

“Oro Valley law states that if there’s reclaimed water available, golf courses will use it.” - MIKE KROPF

fast enough. If you’re at a high-dollar course and can afford large amounts of fungicides and maintenance inputs you can manage it. It’s very high maintenance. If not, you succumb to it. It’s like thatch but different.

“The bentgrass greens slowed down a bit at my last course, so management just bit the bullet and took out the bentgrass and replaced it with Bermudagrass,” Kropf adds. “I’m a big fan of Bermudagrass greens. I don’t have the manpower or the money to deal with bentgrass. But if you have bentgrass greens, then you also have Bermudagrass that encroaches on the bentgrass greens.”

When overseeding Bermudagrass greens, they eventually will roll similar to bentgrass greens, Kropf says.

“I overseed the last week of September, and by Thanksgiving, you’re really dropping the mowing heights,” he says. “I was cutting them at 0.125 by January. I had them down to 0.115 by March and then down to 0.110 in April because of the tournaments we host. When I scalped for overseeding preparation, I had the mower down to .100. Tifdwarf Bermudagrass can tolerate that. MiniVerde, a new dwarf-type Bermudagrass, can handle it even more.”

Last month, the ryegrass and *Poa trivialis* were kicking out of the greens, and Bermudagrass was coming through. Kropf says it takes a month to six weeks to get through the transition.

WATER DELIVERY

One would think using reclaimed water to irrigate a golf course would be cheaper than using potable water because the quality isn’t as good. But that’s not the case at Sun City Vistoso. Kropf pays \$830 per acre-foot. Compare that to \$5 an acre-foot other area courses pay for well water because they were grandfathered in using that water, to which they have rights.

To deliver the reclaimed water to Sun City Vistoso and other area courses, the city had to route a pipe, which is T-ed off at a nearby main road. Heritage Highlands pays less for reclaimed water than Sun City Vistoso because it already had a reclaimed water line routed

directly to it.

“My water is routed through the local municipality,” Kropf says. “I have to call Oro Valley (the nearest community supplier) every morning and tell them what I watered and what I need. Once it gets all orders, it calls Tucson Water and has it sent. I pay \$2.55 for 1,000 gallons. At Heritage Highlands, they pay about \$2.05 because they don’t have to go through the local municipality. They get their reclaimed water directly from Tucson Water.”

The golf courses using reclaimed water didn’t have to pay for the pipe that was installed – the municipality paid for it up front.

“When all is said and done, I pay more for reclaimed water than potable water,” he says. “Technically, you’re not supposed to pay more for reclaimed water, but it’s not a savings because I have to overwater to leach out the salts and increase the application of soil buffers and calcium applications to compensate for the high salts in the reclaimed water. I haven’t seen a larger increase in the budget for water, I’m just adjusting my program.”

A NEW SYSTEM

Sun City Vistoso’s new irrigation system came on line November 2005. Hrycyk was involved with the irrigation renovation, so the system was new to Kropf when he arrived. However, he learned much about water management during the six years he spent at Heritage Highlands when he was the irrigation manager.

“Everything was new except for the pump station, which I’m repairing now,” Kropf says.

The pump station was replaced in 1999, and club management didn’t replace it when the irrigation system was renovated because the system was costly (\$2.5 million) and management wanted to get the full life out of it, Kropf says.

“I’m running on one pump now,” he says. “The reclaimed water ate away at the rubber bushings and seals on the pump shafts causing the pumps to seize.”

The two pumps and the installation will cost about \$40,000, Kropf says.

The new irrigation system has four or five



Install Confidence.[®]
Install Rain Bird[®]
EAGLE[®] 351B
Rotors.

Find out how this
golf-quality short
throw rotor solves
irrigation challenges.

Visit www.rainbird.com/eagle351b.

RAIN BIRD

www.golfcourseindustry.com/readerservice - #29

heads on each lateral line, and Kropf has individual control on each head.

"It's nice because the soils aren't great," he says. "The course was built on rock. I think I'm overwatering. I water every day. I can't go

every three days like others because the soils don't have a good profile and dry out quickly. If I don't keep water on the turf, you can see the salts coming up, especially in the rough. The sodium levels are so high that water is being

pulled out of the plant by the sodium in the soil instead of the plant pulling the water out of the soil. The grass turns gray. Once you see the gray and wilted look of the grass, it takes a while to get the green color back."

Kropf's maintenance budget is \$1.2 million, and \$390,000 is budgeted for water. As of April, Kropf was \$60,000 underbudget for water. He didn't use as much water as planned because there was a good monsoon season. Kropf believes the new irrigation system is highly efficient.

"I'm not watering as much as they did before with the old irrigation system, but the reclaimed water cost is more than if I had potable water," he says.

The reclaimed irrigation water arrives at the course and sits in two holding ponds that are next to the clubhouse. Algae grows in the ponds, and it smells at times.

"I've tried different algacides and nothing worked, so we had to get guys out there and skim the algae off the pond," Kropf says.

Another problem with reclaimed water is

THOR

THOR and Ensys^{te}x, the new *manufacturer direct* names for value in turf and ornamental pest control products



MAXXTHOR

Contains bifenthrin - compare to the active ingredient in Talstar.

TURFTHOR

Contains imidacloprid - compare to the active ingredient in Merit.

Turfthor and Maxxthor control a wide range of above and below ground pests of turf, trees, ornamentals, shrubs, flowers and groundcovers.

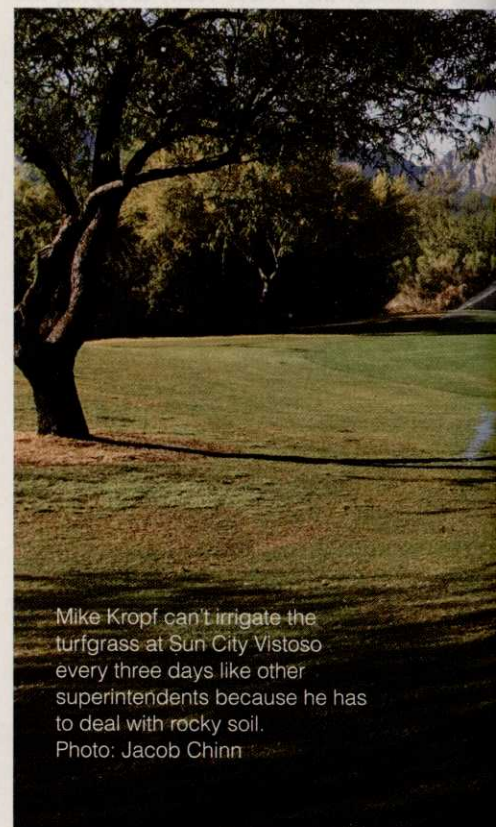
Use them alone or in combination for the ultimate one - two punch in turf and ornamental insect control.

**GO DIRECT
GO THOR**

Call 1-866-FOR-THOR for more information, quotes or to order.

ENSYSTEX, Inc.
A New Day. A New Way.

Turfthor and Maxxthor are trademarks of Ensys^{te}x, Inc.
Merit is a trademark of Bayer Environmental Science.
Talstar is a trademark of FMC Professional Solutions



Mike Kropf can't irrigate the turfgrass at Sun City Vistoso every three days like other superintendents because he has to deal with rocky soil.
Photo: Jacob Chinn

ciliated protozoa, which grow in the irrigation lines. Protozoa grow once they get in the irrigation lines because they don't like oxygen or light. Filters don't work because the organisms grow on the filters, Kropf says.

"It's a snot-like material that clogs the nozzles to the point where it looks like silly string when the heads turn on," he says. "So I'm adding a citric acid and other chemicals to clean them out. You need to stay on top of that or else the sprinklers won't work because they're so clogged."

Irrigating with reclaimed water tends to wear equipment out more quickly. Kropf says the crew at Heritage Highlands replaced nozzles more often because the plastic wore out.

"Metal parts also corrode badly," he says.

CULTURAL PRACTICE CHANGES

Irrigating with reclaimed water doesn't just affect one's watering practices. It impacts cultural practices as well. In many cases, being more aggressive is necessary. Because of reclaimed water use, Kropf is aerifying the rough more often.

"Members who have been here for 20 years

asked what I'm doing, and they say no one has done that before," he says.

Kropf slices the fairways during the winter and aerifies with solid tines (not pulling cores) on the greens because he can't core aerify as often as he would like. He also has been dethatching because of buildup.

Kropf also backs off on his fertility program. He tests the soil three times a year and the water once a month.

"I base my fertilizer programs off of that," he says. "I'm using high levels of potassium because Bermudagrass responds to it in a lateral growth pattern. I'm also going to more organic slow-release fertilizers instead of the synthetics because I don't need salt. I feed as I go and try to time it with the overseeding. I want the turf to peak in March and April because of tournaments we host."

According to the soil tests, the sodium level is now three times higher than optimum range because of the high levels of sodium in the reclaimed water. The turfgrass doesn't always look gray because of overwatering keeps the salts



Install Confidence®
Install Rain Bird®
EAGLE® 705/755
Wind Tolerant Rotors.



Find out why consistently windy conditions are no longer a golf course irrigation challenge.

Visit www.rainbird.com/windsolution.

RAIN BIRD®

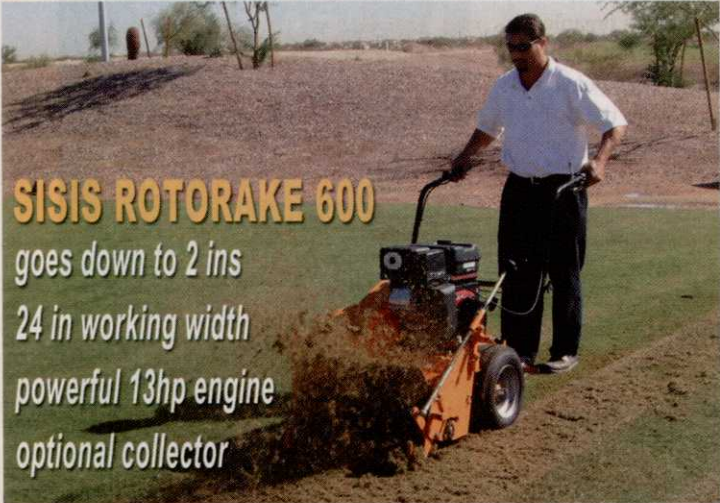
sisis

TURF EQUIPMENT

www.sisis.com



SISIS VEEMO -
maximum thatch removal - minimum surface disturbance



SISIS ROTORAKE 600
*goes down to 2 ins
24 in working width
powerful 13hp engine
optional collector*



SISIS FLEXIBRUSH -
17ft 6 ins wide for fast coverage

Full details from: SISIS INC, PO Box 537, Sandy Springs, SC 29677
Phone: 864 843 5972 Fax: 864 843 5974 E-mail: sisisinc@bellsouth.net

below the roots, the nonstop aerifying and slicing, and the application of calcium and humic acid products.

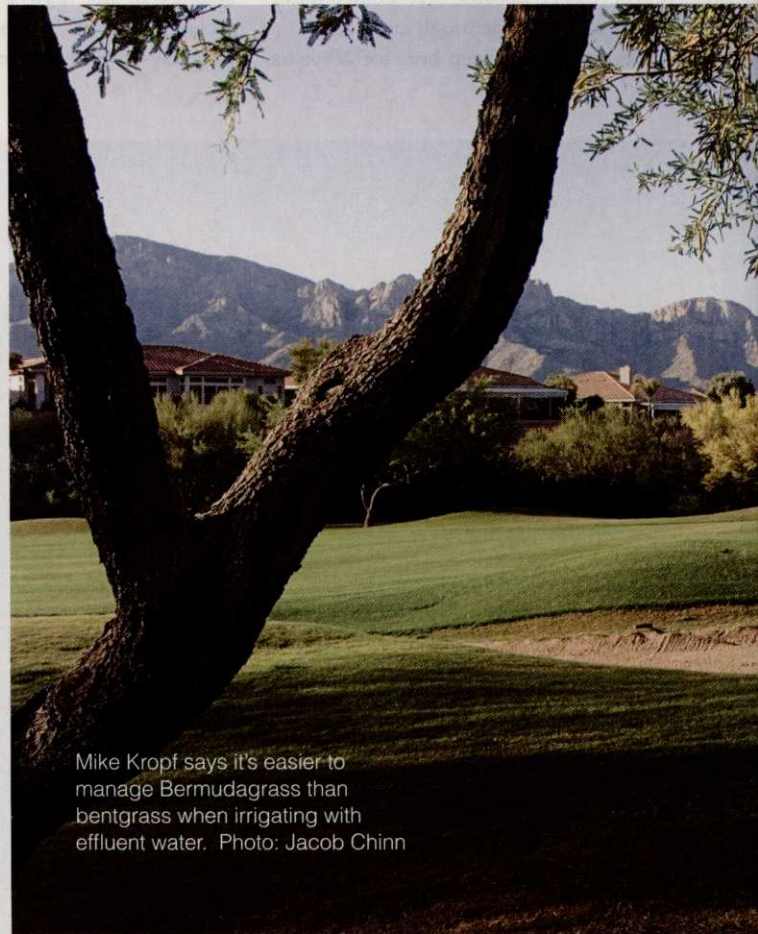
The biggest change is the pH level in the water, which was 9.1 on Kropf's last water test, and that correlates with the higher pH of the soil tests. Tees had pH levels at 8.3 and 8.4. Greens had better pH levels at 7.8 and 7.9. The high soil pH locks up micronutrients, so Kropf has been adding micronutrients and a lot of calcium, which displaces sodium in the soil and moves the sodium down past the roots with the flushing process of applying excess water.

When Kropf arrived at Sun City Vistoso and started mowing the push-up greens, the buckets were juicy - full of water - so he didn't put a lick of fertilizer on them for a month until he got them down to more manageable conditions. He wanted to make them stronger and less susceptible to disease or insect problems.

Kropf also is putting down higher levels of Primo than he normally would because of the reclaimed water use. During July, August and September, he says he can't mow the roughs fast enough.

Despite the changes in his fertility program, Kropf's fertility budget hasn't changed drastically.

One area that Kropf doesn't worry much about is turf disease, mainly



Mike Kropf says it's easier to manage Bermudagrass than bentgrass when irrigating with effluent water. Photo: Jacob Chinn

because of the characteristics of Bermudagrass and the arid climate. In April, it's so dry salts will increase from the heavy use of reclaimed water causing plant stress and increased disease pressures. Kropf applies a fungicide for fairy ring, which is really the only disease the turf gets, unlike with bentgrass.

"Bermudagrass has more tolerance to salt than bentgrass," he says.

RECLAIMED WATER'S IMPACT

In the future, it's inevitable more golf courses will switch from potable water to reclaimed water.

"It's less likely in places such as Washington state where the water tables are so high," Kropf says. "I doubt you'll see this there, but you'll see it anywhere Mother Nature doesn't produce enough water. And environmentalists like it because the grass is a natural filter for waste water."

Even with reclaimed water, there are different quality levels, and Kropf says he's supposed to be getting the minimum standard of "A" quality effluent; however, there are no national standards for reclaimed water.

Whether the switch to reclaimed water is made this year or in five, superintendents in areas that are likely to switch can prepare by realizing they'll need to implement more cultural practices, such as aerifying and slicing, applying more soil amendments, and constantly analyzing incoming water because reclaimed always seems to be changing.

"The biggest thing is – as far out as you can get – to start planning where you're going to adjust fertility programs," Kropf says. "Down the road here, guys are struggling because they didn't adjust enough for what was coming in the water. If you're going to get reclaimed water, plan on getting a lot of nitrogen and sodium." **GCI**



Install Confidence.[®]
Install Rain Bird[®]
EAGLE[®] Wireless Rotors.



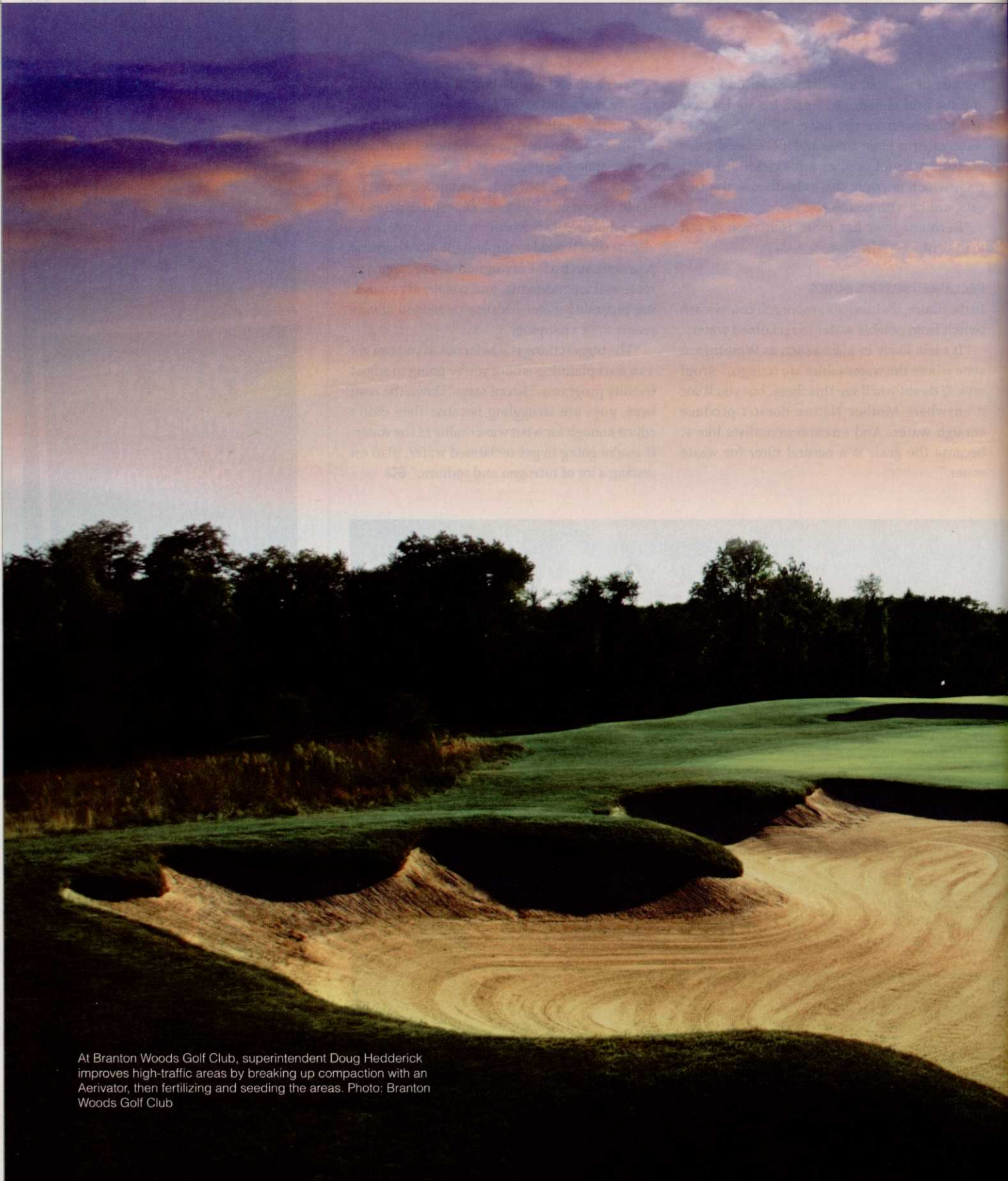
Find out why it's no longer a challenge to add or supplement irrigation practically anywhere.

Visit www.rainbird.com/wireless.

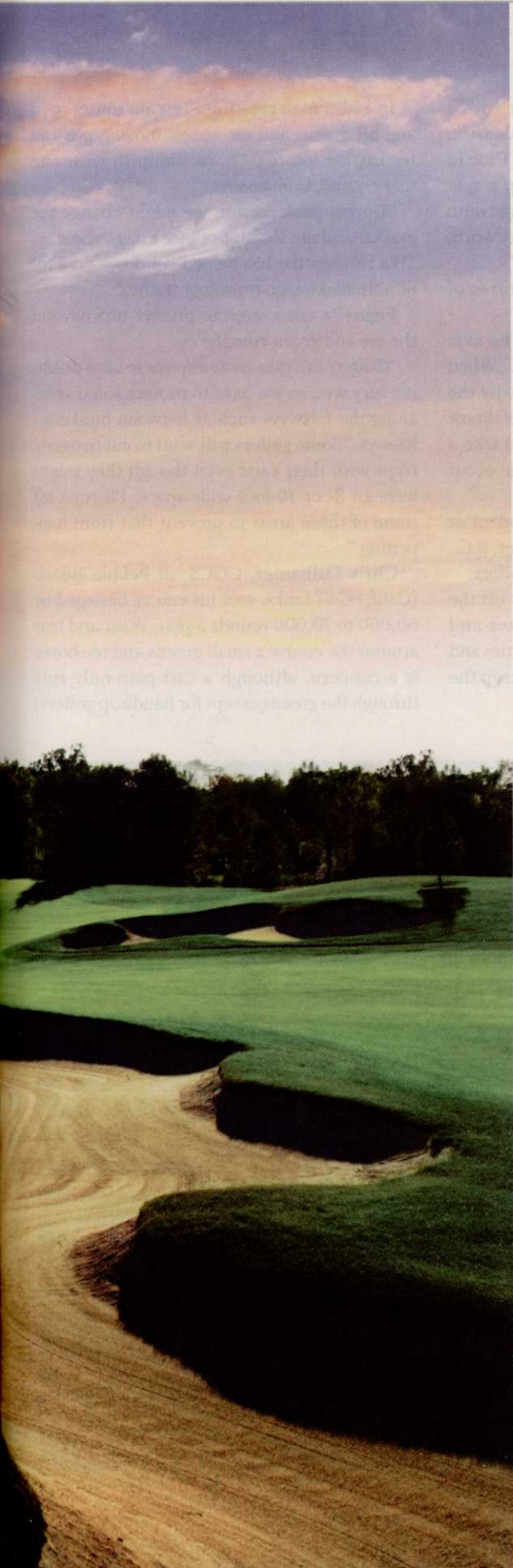
RAIN BIRD

www.golfcourseindustry.com/readerservice - #33

TURFGRASS MAINTENANCE



At Branton Woods Golf Club, superintendent Doug Hedderick improves high-traffic areas by breaking up compaction with an Aerivator, then fertilizing and seeding the areas. Photo: Branton Woods Golf Club



BY JOHN TORSIELLO

TURF WARS

Superintendents try to minimize wear and tear in high-traffic areas through cultural practices and altering golfers' behaviors

Sometimes Monica Cooper, CGCS, feels like she's fighting a losing battle. "I guess I'm a sucker for punishment," says the superintendent of Smyrna Municipal Golf Course in Bell Buckle, Tenn. "I try to keep golfers off the fairways when the grass is dormant during the transition time between winter and spring. They don't understand why they can't go off the cart paths. It's because that's a time when grass is most susceptible to damage from wear and tear.

"But I love what I do, and I keep trying to make the playing surface as good as I can for them," she adds. "We tell them what they need to do out on the course to help, but golfers at a municipal facility have about a five-minute memory span."

Kim Wood, golf course superintendent at the Tournament Players Club at The Canyons in Las Vegas, sympathizes with Cooper.

"I just don't think there's an awareness among most golfers about how much damage carts can do to turf," he says. "We've tried to initiate a 90-degree rule onto and off fairways, but nobody adheres to it. Human beings are like cattle. It's always the shortest possible route to where they're going. It's the same with the maintenance staff. You have to constantly remind them to watch where they access bunkers and not follow the same paths. It's quite a challenge."

Most golf course superintendents probably feel the same as Cooper and Wood as they struggle to prevent turf damage in high-traffic areas, such as entries and exits to and from tee boxes and greens, and on putting surfaces and tee areas themselves.

"You can't start accusing people of going where they shouldn't go and damaging turf," says Joe Figurella, golf course superintendent at The Links at Madison Green in Royal Palm Beach, Fla. "So we try and prevent damage in a number of ways."

TRAFFIC CONTROL

One of the most successful and least labor-intensive means of preventing damage in high-traffic areas is controlling the flow of golfers. This can be accomplished by cordoning areas leading to and from greens and tee boxes and directing golfers to their destinations on each hole with signage. It's wise to alter the exit routes daily to minimize wear to one particular area, superintendents say.

"We try to control the traffic flow by putting

posts into the ground joined together with a plastic, two-inch chain," says Doug Hedderick, superintendent at Branton Woods Golf Club in Hopewell Junction, N.Y. "We open up a spot along the cart path where people can get onto the fairway. When one area starts to get worn, we close it off and create another one."

Hedderick agrees golfers are creatures of habit.

"It's the path of least resistance," he says about golf course foot and cart patterns. "When one goes everyone will follow. That's why the ropes and directional signs work well. It's almost like herding sheep. It's much better to take a proactive stance rather than let damage occur and then try to fix it."

Rob Mackie, golf course superintendent at Dunes West Golf Club in Mount Pleasant, S.C., battles "lazy head syndrome" among golfers.

"Often, they like to park two inches off the cart path, especially around tee boxes and greens," he says. "So we placed railroad ties and roping in high-volume traffic areas to keep the carts on the paths."

In addition to creating alternate routes onto and off greens and tee boxes, moving pin and tee marker locations helps diminish wear and tear on turf, Cooper says.

"During peak season, we might change tee marker and pin locations twice a day," she says. "We believe that has helped cut down on a lot of normal damage from foot traffic."

Figurella takes steps to protect turf beyond the tee and green complexes.

"Golfers can take carts anywhere here unless it's very wet, so we have to protect some areas along the fairways such as between bunkers," he says. "Some golfers will want to cut between traps with their carts even though they might have an 8- or 10-foot wide space. I'll rope off some of those areas to prevent that from happening."

Chris Dalhamer, CGCS, of Pebble Beach (Calif.) Golf Links, sees his course besieged by 60,000 to 70,000 rounds a year. Wear and tear around the course's small greens and tee boxes is a concern, although a cart-path-only rule through the green (except for handicap golfers)

At The Links at Madison Green, superintendent Joe Figurella takes steps to protect turf in high-traffic areas beyond tee and green complexes, such as between bunkers. Photo: The Links at Madison Green



**GOOD GRIEF
ANOTHER WETTING AGENT!**



Poa Annua

THE BEST OF ALL POSSIBLE WORLDS

Golf Course Location

On the Main Line of Suburban Philadelphia

History

18 Hole DONALD ROSS design - 80 years old - 100% Poa Annua
clay/loam fairways - push-up clay / loam greens - city water.

SurfSide 37 Program Prior to 2004

4 to 5 drums SurfSide (52-gal.) per season applied with spray tank - SurfSide pellets used for syringing hot spots - greens and tees aerified twice a year - needle tines 3 times yearly.

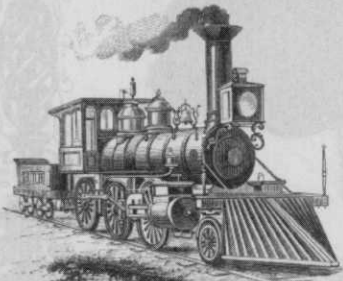
SurfSide 37 Program Years 2004 and 2005

(Severe seasons in the northeast and heavy losses of Poa Annua noted by USGA. One would think there is no hope except for standard agronomic procedures.)

- (1) Construction of new maintenance facility.
Plant Star Pumping System installed.
1-350 Gal. Tank, 2 - 1500 Gal. Tank
- (2) One 52-gal. drum SurfSide 37 blended in 350-gal. holding tank. Entire contents of tank applied in one night's irrigation. Agitation for blending provided by use of Plant Star Bypass System. Field coverage estimated at 3-oz./M.
- (3) Treatments are applied monthly starting in June (if a dry Spring) or by July on entire Golf Course. In dry weather, treatments are applied every 3 weeks.
SurfSide Pellets are used for syringing hot spots.
- (4) Fertiligation estimated at 1/4 lb./M of 18-3-6. This is applied weekly, 12 to 14 times a year through the irrigation system. Tank truck loads are delivered by **Plant Food Co.**

"NOT ENOUGH CAN BE SAID ABOUT TURF QUALITY AND EASE OF MAINTENANCE OF 100% POA ANNUA WITH THE CHANGE OVER TO THE PLANT STAR IRRIGATION SYSTEM. THE LAST TWO YEARS HAVE BEEN TERRIFIC."

THANKS FOR THE INFO, MYSTERY MAN!



"This gentleman has used SurfSide 37 for 25 years on the Golf Course - never having to explain to his green chairman that dead grass is par for the course. Listening to the experts for salvation is ok - hearing the words of one of your OWN during two bitter years, when Poa Annua, PROPERLY HANDLED, can be rewarding, makes good sense. Nor is his success with SurfSide 37 an isolated case."

MONTCO PRODUCTS CORPORATION (PHONE) 1-800-401-0411 (FAX) 1-215-836-2418

GEORGE PIERPOINT



WHITE PLAINS

NEW YORK

- NOW SEMI-RETIRED - Finished After 28 Years Of SurfSide 37 And It Never Failed Him On Any Golf Course

The open road beckons me and my HARLEY, but there is quiet comfort in knowing that with all the talk of modern demands placed on the superintendent to produce Tournament Quality Grass on a daily basis, I found no way out and no excuses. You adjust rates and application to existing conditions... improve them as best you can, but don't deviate from a SurfSide program or the use of the new SurfSide Pellets when syringing. **STICK WITH YOUR APPLICATIONS IN A WET OR DRY SEASON.** Start applications early in the season. Spoon feed your grass bi-weekly through the height of the season. Add your own brew of nutrients to the SurfSide in the spray tank or irrigation line. Never use fungicides or pesticides without it, and most important, don't TOY with SurfSide... you won't get the desired results. Budget a batch of drums for greens & fairways, then go and enjoy your HARLEY!

See you in Daytona...

George
5



MONTCO PRODUCTS CORPORATION (PHONE) 1-800-401-0411 (FAX) 1-215-836-2418