ON A ROLL

What's good for greens has got to be good for fairways, right? Merion GC's Matt Shaffer experiments with fairway rolling to reduce turf stress and improve overall health.

by Bruce Williams, CGCS

Einstein said the definition of insanity is doing the same thing over and over and expecting different results. The world needs people who make it a habit to think out of the box. Thank God we have them.

Over the years, I have seen a variety of cultural practices come and go and even a few revived that were used half a century ago. One of those cultural practices is turf rolling. Turf rolling was most often utilized in the spring or during construction. I can remember always seeing a small roller and a large roller at every golf course I visited. I would also see three gang rollers used to roll larger areas of turf throughout the 20th century.

In the parts of the country where there was heavy frost we would often see some heaving of the soil and this created uneven putting surfaces almost every spring. Rollers were used to smooth out the putting surface prior to the first mowing in the spring.

Rollers had taken on many forms, and most rollers were about 3 feet wide and filled with water to have greater impact. Even after rolling I remember using a Toro Series IV walking greens mower – with a masonry block in the basket – that was used prior to the official first mowing of all of the greens. This prevented scalping and gave a very smooth surface when topdressing since topdressing frequency was much less.

Rollers took on many forms and I have seen vibratory rollers, small construction rollers and everything in between.

As greater demands for high-level conditioning arose, there was a tendency to take practices like rolling and expand them to other areas of the golf course like tees and approaches. Some of these practices have evolved into use on fairways as well and fairway rolling has followed suit in that evolution.

CONCEPT. Over the years, I have had the pleasure to know Matt Shaffer, director of golf courses at Merion Golf Club in Havertown, Pa., very well. Matt is one of those cutting-edge guys who does not always wait for the newest pieces of equipment and latest trends to develop. Matt is at the forefront and works with quite a few equipment manufacturers, universities and plant-protectant companies to develop his conceptual plans into realities at Merion GC.

Through following former and current research on disease development, Matt realized there were a variety of benefits to greens rolling. One of those benefits was the reduction of disease pressure even in an area like Philadelphia that is known for turf damage through disease.

As the demand for excellence at Merion increased there were several cultural programs that expanded beyond the greens and out onto the approaches leading to the greens. One of those cultural practices was the rolling of turf. Matt noticed a reduction in disease pressure on the approaches, which started to make him think that there was potential for doing the same on fairways. All of this fit nicely into an integrated pest management program that utilized rolling to aid in reducing fungicide applications to Merion's many acres of fairways.

DEVELOPMENT. The amount of equip-

As demands rose for high level conditioning, practices have evolved to include fairway rolling.

BRUCE WILLIAMS

Sal Rizzo: "We built a small model and worked on the steering for what seemed to be forever. We were positive that when turning on the green there should be no damage. It took four months alone just to perfect the steering."

ment and labor required to roll fairways would surely be cost prohibitive. Only greens rollers were commercially available a year ago. So a concept had to be taken to the right people to develop a prototype of a roller that could be wide enough to make the process feasible. It also had to be mobile enough to move from fairway to fairway with little or no reason for an operator to get off the machine.

Matt says he contacted every manufacturer he could think of to build this machine and nobody wanted to take on the project of designing this machine. Matt and Sal Rizzo from Salsco had done business for many years. When Matt asked Sal if he had any interest Sal agreed to take a look at the project. They set a time to meet and discuss the project.

Present at that first meeting were Paul Brandon, sales manager for Finch (the local John Deere dealer) and Dick Owen, a Salsco golf equipment salesperson. Combined there was well over 100 years of experience in golf and turf equipment and maintenance at this gathering. They made a wish list of the things they wanted the machine to do. Nobody knew what it should look like – only the things they expected from it.

As Sal drove home the next day and thought about this new machine he began to get excited about the project. As he drove the machine started to come together in his mind.

Sal told me: "I have no choice once I start the process... the whole machine must be done in my mind. I install every nut and bolt, every link and bracket, investigate all the stress points, the whole unit. Then I drive it and use it in my mind to work out any weak points.

"Once I'm happy with the unit in my mind, I begin to lay the concept out to the R&D people at Salsco," he adds. After they picked apart the base design they called in the AutoCAD guys. At this point the yellow pads come out and the base unit begins to take form.

"We built a small model and worked on the steering for what seemed to be forever," he says. "We were positive that when turning on the green there should be no damage. It took four months alone just to perfect the steering. Sal estimated that the first machine had at least $350,000 in design and production time. We used components and technology from other machines we build and the unit began to take shape."

When they introduced the Tranz-Former at Merion GC to the same group who attended the initial meeting the feedback was extremely positive. This machine performed better than expected. "When we brought the prototype to Matt you would have thought it was his first child," Sal says. "He loved everything about it."

BRUCE WILLIAMS

IMPLEMENTATION. Through prior experimentation the team at Merion GC had ascertained that a significant reduction in an aggressive dollar spot infestation had occurred when rolling approaches.

Early versions of a fairway roller were created with a five-plex, but eventually the Salsco prototypes were put into action on a regular schedule. With the new fairway rollers it was decided to operate the new machines on a regular schedule. Fairways are rolled at the rate of 4.5 acres per hour and the turf team has the system down pat.

Fairways at Merion GC are mown on Monday, Tuesday, Thursday and Friday each week. Fairways are rolled on Wednesday, Saturday and Sunday. Additional cultural practices impacting fairway conditions are the use of topdressing sand at the rate of 15 tons of sand in two applications per year.

RESULTS. As they say "the proof is in the pudding." All of the development of this new machinery would have been for naught had there been no measurable results. During the summer of 2011, Shaffer told me that "I have not applied any fairway fungicides in 280 days and that alone will allow us to develop an effective calculation for a realistic time for return on our investment in the machinery." In 2012 fairway fungicide applications were utilized on a 21-28 day schedule but at a much lesser cost than previous years. Any visible dollar spot was less aggressive and smaller in size with the rolling.


Shaffer

Side benefits have included a noticeable thatch reduction. The sand topdressing may be adding to that effect, but it is all good. Matt says when he looks at the actual height of cut for the fairway turf, through a prism, it is .010 inches less than before fairway rolling. This has resulted in greater member satisfaction with a tighter lie while not sacrificing the health of the plant with a lower bench height of cut. Utilizing the newer cultural practices on fairways it is hoped that fairway aeration can be minimized in the future.

THE SCIENCE. Some of the genesis of the fairway rolling concept not only came from the trial-and-error concept and practical trial and error, but also from the science and research behind the concept.

Dr. Thom A. Nikolai, turfgrass academic specialist at Michigan State University, has been performing lightweight roller research since 1993. His observations about the numerous benefits that regular rolling provides were the impetus for the resurgence of the mechanical practice. Those benefits include decreases in dollar spot, brown patch, and

localized dry spot while increasing green speed. Many of his findings have been summarized in a recent article published in the summer issue of the Michigan Turfgrass Foundation publication of NewsNotes.

Masters student Paul Giordano reported that increasing the frequency of rolling significantly decreases the incidence of dollar spot. Beyond the research at MSU that proves rolling decreases dollar spot, Rutgers University research has also shown that anthracnose can be decreased with regular use of lightweight rolling. These are surely the two largest challenges for maintaining disease-free turf in the cool-season regions of the US.

While reduction of morning dew and a healthier sward of fairway grasses may be a key component of disease reduction, Giordano's research indicates that changes in the microbial population caused by rolling are most likely the key. Michigan State is performing rolling research on fairways and athletic fields. We can expect to see more research results from Michigan State in the upcoming years.

SUMMARY. Could it be that we are seeing another case of history repeating or reinventing itself? Practices like rolling of fairways, that were once utilized, are coming back into modern turfgrass maintenance. Science and rationale are behind the new direction to improve fairway conditions.

While it took an investment of $350,000 to roll out the first machines Sal Rizzo indicated that he is selling his units in the range of $35,000, which makes them affordable for a variety of golf courses.

Each facility must do its own homework as to what cost savings might be evident. It is hard to place an exact value on overall improved fairway conditions, but if you could calculate items like reduced fungicide applications and less hand watering it is easy to see how long this may be a prudent investment.

Time will tell if this becomes a trend. Salsco is taking orders and units used at a major earlier this year have created buzz and became the impetus for Brigham Young University to order one for their sports turf.

Shaffer continues to be on top of his game and always striving for improvement on his golf courses. With fellows like Shaffer taking a need and developing the concept it opens the doors for creative people like Sal Rizzo to invest his time and money into new technology that will only improve over time. **GCI**

Bruce R. Williams, CGCS, is principal for both Bruce Williams Golf Consulting and Executive Golf Search. He is a frequent GCI contributor.

feeding *frenzy*

Your fall fertilizing program has a direct impact on spring turf. Supers share their strategies that get their turf fed and in top condition.

BY RICHARD SKELLY

How does one best approach fall fertilization after an extremely dry and hot summer? No doubt this issue is on the minds of many superintendents around the Southwest and Midwest. All experts GCI talked to agreed fertilizer with higher levels of potassium and phosphorous is the way to go, but when you're talking 30 to 60 acres of coverage, that can get downright expensive.

Most every superintendent knows the importance of keeping good logbooks and records of how much was applied to the turf on what dates and how, but what do you do after a weather season like this one, marked by the most extensive drought and excessive heat since the Dustbowl of the 1930s?

Tim Nielson, the superintendent at Creekmoor Golf Club in Raymore, Missouri, not far from Kansas City, says in his 10 years of being a superintendent, he's never witnessed such a dry spring and summer. Creekmoor is an 18-hole semi private facility built in 2006 that opened in 2007. Nielsen has zoysia fairways and bent grass tees and greens.

"I haven't seen anything like

ALL IMAGES SYNGENTA

have a large lake to draw water from and our irrigation system is fairly state-of-the-art; the coverage is pretty good."

Despite the extreme weather around Kansas City and other parts of the southwest and Midwest – notably Arizona, New Mexico, Utah, Colorado, Texas, Iowa, Nebraska, Kansas, Missouri and parts of other states – Nielsen says he's not changing his fall fertilizing routine.

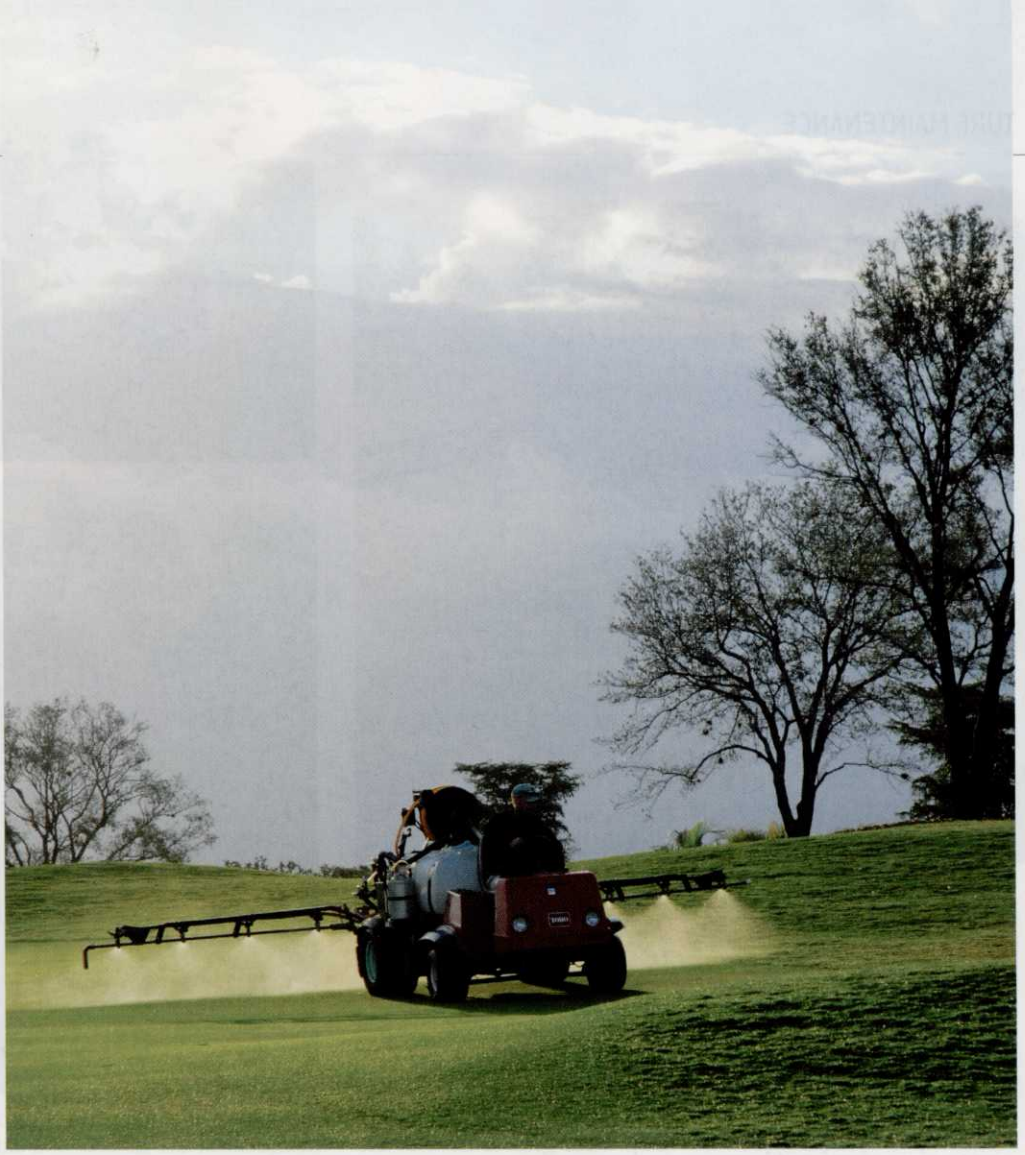
"I typically go for the second week of September every year. This year, I'm not going to change anything. The temps look like they'll be in the low to mid-80s so I'm not too concerned with that," he says, adding that Creekmoor's irrigation system will provide the water for the fertilizer to take, "but obviously, if this drought continues into the fall and winter, it doesn't bode well for next spring."

At Creekmoor, Nielsen reports his roughs thinned out a bit in the heat, but that's about all he lost. He'll have to do some over-seeding there.

"I can tell you what I should have done, considering how dry it was," Nielsen continues, "it seems to me like the drought started well before 2012. It was dry last fall, and it was dry in the spring and this spring when we were trenching a line, digging down three feet, I noticed it was super dry, and realized right then and there I should have been using more water in the spring."

"If there is one tip I can offer about fall fertilizing, it's that if you are seeding, you need to put down a high phosphorus fertilizer and be sure you maintain your soil moisture," Nielsen says.

Assuming the worst case scenario, that his area of Missouri is in for a dry fall and winter, Nielsen says he will "look to water deeper into the profile in the spring and make sure I build up the moisture there."



If you are seeding, Creekmoor GC superintendent Tim Nielsen recommends a high phosphorus fertilizer and maintaining adequate soil moisture.

Brad Gray, the superintendent at Mission Hills Country Club in Kansas City, Mo. has been in a superintendent role for 12 years. He oversees a classic walking course that was designed and built by Tom Bendelow in 1914. Mission Hills was redesigned by Keith Foster in 2006. Bendelow also designed Medinah Country Club, site of this year's Ryder Cup matches.

"This has been a terribly hot and dry summer," Gray says, "but what's unusual about it is it's always kind of hot and humid in Kansas City. But this year it's been hot and dry, almost like New Mexico or Arizona."

Gray has bentgrass greens, zoysia grass tees and fairways. The roughs at Mission Hills are fescue and bluegrass blended with *Poa annua*.

"Right now we're out there aerifying and over seeding the roughs. Then we'll fertilize on schedule the second week in September," Gray explains.

"We came through the summer the best we've ever had as far as maintaining cool season turf grass. We're in a drought, yet I'm on city water, so anything we use we buy and we've had no restrictions on our water use. We had all the water we needed, but that came with pretty high water bills."

The lack of rain put extra stress on approaches to and from cart paths, Gray says, so in those places he did some extra application of phosphides and some foliar "at the in and out places next to our cart paths."

Pressed for advice to other drought-hassled supers, Gray says: "Raise your mowing heights, if possible. That's a way to save money and if you do have access to the water, maybe just try to cool the plant through the day, giving it quick spritzes from the irrigation system."

Gray says the men and women on his maintenance team do their mowing in the morning and spent afternoons syringing and otherwise irrigating certain stressed areas at Mission Hills.

What if there is no relief in sight, and an equally dry winter is expected?

"I won't alter my plan next spring," Gray says.

"Every super should be tweaking their management and maintenance practices all the time, there might be a few things I tweak but it won't be much different in the spring."

Warmer weather Bermuda and zoysia need more phosphorus and potassium in late summer and early fall to help with winter tolerance.

"Hopefully, where possible, the superintendents are using irrigation in conjunction with their fertilization programs. Once there is rainfall, eventually the whole turf grass plant is much better hydrated."

– Charles "Bud" White

Charles "Bud" White at the USGA's regional office in Dallas, says superintendents with warmer weather Bermuda and zoysia grasses need to go with a more phosphorus and potassium in late summer and early fall to help these grasses have better winter tolerance.

"When Bermuda grass goes dormant in the fall, it's much more susceptible to winter kill, so the fertility plan should be geared toward trying to offset the chance of winter kill affecting the grass too much. That should be the focus for people who use warm season grasses, or the golf courses primarily in the South," White explains.

"With bent grasses we advise a similar scenario, a little more phosphorus and little more potassium for the same reasons of trying to establish root growth and rebuilding a healthier plant," White adds.

In Dallas, Sept. 4 was the area's 31st day of 100 degree plus temperatures, White says, noting "normal" for Dallas is 18 days per year of 100 degree plus temps. Last year, Dallas had a record-setting 71 days of 100 plus temperatures, "and this year, we've had another hot summer, not quite as bad as last year, but almost equally as dry."

White says the drought area as he understands it includes all of Texas, Louisiana, Arkansas, Oklahoma, New Mexico, Colorado, Nebraska, Iowa, Kansas, Missouri and Tennessee, "and this year it was very difficult, it even went on into the Carolinas and Georgia."

"Hopefully, where possible, the superintendents are using irrigation in conjunction with their fertilization programs. Once there is rainfall, eventually the whole turf grass plant is much better hydrated," White says.

"It's going to take several inches of rain to get the soil back to where it was, and in some places in the drought states there's been several inches," he adds. "That's why we recommend potassium and phosphorus to rebuild a strong root and rhizome system."

Dr. Richard White, a professor of Turfgrass Physiology and Management at Texas A&M University in nearby College Station, Texas, says a good time for supers with cool season grasses to fertilize is once there's a break in the hot and dry weather.

"The challenge is some of your superintendents are dealing with warm season grasses and some are dealing with cool season grasses," says White.

"My recommendation is as long as hot dry conditions of summer have moderated, that's when you should look to fertilize. If you can, wait for somewhat cooler fall temperatures." **GCI**

Richard Skelly is a freelance golf writer based in Spotswood, N.J. and a frequent GCI contributor.