

Bring On the Baking Soda

Two Ohio superintendents discovered an innovative solution to moss problems on their greens after other solutions produce mixed results

BY FRANK H. ANDORKA JR., MANAGING EDITOR

The hardest part of controlling moss on greens is that there's no sure-fire way to eradicate it. Some superintendents use iron sulfate. Others swear by ammonium sulfate or copper sulfate. The use of Ultra Dawn (the dishwashing soap) has spread quickly to many parts of the country. Unfortunately, there's no one method that works perfectly for all superintendents.

That's what spurred superintendents Tom Vogel and Rob Miller to try a radical solution as moss populations expanded on their course's greens.

Vogel, certified superintendent at Portage CC in Akron, Ohio, had persistent moss problems on about six greens. His treatments ran the entire gamut of the methods mentioned earlier, and he still couldn't get a consistent kill that would leave the greens undamaged.

"I wasn't getting as much control as I needed, and the members were starting to ask questions," Vogel says. "After having met with limited success with other methods, I decided I needed a new solution."

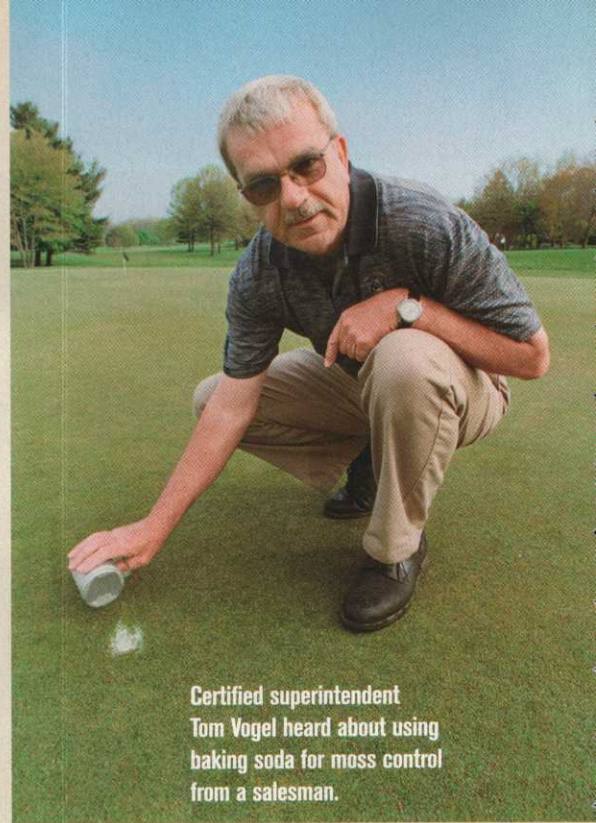
Down the road at Glenmoor CC in Canton, Ohio, superintendent Rob Miller came to the same conclusion about the hard-to-eradicate moss on two of his greens. "We could see the moss starting to expand, and we knew we needed to stop it in its tracks," Miller says.

Problem

Conventional moss-control strategies, such as copper sulfate and iron sulfate, weren't working on two Ohio courses. The popular Ultra Dawn strategy proved difficult to manage in the state's climate. Meanwhile, the moss population at both courses continued to grow.

Solution

The two courses, independent of each other, stumbled on the idea of using baking soda to burn the moss out of their problem greens – with results both superintendents refer to as "remarkable."



Certified superintendent Tom Vogel heard about using baking soda for moss control from a salesman.

The problem

Moss poses a complex problem for superintendents because it can live under duress for long periods of time, according to Tony Koski, an extension turf specialist at Colorado State University in Fort Collins, Colo. Moss is a bryophyte, meaning that unlike turfgrass it has no roots or vascular system, reproduces vegetatively or by spores, and can survive long periods of desiccation. These factors taken together make it hard to design a fungicide to eradicate it.

At the same time, the problem has reached epidemic proportions in recent years because more intense turf management has created perfect conditions for moss survival, Koski says. These practices include low mowing heights, lower nitrogen rates on greens, discontinued use of mercury-based fungicides and use of finer topdressing sand, which inhibits good drainage by creating a perched water table.

Koski says his research shows that the Ultra Dawn was the most effective of the several methods he tested. (Ultra Dawn is most commonly applied in a spray form at a ratio of 4 ounces/gallon of water, and superintendents should drench the moss with the solution.)

But Vogel, who tried the Ultra Dawn treatment on his problem greens, says it's tricky to apply.

"You have to get the timing exactly

right, and the weather conditions have to be ideal for it to work properly," Vogel says. "It has to be a completely sunny day, but it can't be too hot [*Editor's note: Koski says that Ultra Dawn should be applied between 55 degrees F and 80 degrees F in full sunlight.*] For some of us, that makes it tricky to do in the summer."

Miller hoped to burn his moss out of his greens and tried the Ultra Dawn and hydrogen peroxide treatments, but neither gave him the control he wanted.

"You'd make the application, and it looked like it worked," Miller says. "It would turn the moss brown, and it would appear to be dead. But two weeks later, it would be back, and it was stronger than it was before you tried to kill it."

Vogel was nearing his wits' end when a salesman from J.R. Simplot came to visit. As they sat in his office discussing the salesman's products, Vogel mentioned his moss problem. The salesman paused for a moment, and then told Vogel he'd heard that some superintendents were having success with an entirely new method of moss control: baking soda. Though he wasn't sure how he was going to get it out on his greens, Vogel

thought to himself, "This idea is so crazy, it just might work."

Less than 25 miles away, Miller was also coming to the same conclusion.

"It kind of came to me happenstance when I was talking it over with my assistant, Jerry Cox," Miller says. "He had heard about the baking soda idea, and suggested we try it. It couldn't work any worse than anything else we'd tried."

The solution

Vogel says he played around with the right amount of baking soda to apply during last summer's brutal heat. Since he didn't have any details about an appropriate rate, he experimented with it.

"I was excited, but I was scared at the same time," Vogel says. "The biggest question I had to answer was how to get the baking soda from the box to my greens."

First, Vogel tried to use a saltshaker, but the holes were too small. Then one day while Vogel watched the cook in the course's restaurant shake powdered sugar on to each delectable order, an inspiration came to him.

Vogel took one of the myriad powdered-

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"After having met with limited success with other methods, I decided I needed a new solution."

TOM VOGEL
CERTIFIED SUPERINTENDENT
PORTAGE CC
AKRON, OHIO

**Read another
Real-Life Solutions
on page 88.**

Vogel (center) discusses his moss control strategy with two fellow staff members at Portage CC in Akron, Ohio.

Real Life Solutions: Moss Control

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sugar shakers from the kitchen, filled it with baking soda and covered 90 percent of the holes. Then he took it out to his greens and shook it twice. The baking soda landed on the moss, but also landed on the turf surrounding it, causing some phytotoxicity. "Two shakes was far too much," Vogel says.

After more trial and error, Vogel learned the best way to apply the baking soda is to put the powdered-sugar shaker on its side next to the moss patch and gently tap the shaker, allowing a puff of baking soda to land gently on its surface.

"It sucks the moisture right out of the moss," Vogel says. "We had what we considered a severe problem, and we got

100-percent control with a little bit of product."

Miller, on the other hand, applies his baking soda two ways. First, he uses a saltshaker for smaller moss spots the size of a quarter or less. For larger moss patches that are inextricably intertwined in the turf, Miller concocts a less "hot" application by mixing 6 ounces of baking soda per gallon of water and applies it with a backpack sprayer.

"It took us a while to figure out what rate worked best for us, but more than 6 ounces was too hot," Miller says. "On the other hand, if you go any lower than that, you won't have the desired effect."

Miller says he also does spot applications with spray bottles, but he warns that the mixture must be shaken periodically to keep the baking soda in suspension. He also raves about the length of control, which can be anywhere from two to four months. "Compared to some of the other products I've used, the control is amazing," he adds.

Outcome

Vogel says he was so pleased with his experiment last summer that he's planning on doing it again this year, possibly suspending it in water like his colleague Miller did. The two downsides — that baking soda is not labeled for turf and the mild phytotoxicity it causes — are outweighed by the positives, which include no weather restrictions on its application and the long-term moss control it provides.

"Once I told my members not to worry about the slight yellowing of the turf in the patches where the moss had been, they were delighted we were controlling the problem," Vogel says. "You're not handcuffed by the calendar anymore."

Miller adds that he plans to apply baking soda to problem greens in the spring and fall this year.

"You always see complete control when you put it out," Miller says. "It's the consistency of the process that I like. My comfort level with baking soda is high." ■

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Real-Life Solutions

GREENS RENOVATION

Subtle Approach Ensures Subtle Changes

**Architect Tripp Davis
'massages' greens to
regain lost cupping areas**

BY ANTHONY PIOPPA

Oklahoma-based golf course architect Tripp Davis was brought in by an upscale private course located in the metropolitan New York area to see what could be done to soften portions of two greens that had lost cupping areas because of increased green speeds. The club (which declined to allow its name to be used for this story) was looking for a way to regain those areas while foregoing entire greens renovations.

"Our approach is that you want to fly in under the radar screen and make changes in a way so subtle that you leave as little mark as you can," Davis says.

The two greens Davis

worked on average about 6,000 square feet. About 2,000 square feet was recontoured on one green, and another 3,000 square feet was affected on the other green. The project began in early October 2002 and was done in seven days.

"The best time to do it is in the fall," Davis says of the procedure, which he calls "massaging." "You're not going to want to play on the [reworked areas] again that year."

The first step of the procedure is to strip the sod from the designated area. The sod is then placed nearby in a shaded area and kept moist throughout the proceedings. Davis said it is imperative to lay the sod flat, grass side up, instead of keeping it rolled.

The purpose of re-using the sod is so the renovated section blends in with the unchanged portion. The turf of the New York layout was a bentgrass-*Poa annua* mix. Sodding or seeding with just bentgrass would have made the affected area stand out, creating an irregular putting surface that would also require different maintenance practices.

The soil from the section Davis worked on was taken out in two 4-inch lifts using a small backhoe. The material was saved in a protected area to keep it from becoming contaminated.

Davis said the first layer is



PHOTOS COURTESY OF TRIPP DAVIS

The sod is stripped away before the "massaging" procedure, but it's kept safe and re-used so the renovated section blends in with the unchanged portion upon the project's completion.

Problem

A popular New York course had lost cupping areas on two of its greens because of increased green speeds. The club wanted to regain those areas, but without an entire renovation on the greens.

Solution

"Massaging" the greens to soften them and regain lost cupping space. The process is a lot less intrusive than a full-scale renovation.

predominantly topdressing, while the second 4-inch section is the original greens mix, which in many cases will be native topsoil.

After the soil is removed, an additional 6 feet of sod is stripped from around the perimeter of the area being "massaged," allowing Davis to blend in the new contours.

With the New York project, drainage was added as well to the remodeled section. In these situations,

Davis said he had to be careful to install drainage in such a way as not to pull water from the new putting surface faster than the rest of green. Even though the original soil is re-used, it loses its compaction during removal and that causes its water-holding capacity to increase, meaning it no longer drains at the same rate.

At this job, 3-inch perforated drain lines were laid into an 8-inch trench. First, 2 inches of pea gravel was

put down, then the pipe. More pea gravel was added until there was a 2-inch layer of rock covering the pipe. The remaining part of the trench was filled with a mix of sand (50 percent), soil (40 percent) and peat (10 percent.)

In order to initially improve porosity, a 4-inch cone of the same 5-4-1 mix was added on top of the trench. "Pea gravel all the way would speed up drainage too much," Davis says.

Once completed, the original soil was replaced in two layers. Once that was complete, a light layer of nitrogen was spread to facilitate root growth, and the sod was put back.

The entire process took about three days per green. But even though the most intrusive work was completed in that short time, extra care was taken to ensure the turf was healthy.

Davis said a microscopic gap between the soil and the sod is created when the sod is replaced. If the quality of the irrigation water is not good — a high percentage of salts, for instance — a layer will build up in the gap and hinder root growth or cause roots to move laterally. Also, too much nitrogen can cause the roots to grow at such a rapid rate that they will once again move laterally instead of down into the soil, thus creating a thatch layer.

Light and frequent applications of topdressing, often as twice a week, were performed when the sod was knitted in enough to handle some wear. Depending on

the weather, the first aeration can occur later in the fall or in early spring, Davis says.

In a best-case scenario, the greens are playable in five to six months, depending on the weather. According to Davis, those wishing to take a chance performing the procedure in the spring could have the greens back in action in 60 days, but face the increased risk of losing turf.

So far Davis has massaged greens on three courses, including one of his own designs, Grand Elk Ranch and Club in Granby, Colo., that opened last fall. The technique was necessitated after a drain line collapsed. The problem was corrected before the course opened using the massaging method.

The majority of greens needing revamping, however, are on older courses and that fact points to a contradiction in what golfers will tolerate, Davis points out.

"There is a big difference between classic golf courses and new golf courses," he says. "If we built new greens with 3-percent slope that were rolling at 10, we'd get crucified. It would be a bad design. In the Northeast and other areas, they are pinning areas (on older courses) close to 5 percent with green speeds approaching 11."

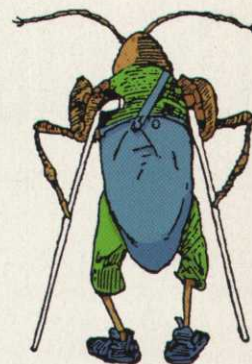
If one day those clubs find the contours too severe, a massage may be just the cure. ■

Pioppi is a free-lance writer from Middletown, Conn.

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