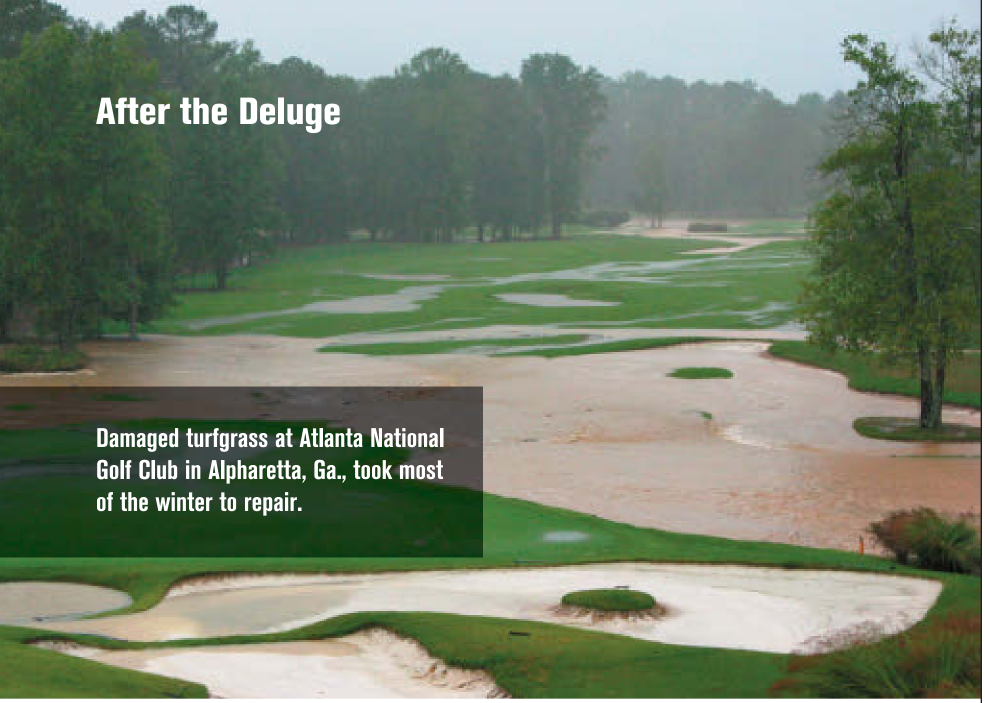
After the Deluge



Damaged turfgrass at Atlanta National Golf Club in Alpharetta, Ga., took most of the winter to repair.

PHOTO BY: JEFF TRAVIS

Continued from page 48
limbs, plastic bottles, soccer balls and basketballs — were removed, Esoda's crew shifted into DEFCON 1 to administer first aid.

The soil was tested for disease and a steady regiment of aerification began. Esoda says he used an aggressive fertilization program last fall to counteract moist conditions. He also controlled golfer traffic on the greens.

"We hurt, but we didn't lose any greens," Esoda says. "They were thin and nasty looking, but they didn't die."

Dennis Martin, Ph.D., extension turfgrass specialist at Oklahoma State University's Division of Agricultural Sciences and Natural Resources, encourages superintendents to look at the big picture when assessing damage. The sheer shock and awe of large-scale flooding can be blinding.

"You're faced with so much work so quickly and really no hope of bringing things back to complete normalcy right away," Martin says. "That's why a prioritization strategy is important. You try to save your infrastructure because that's the most expensive thing to deal with."

His top suggestions for immediate flood response include:

- get debris off if you can;
- use large quantities of high-pressure water to clean turf;
- salvage the construction profile of the greens, otherwise problems will remain for years; and
- remove silt so weed problems will be minimal.

Alfredo Martinez, Ph.D., turfgrass disease specialist for the College of Agricultural & Environmental Sciences at the University of Georgia, says superintendents may not realize how vulnerable turfgrass can be when it's soggy from flooding. Hence, proactive and repeated soil testing is key to managing and fighting bacterial threats to the grass. These actions may delay a course from reopening sooner, but Martinez says they're vital to the turf's overall health.

In Oklahoma last year, some of the hardest-hit courses during spring flooding were those under construction. Four inches of rain that fell in three hours — on already moist ground — derailed the summer opening of Patriot Golf Course in Owasso. The course knits together marsh, woodlands, prairie and limestone canyons that fueled the flash flood, washing away newly laid sod.

"Once the water started moving, the damage was done," says superintendent Jeremy Dobson.

Drainage inlets became clogged with sod and rocks, and boulders that had moved to the bottom of the canyons during construction littered the greens. One

Continued on page 52

Continued from page 51
rock blocked a 36-inch drainage inlet.

"It was kind of a blessing in disguise as it really identified the problem areas and gave us a chance to address those," Dobson says.

Construction crews used the destroyed areas as access points to create check dams with large boulders to slow water for the next rain event.

While other courses may have rehabilitated or replaced greens, Dobson pursued a different approach to fighting the silt layer and anything it may have left behind.

"Being a new course, I suggested to the ownership that we take the opportunity to recore the greens and fill them up with the proper mix rather than dealing with this layer of silt over them," he says. "They supported that decision, which was the most important decision that was made as far as the future health of the greens on this property."

Proactive and repeated soil testing are key to managing and fighting bacterial threats to the grass.

ALFREDO MARTINEZ,
UNIVERSITY OF GEORGIA

Dobson had an opportunity to gauge whether the changes to the course's construction were effective in the fall when the course received more than 3 inches of rain.

"Everything we had done seemed to hold up, and we had what I consider minimal damage," he says. "It was routine damage cleanup. The turf held up well. I feel confident that everything that was done to help us through the rain events held up and served its purpose."

Working with the ebb and flow of the terrain at a golf course is often one of the best remedies for managing floods.

For Babeck, flash flooding has been a familiar experience. A creek that feeds a major source of water for the surrounding community bisects his course. After watching major floodwaters surge four times, he identified what would redirect the water.

"We went in and raised the elevation of the fairway and did some sloping so the water would move across the area so it wouldn't back up," he says. "We've had a couple of decent rains but nothing quite like we had in 2006. For the

Continued on page 54

See the future of golf course irrigation
and learn how to use up to 90% less wire
at **www.rainbird.com/ICS**

Using less wire by getting straight to the point.

That's intelligent.

The innovative Rain Bird® IC™ System uses up to 90% less wire by directly linking your rotors and central control. The groundbreaking Rain Bird® IC™ System saves you time, money and labor by using up to 90% less wire than other control systems. Advanced diagnostics even let you troubleshoot from the convenience of your office. Proving less really is more. That's The Intelligent Use of Water.™

RAIN BIRD®

Some of the hardest-hit courses during spring flooding In Oklahoma last year were those under construction, such as the Patriot Golf Course in Owasso, Okla. The photographs here tell the story.

PHOTOS COURTESY: PATRIOT GOLF CLUB

Continued from page 52
smaller events we helped ourselves out a little bit."

The course's crew was able to move silt off of the greens with minimal turf loss. In some areas the flood delivered 3 to 5 feet of dirt in areas as wide as 450 feet.

Three of the four bridges on the course had to be replaced because of tree damage. But the way they were constructed originally didn't make sense for hazardous flood conditions. So they were replaced by concrete low-water crossings.

"They aren't as pretty as before, but they're a lot more functional," Babeck says.

Reflecting on Mother Nature's wrath is a lot less painful than watching it float by. That said, Babeck realizes it's nobody's fault when flooding damages property like a golf course.

"There's nothing you can do but go back and fix it," Babeck says. "But when you put it back together, you can try to make improvements." ■

Harler is a contributing editor to Golfdom and managing editor for Golfdom's TurfGrass Trends.


Haul-in-one.
With up to a 1200 lb payload capacity, the E-Z-GO® MPT Series can carry it all—from flagsticks to sand and everything in between. Whether equipped with E-Z-GO's proven electric powertrain or a best-in-class 13 hp Kawasaki® engine, the MPT provides more power, greater hauling and better energy efficiency. Get it all, and more, from the E-Z-GO MPT.
Learn more at www.ezgo.com.
EXCELLENCEINMOTION
E-Z-GO®
A Textron Company

Our BRIGHT ideas come in Green!

LebanonTurf offers a full line of products with leading edge technologies to keep your turf healthy and pest free. ProScape® with Merit® is perfect protection against grubs and a wide variety of other insects. Perfect for late spring or early summer application providing season long protection. Merit is proven to be more cost effective than other grub products. ProScape with Merit is fortified with MESA® slow release nitrogen for brilliant color, quick response, and extended feeding.

For more bright ideas about our full line of professional products, please visit LebanonTurf.com or call 1-800-233-0628.

LebanonTurf

TURFGRASS TRENDS

SPRING GREENUP

Study Tells if Paint, Polyethylene Covers Can Enhance Greenup

By John M. Kauffman and John C. Sorochan

Low-temperature injury, winterkill and slow spring greenup are common problems facing managers of warm-season putting greens in the transition zone. Putting greens are often covered with polyethylene blankets during cold periods to protect against low temperature injury. Green latex paint also adds color during the dormancy period and may hasten turf greenup in the spring.

The objective of this study was to determine the impact of polyethylene covers and painting on low-temperature injury and pace of spring greenup of four warm-season putting green turfs in the transition zone. Covering alone, painting alone, covering plus painting, and no treatment were applied to Champion and TifEagle bermudagrass, SeaDwarf seashore paspalum and Diamond zoysiagrass in 2009 at Knoxville, Tenn. Covering plots caused turf to emerge from dormancy sooner than painting, and the covered plots maintained higher surface and soil temperatures than uncovered plots. Covered bermudagrass plots emerged from dormancy a full three weeks sooner than uncovered plots. Using polyethylene turf blankets can improve winter survival and hasten spring greenup for ultradwarf bermudagrass and seashore paspalum in the transition zone.

Cold hardiness and winterkill are concerns of golf course superintendents who manage warm-season putting greens in the transition zone. The increasing use of ultradwarf bermudagrass putting greens in the transition zone has made practices to enhance winter survival more important. Therefore, superintendents must find methods of managing the off-color winter-playing surfaces that accompany the lengthy dormant period of warm-season putting greens in the transition zone. Finding methods to improve spring greenup may allow play to resume earlier in the spring and allow the turfgrass plant to begin producing photosynthates earlier in the year, which can stimulate growth and produce a healthier turf stand.

Covering warm-season turf is a common method used to increase winter survival. Bermudagrass greens were covered with pine straw in the 1920s to promote winter survival. More recently, wooden mats, straw mulch or impermeable synthetic blankets installed for consecutive months during the winter have been shown to improve winter survival of annual bluegrass and creeping bentgrass putting greens. However, the demand for year-round play has made using these winter-long covers unfeasible.

Temporary and moveable winter covers, such as woven fiber and plastic blankets, are another option that can be used to trap heat energy near the soil surface and

Continued on page 58

IN THIS ISSUE

OUR SPONSORS

(Above) The plot area in November 2008. Covers were in place because temperatures were below 25 degrees F, but paint had not yet been applied.

(Below) Seashore paspalum plots in April 2009. The lower plot was covered throughout the winter. The covered paspalum plot had much more green turf cover at this late April date than the uncovered plot.

PHOTOS COURTESY: UNIVERSITY OF TENNESSEE

Continued from page 57

keep the soil and air temperatures around the turf surface warmer than the ambient air temperature, which can protect turf from winter injury. Previous research has shown moveable covers to enhance fall color retention, winter survival and spring regrowth of bermudagrass maintained at heights above 0.75 inches and on MS-Express bermudagrass maintained at putting green height. However, no research has been conducted regarding the effects of temporary winter covers on the more commonly used ultradwarf bermudagrass cultivars like Champion and TifEagle, or other species.

Historically, superintendents have overseeded warm-season greens to help maintain acceptable aesthetics. However, surface quality and aesthetics often decrease during fall establishment of the overseeded turf and spring transition back to the warm-season turf. Additionally, overseeded surfaces require more fertilizer, water and pesticide inputs than nonoverseeded turf and the shade created from the overseeded turf can impede spring greenup of the warm-season turf. To provide green color on the putting surface during the dormancy period without the drawbacks of overseeding, warm-season putting greens are often painted with a green latex paint. However, the impact of painting the surfaces on soil temperature, turf surface temperature and winter survival is unknown.

To those ends, the objective of this research was to determine the impact of polyethylene covers used during periods of low temperature and the use of latex paint on low temperature injury and pace of spring greenup of warm-season putting green species in the transition zone.

This study was conducted on a sand-based putting green at the East Tennessee Research and Education Center in Knoxville. Champion and TifEagle bermudagrass, SeaDwarf seashore paspalum and Diamond zoysiagrass were established from sod in 10-foot by 5-foot plots in July 2008 and maintained under putting green conditions, including mowing at 0.125 inches six times per week and irrigating two to three times per week. Bermudagrass and seashore paspalum plots received 6 pounds, 1.5 pounds and 2.5 pounds of nitrogen (N), phosphorus (P) and potassium (K) per 1,000 square feet, respectively, for the year, while the zoysiagrass plots received 3 pounds, 1.5 pounds and 2 pounds of N, P, and K per 1,000 square feet respectively.

Polyethylene covers (Evergreen, Covermaster Inc., Rexdale, Ont., Canada) were randomly applied to one half of the plots for each of the green variety/species when the forecast low temperature was to be ≤ 26 degrees Fahrenheit. Covers remained in place if temperatures were forecast to be ≤ 37 F, but were removed if temperatures were forecast to be >37 F. A green latex paint (MatchPlay Ultra Dwarf Super from Pioneer Athletics in Cleveland) was also randomly applied to one-half of the plots for each putting green variety/species. The paint was mixed using a 1 to 10 paint/water mixture applied in three directions. Covers and paint were applied in factorial fashion. So the four main treatments were covers and paint, covers without paint, paint without covers, and the untreated control that didn't receive covers or paint for each of the four varieties/species.

Turf surface temperature underneath the covers was measured weekly using an infrared surface thermometer. Soil temperatures at a 1-inch depth were collected weekly with a soil temperature probe. A visual observation of green turf covers was taken weekly to assess how long different varieties/species took to emerge from dormancy.

Polyethylene covers and turf variety/species significantly impacted turf surface temperature in 2008, although the presence or absence of latex paint didn't significantly alter surface temperature. Covered plots tended to have a higher surface temperature than uncovered plots. Diamond zoysiagrass and SeaDwarf seashore paspalum generally had higher surface temperatures than the bermudagrasses, both when covered or uncovered. SeaDwarf had a much darker dormant color than the ultradwarf bermudagrasses, while Diamond zoysiagrass did not entirely go dormant and maintained some green color. Latex paint applications did tend to increase surface temperatures slightly over nonpainted, noncovered plots, but the change was not statistically significant.

Covers and turf variety/species also significantly impacted soil temperature in 2008. Covered plots returned significantly higher soil temperatures than uncovered plots on nearly all rating dates. Among the uncovered plots, SeaDwarf seashore paspalum often returned the highest soil temperatures, likely because of its longer color retention in the fall and dark dormant color. Latex paint applications had no effect on soil temperatures.

Additionally, covers and turf variety/species significantly impacted the time of complete spring greenup. Covered Diamond zoysiagrass fully recovered from dormancy in early April, four weeks before any other variety/species. Both Champion and TifEagle fully recovered in May when covered, but didn't fully greenup for an additional three weeks when not covered. Covered SeaDwarf completely recovered in May, as did the bermudagrass varieties, but had significant winter injury when not covered, delaying its complete greenup until August. Non-covered plots treated with latex paint applications tended to have greater amounts of green turf cover than non-covered, non-painted plots in the first two weeks after dormancy had broken, but green turf cover was similar for all plots two weeks after dormancy emergence.

Polyethylene covers increased turf surface temperature and soil temperature when used during cold periods. Polyethylene covers also enhanced spring greenup of all varieties/species except for Diamond zoysiagrass, which emerged from dormancy earlier than all other varieties/species, regardless of cover application. Latex paint applications had a slight effect on surface temperature and spring greenup, but not enough to be statistically significant.

Painting warm-season greens is a viable practice and a cost-effective alternative to overseeding in the transition zone. But painting alone is not enough to protect warm-season putting greens from winter injury. Golf courses in the transition zone seeking to regrass their putting greens to a warm-season species should consider purchasing some sort of turf cover to ensure their greens survive the winter and emerge from dormancy quickly.

John M. Kauffman is a graduate student in the plant sciences department at the University of Tennessee in Knoxville, and John C. Sorochan is an associate professor of turfgrass science there.

Painting alone is not enough to protect warm-season putting greens from winter injury.

REFERENCES

Beckett, H. 1929. Covering bermudagrass greens for winter protection. Bull. USGA Green Sect. 9:175.

Dionne, J., Dubé, P., Laganiére, M., and Desjardins, Y. 1999. Golf green soil and crown-level temperatures under winter protective covers. Agron. J. 91:227-233.

Goatley, J.M., J.P. Sneed, V.L. Maddox, B.R. Stewart, D.W. Wells, H.W. Philley. 2007. Turf covers for winter protection of bermudagrass golf greens. Applied Turf. Sci. 1-9.

Goatley, J.M., V.L. Maddox, D.L. Lang, R.E. Elmore, and B.R. Stewart. 2005. Temporary covers maintain fall bermudagrass quality, enhance spring greenup, and increase stem carbohydrate levels. Hort Science. 40:227-231

Johnston, W. J., and Golob, C. T. 1997. Using a turf cover in combination with winter applied plant growth regulators on putting greens. Int. Turf Soc. Res. J. 9:328-333.

When Is Fescue Not a *Festuca*?

Debate ensues over changing classification of grass variety

By Curt Harler, Managing Editor

Since forever — or at least since most gray-haired golf course superintendents were in school — broadleaf fescues were firmly planted in the genus *Festuca*. We dutifully memorized that it was in the *Gramineae* family, and we quickly became aware of its important place in the turf world.

That may change. Or, it may already have changed. A move to change the classification is being pushed by the most recent generation of taxonomists.

"The breeders want to stick to *Festuca*," says Leah Brilman, director of research and technical services for Oregon Seed Farms. Brilman received broad support for her motion to keep fescue as *Festuca* from a number of other breeders at the recent Crop Science Society of America meetings in Pittsburgh. However, the plant breeders don't hold all the cards in this game.

PHOTO BY: STEPHANIE RICCA

Taxonomists are moving away from phenotypic classication (the way things look) to genotypic classifications (the way their genes are defined).

"Some recent taxonomists want to put it in *Festuca*," Brilman says, "and others want it in *Festuca*."

Schendonorus was once the name used to refer to the segment of the genus of *Festuca*, to which the broadleaved fescues belonged.

"If we accept these names, do we have to call it tall ryegrass? Or tall *Schendonorus*?" Brilman asks.

Good question. And the answers, according to proponents of the name change, will come from down deep — way down deep in the genetics of the plant and not the way they look. Taxonomists are moving away from phenotypic classification (the way things look) to genotypic classification (the way their genes are defined).

These taxonomists say there are genetic markers that indicate that not all fescues conform to the *Festuca* nomenclature.

"They don't belong in *Festuca*," says Mary Barkworth, director of the Intermountain Herbarium at Utah State University. "People say, 'Why fuss? It's been that way since the 1970s.' "

However, since then there has been a great deal of protoplast DNA work done.

"That DNA work puts them with *Lolium*," Barkworth says.

On a more visual basis, Barkworth points to the morphology of the spike and their crossing relationships as proof that they do not belong in *Festuca*.

Agronomists and seed breeders — including the dean of turfgrass James Beard, Ph.D. — beg to disagree with the change. Besides, they note, linking to past names is important for germplasm repositories. Breeders complain they have had four names thrown at them in recent years — without any input from the breeding community. And they like *Festuca*.

And while the battle has been joined, there's little hope for a truce and less expectation for an immediate resolution to the tiff.

Some turfgrass experts shrug and say "whatever" to taxonomy fights. However, the

Continued on page 62