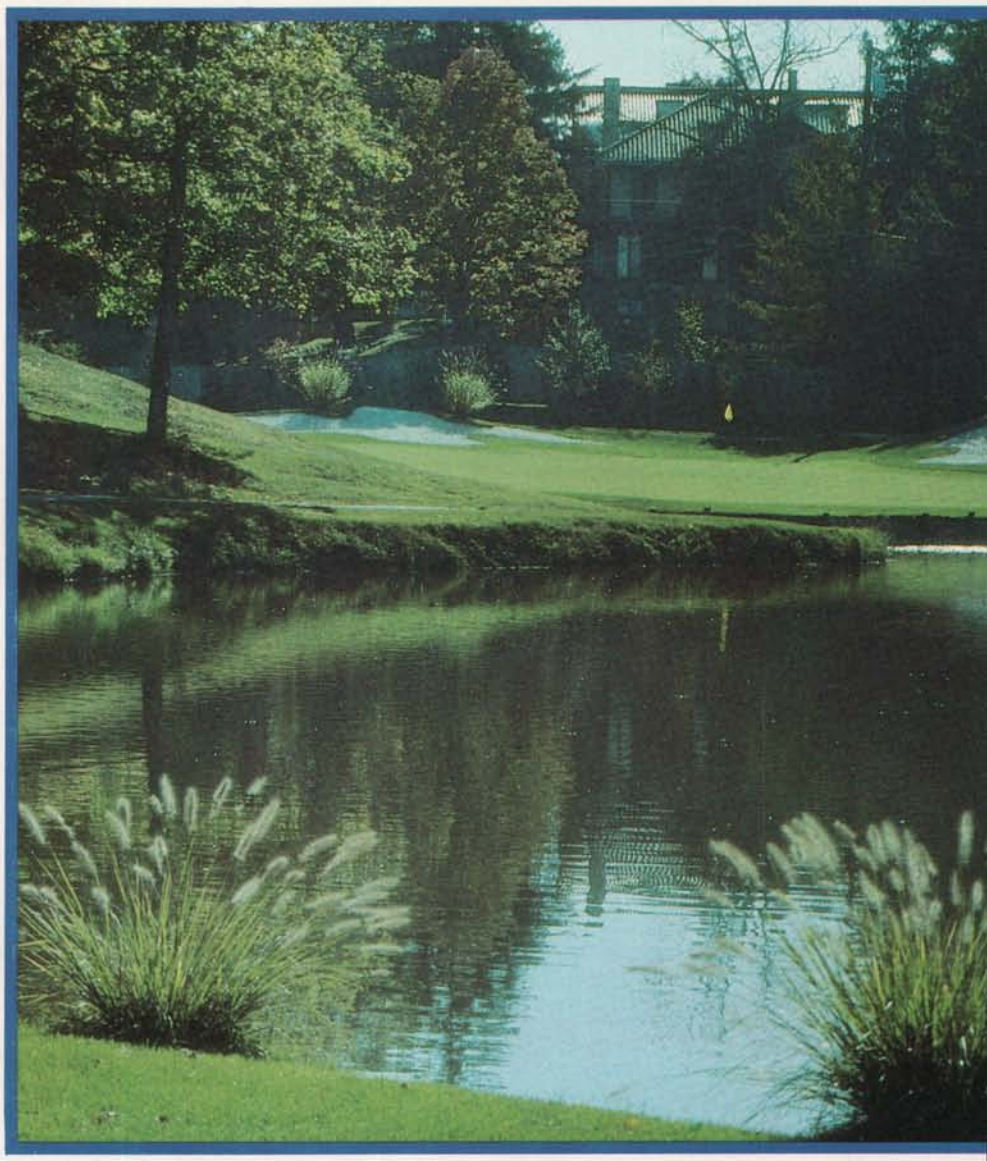
The Maintenance Link

By Dr. Michael J. Hurdzan, ASGCA

One of the most important questions we can ask today is what can the golf course superintendent and the athletic field manager do to help each other?



Besides maintaining scenic beauty, a superintendent also contends with turf wear problems. This is the seventh hole at Hillcrest Country Club, Batesville, IN.

The most intensely maintained turfgrass in the world is on golf greens, golf tees and athletic fields, in that order. Although each installation serves an entirely different purpose and has its own peculiar type of problems, there is a common thread that binds them together. That thread is the goal of producing the best playing conditions possible through management of plant growth and controlling the use of the turf area.

On one end of the thread is the golf course superintendent who has a long tradition of expertise in sports turf management. For more than a century superintendents, once called greenskeepers, have worked with nature to produce a sports area of high scenic value. Only the botanical garden or arboretum rivals the golf course for natural beauty under man's care.

The athletic field manager, on the other end of the thread, is just starting to receive the recognition he deserves in providing a durable, safe surface for other major sports played on turf. The history of the athletic field manager is one of little recognition, with the exception of managers of fields at the college and professional sports levels. Most other fields are managed by a member of the coaching staff, janitorial staff or park crew. Some landscape maintenance companies perform athletic field maintenance under contract.

One of the most important questions we

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can ask today is what can the golf course superintendent and the athletic field manager do to help each other? Certainly there is much for each to share with the other that might make an important difference to the future of sports turf management overall.

The best place to start is to examine the goals and purposes the golf course superintendent or athletic field manager has for his particular turfgrass installation and then compare and contrast the management techniques used to achieve them.

The golf green is intended to provide the smoothest, fastest, most consistent turfgrass surface possible on which golfers can test their putting skills. Since putting is acknowledged as a test of precision, with shots rarely longer than 100 feet, the putting surface is small in comparison to athletic fields. This confined space, although not intended to withstand severe tearing by cleats, must withstand compaction from golfers, pitting from golf balls lofted onto the green from traps or fairway, and the cultural stresses of growing a plant well below its optimum cutting height.

The typical specifications for bentgrass or bermudagrass putting greens actually increase the turf's susceptibility to environmental pressures of heat, humidity and pests. To help the green withstand these stresses superintendents change pin placements regularly and maintain greens on virtually an hourly basis. To assist the superintendents, golf course architects and the United States Golf Association have designed greens with specialized rootzones and drainage systems and, in courses handling a large number of rounds, larger greens or double greens to distribute traffic wear.

Superintendents mow these creeping cultivars of bentgrass and bermudagrass at 1/4 to 5/64-inch cutting heights. Greens are aerified three to six times per year, verticut weekly during active growth periods and topdressed twice each week. These practices are combined with intensive irrigation, fertilization and controls for diseases and pests.

The athletic field is at the opposite end of the spectrum from golf greens. Its purpose is to provide reliable footing and physical support to users who generally impart violent damage to the turf as part of that use. The athletic field surface receives not only compaction and cleat abrasion, but also highly concentrated activity in certain areas.

The field manager can't move the goal posts daily or make the field larger to spread out the wear. There have to be other solutions to heavy use. A few of today's stadiums, such as the Orange Bowl, Los Angeles Coliseum, Mile High Stadium, and Anaheim Stadium, host more than 100 events per year on a single natural turf surface. Some park superintendents may even laugh at this figure considering the use on their fields.

The activities on athletic fields require less surface perfection than those on golf greens. The surface must be smooth enough to prevent player injuries and to assure against bad bounces. With the advent of artificial turf, more attention has been paid to both the speed of a ball on the turf and the speed a player can attain while playing. Cutting height and type of turfgrass can affect both.

The most commonly used turfgrasses on athletic fields are varieties of Kentucky bluegrass, ryegrass, tall fescue, and bermudagrass. Zoysiagrass is being tried on some fields in the transition zone. Overseeding fields with perennial ryegrass for quick repair of divots or to protect dormant warm season turfgrasses is a rapidly expanding technology for heavily used fields.

Maintenance of important athletic fields in season involves mowing every other day at one-inch cutting height, aerification and/or overseeding 10 to 15 times per year, occasional topdressing, and moderate use of irrigation, fertilizers and pesticides. However, it is correct to say most fields in this country receive weekly mowing, a single application of fertilizer each season, aerification twice a year at best, limited weed and insect control, one heavy overseeding, and infrequent irrigation during dry months.

The main football practice field at Texas A&M University in College Station was constructed following USGA Green specifications. Even though the Texas Aggies play their home games on artificial turf, they practice on a field utilizing golf construction standards.

The golf tee is intermediate between athletic fields and golf greens. A tee must provide a very smooth, level, low-mowed turf for precise shot making. But, it also receives violent abuse from its users while providing firm footing and support. Tees receive concentrated and isolated activity, with lots of ripping and tearing of the surface.

You'll find nearly every type of turfgrass on tees, often mixed together, including bentgrass, Kentucky bluegrass, ryegrass, tall fescue, bermudagrass, and zoysiagrass. Separate maintenance programs may be required when year-round play necessitates management of both cool and warm-season turfgrasses.

Maintenance of tees varies widely with the course. Tees are mowed two to seven times per week, irrigated if necessary, aerified three to five times per year, overseeded or spot-seeded 10 to 15 times per year, topdressed as needed, and fertilized regularly to aid recovery of the turf.

Superintendents and athletic field managers can compare their turf based upon the type of facility or the expectations of their superiors. But, they might be able to share more with each other by looking at less apparent similarities of their jobs.

First is the physiology of turfgrasses. You may have successfully maintained sports turf for years without knowing the first thing about physiology. But, the

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underlying secret to management of turfgrasses is their common physiology despite obvious differences in appearance and performance.

The manager of the golf green has learned the significant importance of managing the micro-nutrients within the root zone. Putting green turf, like other types of sports turf, is always on the verge of dying. Management of the very little things can separate success from failure.

Managing micronutrients begins with routine monitoring of the pH of the soil and the soil solution. Although the pH of the soil may not be in the desired range (6.5-6.8), the plant reacts mainly to the soil solution. It is not uncommon for a soil with a high pH to have an ideal soil solution pH, with proper management. The turf manager can adjust the pH of the soil water by applying acid-forming (sulfur) or base forming (lime) materials.

Routine monitoring also provides important information on the cation exchange capacity (C.E.C.) of the soil, the amount of water that percolates thru the soil profile, the temperature of the soil, and the effects of the irrigation water on the soil. Some of these factors may seem unnecessary and overcomplicated. However, they are vital indications of turfgrass health under stressful conditions. You may prefer to consult a soil specialist periodically and adjust your program to his recommendations.

You can carry out your own partial monitoring program by purchasing a good quality pH meter and test kit. Complete data can be obtained by sending a soil sample to the state extension soils laboratory once or twice each year. This test will also provide a run-down on micronutrients in the soil that may require an adjustment in your fertilization program.

One important measurement of soil quality is the calcium to magnesium ratio. It should be in the range of 7:1 to 10:1. It is common for soil scientists to recommend additional magnesium by applying up to five pounds of magnesium sulfate (epsom salts) per one thousand square feet and watering it in thoroughly.

Iron is gaining recognition as an important influence on turf color. Some products being applied to turf are Ferramec (PBI Gordon), Lesco Iron Plus (Lesco Inc.) and Panasea (Emerald Isle). Potassium fertilization has also been under-estimated. The trend is toward fertilizers with a 1:1 ratio of nitrogen to potassium.

The value of organic content in the soil is recognized but too often oversimplified. Organic based fertilizers have been used effectively for much longer than the newer inorganic ones. Milorganite (Milwaukee Sewerage Commission) has been used since the 1920s.

But, not all organic products are the same. Composted sewage sludge products can form a crust over the soil surface if improperly applied. It is important to incorporate these products into the rootzone through aerification prior to application and dragging after. Consult a soils expert before applying organic-based fertilizers to sand-based fields.

In areas with variable quality irrigation water, it is wise to have the water tested monthly until seasonal variations are fully understood. Golf course superintendents may be able to relate the care of tees to athletic fields. In most instances, golf course tees are undersized, poorly placed, badly drained, and recieve a concentrated amount of wear in certain areas, usually the center. In addition, golfers knock out huge divots, one almost on top of another, so vegetative healing of these scars is difficult. Vigorous growth is necessary to permit the best turf conditions possible, and this most often must be done on native soils, and not fancy rootzones as on greens.

The first step to making golf tee turf grow is to provide the best rooting possible through core aerification, removal of plugs if the soil is poor, and topdressing with a 1/4 to 1/2-inch layer of sand which is dragged into the aerification holes. The sand should be tested for particle size and pH before application.

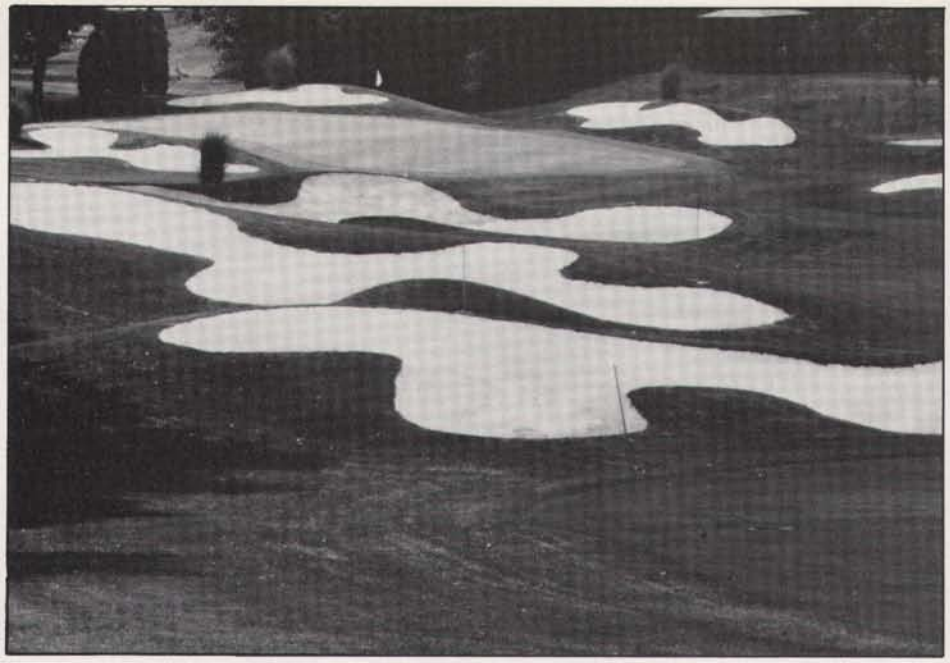
Starter fertilizer with a high phosphorus to nitrogen and potassium ratio should be applied to stimulate the germination and growth of the seed to follow. Overseed with a slicer-seeder if possible, but broadcast spreaders are acceptable.

The choice of overseeding materials is growing as turf breeders develop advanced varieties and cultivars.There have been dramatic advances in the past three to five years in plant breeding as evidenced by the frequent news coverage about genetic engineering. Newly released turfgrass cultivars vary widely in their growth habits, requirements and adaptability.

The sports turf manager needs to know the names of cultivars, not just types of turfgrass seed. For example, managers of golf tees have found that some of the more vegetatively aggressive cultivars of Kentucky bluegrass, such as Touchdown, Bensun (A-34), Mystic, and Sydsport, can accelerate the turf recovery process. Some tests have shown plots of these varieties have doubled in size in one year.

The United States Department of Agriculture Research Center in Beltsville, Md., has coordinated national performance tests of many turfgrass varieties for various qualities. It's important to note that some cultivars will perform better in certain regions of the country than others.

Dick Jenks stands on an Oregon high school field constructed with his Hi-Play sand rootzone, designed to handle the heavy winter rains of the Northwest.



The "links look" of the fourth hole at Hillcrest Country Club, gives modern golfers the feeling of the ancient Scottish courses.

Ask your seed supplier about these tests or contact Jack Murray, USDA-ARS-NER, Field Crops Laboratory, Beltsville, Md. 20705.

Perennial turf-type ryegrasses have shown marked improvement in pest resistance and cutting quality over the best varieties of a few short years ago. You can see that careful selection of overseeding materials can produce dramatic results.

This information-sharing relationship is not one-sided. Athletic field managers have advanced understanding of thatch, more affectionately known as "mat." Their experience has shown that 1/4 to 1/2-inch of mat can dramatically reduce turf wear and improve vegetative recoupability.

Recently, some university turf researchers, golf course superintendents, and athletic field managers have been testing both surface and subsurface fibers and materials to see if they do reduce excessive wear and compaction. The researchers discovered that thatch could take ten times more wear and abrasion than some products tested. Their conclusion was 1/2-inch of thatch may be ideal for athletic fields and golf tees, and 3/8 to 1/4-inch of mat may be ideal for golf greens.

There is a definite link between the golf course superintendent and the athletic field manager. Maintenance techniques can be shared to improve the lot of both. Sharing of this information through trade journals like sportsTURF benefits everyone. ▶

Editor's Note: Michael Hurdzan is past president of the American Society of Golf Course Architects and a partner in the golf course architecture firm Kidwell & Hurdzan Inc., in Columbus, OH. He is the author of the recently-released booklet Evolution of the Modern Green, available for $5 from ASGCA, 221 North LaSalle St., Chicago, IL 60601.
