Nelson says.

Read the label

You'd think that reading the labels on chemicals before spraying should go without saying. But expert after expert make the point that superintendents don't always do the obvious.

"We aren't chemists," says Scott Welder, superintendent of the Lake Buena Vista Course at Walt Disney World in Orlando. "It is upsetting when people tank mix chemicals without reading the label because it gives the entire profession a black eye.

"The chemical manufacturers have spent millions of dollars to research what mixes are acceptable and which aren't", he adds. "We should always follow the label recommendations as it is the law."

Todd Lowe, a USGA Green Section agronomist in Rotunda West, Fla., says superintendents should pay special attention to specified turf varieties and rates.

"When we get reports of phytotoxicity in our region, it's often applicator error," Lowe says. "Sometimes you also see superintendents use a product on their greens that is labeled for fairways or apply chemicals during periods of high heat and humidity. These can all cause phytotoxicity."

But it's not just applying a chemical on the wrong turf that can cause problems. Sometimes, something as simple as misreading a decimal point can cause trouble. Nelson tells the story of one unfortunate golf course in the Northwest where an applicator misread the decimal point on a sulfur application. Instead of applying 1 pound of sulfur per 1,000 square feet, the applicator applied 10 pounds of sulfur per 1,000 square feet. The result was fried tees.

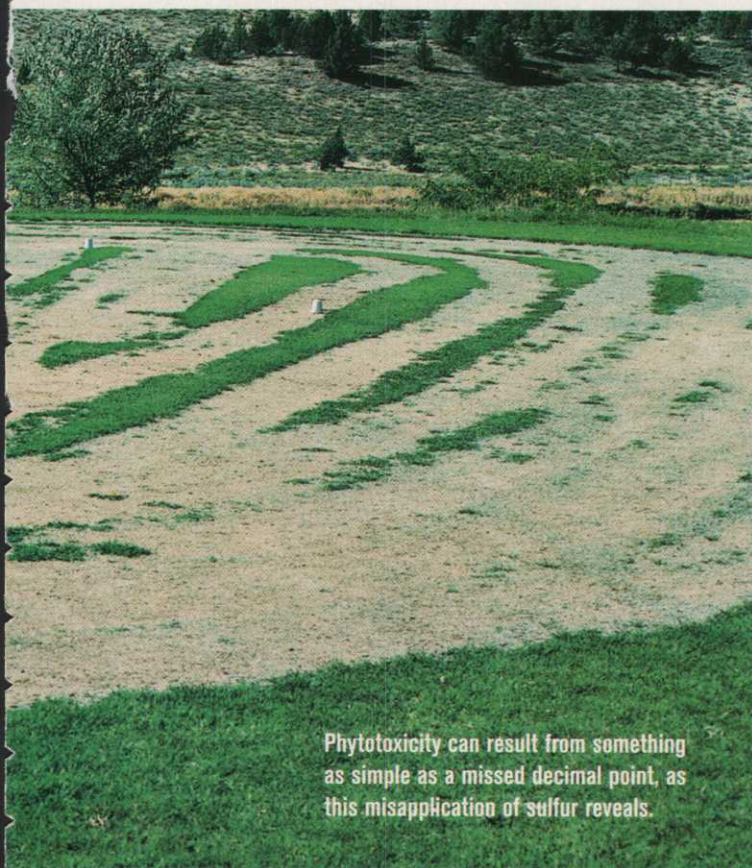
"Most of the time, superintendents are doing their homework, but people like to tank-mix and sometimes that hurts them," Nelson says. "If you're careful and read the labels, you shouldn't have too many problems."

Watch the weather

Jim Seaman, certified superintendent of Shaker Ridge CC in Colonie, N.Y., watches weather reports religiously. In upstate New York, the weather has a tendency to change quickly, and Seaman is always concerned about the effect of such variables on his chemical applications. But around Thanksgiving two or three years ago, the weather bit Seaman anyway despite his best efforts to avoid weather-related problems.

Seaman says he applied PCNB to his greens at temperatures well within the constraints listed on the label to control snow mold. Unfortunately, the temperatures soared to levels much higher than would be expected in early December (the famous Indian summer effect) in his region.

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Phytotoxicity can result from something as simple as a missed decimal point, as this misapplication of sulfur reveals.

LARRY GILHUI/USGA

Phytotoxicity

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As a result, two greens at high elevations in direct sun were burned slightly.

"It's good that I didn't use the highest rates, or I would have had worse problems," Seaman says.

The end game

So what can superintendents reasonably do to avoid becoming the next victim of a phytotoxic problem? Aside from those mentioned above, here are some other common sense guidelines superintendents should follow:

Train spray technicians adequately or give them their instructions in writing.

Lowe says superintendents should make sure everyone knows the chemicals applied and what constitutes proper application protocols.

"They should check the sprayers to make sure they're properly calibrated and make sure the tanks were washed out properly so they're not dealing with residues from other chemicals," Lowe says. "You don't want inexperienced people out there spraying these chemicals, so make sure they know what they're doing."

Bevard suggests putting application instructions in writing for spray technicians before they go out.

Gurke says training employees is the most important step superintendents can take to prevent phytotoxic problems.

"If you don't train them correctly, you'll be the fall guy when something happens," Gurke says. "So it's in your best interest to train them well."

Use enough water.

Seaman says one of the most common mistakes superintendents make is not using enough water to dilute the chemicals. He recommends using at least 2 gallons of water per 1,000 square feet of turf. Bevard says he agrees with Seaman's figure as a guideline, but it's not a hard and fast rule.

"If you don't use enough water, you can end up putting out chemicals in much higher concentrations than you intend," Seaman says. "Most labels will give those guidelines, and superintendents should follow them."

"It really depends on the product," Bevard says. "The label will usually provide guidelines for the minimum amount of water to be used during application."

Test any tank-mixed combinations on inconspicuous areas of the course.

Welder tells fellow superintendents that they shouldn't gamble on their greens. If tank-mixing is vital, first check the label, with the supplier or with fellow superintendents.

"You can do the 'jar test' to determine if the chemicals are compatible, but it won't tell you if you have a potential phytotoxicity problem," Welder says. "Some chemicals are



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JIM SEAMAN
CERTIFIED SUPERINTENDENT
SHAKER RIDGE CC

synergistic with others, but this can normally be found on the label. If I was dead set on applying an exotic tank mix, I would first test it on the sod nursery."

LeSage says he once did a test to see if the advice of a mentor about mixing insecticides with fertilizer on his nursery was true. He killed most of the turf with his test.

"I'm glad I didn't try it on my course," LeSage says. "I like my job."

Go with your gut instinct.

If superintendents don't feel comfortable with an application, they shouldn't make it, Bevard says. Superintendents should call the distributor or company representatives to ask for guidance if there are any doubts about how chemicals will react. "You can save yourself a lot of heartache if you ask before you apply," Bevard says.

He also suggests superintendents find out the exact mode of action for the chemical before they "fix" the problem. Some solutions can actually make the problem worse.

For example, if a herbicide is taken up through the roots, trying to water it in will exacerbate the problem as it's forced through the root zone. "Doing nothing may not be the worst option," Bevard says.

Be honest with the golfers.

Gurke says superintendents must resist that temptation to deflect blame when applicator error causes a phytotoxicity problem.

"You want to get ahead of the story and get everything out in the open," Gurke says. "Knowledge is the most potent weapon you have against unfounded rumors about what happened on your course."

If superintendents try to cover up their mistakes, it will only cost them in the long run, Gurke says. He was honest with his golfers when he accidentally smoked the fairways, and it paid off. There weren't calls for his head, and his integrity remained intact because he admitted his mistake.

"It only takes one time for your members to discover you're lying," Gurke says. "After that, they'll never believe anything else you say." ■