Standing Up to Summer Stress

By Rich Hanrahan

Stress on golf course greens takes many forms — soil compaction, disease and poor drainage, among other things. Hot, humid weather, combined with cutting heights at or lower than .1-inch and decreased nitrogen levels for improved putting quality, creates constant pressure for greens from spring through fall.

Because stress has become such a ubiquitous problem on golf course greens in recent years, researchers in several Northern and Mid-Atlantic states have ongoing studies to explore the issue. The overwhelming consensus of these studies is simply: Healthy, vigorous turf withstands stress much more successfully than unhealthy turf.

Bruce Clarke, plant pathologist at Rutgers University, began studying stress after witnessing a big increase in dollar spot and anthracnose in recent years. He attributes the mounting disease pressure to two factors:

- Weather conditions have been conducive for both diseases in many parts of the country. Soaring temperatures and high humidity created prime conditions for these fungal diseases, encouraging disease activity for long periods during summer months; and
- Management conditions have changed to include more intensive practices, such as reducing soil moisture for increased ball speed, cutting too frequently and lower cutting heights.

"Many superintendents are being forced by their membership to dramatically lower cutting heights even on older bentgrass greens, which really can't take it," Clarke said. "The newer bentgrass varieties have been bred to tolerate a lower height of cut, but even the newer varieties don't thrive at heights lower than .1-inch."

Slightly alter turf management

Clarke suggests superintendents slightly alter management practices to improve turf quality.

"Plants have a natural ability to resist diseases if they are healthy," he said. "Improved maintenance coupled with better chemical practices will reduce stress and minimize disease symptoms."

To offer further suggestions for improving conditions, Clarke began researching the use of Chipco Signature in combination with other products to control disease and improve turf quality. He found that the combinations of Signature and Chipco 26GT or Daconil provided seasonal disease protection.

"In one study in northern New Jersey in 2002, we applied these combinations on a preventive basis beginning in mid-May, reapplying every two weeks," Clarke noted. "That year, disease started appearing on our untreated check plots on about July 4. We stopped applying the fungicides on August 19, but took residual data on disease control through mid-September."

Clarke's plots were a mixture of 70 percent *Poa annua* (annual bluegrass) and 30 percent bentgrass. "Annual bluegrass is well adapted to golf course greens in the mid-Atlantic, upper Midwest and New England states," he said. "Though anthracnose attacks both species, it's a major problem on annual bluegrass. But the combinations improved turf quality so well that disease was easier to control."

Focusing on shady greens

Karl Danneberger, professor in the department of horticulture and crop science at Ohio State University and senior science editor for *TurfGrass Trends*, has researched stress management on golf course greens since 1997. Initially, he looked at disease control in all situations, but he later narrowed his focus to turf quality of annual bluegrass on greens growing in shade.

"That's where we get most stress on golf greens in Ohio," he said. "With shaded greens, there's very little air movement, plants don't transpire and the result is a stressed turf."

Danneberger's research trials also showed that Signature in combination with Daconil or Chipco 26GT measurably improved turf quality. He used a visual scale to measure color and percent of turf cover, with a 9 rating indicating good, rich color and 100-percent cover.

"Our best results were with a Signature/26GT combination, using 4 ounces of each product per 1,000 square feet," Danneberger explained. "We sprayed on a 14-day schedule beginning in mid-May and ending in early Sep-

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tember. Our initial test was in 1998, but results have been replicated in subsequent years. I think Signature just makes the plant healthier and able to withstand disease pressures."

Joe Vargas, professor of plant pathology at Michigan State University, began studying turf quality improvement in 1996. His studies concentrated on annual bluegrass turf because "that's about all we have in Michigan other than new golf courses," he says. "If we don't keep it alive, we play on dirt in the summertime."

Again, combinations of Signature and either Daconil or 26GT scored highest in his quality tests. He says Signature thickens cell walls, reduces respiration, increases carbohydrates in the cell and causes an increase in mychorrizal formation on the root zone of the turf plants.

Slowing respiration

"Whereas photosynthesis quits at 85 degrees F., respiration continues on a linear level," Vargas says. "The hotter it gets, the more the plant respires. If the plant is not making enough food to replace what's being lost, it starts burning up stored reserves of carbohydrates. The more it burns, the weaker the plant becomes. If you can slow down respiration, you'll get a healthier plant.

> "If you can slow down respiration, you'll get a healthier plant."
>
> — JOE VARGAS

"A thickened cell wall gives the plant better resistance and a better chance of handling traffic and surviving in a bad environment, such as shade," he adds. "Also, mychorriza help prevent infections on the plant roots."

Beginning the Signature program in cool weather is the key to maintaining turf vigor, according to Vargas. By starting Signature applications in mid-May and continuing with biweekly applications through early September, superintendents can maintain a healthier turf and stave off major disease problems.

"Signature can't work overnight," Vargas added. "It needs time to build up the strength of the turf. You can't start this program when carbohydrates have already been depleted from the plant. You need to start in cool weather before the stress season hits. While Signature builds the health of the plant, the other products, 26GT and Daconil, take care of seasonal disease problems like dollar spot and brown patch."

Turf quality testing over the past few years has shown that superintendents can get a jump on stressed golf course greens. By beginning to build turf health in cooler weather, they can develop a tougher plant, which better withstands summer stress.

Hanrahan is senior development manager of fungicides for Bayer Environmental Science.

TURFGRASS TRENDS

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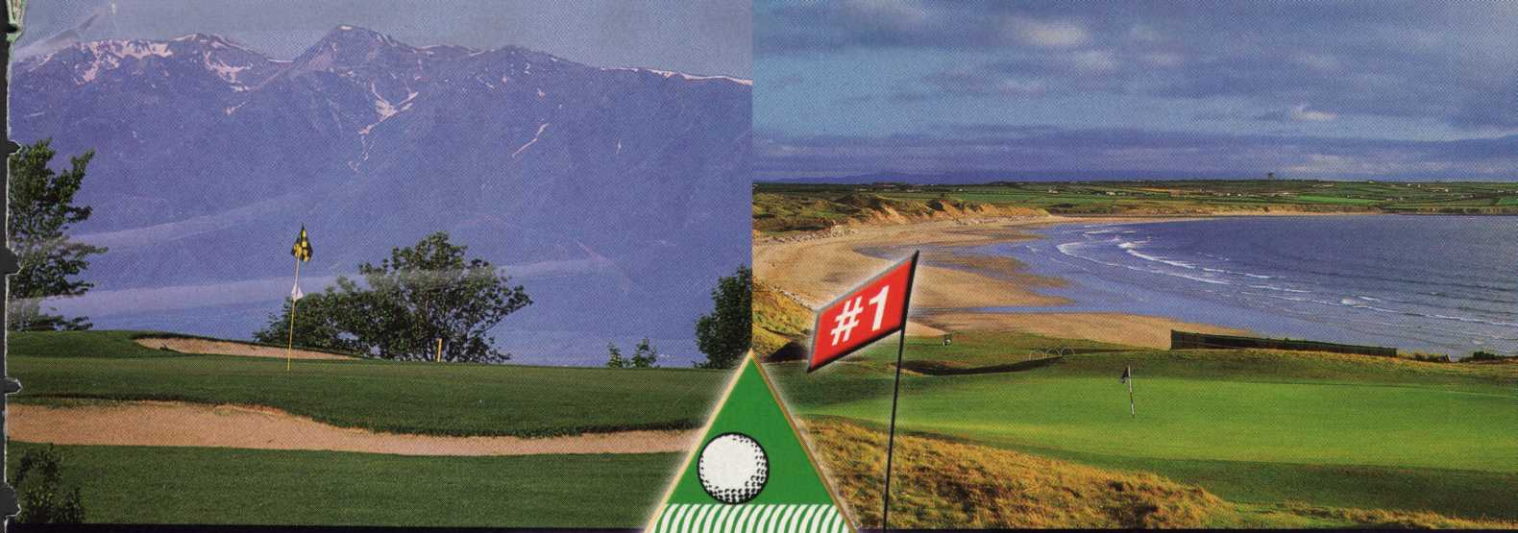

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In Pursuit of Perfection

All superintendents dream of finding an ideal nutrition program for their turf, but experts say there's no such thing as a one-size-fits-all solution

By Frank H. Andorka Jr.
Managing Editor

MIKE KLEMME

A perfect fertility program that would apply to all golf courses is like Ponce de Leon's famous Fountain of Youth: Everyone wants it, but no one is ever able to find it. Superintendents, fertilizer companies and turf researchers spend thousands of dollars and countless hours in this quixotic pursuit and with little success.

"I don't think there is such a thing as a 'perfect' plant nutrition program, especially when there's a living plant involved and nature plays a role," says Darren Davis, certified superintendent of Olde Florida Golf Club in Naples. "If you ask 10 people what their ideal program is, you'll likely get 10 different answers."

What experts remind everyone is that there is no such thing as a perfect plant nutrition program that will work for every superintendent. But there are certain steps superintendents can follow to help them create a "perfect" nutrition program for their specific turf conditions no matter where they are.

Test the soil

Matt Shaffer, superintendent at Merion Golf Club in Ardmore, Pa., says the starting point for any fertility program is a soil test. Without a test, superintendents will never know exactly what the turf needs.

"If you're just starting a new job, test everything: greens, tees, fairways, six different roughs, bunker banks — everything," Shaffer says. "Then follow up annually with six greens, six fairways and six tees so you can monitor your progress."

Jim Loke, certified golf course superintendent at Bent Creek Country Club in Lancaster, Pa., uses three types of soil testing that he says are important in producing high quality turf conditions: soil chemistry, soil paste extract and tissue analysis. He finds the soil paste extract test to be the most important because it explains what nutrients are in soil solution and what is available to the turf plant.

To provide the healthiest turf plant, he then refines his fertility program around what the soil paste extract gives him. Loke does the testing three times per year.

Tissue samples a must

Rick Tatum, director of golf operations of Grey Oaks Golf Club in Naples, Fla., says tissue sampling is even more important than soil sampling in his region.

"Soil sampling is important because it provides you with a baseline of what nutrients are available to your turf," Tatum says. "But all the nutrients in the soil aren't going to matter if the plant isn't taking them up and using them. Tissue sampling allows you to monitor whether the nutrients in the soil are making their way to the plant."

It's not a cheap process — Tatum shells out $10 per sample for greens on three golf courses,

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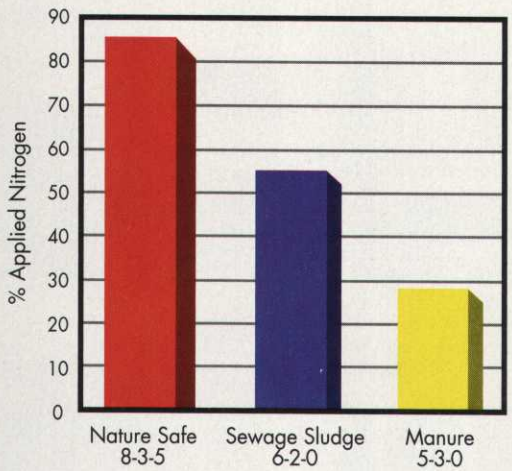

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"I don't think there is such a thing as a perfect plant nutrition program."

DARREN DAVIS
CERTIFIED SUPERINTENDENT
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and he takes them monthly on three courses from four greens, four tees and four fairways. But he justifies the expense to his green committee because the numbers prove he is only putting out the amount of fertilizer the plant needs.

"When we receive the test results, we adjust our fertility programs to fix any deficiencies that the tests show," he adds. "It's a great tool to use when your committee is questioning why your fertilizer budget is so high."

Superintendents must remember that not all turfgrasses are created equal, says Buford Creech, co-owner of Southeast Turf and Ag, a consulting and product development company. It's important to know how much nitrogen a specific variety *really* needs before constructing a program to meet its needs.

"You don't want to get into a situation where you're overfeeding the turf," says Creech, who is a certified crop advisor (CCA). "That could be a recipe for disaster for several reasons."

Creech says overfertilization has the potential to create environmental concerns and undesirable growth, and in some cases promote disease.

Tatum says his frequent tissue testing also allows him to decide quickly whether new products will fit into his nutritional needs.

"A lot of salespeople will come into my office making claims about their products and their effectiveness," Tatum says. "If they'll let me test their products on my turf, I can usually test their claims because my samples show me what effect their products *actually* have on my turf. It can scare some of them off, but it allows me to provide the best nutrition for the turf on my course."

Watch your water

With any fertility program, the amount and quality of the water that superintendents use can affect how well the fertilizer works, Loke says.

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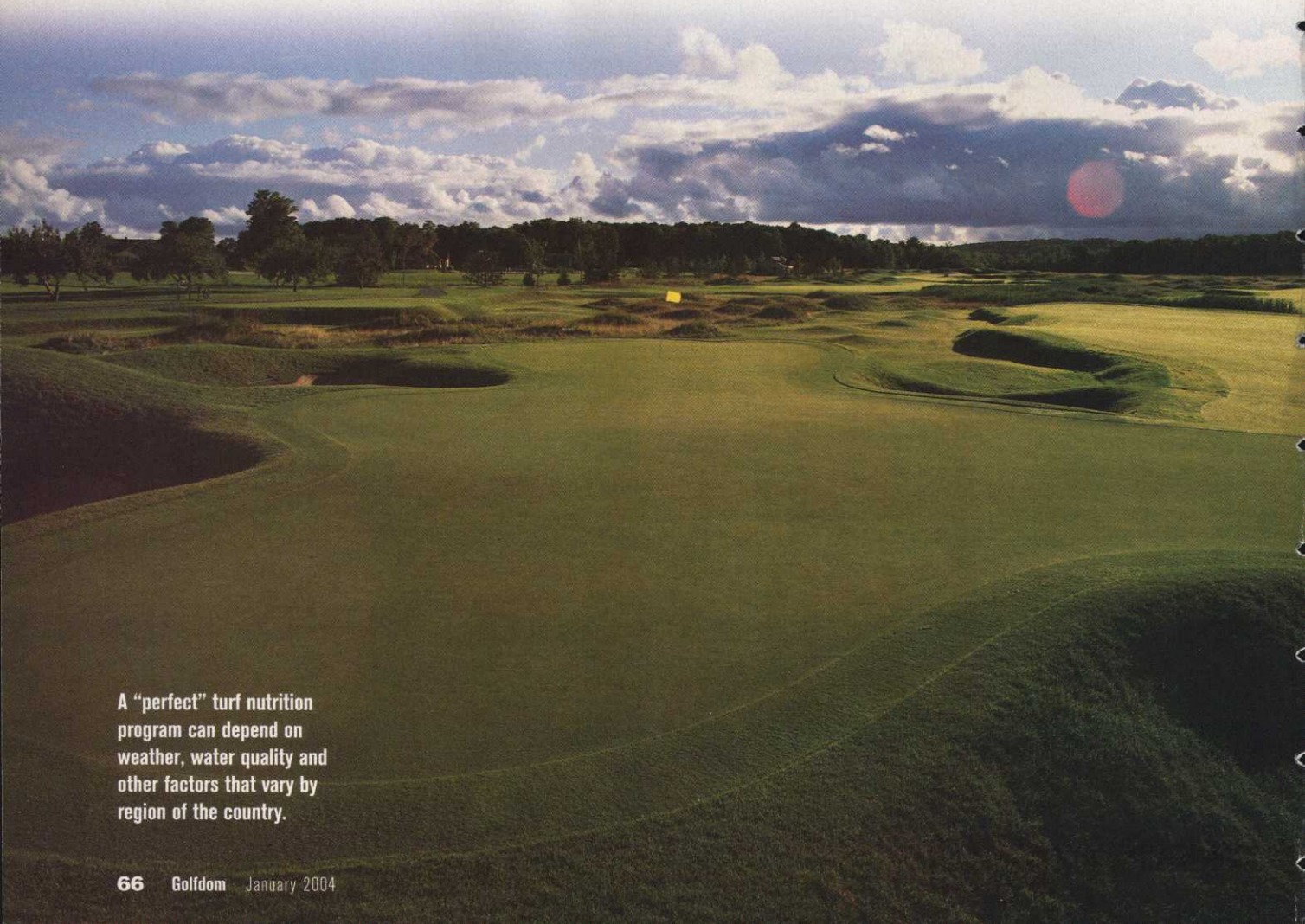
MIKE KLEMME



A "perfect" turf nutrition program can depend on weather, water quality and other factors that vary by region of the country.

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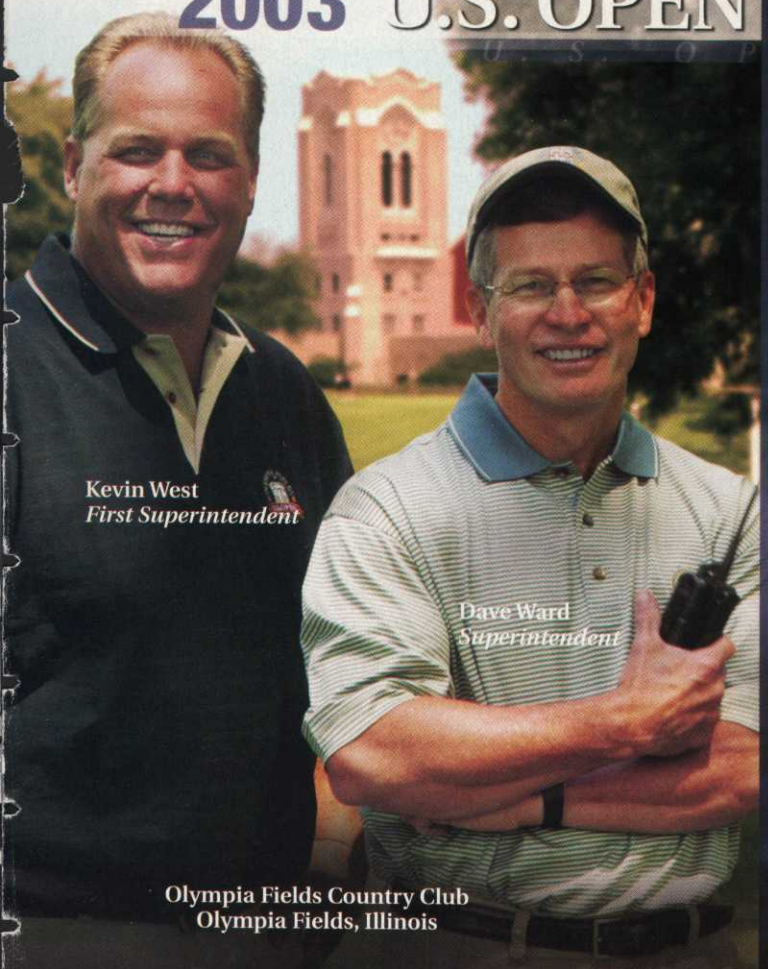

Olympia Fields Country Club
Olympia Fields, Illinois

According to Dave Ward, superintendent at Olympia Fields—*the number 24 ranked course by Golf Digest*, installation of the Rain Bird® Cirrus™ Central Control System paid dividends last year alone when the course didn't see one decent rain from June through September.

"Having a control system do exactly what you want really benefits you during a drought. The course looks very healthy and green. The greens and the roughs are thriving. Having full coverage in your roughs really makes a difference in appearance."

Kevin West, first superintendent at Olympia Fields, says the system's flexibility is a key advantage.

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"You have to investigate how your water quality will affect the absorption rate of the fertilizer for the plants," Loke says. "If your water isn't good quality, you have to factor that into your fertility equation."

Dan Dinelli, certified superintendent at North Shore Country Club in Glenview, Ill., says superintendents should think about using fertigation to deliver nutrients to the turf in small doses instead of large, broadcast fertilizer applications.

"You have to determine whether you have a decent irrigation system that gives you effective coverage before committing to it," Dinelli says. "But I believe it's another tool to deliver plants nutrients before and during stressful periods more effectively."

Creech agrees. "If you can spoon-feed your turf through a fertigation system, it's one of the best ways to deliver nutrition to your turf."

"You have to adjust to what the weather allows you to do."

RICK TATUM
CERTIFIED SUPERINTENDENT
GREY OAKS GOLF COURSE

Weather matters

One of the most important factors in fertility is the effect that weather has on the process. Merion's Shaffer says his fertility plan takes its cue from the weather.

"We don't have any artificial numbers that we try to hit," Shaffer says. "If it's extremely wet, for example, nutrients are far more mobile. As a result, we'll adjust our fertilizer levels downward to avoid leaching. It's all a matter of tweaking here and there to meet the turf needs."

Shaffer also says he changes fertilizers depending on the weather. During the summer he uses natural organics on greens, tees and fairways because the temperatures encourage microbe growth. In the off-season he uses liquid supplements or isobutylidene diureas (IBDUs).

Peter Leuzinger, certified superintendent of The Ivanhoe (Ill.) Club, says Northern superintendents are feeding semidormant turf as the season winds down in mid-October. He says that he feeds his turf heavily after the third frost, which sets it up well for the following season.

"I've been following this practice for years after I heard about it from turf professor Tom Fermanian at the University of Illinois," Leuzinger says. "I've found that the turf is tougher going into the winter and greens up more quickly in the spring."

Grey Oak's Tatum says he also has to adjust to the weather in Florida, but in the opposite manner of his colleagues in the North. In the winter, he uses IBDU fertilizers because they're not temperature controlled. In the summer, when temperatures can soar into the 90s, he uses slow-release, sulfur-coated products.

"You have to adjust to what the weather allows you to do," Tatum says. "If you lock yourself into one specific type of fertilizer, you can end up in trouble."

So as with any pursuit of perfection, it's important to be flexible — and make use of all the technology available, Shaffer says.

"We'd all better figure out how to do the perfect fertility program for our turf because there may be a time in the not-so-distant future when we'll have to grow grass with very few chemicals," Shaffer says. "So we'd better know how to grow a bigger, badder plant — and fertility is the key."

"There is no such thing as a perfect nutrition solution," Creech insists. "What fertility superintendents need to maintain their turf will depend on what region of the country they're in and the variety they have. It's that simple." ■

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Jeffrey Elmer

Certified Superintendent, Oakwood Country Club, Kansas City, Mo.
Editor, Heart of America GCSA's *HeartBeat* newsletter

He coaxes, he cajoles – and he collaborates. Month after month, 10 times per year for more than eight years now, Jeff Elmer has pounded the keyboard, rounded up feature stories and articles, and confounded any doubters who thought it improbable that one person could have such a profound effect on one publication.

Heart of America GCSA's *HeartBeat* newsletter could be in dire straits without the leadership of the chapter's former president. After serving through the officers' chairs, culminating in his presidency in 1992, Elmer took no breather in his aid to the chapter. His year as immediate past president in 1993 moved smoothly into the editorship post that he has held since 1994.

"He contributes to the cause every month," says Heart of America GCSA President Tony Bertels. "It's really important because, as superintendents, we are very busy trying to take care of a golf course, but Jeff somehow finds the time to do the editing and writing for the magazine."

Last year, Elmer was awarded the Chet Mendenhall Award from the chapter for his dedication, inspiration and volunteer work.

Ken Krausz

Certified Superintendent, Paramus Golf & Country Club, Paramus, N.J.
Long-time editor of *The Greenerside* for GCSA of New Jersey

The "volunteer" gene runs strong in Ken Krausz's family. His 16-year-old daughter, Anna, is a fourth-generation volunteer firefighter, and Krausz's career in turfgrass maintenance actually stems from a contact he made while a young volunteer fireman in Old Tappin, N.J. Another volunteer was the head of the town's Department of Public Works and told Krausz he needed laborers for the municipal Old Tappin Golf Course. That was in 1978.

Since then, Krausz earned a degree from Rutgers University's 20-week winter turfgrass school, headed Old Tappin's maintenance department for a couple of years and has been superintendent at Paramus Golf & Country Club since 1988. Through it all, he has continued his strong bent toward volunteering – even to the point of continuing as a firefighter. In his turf life, Ken was first elected in 1990 as District One director for the GCSA of New Jersey. He served in all the offices, including a term as president in 1999-2000. In May 2003, Ken completed six years as editor of the chapter's magazine, *The Greenerside* and turned its reins over to a successor. One of his highlights was chairing the 75th Anniversary Committee.

DO YOU KNOW A LOCAL HERO IN YOUR CHAPTER?

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