

off on the right foot.”

Kevin also plans to conduct workshops throughout the state in late February and early March. “We want to let the people know what we’re doing. We want to give them ideas on how they can develop their own ITM plan or hire us to come in and do that for them,” he points out.

Can’t know it all...

What needs to be done on turf facilities? In his first year, Kevin found that many turf managers are doing a lot of things right. “But we can always do better with identifying pest damage, identifying the pests, and choosing the best pesticides and fertilizers,” he says. “Basic knowledge in these areas tends to be a weak point for most people. There’s so much information out there, so many things that you need to know, that it’s difficult for turf managers to have a grasp on everything. The biggest thing they need to be able to do is identify the actual problem and know how to best treat it. We think we can help them in this area.”

Kevin gives an example of one client he’s worked with. “We went to the Elmbrook School District where they just spent \$250,000 on a new sand-based football field. We walked that field, as well as their soccer and baseball fields, to find out what they were doing. They weren’t accustomed to the sand-based field; it’s a whole different ballgame compared to managing turf on native soil.

“Hopefully we improved their fertility program as far as timing it to benefit the turf a little bit better,” he continues. “We’ve increased their aerification program which will improve the root system and plant density so that the turf can intercept a lot of the fertilizers and pesticides moving down through the soil profile.”

Kevin finds that golf course superintendents are better able to develop their own ITM programs compared to people in school districts or park departments. “They have a better foundation of knowledge. They’re very organized. They network among each other, getting ideas from other people,” he believes.

And he encourages golf course superintendents to be proactive with environmental issues. “Even though NR151 has been watered down, I think bigger regulations are still to come,” Kevin says. “If we can be as proactive as possible, maybe we can keep overzealous regulations at an arm’s length.”

O.J. Noer Facility is tops...

Having worked at and seen many turf research facilities, Kevin is impressed with the O.J. Noer Facility. “I think it’s a top-notch facility,” he says. “It’s head and shoulders above the facilities that I’ve been to and worked at. We have adequate room to do turf research, and there’s adequate room for expansion. The people here work well with the industry – not

only the golf industry, but the equipment industry as well. We have top-quality equipment here. The facilities, the networking with industry, the support from industry – they’re all great here.”

After his first year in Wisconsin, Kevin has decided that he likes it here. “It was a little hot this summer, though,” he points out. “It felt more like Tennessee. But I like the lay of the land here. I like the four seasons. I like the variety of outdoor activities. And I think Wisconsin has a very active citizenship. That’s what I liked about Minnesota and one of the reasons I wanted to move back north.”

Speaking of outdoor activities, Kevin enjoys hunting and just wandering through the woods and taking pleasure in the out-of-doors with his two dogs. Actually, the dogs belong to his girlfriend back in Tennessee who has 12 more dogs with her. “I’m working on getting her moved up here,” he points out. Kevin lives between Mt. Horeb and Black Earth in the Town of Vermont, not too far from the O.J. Noer Facility.

Now that Kevin has found Wisconsin on the map, let’s hope he doesn’t take any detours for a while. ♣



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Budget Blues

By **Bob Vavrek**, Agronomist, USGA Green Section, North Central Region

The 37th Annual Wisconsin Golf Turf Symposium concluded a few weeks ago and those in attendance would have had to been asleep not to take home a few novel ideas regarding ways to stretch an operating budget. It was no surprise to find that most of superintendents polled during the meeting have had their budgets frozen or reduced for 2003.

Most of the operating budget is spent on wages and benefits, consequently hiring fewer employees is often the first response to budget cuts. This means non-essential areas of the course will receive less attention. Based on the comments from attendees made during the panel discussion, some of the changes that will occur due to severely limited resources include:

- Roughs and fairways will be mowed less frequently.
- Every hole location may not be changed each day, based on the amount of play the previous day.
- Bunkers may be raked only once or twice per week, and only touched up during the weekend.
- Greens may be maintained with riding units more often and mowing may only be done six days per week.
- The practice of allowing early bird players access to the course will be curtailed, especially the single or double golfers who like to be first off on the tee at first light and play in under three hours. They inevitably catch up with the maintenance crew, which reduces the efficiency of mowing operations.

- Overtime will be eliminated, which means some valuable long-term employees that depend on overtime will seek other employment. No overtime means many in-house renovation projects will need to be delegated to contractors.
- One course decided to slash green fees to attract more play, while at the same time explaining to the golfers that the reduced fee will be at the expense of far less grooming of the course.

Excessive bunker maintenance, due to golfers' spiraling expectation was a concern mentioned in several presentations. In the ideal world, golfers would do their fair share and play a responsible round - replace divots, fix ball marks, and rake the hazard after a shot. In this world the sand in bunkers would only have to be touched up from time to time unless a severe washout occurred after heavy rainfall, though soil-contaminated sand may require frequent tillage. Customary golf course etiquette shouldn't be too much to ask, but far too often, it is.

Unfortunately, as much or more time is spent grooming bunkers

than grooming greens at an increasing number of courses. All the complaints over *inconsistent* bunker conditions heard during many TAS visits this season reinforces the fact that golfers have simply forgotten that bunkers are hazards - hazards that need to be avoided or there will be a significant penalty to pay. An inordinate amount of time is being spent to provide *consistent* conditions in hazards, but the complaints never end because what constitutes ideal conditions to one golfer may be considered unacceptable to another. Consistency is definitely in the eye of the beholder.

Not all is doom and gloom. The observation was made that budget cuts can be considered an opportunity for some superintendents to step up to the plate and prove their value to an owner, course official, etc. By making an extra effort to document and then communicate the changes that need to be made to the course maintenance program during tough economic times, the smart manager will convince everyone that he or she is truly an invaluable employee. ♣



Bob Vavrek, Bruce Williams and Mike Hurdzan were among the distinguished roster of speakers at the 2002 Wisconsin Golf Turf Symposium.

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What Is the Likelihood of Runoff from Turfgrass?

By Dr. R. Chris Williamson, Turfgrass and Ornamental Specialist, Department of Entomology, University of Wisconsin-Madison

The growing public concern for the use of fertilizers and pesticides and their perceived potential for runoff into storm sewers, streams, ponds, lakes and ultimately into ground water supplies have provoked scientists to investigate the potential of pesticide runoff from turfgrass.

Well-maintained or highly manicured turf typically requires arbitrary inputs such as fertilizers, fungicides, herbicides, insecticides, and other related turfgrass products. Unfortunately, the perception that a certain portion of the public has is relatively negative; it is thought that highly manicured turf areas such as athletic fields, home lawns, golf courses, and etc. are merely "toxic waste sites." Public surveys have revealed that many people perceive pesticides to be harmful to humans, especially children, animals, and the environment. Moreover, they also believe that fertilizers and pesticides are readily washed or leached-away and runoff into public water supplies, ultimately contaminating the environment and drinking water supplies.

This perception, however, is not supported by science; it is primarily based on human emotion. For this reason, several non-biased, university research investigations were conducted to determine the potential for runoff of fertilizers and pesticides on turfgrass (pervious surface).

Recently, research at the University of Wisconsin-Madison revealed that dramatically more runoff occurs from impervious (concrete or paved) surfaces compared to pervious (turf) surfaces

(Figures 1 and 2, 1999-2000 and 2000-01, respectively). Additionally, when there were runoff events, most pesticide residue occurred immediately after (i.e., within 24 hours) the first irrigation or rainfall event on the impervious surfaces. Only negligible traces of pesticide residue was detected on the turfgrass surfaces. And, rarely was any pesticide residue detected on the impervious surfaces 14 days after pesticide treatment application.

The results of this research support related studies that suggest

quality or healthy turfgrass functions as a filter or buffer to inputs such as fertilizers and pesticides. As a result, it is unlikely that fertilizer and pesticide applications made to quality turf will runoff causing ground water contamination or environmental concerns. However, when fertilizer and pesticide applications are necessary or warranted, it is crucial to avoid treatment applications to impervious surfaces as well as turfgrass surfaces when the soil is frozen, to minimize potential for runoff. ♻

Figure 1. Runoff (water) from Concrete and Turf 1999-2000

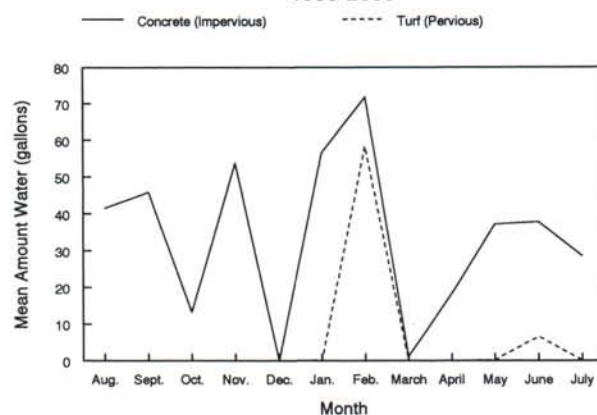
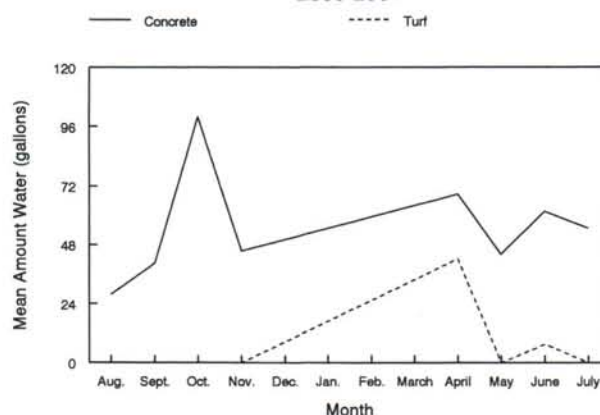


Figure 2. Runoff (Water) from Concrete and Turf 2000-2001



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Nutrient and Sediment Runoff Findings



By **Kevin L. Hensler**, Integrated Turfgrass Management Specialist, O.J. Noer Turfgrass Research and Education Facility

Turfgrass areas have a reputation with the unknowing public of being intensely managed with high inputs of fertilizers. Golf courses are especially visible, leading to environmental concerns about nutrient transport to surface waters. Valid or not, the facts are that over-application of nutrients can lead to nutrient runoff and eutrophication, which is often persistent with slow recovery periods. While research has been conducted in pasture situations, very little research has been conducted on the fate of fertilizer nutrients from turfgrass areas.

At the University of Georgia, L.M.

Shuman (2002) found that runoff of rainfall or irrigation is directly related to application intensity and soil moisture. When the soil was relatively dry, water runoff was only 5 to 15% of that applied, whereas runoff when the soil was moist it was 50 to 80% of that added. Based on these findings, irrigation after fertilization should be minimized to reduce moisture runoff and subsequent nutrient movement from turf areas. Furthermore, fertilizer should not be applied when soil moisture is near or above field capacity or when an intense rainfall is expected.

Phosphorus concentrations in the runoff water varied directly with the

amount of fertilizer applied to the site. It was also determined that a majority of the phosphorous that moved from the site as a result of runoff accompanied the initial rainfall event immediately after application, with very little being transported in subsequent events. Accordingly, from an environmental standpoint, several small applications of phosphorous throughout the year are preferable to one large application (Shuman, 2002). A note of interest, this researcher also found that the plots with no applied phosphorous still had phosphorous runoff concentrations greater than thresholds established by the U.S.

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Environmental Protection (USEPA).

Nitrate N is initially low in runoff water when the ammonia form of nitrogen is applied. Nitrate amounts increase with time as the ammonia is converted to nitrate. However, the concentration of nitrate N in the runoff water for this experiment never exceeded the 10 mg L⁻¹ drinking water standard set by the USEPA. The author recommends always applying low amounts of nitrogen, in whatever form, to prevent nitrogen from entering water bodies or streams through runoff.

Phosphorous, and to a lesser extent nitrogen, are important because they can lead to eutrophication, an over-enrichment of water bodies and streams by nutrients that can cause a subsequent proliferation of aquatic plants. The undesirable symptoms of eutrophication are algal blooms, algal mats, depletion of oxygen on lake bottoms, and a decrease in water clarity. Depletion of oxygen on lake bottoms and the subsequent release of toxins have been associated with fish kills in the past.

Besides eutrophication, environmental effects of nitrogen can include changes in productivity of natural and managed ecosystems and contamination of groundwater with nitrates. The potential adverse human health effects of nitrates in drinking water include birth defects, cancer and nervous system impairment (Taylor and Kilmer, 1980).

Meanwhile, work conducted several years ago at the University of Maryland (Krenitsky et al., 1998) looked at sediment runoff. Sediment runoff from eroding slopes is important because it can cause significant environmental problems by reducing water quality, and impacting aquatic populations. The researchers evaluated the effectiveness of natural and man-made erosion prevention materials to reduce runoff and soil erosion losses from moderately

sloping hillsides.

Commonly used natural erosion materials include straw and turfgrass sod. Turfgrass sod is used extensively to re-vegetate moderately sloping hillsides, whereas straw is primarily used to facilitate seed germination and provide cover on flat to moderately sloped areas. Recently, managers have chosen to establish vegetation by broadcasting seed and covering it with a man-made material. Commercially produced man-made erosion control materials that are often used include woven or bonded mats and blankets composed of jute, straw, coconut, and wood shavings.

Use of erosion control materials are likely to reduce sediment runoff and lessen the potential for off-site movement of contaminants. Straw was found to be highly effective in reducing soil losses and delaying the time to runoff initiation when compared to bare soil. Not surprisingly, they also been found that the presence of turf reduced runoff and soil sediment losses when compared to bare soil.

The authors of this study found that on moderately sloping hillsides, natural erosion control materials, straw and sod, are equally effective or superior to man-made materials in retarding the initiation of runoff, reducing runoff rates, and reducing total soil losses. Sod offered superior performance when compared with straw in all three aforementioned categories. None of the man-made materials effectively extended the time until initiation of runoff. All the erosion control materials examined by the researchers greatly reduced sediment losses when compared with bare soil and would be considered to be effective at reducing total sediment losses at construction sites (as required of DNR legislation NR-151). Of the man-made erosion control materials tested, only jute effectively reduced runoff

and total sediment losses. Therefore, of the erosion control materials they tested, only sod, straw, and jute would be expected to reduce effectively both runoff and sediment losses when used at construction sites.

For more information on nutrient runoff, controlling erosion, or the ITM Program, contact Kevin at hensler@entomology.wisc.edu, or (608) 845-2545.

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WGCSA Meeting - Pine Hills Country Club

By **Dustin Riley**, Golf Course Superintendent, Oconomowoc Golf Club

On September 30th, over one hundred golf course superintendents, affiliates and guests traveled to the eastern side of Wisconsin to partake in a wonderful day of education and golf. Golf course superintendents were encouraged to use this monthly meeting to invite owners, board of directors or other influential persons to Pine Hills Country Club. WGCSA members used this opportunity to introduce their guests to fellow golf course superintendents and also expose their guests to course management concerns.

The Golf Course - Pine Hills Country Club

The Pine Hills Golf Club is a private 18-hole golf course located in Sheboygan, Wisconsin. In 1929, Harry B. Smead designed Pine Hills Country Club for a tally of \$125,000. Included within the project was an underground irrigation system. Some of the original pipe is apparently in use today. The golf course exhibits significant elevation change as well as unforgettable green undulations. In 1929, green heights of cut were obviously not as low as today's. Even with those high heights of cut,

the undulations at Pine Hills CC would have provided the putting challenge Harry Smead desired. Today, those undulations, coupled with top-notch turf conditions, humiliate most golfers. Two-putt greens can almost be a rarity for many of the standard pin locations. The golf course and its playing conditions have been under the direction of Rod Johnson. Over the past 22 years, Rod has displayed the golf course and his staff's ability to four WGCSA meetings, WTA fund raiser event as well as the 1988 Wisconsin State Amateur and the 1999 Wisconsin State Open. The 257 members contribute about 18,000 golf rounds per season.

The Speaker Guest - Ron Forse

Ron Forse, of Forse Design, Inc., has been practicing golf course architecture for over 10 years. Forse Design, Inc., located in western Pennsylvania, has specialized in the restoration of dozens of classic American golf courses. However, Forse Design has also created new golf courses, including a daily fee layout in Pennsylvania

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