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Circle No 123

Designs on Golf

Continued from page 40

7. The master designers and their engineer associates didn't concern themselves with drainage.

Look closely at your course, particularly if it was designed by Ross, Tillinghast, MacKenzie, Seth Raynor, Howard Toomey or Wendell Miller. These designers and their crews were

masters of creating surface drainage that functioned and even added to the design character.

How many times do we see the surface drainage features lost in renovation projects or handled far less deftly today with a cumbersome catch swale and drainage cap?

8. They didn't build "complete" 18-hole courses because they couldn't rearrange certain features or their clients didn't mind if they only built a few great holes.

This dangerous myth is the result of many classics being judged in their deteriorated state instead of by historic photos. It's also a myth being perpetuated by a famous architect who loves to rearrange landscapes, including classically designed ones that don't need any help. The myth says that the old architects only built a few good holes, while today architects are building courses with 18 dramatic finishing holes. That's patent nonsense. The master architects, who spent a lot of time on their sites, injected subtle character into every hole. They just did things more subtly than today's contractors, err architects, and they managed to make some awkward sites work extremely well.

9. These were complex, difficult men to understand and deal with.

This myth says that old architects were essentially "artistes" who didn't listen to their clients. Quite the contrary. They were amusing, creative individuals with numerous interests and wild imaginations. Unfortunately, the wild design features they created for comic relief are the ones golfers took out years ago. Golf just takes itself more seriously these days.

10. The old architects did not foresee evolution or changes to their designs.

Naturally they did, but they never could have imagined some of the atrocities that have taken place on their original layouts. They most certainly understood that bunkers would evolve and technology for turf care would improve. They did not foresee a cast of obtuse committeemen and architects to come along and introduce new, less interesting ideas. But they also could never have imagined a movement coming along to rescue their courses. This is the age of the restoration movement.

Geoff Shackelford can be reached at geoffshackelford@aol.com

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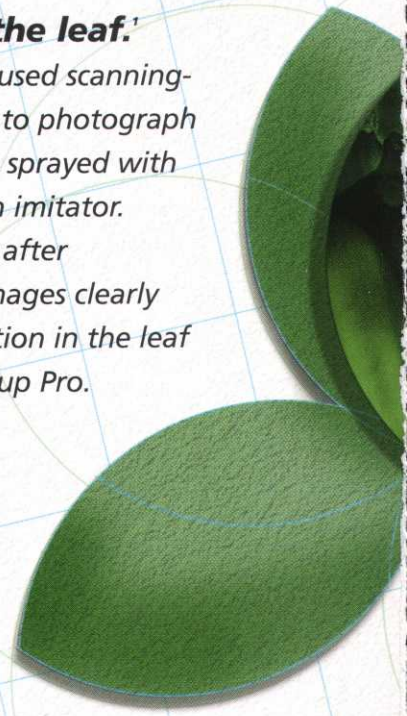
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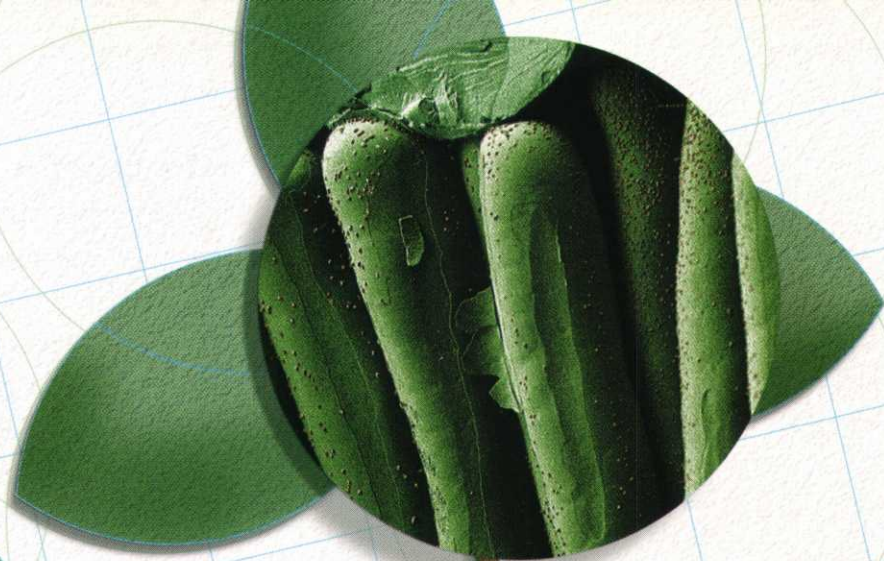
The proof is in the roots.²

Scientists also used autoradiography to photograph and measure the amount of herbicide in the roots two hours after application. Time after time, at least three times more herbicide showed up in the weeds sprayed with Roundup Pro. With the imitator, barely any herbicide has moved to the roots.





This is a cross-section of a weed leaf magnified 1000x. The yellow droplets mean Roundup Pro is already at work inside.

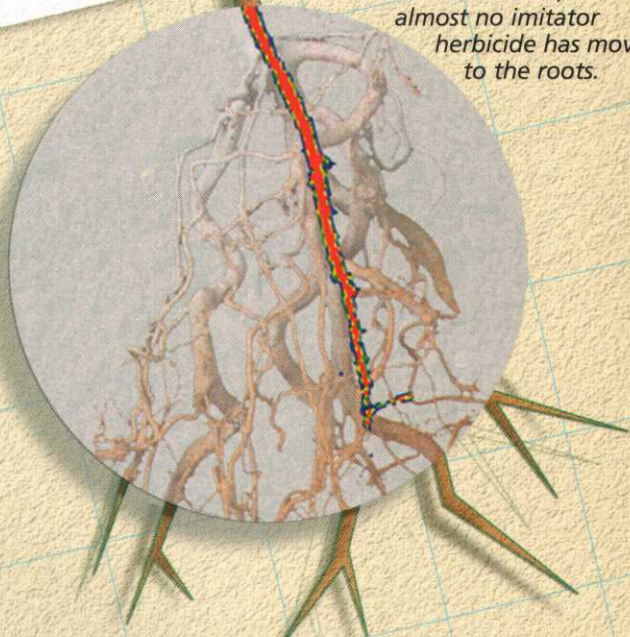


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BY LARRY AYLWARD, EDITOR

Keeping a Mow Profile

Nobody has yet invented a fairway mower that combines the ultimate in production and quality of cut — but manufacturers are trying

Insistent golfers have always judged courses by the state of their greens. If a course's greens were in bad shape, so was the club.

Blame it on the Augusta Syndrome and higher green fees, but more golfers today are taking their demands a step further — to the fairways. It's getting where many golfers won't tolerate poorly conditioned fairways, says Brad Hamilton, marketing manager of the Reelmaster product line for Bloomington, Minn.-based Toro Co. "Nobody can afford to have cruddy greens, but fairways are becoming a key area of differentiation between golf courses," Hamilton says.

Many courses sport carpet-like fairways. In fact, many superintendents are under pressure to cut fairways even shorter to appease members' requests to have the tightest and fastest-playing golf courses around. Hence, fairway mower manu-

facturers are in demand to supply superintendents with equipment capable to help them do their jobs.

"Superintendents are looking for a higher quality of cut," says Chuck Greif, manager of worldwide market and development for John Deere's Golf and Turf Division in Raleigh, N.C. "They want a cut as crisp and clean as on greens and tees."

Can't have it all

"Superintendents want a machine that does a lot of work in a short time," says Ralph Sylvester, senior manager of education development for Textron Golf, Turf & Specialty Products in Racine, Wis.

While today's technology is light years ahead from where it was 20 years ago, it's still difficult for manufacturers to provide superintendents with mowers that increase production without sacrificing quality of cut. "Production is always an issue,

Blame it on the Augusta Syndrome, but more golfers are demanding fantastic fairways.

but it's Catch-22," Hamilton says.

Since most superintendents value quality of cut more than any other factor, manufacturers are supplying them with mowers equipped with smaller cutting units for better quality.

"Most courses are getting away from 30-inch heads," Greif says. "Today, we have fairway mowers that are converting over to 22-inch heads."

Hamilton explains that 22-inch heads provide a closer and tighter cut than 30-inch heads because smaller heads follow the ground's contour more uniformly. But a gang of 22-inch heads doesn't produce like a gang of 30-inch heads.

"Superintendents have to live with today's technology," Hamilton says, noting they can't have the best in production and quality of cut. "But someday, Toro or another company will have a breakthrough idea so there isn't this tradeoff."

Striping and burning are also synonymous with quality of cut. But if a superintendent lowers a mower's height of cut on his course's fairways, he'll sacrifice aesthetics. Hamilton explains that longer and shaggier grass enhances striping.

Let there be light

Lightweight fairway mowers promote better grass-growing conditions because they're gentle on turf. Not surprisingly, weight continues to be an issue with the machines. Greif says there are two sub-topics related to the weight issue: footprints and maintaining good pressure of mowing heads on grass.

Superintendents want lighter mowers that minimize footprints and compaction, Sylvester says. However, the mowers can't be so light as to lessen the pressure of mowing on the grass, which could affect quality of cut, Greif notes.

"Most fairway mowers have either a hydraulic pressure system or mounted springs to hold heads toward the ground," Greif says. "You want a head that gets down there and does a quality job."

Greif suggests that superintendents use

Continued on page 46

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Keeping a Mow Profile

Continued from page 43

mowers that cause no more than 10 psi of pressure to combat footprints.

Sylvester says fairway mowers could be built even lighter if manufacturers use different metals, such as aluminum.

The clumps

Clipping eradication is another issue:

Golfers don't like to see clumps of clippings scattered on golf courses, even if they don't affect playability.

"This has been a big deal in the last three years, and it's getting hotter," Hamilton. "In a perfect world, a superintendent would be able to send his crew out in the morning to cut a dewy fairway, and he wouldn't see a clipping when his crew

was done. As a manufacturer, we're trying to get superintendents close to that point."

Toro and other manufacturers have concentrated on better roller designs so clippings don't accumulate and cluster on cutting units. Rotating brushes with vacuums on rear rollers of cutting units also help disperse clippings.

"With power brushes on the back, you can eliminate clumping, which can eliminate an operation such as blowing off fairways," Greif adds.

Nice ride

While experts say that quality of cut is the top issue, they agree that ergonomics and drive are also vital factors.

"Riding a fairway mower can be monotonous," Greif says. "We need to make a mower more comfortable and the operator station more friendly."

Sylvester and Greif say mower features such as tilt steering, premium suspension seats with lumbar supports and ergonomically located controls help reduce an operator's fatigue. "We need to provide employees with better tools to do their jobs so they're not worn out when they go home at the end of the day," Robson says.

Strange as it sounds, operator-friendly fairway mowers can help retain employers in a tight labor market. A course with newer and more modern equipment will retain more employees than a course with broken-down equipment, Robson says.

Hamilton points out that rider-friendly mowers are vital for many immigrant workers, especially Hispanics and Haitians who are usually shorter than Americans.

Environmental issues

Hamilton expects that most fairway mowers will someday be powered by alternative fuels because of more stringent emission standards on diesel fuel. "But I'm not sure how that will manifest in terms of new products," he says.

In a year, Sylvester expects Textron's fairway mowers to use only biodegradable oil.

Of course, manufacturers will continue their efforts to make mowers that are more mechanic friendly. They'll also strive to make mowers as quiet as hummingbirds. ■

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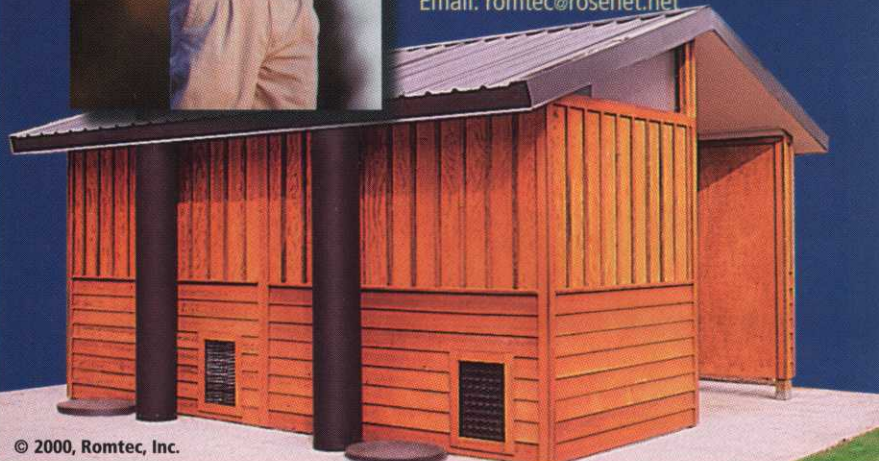
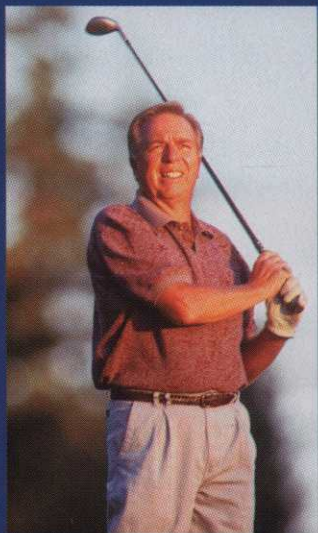
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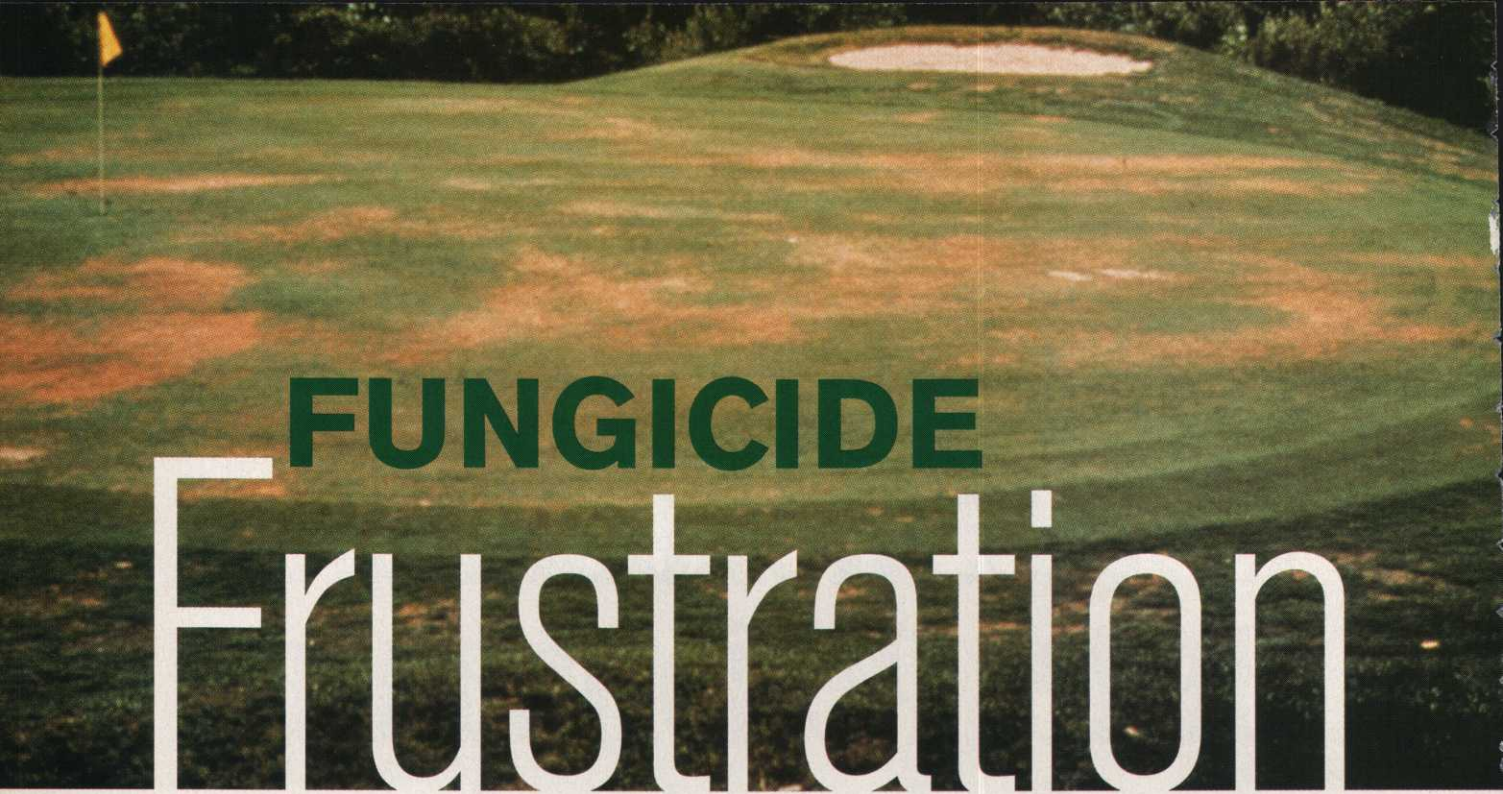
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FUNGICIDE Frustration

BY FRANK H. ANDORKA JR., ASSOCIATE EDITOR

When gray leaf spot or brown patch symptoms appear on golf courses, fungicide resistance isn't on the mind of worried superintendents. They're thinking about how members will react when the disease wipes out 14 of 18 fairways and how they'll explain what happened at the next green committee meeting. So they head out with the latest technology in fungicides to eradicate the problem.

So far there's only anecdotal evidence of fungicide resistance in turfgrass (although there is scientific evidence of it in the agricultural world). But it suggests fungicide resistance should rank higher in superintendents' minds.

The cost of ignoring the issue may equal the danger of disease itself. Once resistant strains evolve, no amount of fungicide can undo the damage.

Though scientists disagree on how widespread fungicide resistance is, there are steps superintendents can take to avoid it. Researchers suggest tank mixes and product rotations, as well as more accurate disease diagnosis, to stave off widespread resistance to current products.

"Superintendents are going to have to be a lot smarter about how they're applying their fungicides," says Jim Walter, turf and ornamental marketing manager and research and development manager for Rohm and Haas. "They will have to pick and choose more carefully what products to use and where. For the most part, superintendents are already being that smart."

Concerns about resistance surfaced last year when researchers heard tales about fungicide-resistant strains of dollar spot, particularly in the East, says Joe Vargas, professor of plant pathology at Michigan State University.

The battle over disease resistance heats up as scholars scramble to figure out what's *really* going on

"We were getting reports of dollar spot that was resistant to everything but Daconil, which was partially restricted by the Environmental Protection Agency last year," Vargas says. "That's going to cause problems at a lot of golf courses that suffer from that disease."

Vargas says superintendents were also reporting lower efficacy than they expected. He says fungicide suppliers are in a

Continued on page 50

RESISTANCE RESEARCH

Wakar Uddin, assistant professor of plant pathology at Penn State University, understands how important it is for superintendents to know whether resistance to azoxystrobin by gray leaf spot fungi exists or not. That's why he launched what he calls a significant study on the issue.

"We can't overlook the possibility of resistance simply because we've never had a scientifically documented case in turfgrass," Uddin says. "It has been reported in several agricultural crops, so it may be worthwhile to investigate the gray leaf spot system as well. The timing is right!"

Uddin, along with Syngenta researcher Gilberto Olaya, will monitor cultures of gray leaf spot throughout the spring and summer on more than 50 courses throughout the Northeast. "We're concentrating our efforts on gray leaf spot because we've been hearing some rumblings of problems," Uddin says.

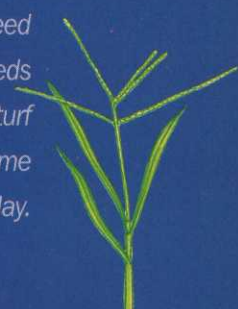
Uddin says he expects to report his results next year.



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Fungicide Frustration

Continued from page 48

bind because products with targeted efficacy promote resistance, but higher-dose, broad-spectrum fungicides raise red flags at the EPA. "It's a Catch-22," Vargas says.

"The EPA is working as the gatekeeper on the front-end and the regulator on the back end," Walter says. "You may see a change with the new administration. It would certainly be nice."

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Chemical family: Dithiocarbamates		
COMMON NAME	TRADE NAMES ¹	CONCERN OVER RESISTANCE
Mancozeb	Fore, Mancozeb, Dithane T/O, Protect T/O	Low
Thiram	Spotrete	
Chemical family: Dicarboximides		
Iprodione	Chipco 26019, Chipco 26Gt	Moderate to High (not persistent)
Vinclozolin	Touche, Curalan	
Chemical family: Benzimidazoles		
Thiophanate-methyl	Fungo 50m, Cleary's 3336, Cavalier	High
Chemical family: Sterol inhibitors or Demethylase inhibitors		
Fenarimol	Rubigan	
Myclobutanil	Eagle	High
Triademelon	Bayleton, Accost	
Propiconazole	Banner MAXX	
Chemical family: Strobilurins		
Azoxystrobin	Heritage	Moderate to High
Trifloxystrobin	Compass	
Additional Fungicides...each in a different chemical family		
Chlorothalonil	Daconil, Manicure, Concorde	
Flutolanil	ProStar	Low
PCNB (pentachloronitrobenzine)	Terraclor, Turfcide, Revere, FFII, PCNB, Defend, Engage	
Pythium (Oomyces) Fungicides...each in a different chemical family		
Mefenoxam	Subdue MAXX, Apron (seed treatment only)	High
Propamocarb	Banol	Low
Fosetyl-Aluminum	Prodigy, Chipco Signature (Aliette)	Low
Azoxystrobin	Heritage	Moderate to High
Chlorneb	Teremec Sp	Low
Ethazol (Etridiazol)	Koban, Terrazole	Low

¹Product list by trade name may not be all inclusive.

SOURCE: J.W. RIMMELSPACH & M.J. BOEHM
The Ohio State University, Department of Plant Pathology

No silver bullet

Superintendents must remember that there's no silver bullet to take care of fungal diseases indefinitely, says Peter Farno, business manager of Chipco Professional Products' fungicide division.

"Superintendents are under a lot of pressure to get rid of disease quickly," Farno says. "Sometimes, that leads them to find a product that works and use it over and over. Unfortunately, that's when you can run into problems."

Think of fungi as fortresses with multiple entry points, and fungicides as troops trying to storm them. If the fungicides insist on attacking the same door each time, eventually the fungi will adjust and bar the door. On the other hand, attacking a variety of entry points at the same time increases the fungicide's chance of success.

Mike Agnew, technical support representative for Syngenta, says his company recommends no more than three or four applications per year before rotating to another product.

"We provide resistance management training for all our sales reps so they can train superintendents about the best program to follow," Agnew says. "We want superintendents who use our products to understand them as well as they can."

Jeff Barnes, biology project leader for the fungicide division of BASF, recommends the following three guidelines for product rotation:

- Don't use a single chemical family of fungicides for more than (For example, if the normal rotation is nine applications to kill dollar spot, superintendents should use sterol inhibitors or demethylase inhibitors only for three of them).

- Limit the number of sequential applications of similar chemistry to no more than two per season.

- Alternate chemistries on a strict schedule.

"If superintendents follow the basic rules for rotation, these products will remain part of their arsenal for a much longer time," Barnes says.

But some scientists question whether

Continued on page 52