

# Product

## PROGRESSION

New insecticides target pests more specifically, reducing the quantity of product needed to perform **By John Walsh**

**T**here's no question synthetic insecticides are more pest specific than ones used 20 years ago. Golf course superintendents can use less of a product, still have improved effectiveness and not worry as much about off-target issues.

"Over my 30-year career as a superintendent, the progress that's been made is significant, considering the highly toxic products used in the early 1980s," says Scott Werner, superintendent at Lincolnshire Fields Country Club, a private, 18-hole course in Champaign, Ill.

But to place all new insecticides into a "more environmentally friendly" category isn't so simple.

"You can't lump all insecticides, no matter how new they are, together," says Dave Shetlar, Ph.D., associate professor in the department of entomology at the Ohio State University. "Just saying they're less toxic and that we use less of them is an

oversimplification. The way these insecticides work makes all the difference in the world as far as safety is concerned."

Insecticides are rated with an LD50 number to indicate their toxicity levels. LD50 is the abbreviation for the amount of toxicant needed to kill 50 percent of a test animal population. It's expressed in terms of weight of chemical per unit of body weight. LD50 is also used to measure the acute oral and dermal toxicity of a chemical — the lower the LD50 value, the more poisonous the chemical. LD50 isn't a measure of environmental hazard.

A low acute toxicity rating isn't the same as environmentally friendly, Shetlar says. For example, fipronil has an LD50 of just 97. "It's extremely toxic, but it's used at very low rates," he adds. "At those low rates, it has a minimal impact on nontargets. It's commonly used for fire ants, mole crickets, and for fleas and ticks on dogs and cats."

Dursban and diazinon were used "everywhere against everything," Shetlar adds. "That's why the EPA banned them."

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# CATERPILLARS

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And then there's DuPont Professional Products' Acelepryn (chlorantraniliprole), which is in a category all by

itself because its LD50 number is higher than 5,000, Shetlar says.

"And if the LD50 number is that high, the EPA says you don't need a signal word on the label," he says. "It's the first product I know of that has no caution label."

Shetlar says Valent's Arena has an active ingredient (clothianidin) with an

LD50 of 5,000. "But the inerts made it more toxic," he adds. "The LD50 of that product is 3,500. With an LD50 of less than 5,000, you need a caution label."

One measure of safety for an insecticide is its effect on nontargeted pests. The newer chemistries are picking up on neural differences in insects and animals, making them more targeted, hence less toxic to noninsects, Shetlar says. But to go to the next level of safety is not an easy task.

"How do I make more money on more complicated products?" Shetlar asks. "The more complex they are to make, the higher the cost, and the use declines because the product is more targeted. From the end-users' views, they want products to be more broad spectrum so they don't have to buy and apply more. From an environmental aspect, the products [aim] to be more targeted."

Shetlar remembers a targeted product in the 1980s that killed only aphids, but it only lasted about three years on the U.S. market because it was too targeted.

All the insecticides have their own niches. Syngenta Professional Products' Meridian, for example, targets insects such as billbugs, white grubs, chinch bugs and mole crickets, Shetlar says. Arena has a broad spectrum and provides good control on weevils, Shetlar says. It has 14 to 20 days of action on caterpillars.

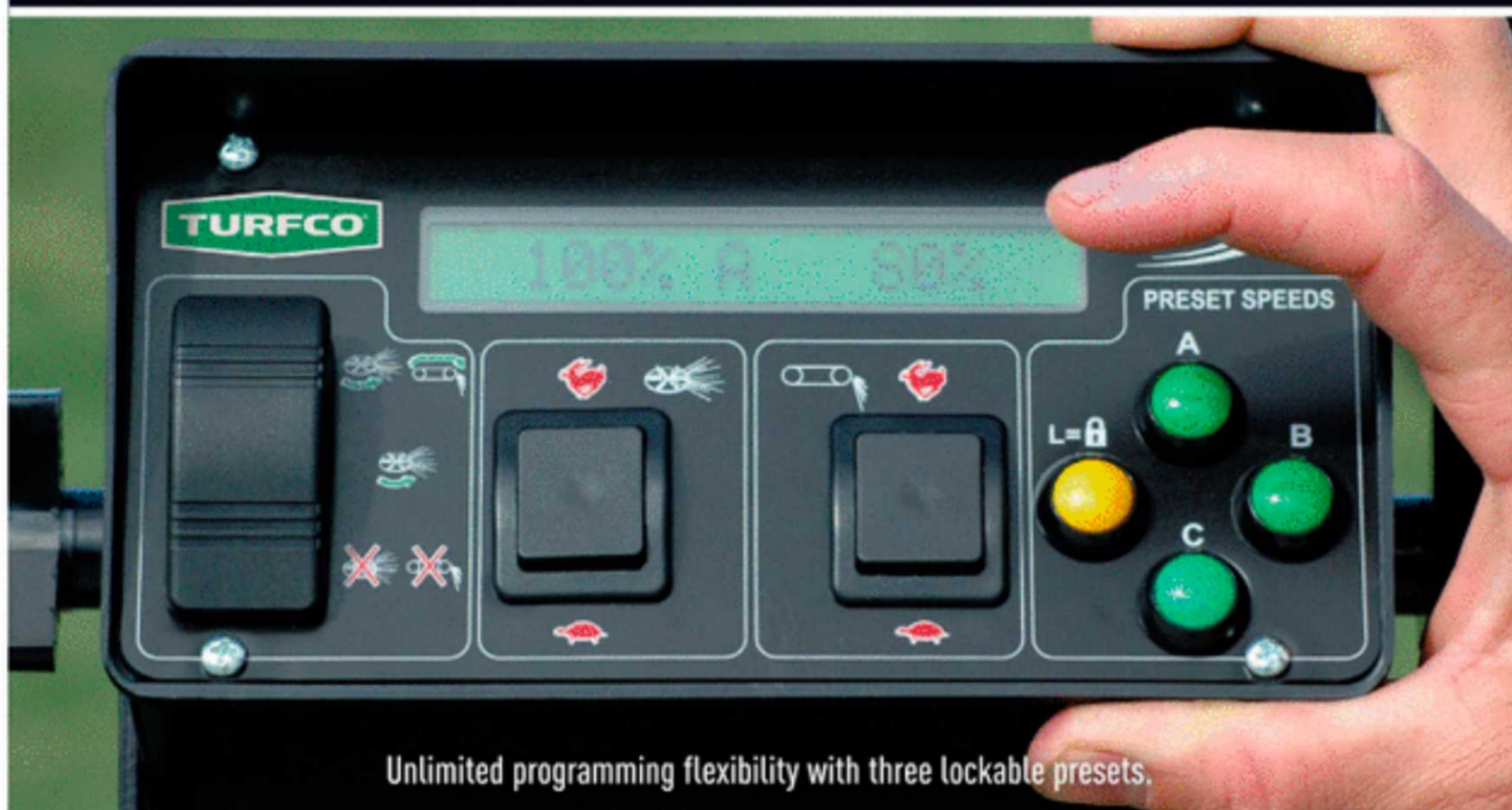
Arysta LifeSciences' Aloft, a combo product (bifenthrin and clothianidin) similar to Bayer Environmental Science's Allectus, effectively knocks down surface feeders, the caterpillar complex and chinch bugs, Shetlar says. Arena and Aloft take out billbugs quickly.

Acelepryn is preventive because it affects insects' muscles. Older insects could survive ingesting it (would get muscle cramps), but an early instar insect would be killed within hours.

Superintendents are impressed with the new insecticides. Jeff White, golf course and grounds manager at Lake Quivera Country Club in Quivera,

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Kan., manages bentgrass greens and zoysiagrass tees and fairways at the Audubon-certified course. White uses Aloft for grub control in the cool-season grass roughs (applied the last week in June or the first week in July once a year). This is the second season he has used it. Aloft controls surface-feeding insects and its

use rates are ultra-low compared with what White used five years ago.

“I don’t treat for any insect other than grubs,” he says. “I do a lot of scouting. I don’t want to impact the environment any more than I have to. I take those issues very seriously for all involved — golfers, members, workers, etc.”

White likes the broader application



# WHITE GRUBS

**With some of the older chemistries, timing was an issue, and turf damage was the result.**

windows of products such as Aloft.

“With a lot of older products, if the timing was off, you’d have to go back and treat,” he says. “With the newer products, I’ve never had to go back.”

Tom Tuttle, superintendent at the Trenton (N.J.) Country Club, mainly controls annual bluegrass weevils and white grubs, and to a lesser degree cutworms and armyworms on *Poa annual* bentgrass greens and *Poa annual*/bentgrass/ryegrass fairways.

Tuttle has had issues with annual bluegrass weevils for nine years. With some of the older chemistries, timing was always an issue, and turfgrass damage was the result. Then he discovered products such as Provaunt (indoxacarb), a curative product, and Acelepryn during a winter seminar from Pat Vittum, Ph.D., of the University of Massachusetts and Paul Heller, Ph.D., of Penn State University, who were testing the products.

Last year, Tuttle used Acelepryn for white grubs. This year, he applied it in April for annual bluegrass weevil and white grubs. Last year, Acelepryn wasn’t available until mid- to late June in his area, so it was too late to use it for annual bluegrass weevils.

“You put out Acelepryn early and get season-long control, which is attractive,” he says. “Acelepryn is a little more expensive up front, but it’s minimal. I’m more concerned about protecting my

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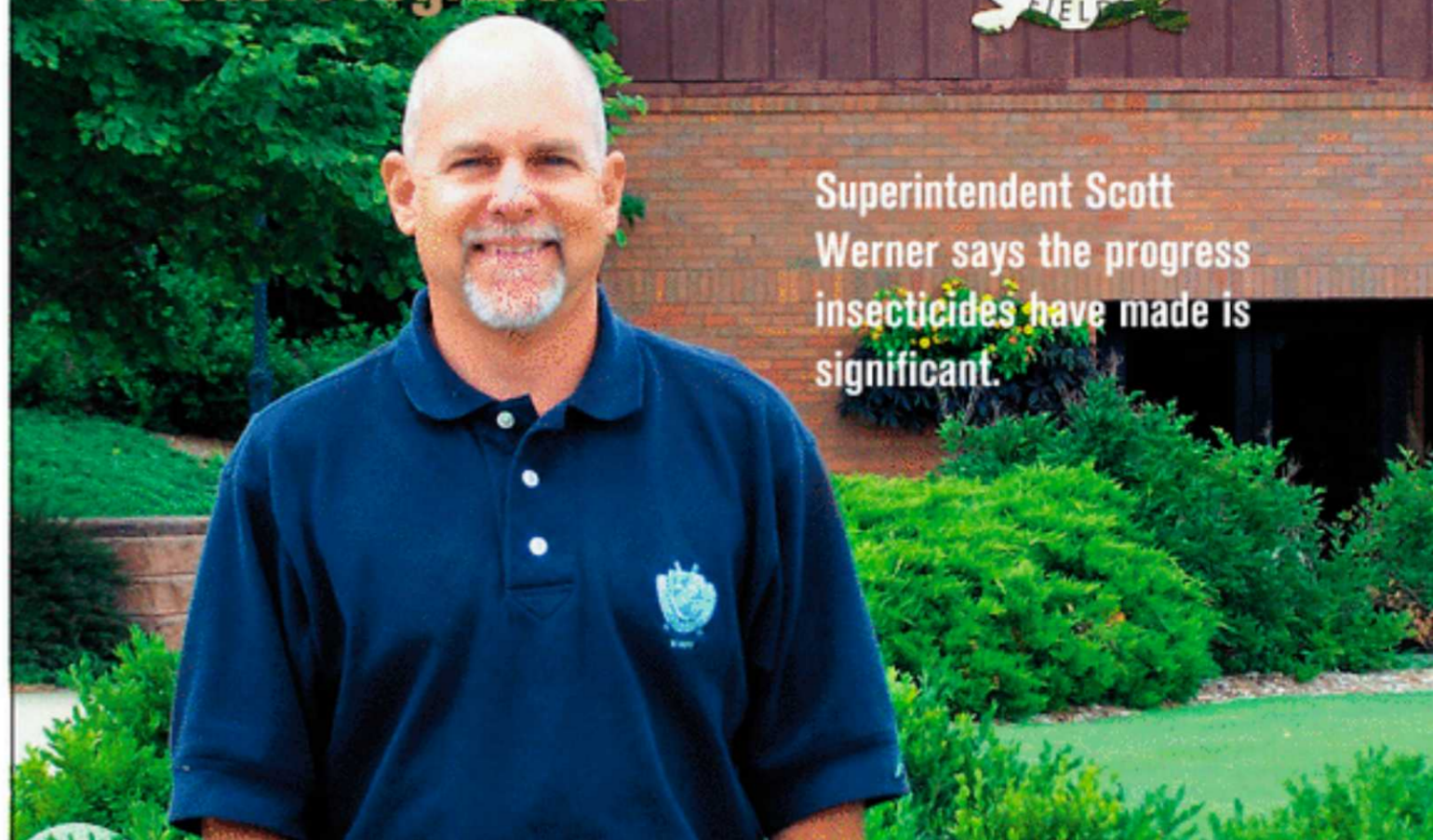
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Superintendent Scott Werner says the progress insecticides have made is significant.

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turf. Acelepryn has good efficacy for surface feeders, but I don't target those insects."

Joe Noppenberger, superintendent at Wedgewood Golf & Country Club in Powell, Ohio, uses mostly Arena and Acelepryn to control cutworms, billbugs, white grubs, June beetles and masked chafers. He applies Arena and Acelepryn for white grubs and billbugs in late May. Then he treats roughs mid-summer for white grubs.

Arena and Acelepryn work much better than older products, Noppenberger says. Currently, he using the 6.4-ounces-per-acre rate with Arena and 8-ounces-per-acre rate with Acelepryn.

At Lincolnshire, Werner targets primarily black cutworms in bentgrass and white grubs under the irrigated areas (primary rough and fairways) except for greens. He treats cutworms curatively and white grubs preventively. He spot treats some areas in the rough because of cost, acreage and risk factor. Werner's treatment of white grubs is preventive (50 acres) with Meridian, which he has used since 2007.

"A lot of people are going out early in the season, but I typically treat in July, closer to when they hatch, which is in mid-August," he says. "It seems the failures occur with those who treated earlier in the year."

The entire neonicotinoids class — a class of insecticides that act on the nervous system of insects with lower toxicity to mammals — has a lower use rate and lower environmental load than the insecticides from the 1990s, Werner says. The insecticides are more pest specific, so there are not as many off-target issues.

"They're a tremendous improvement, which brings a peace of mind," says Werner, who says he's careful about his spray program because his course is surrounded by homes.

Despite the evolution of more targeted insecticides, the ideal pesticide is one that only kills the target, Shetlar says. "Well, we don't have that," he adds.

However, the newer insecticides, compared to older chemistries, are less toxic.

"If you told me 10 years ago that we would have some-

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thing like Acelepryn (which is applied in the first week in May and has caterpillar control through September), I would have told you you were crazy," Shetlar says.

Nonetheless, superintendents are wary of future regulations.

"It seems to be the consensus that we'll be using less pesticide in the future," Noppenberger says. "Look at Canada, for example. There are pesticide bans there. Using less pesticide will make the job more difficult because the expectations for turf conditions won't be lowered."

"I hope the people who make decisions about regulating them are making those decisions based on fact, not emotion," adds Tuttle, who believes manufacturers are making a concerted effort to make pesticides as effective and as environmentally friendly as possible.

"I don't see that trend changing," he adds. "But it's beneficial to us because there's less risk of exposure when mixing less product with the same efficacy." ■

*Walsh is a freelance writer from Cleveland.*



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