



What's New With Dollar Spot?

By Dr. Julie Meyer
Extension Plant Pathologist
University of Wisconsin-Madison

Dollar spot just showed up on some bentgrass research plots at the O.J. Noer Facility last week. This little disease is aptly named: more fungicides are used to control dollar spot than any other turfgrass disease in the country—taking a big bite out of many superintendents' budgets.

Dollar spot is fairly easy to recognize, especially on coarser-textured turf. It can be confused with *Pythium* or *Rhizoctonia* on fine turf. Dollar spot lesions have a bleached look to them, they generally extend across the leaf and are bordered with a tan or reddish brown margin. On closely-mown turf, the small lesions quickly enlarge, the leaves turn yellow, and a sunken spot is formed that is rarely larger than a silver dollar. It's curious that the fungus grows out to this size and then stops. It is thought to be due to an accumulation of materials that the fungus itself secretes—a phenomenon called 'staling'.

The dollar spot fungus doesn't produce spores, but survives in the turf and thatch until conditions are right for the mycelium to grow again. The fungus enters the turf through leaf stomates and through cut leaf tips. Once a lesion is formed on a leaf blade, it serves as a food source for the fungus to grow further into the leaf and out onto other leaf blades. In the early morning dew you can sometimes see the cobweb-like hyphal strands (mycelium) growing from leaf to leaf. Since the fungus enters cut leaf tips and requires a wet leaf to infect, you can visualize how mowing wet turf infected with dollar spot can spread the disease! It's a perfect inoculation technique. Unfortunately, mowing needs to be done early on greens and they are usually wet!

If the invasion of the leaf tissue stops at an early stage, the plant can recover quite well since the fungus stays pretty much on the foliage and does not grow into the crown or roots. Thus, a vigorously-growing turf can recover quite quickly from dollar spot.

However, if turf vigor is low and no other measures are taken to stop the fungal infection, it can kill the plant and the affected areas may be slow to heal.

Like most fungal turf diseases, growth of the dollar spot fungus can only occur when leaves are wet (from rain, dew, high humidity or guttation water) and temperatures are favorable. According to R. Hall, working in Ontario, Canada in the early 1980's, dollar spot activity begins after two consecutive days of wet weather when the average daytime temperature is greater than 70°F or after a period of three consecutive wet days when the average daytime temperature is 59°F or greater. What we need to know is how long the leaves need to be wet before the dollar spot fungus can infect the leaves. This fungus doesn't always need rain to be active—we have seen dollar spot activity with just the morning dews to support its growth. More forecasting models for dollar spot are on the horizon. They will help in timing fungicide applications and timing management practices that discourage dollar spot outbreaks.

Hall found that an application of a fungicide one or two days after two conducive periods gave as good of control as that obtained by a seven-spray preventative program. This may have been coincidence, but it is very encouraging. I found in our trials last year that fungicides applied just as symptoms were appearing were effective in controlling the disease, although I did not compare the results with a strictly preventative spray program.

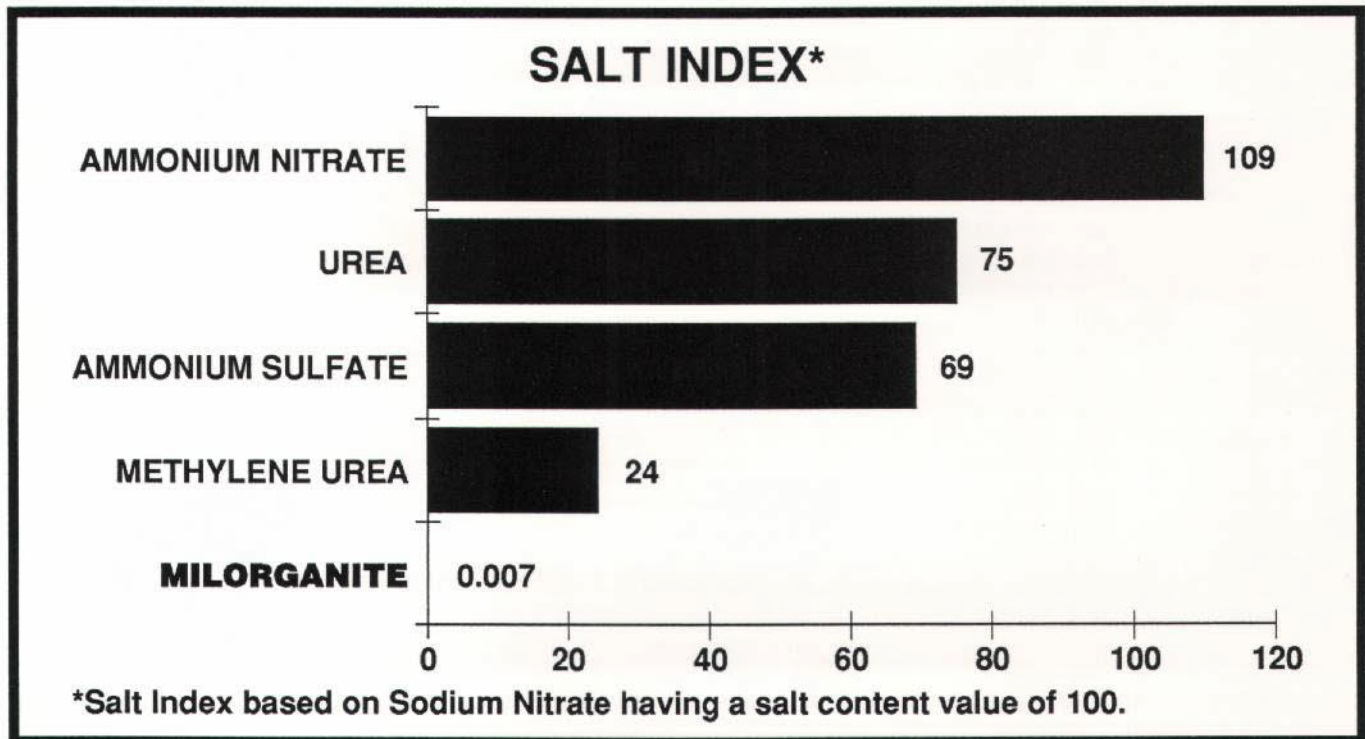
Unfortunately, no bentgrass cultivar is completely resistant to dollar spot. But it was interesting to note in the 1992 NTEP progress report for fairway/tee bentgrass, that bentgrass cultivars can differ quite a bit in their resistance to dollar spot. In the disease ratings taken in Indiana, the site with conditions closest to those in Wisconsin, the ratings ranged from a low of 3.3 to 7.0 (1 = severe disease,

9 = no disease). Cultivars Tracenta, Bardot, and Egmont received a rating of 6-7. Cultivars Cobra, Penneagle, Allure, Providence and National rated above 5. Cultivars Regent, Pro/Cup, Carmen, Putter, Penncross and Emerald were the least resistant cultivars, with ratings between 2.7 and 4.

Turf that is stressed by low N or drought is usually more susceptible to dollar spot. A good explanation for this came from R. M. Endo, who showed that the fungus needs to get a start with some kind of food base before it could infect a plant. In other words, it isn't strong enough to infect vigorously growing green plants, but could infect new plants if any senescent or killed leaves were available for it to grow on first. Endo's theory is that nitrogen deficiency creates an environment where more leaves are senescing than in a stand that receives adequate nitrogen. I believe nitrogen also plays a role in how quickly the turf recovers from an episode of dollar spot. Drought-stressed turf is also vulnerable to dollar spot, perhaps for the same reasons. During conditions conducive to dollar spot, management practices that mitigate the disease are (1) water enough to avoid drought but infrequently enough so that leaves don't stay wet, (2) remove dew and guttation water from greens whenever possible, (3) provide good air circulation, (4) maintain vigorous growth by judicious use of N. The use of plant growth regulators may affect dollar spot incidence. I am taking a look at this with Frank Rossi at the Noer Facility.

Resistance to fungicides is a concern with the dollar spot fungus. Resistant strains have been found to several main types of fungicides used to control it, including benzamizazole, iprodione, and demethylation (DMI) fungicides such as triadimefon. At the 1993 American Phytopathological Society meetings it was reported that two dollar spot fungi resistant to one DMI fungicide (triadimefon) were
(Continued on page 23)

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resistant to other DMI fungicides (propiconazole, fenarimol and tebuconazole) even though those fungicides had not been used on the course. Fungicide resistance is a process of natural selection through the repeated use of the same fungicide, or different fungicide with similar modes of action on the pathogen. It is a concern for us all, as superintendents, plant pathologists and fungicide manufacturers. The best way to avoid resistance is to use fungicides sparingly. There is no consensus among researchers yet if combining fungicides with different modes of action, or

using reduced rate mixtures will delay fungicide resistance. No one yet knows.

It is encouraging to find that there are several examples of control of dollar spot with organic materials. Thirty years ago, Cook reported that composted sewage sludge suppressed dollar spot more than the equivalent amount of N from an inorganic source, establishing for the first time that organic materials may have biological effects that result in disease control. In 1992, Nelson and Craft applied a mixture of sand and different composts and organic fertilizers (70:30 ratio) monthly as a topdressing. They found

two or three materials that were quite promising in controlling dollar spot on creeping bentgrass/*Poa annua* putting greens. The most effective materials were an organic fertilizer made of "plant and animal meals" (77% disease reduction), a manure compost (35% disease reduction) and a sludge compost (13% disease reduction). We have similar studies established on fairway bentgrass out at O.J. Noer. With the importance of this disease to turf maintenance, and the amount of fungicide currently needed to control it, we need all the control strategies we can get for this persistent little disease. ♣



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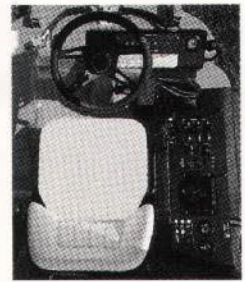
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THE IMPORTANT THINGS

By Monroe S. Miller

It was the height of the golf season and yet at least a hundred golf course superintendents from all over Wisconsin gathered in the basement of the First Methodist Church in downtown Manchester.

The occasion wasn't a happy one. We were there to pay our last respects to a friend and a colleague of long standing. To a man, we were surprised when we learned of Del Donnelly's sudden passing three days ago.

Del had been the golf course superintendent at British Hollow Country Club for forty years. In fact, he was the only superintendent they'd had until Del retired. He graduated from the UW-Madison, was hired when the course was under construction and stayed until he retired a number of years ago.

Everybody was sad, make no mistake about that. But as I remarked to Tom Morris, Bogey Calhoun, Ed Middleton and several others standing nearby, the feeling there in the Fireside Room of the church wasn't swept away with gloom and depression.

We were there to pay respect to a man who had lived a life most people on this earth only dream about. Del was one of the happiest and most satisfied men any of us had ever met or had the pleasure to know.

Kids and grandkids, brothers and sisters and other family members had swollen, red eyes. And a few of us had misty eyesight for a bit. But there was no sobbing, no uncontrolled wailing. Just sadness.

It was a perfect mid-summer day in Wisconsin. Everywhere—from Lake Geneva to Cornucopia and LaCrosse to Sturgeon Bay—it was green. A statewide shower the day before had cleared the humidity from the air and a high pressure system was giving us clear, cool air from Canada. The sky was a beautiful blue, and the 80 degree temperature felt good.

Del's oldest son John approached us, extending his handshake to all of us.

"Dad would be so proud seeing so many of his peers here today." John said with a tone of sincere gratitude. "This is the kind of day golf course superintendents love, and I am grateful it's like this on the day of his funeral."

Most of us had watched the Donnelly children grow up. John was the first to work on the golf course, starting at age 14, back when that wasn't a risk. Then came Sam, Elizabeth, Phil and last, Bill.

The kids and their father got along famously well, despite being together continuously, or almost so, all summer long. Their summer work, along with some help from Mom and Dad, had put every single one of them through the University of Wisconsin in Madison. Del and Vi were both alums and proud their kids chose the same university they had attended. It was Bill who told me once, while working at my course on weekends during a spring semester, that neither parent had ever even mentioned to any of their children that they wanted them in school at the UW. Each child had made his or her own decision.

I couldn't help but think, every once in a while, how much the Donnelly family reminded me of a farm family. They were up early, working together, following the seasons and worrying about the weather. I had mentioned that to Del on one occasion—he and I both had the good fortune of being raised on a farm—and he agreed with me, adding the "sometimes Holsteins are more rational than irate golfers." We both laughed while looking around to make certain no golf player had heard us.

Manchester, Wisconsin was proud of Del. He had been the kind of citizen every community needs, giving freely of his time and talent to make it a better place. He had been a school board member for years, and a leading advocate for the best education Manchester residents could give to their kids.

Del made sure, through his volunteer efforts, that MHS teams played on good fields—football, track and soccer. For forty years other schools in the conference drooled over Manchester's beautifully grassed athletic fields.

And the golf teams from all over that part of Wisconsin loved to travel to Manchester for a high school golf meet. Del, with the total support from British Hollow C.C. members, made every high school tournament seem as important as the U.S. Open. Many of British Hollow's members had played on the high school team as youths and to this day worshiped Del Donnelly.

From many terms on the church council to his annual chairmanship of the American Cancer Society fund drive, Del was part and parcel of his town, a strong thread in the life of a prosperous Wisconsin community. He led the kind of life far too few of us are able or even capable of living. He gave back far more than he took.

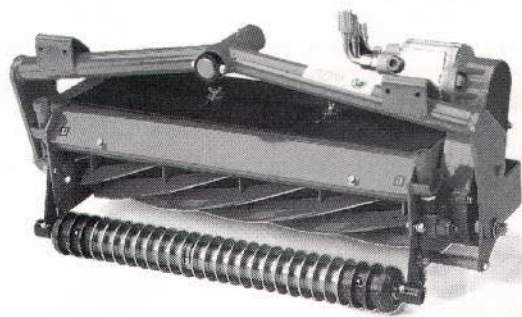
Liz and Sam had been standing on the edge of our group, listening carefully to the talk about their father, wiping away a tear now and again.

Tom Morris was talking. "More than a few times we've listened to colleagues who moved to large cities and big courses say to Del, 'you could be managing a golf course like mine, Del. Why don't you leave British Hollow C.C. and Manchester and get a course like the one I have? You'll make more money, meet some big time players, and establish contact with really important people.'"

"Del was always polite," Tom continued, "and would point out he was pretty happy with his life in Manchester."

"I remember one time in particular. A guy—you all would recognize the name—was back in Wisconsin for a wedding the weekend before Field Day at the Noer Research Facility. So

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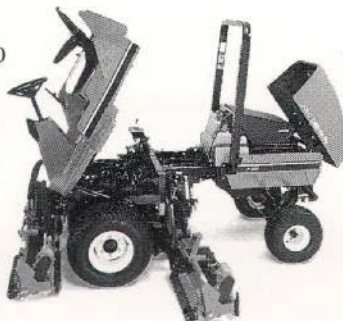
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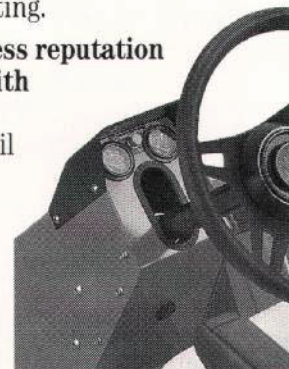


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he decided to stay another two days and attend. A bunch of us were sitting around in the afternoon enjoying a cold bottle of Garten Brau when he started with that familiar line on Del. The essence was why, with his obvious talent and knowledge and experience and education, did Del continue to live and work in Manchester.

"Del smiled as he politely listened. When the bluster died down a bit, he asked the big shot, 'how far do you live from work?'"

"The answer was 'about 50 minutes if I leave at 5 a.m. The trip home can run an hour and a half.'"

"Del replied that he walked over to his office at British Hollow each day and the walk took about 10 minutes," Tom recalled.

I could see Liz and Sam look at one another, smile, and then look past the group to Phil, who had joined us. He also knew what was going on.

Tom continued. "Then Del asked him how far to church. The reply was 'about 40 minutes by car on Sunday morning.'"

"Too bad," Del said, "Vi and I can walk to the First M.E. in about 7 minutes, although we do drive once in a while when it's real cold in deep winter. The kids bike to confirmation and MYF. And, even in the summer, I'm close enough to ring the church bell for each of the two services."

Tom was grinning as he told his story about his lifelong friend. "The guy was getting the picture. Del asked him a few more questions—'do you play golf at your course?'"

The curt answer was 'no, playing privileges aren't part of the job.'"

The scene Tom described had been repeated many times in Del's career. We knew he didn't really care. He was a UW Honors grad, a decorated Korean war veteran, and an ambitious man. He didn't have anything to prove to anyone. He could have done whatever he wanted, wherever he wanted to do it, and been a great success at it.

What he chose, obviously, was a rich and fulfilling life, a happy family, a tranquil community and a job that challenged him every day. It was his choice and Vi's choice. And clearly they were successful with their choice.

The things that were important to Del were right there in that beautiful, quiet and somewhat rural Wisconsin community.

The day after Del's passing, the Manchester Courier carried an editorial about Del. The whole community was mourning his death and would miss him, just like all of us.

Phil spoke up, emotionally moved by the quiet conversation that was, in reality, a tribute to his father.

"My dad had a grasp of the important things. He stayed at British Hollow not because he lacked any ambition, but because of a lack of desire for material things. Money was less important to him—far less—than the quality of life for us and my mom and himself. No one could do more than he did to earn the respect of his children."

Slowly the huge crowd in the church basement dwindled. We were among the last to think about leaving.

It seemed so final that we were hesitant to start home.

Before we left we got together with Vi and Del's family to tell them we were going to name our annual scholarship after him.

"We are going to miss Del terribly," I said to Vi. The guys all nodded.

"But we will never forget him," Tom said. "Never."

Tom was right.

Sometimes we are lucky enough to a person like Del Donnelly. It may happen only once in a lifetime. We learn from such people the true meaning of a good life by the example they set. Del knew what mattered and let that guide him.

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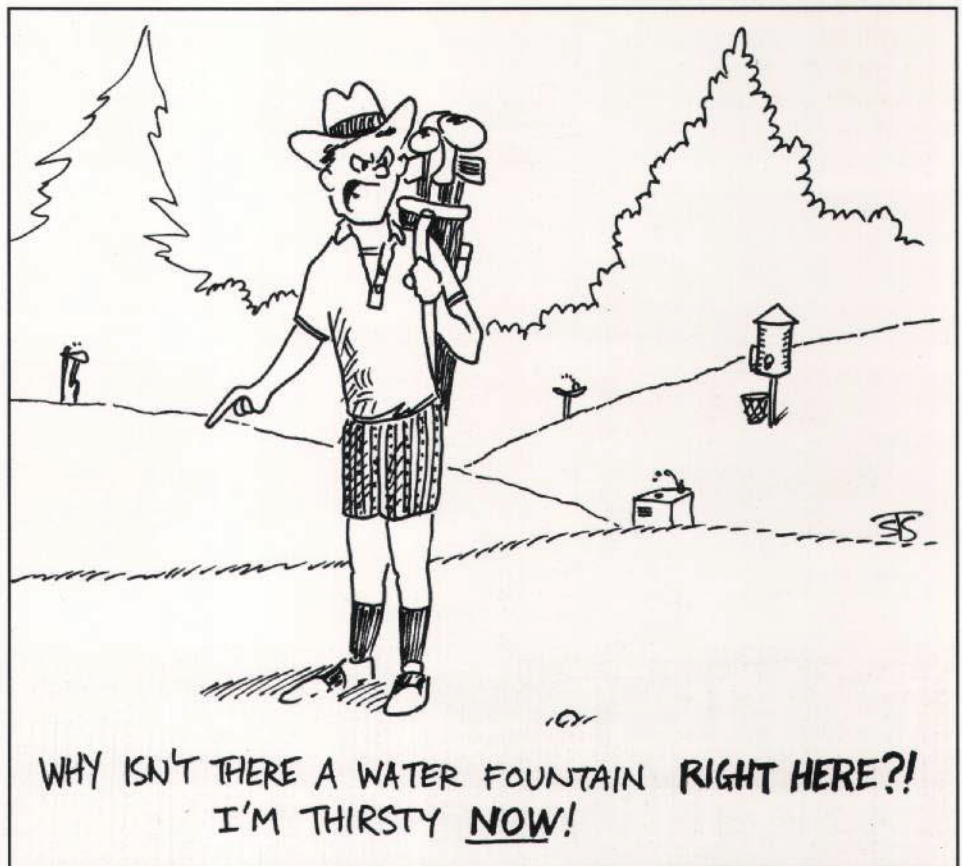
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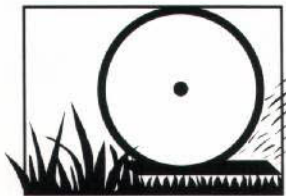
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NGC's Experiences With Washed Sod

By Randy Smith

In 1993, Nakoma Golf Club was going to rebuild its number 12 green because it had experienced winterkill to some degree in 20 of the last 22 years. However, due to some unusual circumstances, it did not have any winter injury last spring when every other old green experienced significant ice damage.

In addition, our second green never did recover since it was under water stress for all but three days last season. It was determined by the board of directors that the second green would be the priority for rebuilding. No time was spent during the season on any temporary remedies, and the rebuilding began on September 24th, 1993.

NGC member and two time U.S. Open champion Andy North and his associate Roger Packard designed our new hole which included a USGA specification green with an elevation one foot above the old green. This would allow some room for drainage since the water table was only about 18 inches below the old surface. New contours, mounds, trees, and an approach redesign which necessitated a change in the pond and retaining wall were all part of



The OLD #2 Green at Nakoma — note the standing water!



Installing Drainage.

the new design. North was very helpful and spent a lot of time helping carry out this "in house" project.

Due to some rather extensive master plan work at Nakoma in 1992/1993, the members were not willing to wait for another half season for a green to grow-in before being able to play it. This attitude led me to investigate to possibility to use washed sod to get the green into play as quickly as possible.

With the encouragement of Jake Renner and some excellent articles in the USGA Green Section Record, I proceeded with plans to sod the green.

I tried to outguess the weather in a most unusual season to plan for delivery of materials. We "locked in" our washed sod—PennLinks grown by Huber Sod Ranch—with a one-half down payment due with the order in June for future delivery.

We ordered 80/20 green construction mix from Waupaca Sand with a delivery date in early September. The coarse sand layer was delivered by a local company, which also supplied the pea gravel.

As the time approached, we made arrangements with the Bruce Company to haul materials to the work site with their flotation trucks. Without those big tires on those trucks, I doubt we'd have the material on site yet today.

Once the final golf outing of the season was over, we were able to begin. But as one photograph shows, we were under water with a window of about two weeks to get this project completed.

Our first two days were spent creating a road with fabric and rocks to just get equipment to the site. We used the next couple of days shortening the pond about 24 feet to allow an approach to the green that did not require a shot over water.



The Sod Process — plywood over the new sod never disturbing the prepared greens mix.

The remodeling done the previous year involved sites very similar to this one, so we had good experience on our side. The only difference, really, was the washed sod.

We were fortunate to have made arrangements to have the sod delivered in early October. Flooding at the Huber Sod Ranch later in the month caused problems in their procedures. The sod arrived on time and we were ready. We had seen samples of the sod and had inspected some greens completed with washed sod. I guess we did not realize how little the truck load would be, nor how light the sod was to handle. Everyone, including golf players, was fascinated with the product. More than a few people made the trip from the pro shop to the work site just to see how we were doing day by day.

Basically, six people plus myself moved and placed about 8500 square feet of sod in six and a half hours. The green size was 6500 square feet, but we included the collar and part of the approach.

Some of the specific procedures we used are:

1. We kept the mix watered down ahead of sodding.
2. We only moved on plywood or planks laid on the new sod, not on the mix.
3. We culled out questionable pieces of sod and used them later on the collar or approach.

4. We laid the sod perpendicular to the fairway and drainage contours.

5. Watering started immediately after the sod was down—we did not want to have any wilting.

6. Watering was also done from either plywood or planking.

7. We rolled the green ten days after sodding—the roots were between two and five inches.

8. The green was cut with a walking greensmower ten days after sodding, and the mower was set at 1/4 inches.

9. Three-fourths of a cubic yard of topdressing was applied at 10 days and 17 days after construction was done.

10. Winter topdressing of 1.5 cubic yards of material was put down on the green in mid-November. Snowmold fungicides were applied.

11. An excelsior mat was used to cover the green for the entire winter.

12. The green was uncovered by the third week of March and recovered when evening temperatures were to drop below 30 degrees F.

13. The first mowing was on April 4th at a height of 1/4 inches. Every mowing after that was at a height of 3/16 inches, done on a daily basis with a walking greensmower.



Careful alignment of the sod to lessen seams.



The first mowing.



A pallet of sod.



Fall Topdressing 6 weeks following construction.



The completed green.

14. The green was aerified on May 25th with 1/2 inch times. The holes were left open and a 2000 pound vibratory roller was used to help level some slight surface undulations.

15. Plans are to use quad tines throughout the summer to help get the air, water and nutrients down through the sod/thatch layer.

16. The fertility program to date has included minors and starter fertilizer worked into the mix prior to sodding and an additional one pound of N/M each month during the season.

One problem that occurred immediately following the sodding procedure was a weekend of high temperatures with very windy conditions. Just watering every couple of hours was not enough. In fact, the sod started to roll up in the wind. We found it necessary to set up a series of lawn sprinklers and continuously water lightly all day and turn them off at night

We continued to do this until sufficient rooting had taken place—about one week after sodding.

Another problem was the slight undulations that I previously mentioned. This caused us to scalp the high spots on every mowing. By using the vibratory roller on the newly aerified surface, we were able to “shift” the surface and level it.

At this point, I feel that the washed sod experience has been a successful one. A seeded green would not be playable for another couple of months. We would certainly use this procedure again, likely this fall when plans are for rebuilding another green. 🌿

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