

## Studies say that when it comes to maintaining greens, an equal combination of mowing and rolling works best.



By Jason Stahl

**R**ollin', rollin', rollin'... If the song "Rawhide" doesn't play helplessly and mercilessly over and over in your head when you're rolling greens, you're lucky. But if it does, somewhere between the whip cracks and the guitar riffs should be the thought that you're doing your turfgrass good because you've decided to give the mower a rest that day.

Recent studies have shown that a combination of mowing and rolling greens during the summer months is the best strategy for keeping turfgrass healthy. Plus, there are large economic gains, too – depending on if you triplex mow or hand mow.

The studies, according to Dr. John Sorochoan of the University of Tennessee, were done to provide hard data behind the USGA and GCSAA's annual recommendations to reduce mowing frequency and raise mower heights to minimize summer stress. "There had never been studies before; this information was always opinion," Sorochoan says. "And the USGA says people just know to do this, but we wanted to quantify how, how much and how significant."

The study Sorochoan participated in also involved Dr. Jason Henderson of the University of Connecticut, Dr. Doug Karcher of the University of Arkansas and Dr. Tom Nikolai of Michigan State University. Greens of *Poa annua*, Ultra Dwarf and bentgrass were subjected to various schedules of mowing and rolling from June through August to determine the ideal frequency.



# ON A ROLL



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On one green, the researchers did what the average facility in Tennessee does and walk mowed it six days a week. On another green, they mowed on Monday, rolled on Tuesday, mowed Wednesday, rolled Thursday, mowed Saturday and then didn't do anything on Sunday.

The study found the quality of the green that was mowed only three times a week was much better than the green that was mowed six times a week. The reason, Sorochan believes, can be explained through science.

"Golf courses on a daily basis just go out and mow, so first thing in the morning they're removing that leaf surface area, which causes stress in the plant," he says. "The plant then uses energy through photosynthesis to heal the wound. When you look at creeping bentgrass, whether it's in the transition zone, Michigan, upstate New York or Vancouver, the best and most efficient time for that grass to photosynthesize is early morning till noon. So, if you've cut it, even though it's using energy to heal itself, you've removed that much

more leaf area that would be absorbing light. So simply by skipping one day of mowing, less energy will be used to heal a wound and there will also be that much more surface area for light energy or photosynthesis to occur."

The study also went one step beyond science and analyzed the economic impact of alternating mowing with rolling – and the results were eye-opening.

"We determined that if you were a private club and walk-mowed your greens, it freed up \$22,000 a year in your budget, which included the cost of two rollers," Sorochan says. "And that money, of course, could be put toward more topdressing sand, another laborer or whatever."

The average daily fee course saved \$11,000 per year if it walk mowed. However, those daily fee courses that triplex mowed only saved about \$1,600 a year, and triplex mowing cost country clubs that incorporated rolling and mowing practices \$80 per year, which included the purchase of two rollers.

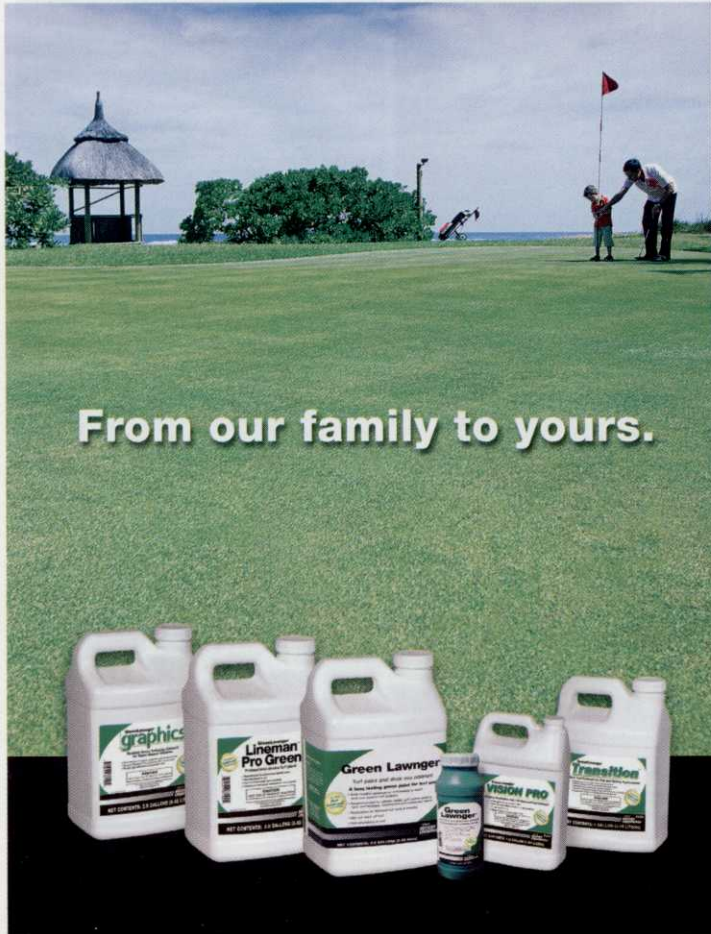
Based on this economic data, Sorochan saw

more superintendents switching to alternating mowing and rolling on a yearly basis more for the benefit of their budgets than the health of their greens.

Dr. Frank Rossi of Cornell University, who recently gave a talk entitled, "Putting Green Mowing...Less Is More," says a lot of people feared there would be a huge downside to rolling if done excessively, but he believes the only downside is created by operator error. Sorochan agrees.

"The problems stem from starting and stopping, spinning out or just stopping," he says. "I recommend to roll as far off the collar as possible or onto the collar. But a lot of people are limited by bunkers or slopes and sometimes end it a foot or two or three or five feet short of the collar, especially if the pin is in the back and you're coming to the front and you've rolled it all the way to that one spot. Don't stop in the same spot every time."

With the lightweight rollers available today, stress from rolling is minimal compared to stress from mowing, Sorochan says. **GCI**



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When rollers were reintroduced in the early 1990s, there was some concern that they could cause wounding and potentially create entryways for diseases. But that has been disproven, too, says Sorochan.

"In actuality, we found that rolling reduced diseases," he says. "Tom Nikolai showed it could reduce dollar spot by 50 percent. And Bruce Clark found you could reduce anthracnose just by incorporating lightweight rolling with your mowing three times a week."

Cornell University's Rossi did his own study, but unlike Sorochan's, it was primarily focused on mower types. Still, he found that there was virtually no effect in the summer months going to three to four mows a week and rolling every day.

"Superintendents can get the performance they want but at the same time, the evidence from the work we've done shows the less you mow, the healthier the plant is," Rossi says.

Rossi's study examined the variable frequency of clip from Eclipse mowers that allow for ground speed and real speed adjustment.

It also looked at bed knife position and the aggressiveness of cut of different mowers. "We sort of found some hidden stresses you would see in mowers that a lot of guys don't pick up on," he says. "At the end of the day, there are some fine points to our work, but you want to mow as little as you need to get the performance you need. You also need to realize that mowing will only get you so far. If you want to keep a healthy surface and get maximum performance, you have to roll."

For those superintendents who haven't embraced this mowing-rolling concept, Rossi encourages them to at least try some vibratory rollers on a triplex mower because "there is significantly less injury associated with using that piece of equipment and it's much faster than a speed roller."

The performance of speed rollers or sidewinders has been compared to triplex rollers, Rossi says, and little difference has been found. So, in his opinion, superintendents should go with speed. "From a time perspective, it's a heck of a lot easier to bum around

with a triplex roller than have to drag a speed roller or side roller," he says.

Yet another study conducted by the University of Arkansas's Jay Richards, Mike Richardson, Aaron Patton and Josh Landreth with Karcher and Nikolai addressed green speed when it comes to rolling.

The objective of the study was to determine the effects of mowing and rolling frequency and mowing height on turf quality and green speed on a sand-based green. The conclusion was that rolling had a greater impact on increasing ball roll distance than reducing mowing height. Also, that mowing frequency could be reduced without a decrease in ball roll distance if turf was rolled on days when mowing was skipped. Therefore, those managing greens may be able to mow less frequently during hot, humid periods to minimize turf stress and produce healthier putting green turf without sacrificing green speed. **GCI**

*Jason Stahl is a freelance writer based in Cleveland.*

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