Field Maintenance Schedule

Fertilization:

Every 8 weeks from November through March at a 3-1-2 ratio with 0.5 lbs. of N/1000

Every 6 weeks from April through October at a 3-1-2 ratio with 1 to 1.5 lbs. of N/1000

Supplemental iron in December and February with 10 lbs./1000

Irrigation: (All dependent upon weather conditions)

January through April: 1 to 3 times per week

May and June: 2 to 5 times per week

July through October: 3 to 5 times per week

November: 2 to 5 times per week

December: 1 to 5 times per week

Aerification:

Slicing aerifier monthly from April through September

Deep tine in August, with hollow tine if field use allows

Core aerate with walk-behind unit as needed at goal mouth, sidelines and mid-field

Topdressing:

August and late fall with #9 sand at approximately 1/4-inch

Overseeding:

September with 10 to 15 lbs./1000 of custom blend of perennial and intermediate ryegrass

Resod:

Goal mouths, sideline and center field areas as required in August

Mowing:

2 times per week at 2-inch height of cut November through March

3 times per week at 1-1/2 to 2-inch height of cut April through October

IPM Program:

Apply Manage and MSMA as needed for weed control March through August

Treat for fire ants as needed monthly

Treat for grubs as needed June and September

Inspection Program:

Fields: daily

Irrigation system: monthly

Bleachers: weekly

Lighting: weekly

Cut lines: monthly

Litter: daily

Restrooms: daily

State of the art lighting and irrigation systems were installed at the complex in 1988. Field 5 is lit by four 45-foot-tall poles supporting five metal halide lamps each. Courtesy: City of Farmers Branch

Maintenance issues

Soil at the Soccer Complex is a heavy clay gumbo. A one percent grade across each of the fields achieves adequate surface drainage. French drains, 6-inches wide and 18-inches deep, were installed on the west and south sides of Field 5 to alleviate standing water along the sidelines that approached the field edge. The common bermudagrass turf was sprigged with Tifway 419, concentrating on Fields 4 and 5, to provide greater turf density and faster recovery.

The July-August window for renovation gets tighter every year. Edwards says, "Tryouts for select soccer ran from July 1 to 15, followed by a 65 team tournament that ended on July 22. By then, our overseeded perennial and intermediate ryegrass were transitioning out. We came in with solid tine aeration to a 6 to 8 inch depth, applied approximately 1/4-inch of #9 sand and used our ball field and mat drags to drag it in. We fertilized with a 24-8-16 fertilizer at the rate of 1-1/4 pound of Nitrogen per 1,000 square feet and increased the irrigation frequency. With practice starting on Aug. 11 and the first game Aug. 22, that gave us three weeks to bring the bermudagrass to top condition."

Compaction is attacked with an aggressive program of monthly slice aeration combined with deep tine aeration, and core aerification in

August when field schedules allow it, all done in two directions. Sand topdressing is applied in August and again in the fall in conjunction with their overseeding program, using approximately 140 yards of sand over the 9-acre soccer complex. This year a small walk-behind core aerifier has been purchased for use in the goal areas, along the sidelines and in mid-field.

Edwards notes, "The rye transitions out about 100 percent by the time to overseed again with our custom blend of perennial and intermediate rye grasses in late September. We slit seed 75 percent of the seed and broadcast the remaining 25 percent. Play can't be restricted at that time so good establishment can take until mid-November. It's then the dominant turf until high temperatures kick in about the start of June. Though the rye on the fields is stronger and longer than the bermudagrass, the density and cushioning of the bermuda greatly improve overall field quality."

Extreme dry weather and stringent water restrictions have complicated field maintenance the last couple years, though the spring of 2000 was relatively wet. Edwards says, "We've prioritized water use on all our properties. We allocate limited amounts to general park and green space and apply that water to the athletic fields to address safety and liability issues and to support optimum field use levels."

Coe and Edwards both commend the support the athletic field programs receive from the City Council, the citizens, city administration and the Parks and Recreation Department. They say, "They expect quality from us and they give us the responsibility and resources to achieve it. It's a team effort, requiring the cooperation and assistance of all parks maintenance crews, the irrigation crew, the mowing operators and the chemical applicator. Ultimately, our success lies in the dedication and commitment to excellence of those on the fields daily; Jose Martinez, Ron Thompson, Dennis Sewell and Russell Coe, who handle the myriad of responsibilities that go along with maintaining top quality athletic fields."

Bob Tracinski is the business communications manager for the John Deere Worldwide Commercial & Consumer Equipment Division headquartered in Raleigh, N.C. He serves as public relations co-chair for the national Sports Turf Managers Association.

New Warm Season Grasses

by Dr. Gil Landry

This article focuses on bermudagrass, since probably more than 90 percent of all warm season sports fields use some type of bermudagrass. As with many items for use on athletic fields today, we have more options to choose from in bermudagrasses than there is scientific data to support. However, there are sources of unbiased information, such as your local County Extension office. This office is part of your state Land Grant University system or Agricultural College.

Another excellent source of information comes from the National Turfgrass Evaluation Program (NTEP) which works through these Land Grant Universities. This organization works with turfgrass growers to organize and help fund turfgrass evaluation trials with the Land Grant Universities throughout the country. NTEP has a web site (http//:www.ntep.org) where many of these research reports can be found.

As NTEP literature notes, "New turfgrass varieties are constantly being released from public and private sources. In addition, turfgrass breeders are continually interested in having experimentals tested under a variety of growing conditions. In order to determine relative adaptability and performance, it is necessary that test turfgrasses be tested under different environmental conditions. Likewise, turfgrass research scientists and extension agents are interested in the relative performance of new turfgrasses and thus routinely establish evaluation tests.

"In evaluation tests, it is important to have seed of varieties or test entries from certified sources or sources from which the evaluator would be able to verify origins. This gives assurance as to the purity of the entries tested and results reported would likely be reproducible."

NTEP lists the proper name and experimental number of the turfgrass varieties, along with the company or institution willing to supply them for turf evaluation trials. NTEP also notes whether these varieties are commercially available.

The Options

So what are your options? Table 1 lists the seeded and vegetatively produced bermudagrasses that were in the 1992 and 1997 National Bermudagrass Trials organized by NTEP. In 1992 and 1997 there were 26 and 21 research sites, respectively, throughout the South and transition zone of the country. Locations ranged from Maryland in the east to California in the west to Illinois in the north and Florida in the south.

Historically, these tests provide a good general evaluation of a turfgrass over a wide range of environments and maintenance programs. However, the key to in-the-field usability of any performance data is how closely the growing conditions and program match your specific conditions. So basically, the closer one is to a study and the more similar the maintenance practices are, the more meaningful the information.

Obviously, there are other options to consider in variety performance consideration, including reputable industry sources and local examples of turfgrass performance near you in both testing and in field-use situations.

Tifway is the most common bermudagrass used on moderate to high budget facilities and most of the better performing sports field grasses have been vegetatively reproduced. However, there probably are more recreational sites with seeded grasses in the south because of budget constraints.

When you access cultivar performance data, you need to evaluate how similar your facility maintenance program is to those used in any study. Along with environmental conditions, consider the soil profile, soil pH, soil phosphorus and soil potassium levels, the rates and timing of nitrogen applications, the mowing height and any weed, insect, or disease controls.

The turfgrass traffic simulator has drums with cleats attached, to simulate one football game under wet conditions. Courtesy: Gil Landry

In the 1992 NTEP test, the top ranked bermudagrasses for the four year study nationally were Baby and Tifgreen. These were closely followed by Tifway, Midlawn, Midiron and Midfield. All six of these entries are vegetatively produced grasses. The top performing seeded types were Mirage, OKS 91-11, J-27 and Jackpot. Arizona Common, the industry standard, was the poorest performing entry in the study.

In the 1997 NTEP test, the top ranked entries were OKS 95-1, OKC 18-4, Tifgreen, Tifway, Midlawn and Princess. These were followed by TifSport and CN 2-9. In 1999, the top performers were TifSport, OKS 95-1, Tifway, and OKC 18-4. These were followed by Tifgreen, Princess, Midlawn and OKC 19-9. For the first time there are seeded types, OKS 95-1 and Princess, performing as well or better than the best vegetative types.

Traffic Tolerance Testing

For most sports field managers, traffic tolerance is another major factor that helps one select the best turfgrass for their conditions. At the University of Georgia we have applied simulated traffic to the 1997

NTEP trial.

Eighteen seeded bermudagrasses were planted on June 26, 1997, at the rate of one pound per 1,000 square feet. Ten vegetatively reproduced bermudagrasses were plugged with 1.5-inch diameter plugs on 6-inch centers on June 30 or July 2, 1997. The plots are 6 by 16 feet with three replications arranged in a randomized complete block design. The site has a sandy loam soil with a soil pH of 5.9 and high P and medium K levels. It is in full sun.

The mowing height is 0.75 inches and the area is cut two times a week. The N rate is 5.25 pounds per 1,000 square feet per year with 0.75 lbs. applied each month from April through October. The trial is irrigated to prevent dormancy. Pest problems are treated as needed, with a preemergence herbicide being used for crabgrass control.

Traffic tolerance is being evaluated using a "Traffic simulator." The simulator is used to simulate one football game under wet conditions. It has two drums with football cleats attached to each drum. The drums have different size sprockets so they turn at different rates to cause tearing as well as digging or cleating, just as the players do.

Traffic was applied in June, September and twice in October in 1998. Obviously, the grasses recovered from traffic more rapidly during the rapid growth cycle of summer and much slower in October. Generally, most vegetative entries have better traffic tolerance than the seeded ones. Traffic tolerance appears to be closely associated with turf density. Those grasses with high density are not thinned out as fast as the more open seeded types.

Mini-Verde, a dwarf bermudagrass, has excellent traffic tolerance and was followed by CN 2-9, Tifway, OKC 19-9, and TifSport. Princess was easily the best performing seeded type and was followed by Jackpot, PST-R69C, OKS 95-1, J-540, and Shangri La. Common bermudagrass had the poorest traffic tolerance.

Such research provides data to assist sports field managers in making turfgrass variety decisions.

The Consequences of Overseeding

by Tony Koski

Next to mowing, fertilizing and irrigating, overseeding is one of the most routine of sports turf management practices. As with any routine practice, however, it is sometimes performed with little thought or consideration of how it may impact turf quality in the future. The purpose of this article is to encourage the sports turf manager to more carefully consider how today's overseeding exercise might affect turf quality for a number of years into the future.

Why do we overseed?

The reasons for overseeding sports turf are well known:

* To fill in turf damaged by traffic or pests
* To introduce a different species into an existing turf, with the hope of changing the turf species over time
* To introduce newer, improved varieties of the same species into an older turf area
* To place seed in the turf, in anticipation of turf damage
* To provide temporary cover or color (winter overseeding of bermudagrass, for example)

Just as the reasons for overseeding are varied, choosing the appropriate species and cultivar is important for getting the best results when overseeding. Timing and method of seeding should also be well thought out. If careful consideration is not given to all aspects of the overseeding process, the results may be unsuccessful or even undesirable.

In most overseeding situations, the ideal practice would be to overseed with the same species that the field was originally planted. By using the same species for overseeding the playing surface, uniformity is maintained. This is true not only in terms of visual aesthetics, but also for maintenance and quite possibly playability. However, the sports turf manager rarely practices his or her trade in an ideal world. Quite often the grass species used for overseeding is not the same as what was initially planted in the field, for some very good reasons.

Bermudagrass soccer field showing patches of overseeded ryegrass. Courtesy: Tony Koski

Overseeding with ryegrass

The short windows of opportunity available for overseeding Kentucky bluegrass fields, for example, often require one to use perennial ryegrass. When there are only a few weeks between seasons, important games or other field events, the rapid germination rate and seedling vigor of this species provides much greater potential for success than if bluegrass were used. It is very difficult to get bluegrass to "catch" and flourish when you have only a few weeks to a month as an overseeding window. Ryegrass, on the other hand, can germinate, become competitive with the existing turf and mature to the point that it can take traffic in a relatively short period of time. Tall fescue fields are sometimes overseeded with ryegrass as well, since tall fescue seedlings take some time to mature to the point that they can tolerate sports turf traffic. The establishment rate of overseeded ryegrass can be further hastened by using pregerminated seed.

Unfortunately, the aggressive or frequent use of perennial ryegrass as an overseeding grass may, over time, cause fields to shift from totally Kentucky bluegrass to mainly perennial ryegrass. Aesthetically, this is not a problem because ryegrass provides a very attractive playing surface. But ryegrass does not provide the level of traction that bluegrass does. This is because it doesn't form

Good seed-soil contact is essential for successful overseeding. Courtesy: Tony Koski

rhizomes and its shiny, succulent leaves can create a slippery surface. Further more, its bunch growth habit does not allow it to spread and repair worn or divoted areas like bluegrass.

Problems with ryegrass overseeding are not limited to its use on bluegrass fields. Overseeded bermudagrass often has problems emerging from dormancy in the spring, especially when high rates of ryegrass have been used or when spring and summer weather is cooler than normal. The competition and shading caused by a dense ryegrass canopy can actually kill bermudagrass before it has a chance to emerge from dormancy. Transitioning from overseeded ryegrass to bermudagrass can be hastened by lowering mowing heights in the spring to remove as much of the ryegrass canopy as possible. This allows sunlight to stimulate bermudagrass growth, and at the same time stresses the ryegrass to encourage its disappearance. Herbicides that selectively kill ryegrass can also be used, but the dying ryegrass should be removed to allow light to penetrate into the bermudagrass stolons below.

Of course, those with perennial ryegrass fields appreciate its rapid germination and aggressive seedling growth. This is essential on a ryegrass field, where recovery from injury is essentially supplied by the field manager via constant overseeding.

Overseeding with bluegrass

Overseeding with Kentucky bluegrass can be successful if the seedlings are given sufficient protection and time to allow them to mature. Single-sport bluegrass fields can be overseeded annually with great success. Multi-use fields are generally overseeded with a combination of ryegrass and bluegrass, but few of the bluegrass seedlings will survive in the high use areas of the field. As a multi-use or otherwise heavily used field grows in age, the increasing percentage of perennial ryegrass (and often annual bluegrass) makes it even more difficult to establish new bluegrass.

Opinions vary regarding the success level to expect when overseeding bluegrass into a turf containing a high percentage of ryegrass or annual bluegrass. Research projects have just begun at Kansas State and Colorado State universities to evaluate techniques for improving survival of overseeded bluegrass into ryegrass turf. Though they don't guarantee success,

Notice the strips of overseeded perennial ryegrass, seeded with a walk behind slit seeder.
Courtesy: Tony Koski

some strategies that the sports turf manager might employ are:

- Use one or more of the aggressive, low-growing bluegrass cultivars for overseeding
- Ensure good seed-soil contact by drill seeding, slit seeding, or by seeding following shallow core cultivation
- Maintain as low of a mowing height as possible to reduce the competitiveness and shading effect of the perennial ryegrass
- Use a plant growth regulator such as Primo (trinexapac ethyl) to reduce ryegrass competition in conjunction with seeding efforts

- Use bluegrass seeding rates of 3-6 pounds of bluegrass per 1000 square feet
- Try pregerminating the bluegrass seed
- Seed when conditions (warm soils and cool air temperatures) favor germination and seedling growth (late summer or fall)
- Use turf blankets to encourage germination and growth during the spring (although this will favor ryegrass vigor, as well)
- Use as little ryegrass as possible in the overseeding program

It appears that there is little chance for bluegrass to germinate and become established in a dense, healthy, high-cut perennial ryegrass turf. The ryegrass must be weakened so as to allow bluegrass establishment, but not so much that turf quality is severely diminished - unless some temporary turf loss can be tolerated.

Overseeding with bermudagrass

With the recent development of good quality seeded bermudagrasses, the turf manager may find occasion to use bermudagrass for overseeding. This need may arise when bermudagrass has suffered winter kill or when bermuda loss occurs during spring/summer transitioning. It is important to do your homework and select the best seeded bermudagrass cultivar, since they vary in texture and winter hardiness. These new bermudagrasses should be seeded in late spring or early summer when warming soil and air temperatures encourage germination and seedling establishment.

An interesting variation on the use of bermudagrass has recently been proposed by Drs. Gaussoin, Minner and Keeley at the University of Nebraska, Iowa State University and Kansas State University, respectively.

It involves the overseeding of cool-season sports turf with bermudagrass. They found that, when the only overseeding window available to the sports turf manager is the summer, the seeded bermudagrasses can perform quite well on midwestern athletic fields. The majority of the bermudagrass does not survive the winter in the northern fields, so it must be reseeded annually. This innovative overseeding technique allows northern fields to have a healthy stand of grass during a time of the year when heat and humidity preclude the successful overseeding of cool-season grasses.

Experiment!

There are not a large number of species used for sports turf overseeding, but there are many different varieties of each species. And there are numerous variations of how overseeding is performed. Seeding rates, frequency and time of year are all variables that can be experimented with. Methods of introducing seed and the use of plant growth regulators or turf blankets can also be tested. Maintenance programs can be fine-tuned to provide optimal conditions for seed germination and seedling growth. As with all aspects of sports turf management, there is no single correct way to overseed successfully. I would encourage every sports turf manager to experiment with different overseeding techniques and to share success stories with their colleagues.

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