

Pre-emergent herbicides: Now taking time out of the application equation

By MARK LESLIE

Sounds like the sales pitch for a Lamborghini:

"You can stop it on a dime..."

"It brings much lower environmental loading..."

"Bigger windows (of opportunity)..."

"It's in a class by itself."

Indeed, some of the pre-emergent herbicides on the market today are in a class far beyond products available to golf course superintendents even as they entered the 1990s.

"A lot of the new pre-emergents are so-o-o good..." said one Midwestern superintendent.

So good at what?

- So-o-o long-lasting.

Pre-emergents are available that can be applied not only in the early spring but the previous fall.

"You gain a lot more flexibility about when you can apply it. You don't have to push your germination window as hard to feel confident that you can have season-long control," said Joe Yoder, Sandoz's manager of technical service and product development for specialty products. "If someone has a real busy spring and has a difficult time in getting around to all of their needs, this allows them to apply back in the fall

"It doesn't mean they can't come back

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— Joe Yoder, Sandoz Agro

in the spring and touch it up if they want to. But it can, for instance, be the first round in their goosegrass control program."

The traditional pre-emergents did not work if they were applied too early and the soil temperatures didn't get up high enough, or if it rained. The timing was all temperature-related and soil temperature-related because it was predicated on when the [weed] seeds germinate.

- So-o-o low-use.

"We see use rates continuing to go lower," said Bob Gordon, sales representative for Rohm & Haas, which produces Dimension. "Depending on your application, the rates are as low as 1/8 pound per acre. The high end is only one-half pound per acre."

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Triazole-based fungicides: Just too good to be true?

By MARK LESLIE

In a classic example of "icing on the cake," scientists have proven that fungicides in the triazole family not only fight turf disease, they also increase establishment and growth of cool-season turfgrasses.

Drawing on several years of research analyzing the effects of various products on new turf establishment, Dr. Richard E. Schmidt of Virginia Tech in Blacksburg, Va., said: "We're producing stimulation [of turfgrass] using relatively low rates of materials."

Schmidt, of the Department of Crop and Soil Environmental Sciences, specifically tested the triazoles propiconazole (Ciba's Banner), triadimefon (Miles' Bayleton) and cyproconazole (Sandoz's Sentinel), as well as seaweed-extracted cytokinin.

Not only did the triazoles fight systemic fungi and improve growth, they helped drought and salt tolerance in the bluegrasses, ryegrasses and bentgrasses tested, Schmidt said.

The researcher explained that triazole is a sterol inhibitor. "When

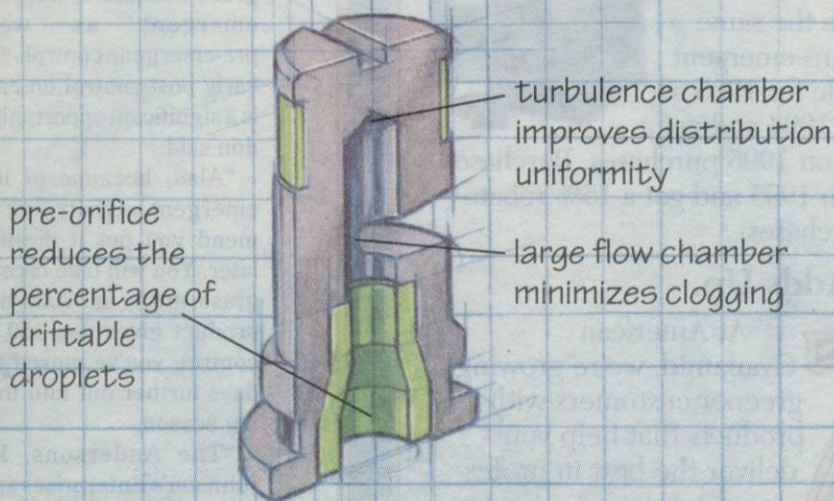
you reduce sterol biosynthesis within a plant, the membranes are more fluid. And this improves moisture relationships," Schmidt said. "Triazoles also reduce saturation of fatty acids in the lipids. This makes membranes more 'fluidy.' So we have more water going into the cells, then more electrolytes also go in... The plant then retains more water and is therefore more drought-tolerant."

Regarding salt tolerance, he said: "We've established and confirmed that [triazoles] reduce sterols and saturation of the fatty acids, creating more double-bonding. However, the biggest factor we're finding is that we're tremendously increasing the anti-oxidants within the plant."

"We have demonstrated that grasses stimulated to have high concentration of anti-oxidants can tolerate saline irrigation. When a plant gets into a hazardous situation, it will start creating anti-oxidants. But we can improve that 200- to 400-fold," he said.

Tests also indicated that plants treated with triazoles used more car-

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Good news for triazole users

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bon dioxide, which increases the rate of photosynthesis, or food production. Schmidt reported stimulated root development as well, with best results occurring with applications to new seedlings at the two- to three-leaf stage.

Schmidt also reported "promising results" using extract from seaweed, "a very rich, natural source of cytokinin, a hormone that naturally develops in plants and which incites budding development."

Combining cytokinin and triazoles could produce the best effects, he said, citing an example of a turfgrass grower who came to Schmidt a year or so ago concerning problems he had with several acres of tall fescues.

"I recommended a blend of Banner and a fortified seaweed product. He came back later with a check to support our turfgrass biostimulant research," Schmidt said.

He added that superintendents can use seaweed and reduce the amount of triazoles and still get the same results. "It's an impact on IPM [Integrated Pest Management] and also has economical benefit," he said. "When a sod grower is that pleased with results, he must have benefited economically."

Schmidt warned that dozens of new seaweed-based products are on the market and "you have to be careful. Most on the market are fortified — mixtures of humic acid and seaweed extracts and maybe something else; some are straight seaweed; and then there are different extraction methods used to obtain the seaweed. They could be concentrated by boiling, freeze-drying, or mechanical processing. If it's boiled, it has less value because heat de-natures the proteins."

He also warned not to overdose the grass.

"These do have a hormonal effect. And they have an optimum application rate. Once you go over that, it starts decreasing in effectiveness," he said. "Too much activity gives detrimental effects."

Overloading can mean overkilling, he said. "What happens is, a superintendent comes out in the spring and uses Scott's Paclobutrazol [a triazole turf-growth regulator] to control seeding of *Poa annua*, then he puts down Banner to control dollar spot, then he puts Banner on again as a growth enhancer/conditioner. Then he gets summer patch disease and he calls a pathologist who tells him to put on a triazole fungicide 4-X twice. And his green dies and he wonders why.

"What he has done is over-

dosed the green with triazole compounds which cause hormonal reactions within the plant."

Mike Mongon, superintendent at Arcola Country Club in Paramus, N.J., testified to the effectiveness of a triazole's improvement on seedling turf.

Facing heavy winter damage in 1994, Mongon applied Banner and reported: "It certainly looked like it helped tremendously. Other areas of the course also had winter damage and didn't respond as favorably as the Banner-treated turf."

Dr. Schmidt suggests mixing in seaweed product

BLACKSBURG, Va. — By using fortified seaweed with triazoles and other fungicides, golf course superintendents can greatly reduce the amount of fungicides they use, according to Virginia Tech Professor Richard E. Schmidt.

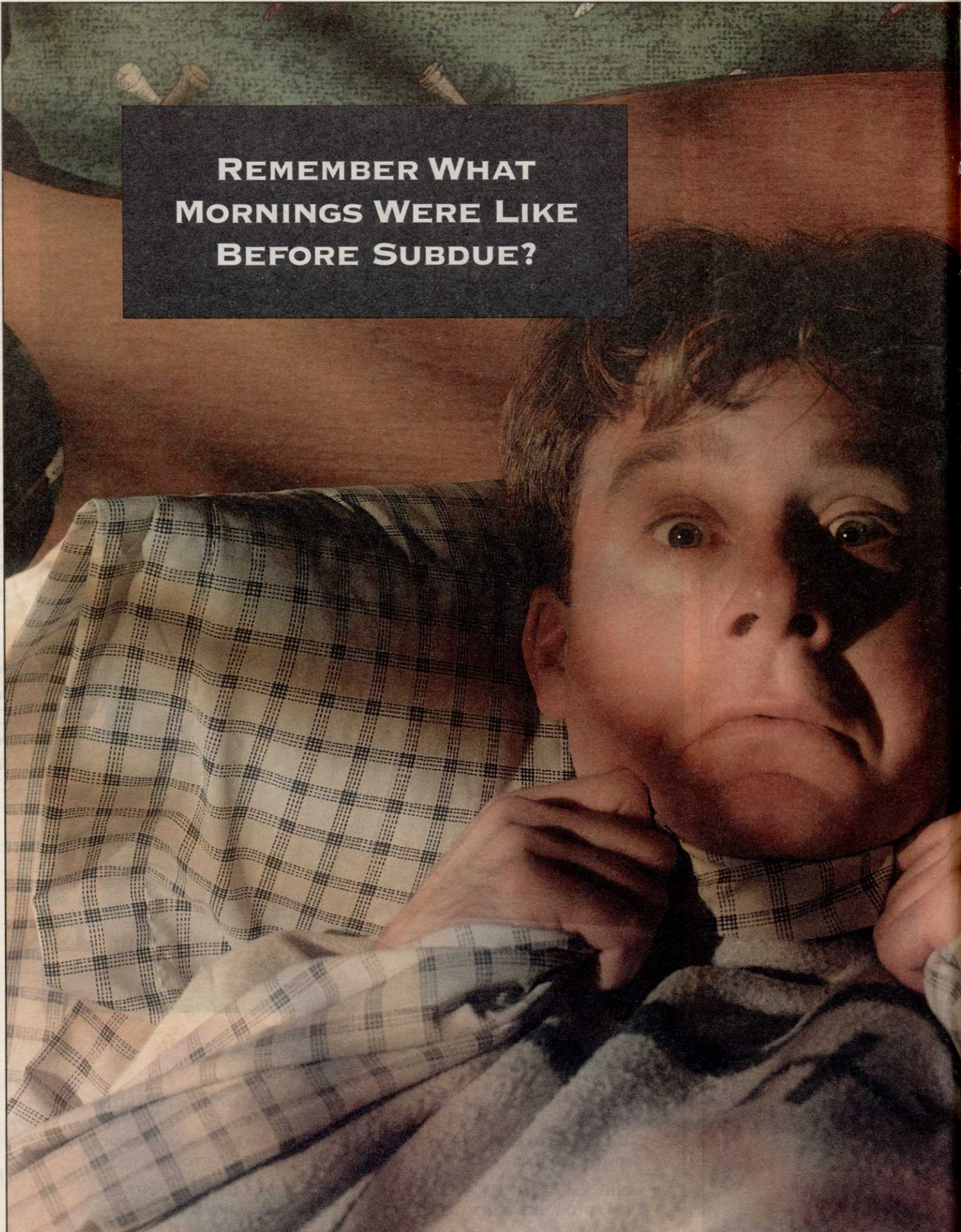
"It's an education of how to use them in concert, but over a year's time you can probably reduce the amount of fungicides needed by 40 percent when the materials are properly used," Schmidt said. "We have data permitting me to say that. It not only works with the triazoles, but other fungicides as well."

The Virginia Tech researcher pointed to

not only the economic impact but the "more important ecology impact."

"We're making the plant more healthy," he explained. "For example, we have real strong data showing we can condition plants to resist the invasion of nematodes. To control nematodes chemically is not only expensive but very caustic. So if we can get away without using a nemacide, we reduce environmental hazards."

The turfgrass industry is "bombarded with innuendoes about not being ecologically sound," Schmidt said. "But we are. And here is a case where we can improve plant vigor and also show that we are good stewards of the environment."



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