Playing Privileges

By Rod Johnson

Not every golf course is the same, nor are the golf course superintendents that they employ. Our job descriptions are often as varied as the terrain we manage. Fortunately or unfortunately, depending on your perspective, our salary and benefit packages differ greatly. In our profession, a lengthy job description does not necessarily insure wealth.

Recently, an employment opportunity flyer crossed my desk that listed "Playing Privileges" as an employment benefit. At the risk of offending someone, my reaction is, "Why, thank you! How very generous of you! Will the local Piggly Wiggly accept these privileges as barter? Does the IRS need to know about these Playing Privileges or can it be our little secret?"

Seriously, most of us view playing privileges as a given with the position. However, how many of us take full advantage of them and realize their full value?

I personally enjoy the game tremendously. I credit much of the success that I have had as a golf course superintendent to a playing knowledge of the game. The opportunity to view a golf course from a player's perspective has proven invaluable to me.

I am as addicted to golf as the next nut. If I was employed in a different field, totally unrelated to golf, I am sure that I would still play frequently. Through the years, I have been fortunate enough to take my game on the road, so to speak. From WGCSA meetings to GCSAA tournaments, I have had the privilege of playing numerous golf courses. At one time or another, I have attended the three "majors" that are held in the United States. In each and every instance, I have gained something. From a small maintenance idea to a major breakthrough, a game of golf nets something tangible.

I have nothing but respect for those members of our profession who provide excellent playing conditions on their golf courses, yet do not play the game. A quick mental list of Wisconsin's best maintained golf courses reveals many superintendents who would prefer to use golf clubs as boat anchors. Nevertheless, the fact is that for every well-conditioned golf course where the superintendent does not play golf, I can name five courses that benefit greatly because their superintendents play golf regularly.

In the last issue of our newsletter, 44 superintendents were polled regarding who sets green speeds at their clubs. A surprising 73 percent claimed that they set green speeds themselves. I hope that 100 percent of the "speed setters" play golf. Playing golf is the only way to understand the anguish of a four-foot downhill putt with a left to right break that lips the cup and rolls twenty feet away.

The point of this all is to challenge every WGCSA member to know the game and the people who play it. Perhaps you could pool your playing privileges with the club professional and get a game with the green chairman and club president.

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WINTER SPRING, SUMMER SPRING

By Monroe S. Miller

Anyone who has lived in Wisconsin for more than a couple of years knows we actually have five seasons — summer, autumn, winter, winter spring and summer spring.

Most of us opened our golf courses in winter spring this year. There were a lot of March openings again; that seems to be happening more and more. I cannot fathom opening for golf as late as mid-April; the year when many Madison golf courses opened in late April seems to be in another age entirely.

The week of 70s during the middle of March got everyone in our world — players, pros and superintendents — excited about a new year of golf. An early opening was the best thing that could have happened. Even the single digit temperatures that followed those 70 degree days couldn't dampen the high spirits, excitement and anticipation of a new season.

As I put these lines on paper, there is a sense that summer spring is around the corner. The harsher days of late March/early April have given way to the more gentle and greener days of late April/early May. We are seriously thinking about putting irrigation intakes in place in Lake Mendota. The celebrations over the great UW win in the NCAA hockey championship game have subsided, and we are thinking about going to a Brewers game. It seems we have turned the corner on this season.

•

Despite the early and extended cases of spring fever, brightened spirits inspired by early rains are dampened by questions and worry over drought conditions.

The nearly two inches of rain above normal we've had in our town haven't helped much to alleviate my own fear of a continuation of dry conditions. That two inches of rain came on frozen soil and quickly ran off; trees desperate for subsoil moisture are still thirsty and groundwater supplies are still low. The beneficiaries were surface water supplies, and that isn't all bad when you irrigate your golf course from Lake Mendota or similar bodies of water.

So I'm still praying for rain. The 1990 Farmers Almanac offered some solace. March 7, 9 and 10 represent "Ember Days". The weather that falls on those days supposedly gives clues of weather in upcoming months. Based on those days in 1990, the weather in two of the following three months should be rainy. Coincidentally, the NWS is predicting the same!

Weather lore also holds that the first frost of autumn comes six months after the first thunderstorm. For us, that means we'll get out first frost on September 8th, six months after our March 8th thunderstorm. That's awfully early.

Climatologists at the Midwest Climate Center report that "the odds suggest continuation of a four-year drought in the midwest well in 1990." The drought we've been experiencing is the worst since 1961, when an eight-year dry spell ended. Pam Naber, of the Wisconsin State Climatologist's office, concurs for our state.

There are areas in Wisconsin that are 10-20 inches behind in rainfall for the last two years. That kind of deficit isn't made up overnight; in the worst areas it will take about six consecutive "normal" years for underground aquifers, wells, lakes and reservoirs to recover.

Grave digger reports from around Wisconsin indicate there is very little moisture at all in the top six feet of soil in many parts of the state.

Spring is a season of optimism for most people. This year, that optimistic attitude may be especially important for those managing golf courses. It may be another dry year for us.

•

The Sierra Club is famous for lobbying for environmental causes. More than a few times they've been off target.

They loudly promote recycling, especially of paper products. That makes sense since the club was founded to preserve wilderness areas and natural parks.

Well, a couple of branches finally looked in a mirror and didn't like something they saw. They started to squawk over a hypocritical practice of the Sierra Club.

The Sierra Club's annual fund raising calendars AREN'T printed on recycled paper! Figure that one out.

After a lot of member pressure, those two "trouble-making" chapters stopped selling the calendars. Nothing was heard from other chapters.

One might suggest that the Sierra Club get its own priorities straight before launching its next attack on one of us.

•

I like tractors a lot, both the real ones and the toy ones. I've been driving them since my mid-grade school days.

It was a pleasure buying one (a real one) last year, too. But not until I knew I was going to get a U.S. made model. The Ford 2910 we purchased was, according to Neil Richter, one of the last of its kind made in Ford's Troy, Michigan tractor plant. All-American products, like smaller tractors, are made in the U.S., one would assume.

Well, assume otherwise. Nearly 80 percent of ALL farm tractors sold in our country are made by foreign workers.

Virtually all tractors under 100 horsepower sold here are made overseas. One exception is White; they are making a line of smaller tractors in plants in Ohio and Iowa.

Henry Ford would turn over in his grave if he knew. So would Jerome Case.

We in Wisconsin should weep. Many smaller tractors used to be made within our borders — Case, Allis-Chalmers and Massey-Ferguson. Now they are made in Tokyo and Seoul, among other foreign places.

"Don't worry," some say. "Despite unit numbers, the total dollar volume

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of the 20 percent made here is equal to the 80 percent foreign made dollar volume."

"Fine," I say. "Have you ever tried to mow roughs with a Ford TW-25? And how many 180 horsepower John Deere rigs do you think Japan and Korea are buying from us?"

On the same day I read this report on foreign tractors, I read a report about the nations that lead the list of unfair trade practitioners against U.S. made products. Guess who was on top of the list?

Japan. Who followed?

Korea. Then Taiwan. Then China.

Is this "Japan bashing"? If it is, so be it.

Should I ever need to buy another tractor, I'll buy a used one before I'll buy one from across the Pacific.

•

It's a sign of the times, I guess. I received a letter from Dr. Leo Walsh, Dean of our College of Agricultural and Life Sciences, telling of the UW-Madison's first field testing of a genetically engineered organism.

It is a genetically engineered bacteria designed to improve crop yields. It will be tested on the UW's Arlington and Hancock agricultural research stations. The 40 plots, with a total area of under one-tenth of an acre at each station, will help researchers improve yields of several crops and many help reduce the use of commercial fertilizers.

Crops that may benefit are peas, beans, soybeans, clover and alfalfa (all nitrogen-fixers). The work is being done by the UW Department of Agronomy.

Can you imagine the research that could conceivably be going on at the NOER CENTER in the coming years?

•

Add Mariel Hemingway, Allyce Beasley ("Moonlighting"), John Ratzenberger and Ted Danson ("Cheers") to your Meryl Streep list of Hollywood types who seem to know everything about the environment.

This group has been railing at California's effort to control the Medfly with malathion. The aim of the California Secretary of Agriculture is to save the citrus industry in a safe and responsible way. The actors disagree.

Since this talented group is so serious about the (non)use of agricultural pesticides, there really is only one effective way for them to protest, in my opinion anyway.

They should quit eating. Through this sacrifice, they'll become martyrs. Their reruns will see ratings increase.

For me, please pass the grapefruit.

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Have a good summer. One final thought: there are a lot of interesting things going on in golf course management around Wisconsin. I'd like to share them with our readership, which is to say I'd like to share them with your colleagues and peers. How about some help? The requirements are simple — the decision to contribute, a sharp pencil and a tablet of paper.

•

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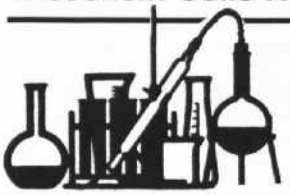


Nitrogen 'Best Management Practices' for Turfgrass

By Dr. Wayne R. Kussow
Department of Soil Science
University of Wisconsin-Madison

The ultimate goal of best management practice (BMP's) is to establish and maintain high quality turf at reasonable cost without detriment to the environment. In the case of nitrogen, the focus is on loss of the nutrient from turf. Reducing N loss accomplishes three things: (1) The percentage of fertilizer N recovered by the turfgrass is increased; (2) The percentage of fertilizer N that can enter surface and groundwater is reduced; and (3) With more efficient use of the fertilizer N, high quality turf can be achieved at reduced cost and with lower N rates. This, in turn, further reduces the amounts of N that may escape to the environment.

Avenues for Nitrogen Loss from Turf

Understanding how nitrogen applied to turf escapes to the environment is basic to the development of BMP's. But, these considerations arise only when the nitrogen is, in fact, applied to the turf. The moment that nitrogen fertilizer is inadvertently applied to and left on paved surfaces constitutes pollution of the environment. There should be absolutely no tolerance for such an irresponsible act.

The nitrogen loss mechanisms of concern here are (1) volatilization, (2) denitrification, (3) leaching, and (4) runoff (Fig. 1). The first two mechanisms pose no threat to the environment. Rather, such losses reduce fertilizer N effectiveness. Leaching, on the other hand, leads to groundwater pollution, and runoff loss contaminates streams and lakes.

Under extreme conditions, any one of the above avenues can result in loss of as much as one-half the N applied to turf (Table 1). However, all of these losses can be reduced to insignificant amounts through adoption of BMP's.

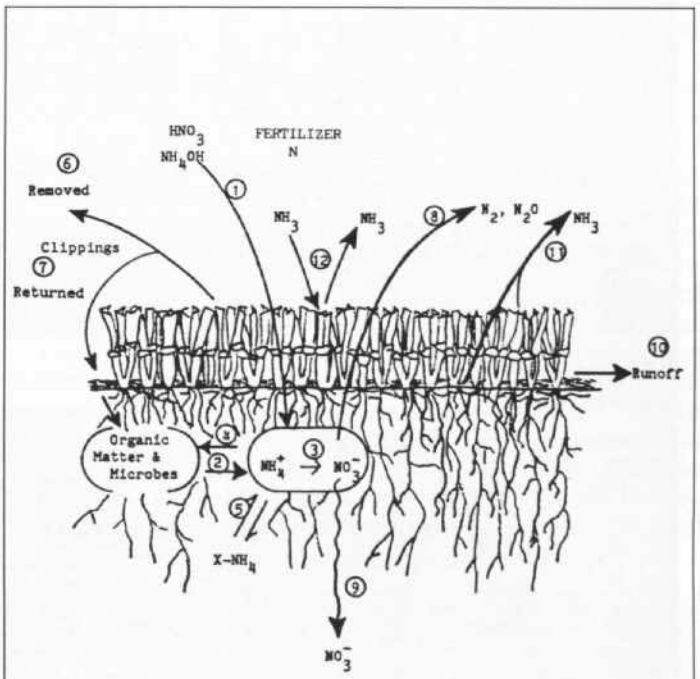
TABLE 1.
RANGES IN NITROGEN LOSS FROM TURF

Type of Loss and the Process	Percent Fertilizer N Lost
Permanent	
Volatilization	1-50
Denitrification	1-40
Leaching	1-40
Runoff	1-20
Temporary Immobilization	20-40

Reducing Fertilizer N Losses

A reasonable goal for nitrogen BMP's is to reduce fertilizer N losses to 2 to 3 percent or less. Zero loss is not a reasonable goal simply because N loss measurements are confounded by background N levels. Runoff water or leachate from turf always contains some N regardless of whether the turf has been fertilized or not. The N detected in these situations is that released through microbial decomposition of organic matter — clippings, thatch, dead roots and other microorganisms.

Figure 1.
Nitrogen Inputs, Transformations and Loss in Turf



1. Inputs from Rain and Fertilizer
2. Mineralization
3. Nitrification
4. Immobilization
5. Cation Exchange
6. Clipping Removal
7. Clipping Return
8. Denitrification Loss
9. Leaching Loss
10. Runoff Loss
11. Volatilization
12. Ammonia Exchange

In talking about fertilizer N losses, no one should assume or imply that if losses are reduced to 2 to 3 percent of the amount applied, turfgrass recovery of the applied N will increase to 90 percent or more. In actual fact, turfgrass recoveries of fertilizer N rarely exceed 60 percent (Table 2). Does this mean that the remaining 40 percent has been lost, either to the atmosphere or to the environment? Not at all. Fertilizer N recovery values consider only the N removed in clippings. The "missing" 40 percent or so resides in residual N in SRN granules, grass stems, stolons or roots and the microbial population of the turf. This is what is known as immobilized N (Fig. 1). It cycles through the turfgrass-soil system on a continuous basis. It does not represent lost N nor does it pose a threat to the environment.

Reducing fertilizer N loss is not difficult. It involves proper choice of fertilizer, appropriate methods of application and, in some instances, precautionary measures prior to turf establishment. *(Continued on page 9)*

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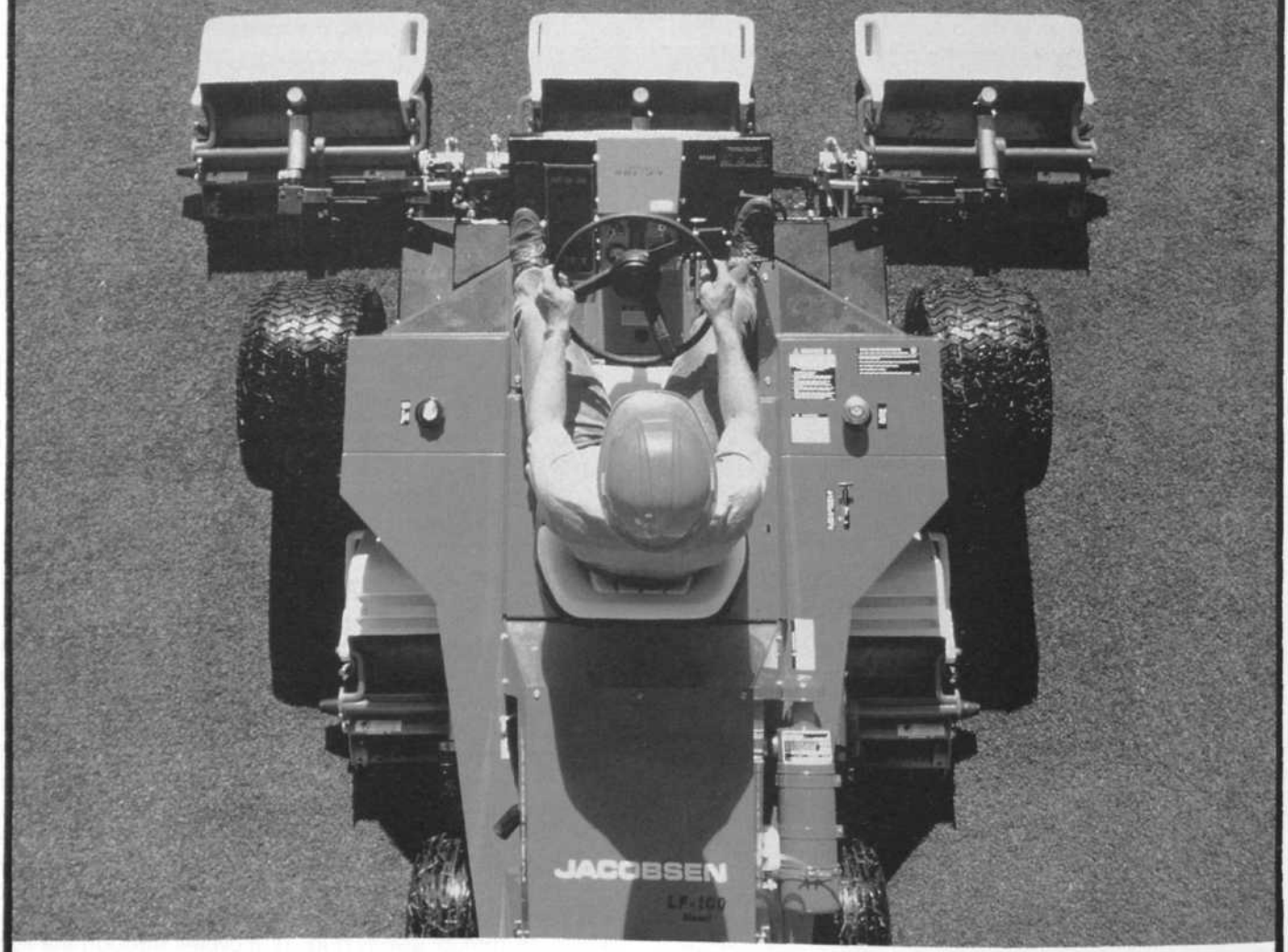

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TABLE 2.
FERTILIZER N RECOVERY BY TURFGRASS

Nitrogen Source	N Recovered
	%
Urea-Liquid	49-60
Urea-Prills	44-52
SCU	46-52
RCU (Resin Coated Urea)	48-54
UF/Methylene Urea	22-60
Milorganite	27-35
IBDU	40-47

Volatilization loss: Losses of this type are significant only when urea or urea-containing fertilizers are used. Losses of N are greatest when urea is left on warm, moist turfgrass and soil surfaces for periods of 24 hours or more. The presence of a substantial thatch layer significantly increases the amount of nitrogen lost. Volatilization N losses can be reduced to 2 percent or less by doing one of two things. One is to irrigate in the urea shortly after application (Table 3). The amount of water required varies from as little as ¼-inch to ¾-inch or more. The deeper the thatch layer, the greater the amount of water required.

TABLE 3.
IRRIGATION EFFECTS ON UREA-N VOLATILIZATION LOSS

Amount of Irrigation	Fertilizer N Volatilized
Inches	%
0	14.1
0.2	4.5
0.4	2.2
0.8	0.8

The second way to minimize volatilization loss of nitrogen is to apply an N source other than urea (Table 4). Even sulfur-coated urea (SCU) seldom has volatilization N losses greater than 3 percent. Organic N sources, methylene ureas, IBDU, etc., typically lose no more than 1 or 2 percent of their nitrogen through volatilization.

TABLE 4.
N VOLATILIZATION LOSS FROM DIFFERENT FERTILIZERS

N Fertilizer	Fertilizer N Volatilized
	%
Urea-Liquid	4.6
Urea-Prills	10.3
Formolene	3.2
Fluf	4.5
UF	3.0
SCU	1.7
IBDU	1.9

Denitrification loss: This type of loss results when soil microorganisms convert nitrate-nitrogen to gaseous forms (Fig. 1). Denitrification occurs only when the microorganisms lack oxygen. This situation arises from excessive water in soil, or conversely, from inadequate drainage. Even then, the amount of nitrogen lost via denitrification depends on how much nitrogen exists in the form of nitrate when oxygen deficiencies develop.

The most obvious way of minimizing denitrification loss of nitrogen is by improving soil drainage or providing for adequate drainage before establishing the turf. In situations where it is impractical to achieve high water infiltration rates and rapid drainage (on clay soils, for example), then irrigation practices become very important. Water application rates have to be such that saturation of the soil does not occur.

The third means of reducing denitrification loss of fertilizer N is to avoid accumulation of high concentrations of nitrate in soil. When applying soluble N sources, this can be achieved through frequent, low rates of application. The alternative to light frequent applications is application of slow-release N fertilizers.

Leaching loss: As in the case of denitrification loss, the culprit is nitrate-nitrogen (Fig. 1). This form of nitrogen is contained entirely in soil water and moves with that water. Virtually any time nitrate moves downward in soil more than a few inches beyond the turfgrass rooting zone, that nitrate eventually winds up in the groundwater. The keys to minimizing leaching loss of nitrogen are keeping nitrate concentrations low in soil water and not irrigating to the extent that water moves beyond the rooting zone of the turfgrass.

Light, frequent applications of soluble N sources or less frequent applications of slow-release N sources are equally effective in keeping soil water concentrations of nitrate at low levels. Either of these approaches to fertilizer application, used in conjunction with irrigation regimes that do not lead to application of water in excess of that lost by way of evapotranspiration (Table 5) are the keys to reducing fertilizer N leaching losses to 2 percent or less.

TABLE 5.
EFFECT OF IRRIGATION REGIME ON N LEACHING LOSS FROM A GOLF GREEN

Irrigation Regime	Fertilizer N Leached
	%
0.4 inches/day	39.2
As Needed	5.1

Logically, leaching losses of nitrogen are greatest on very sandy soils during periods of heavy rainfall. In Wisconsin, rainfall in excess of turfgrass evapotranspiration rates most commonly occurs in spring and fall. Thus, it is rather important that when fertilizer N is applied at these times on sandy soils, it contain a slow-release form of nitrogen.

Runoff loss: Runoff loss of nitrogen happens only if fertilizer is on the soil surface when rainfall or irrigation exceeds the infiltration rate of soil. Research has shown that runoff from a good, dense turf with some thatch is a rather rare event. For example, in studies conducted in Rhode Island and Pennsylvania, runoff from turf was recorded on only two occasions at each site over 2 or 3 year periods and the amounts of runoff water collected were extremely low.

There are, however, situations where fertilizer N runoff loss from turf need be of concern. The problem is most prevalent around buildings where, during construction, heavy equipment has caused extensive soil compaction. The ef-

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