CUTT

Field Renovation Via Overseeding

Program Spotlight

Soil modification is only one component of a high traffic turf strategy.

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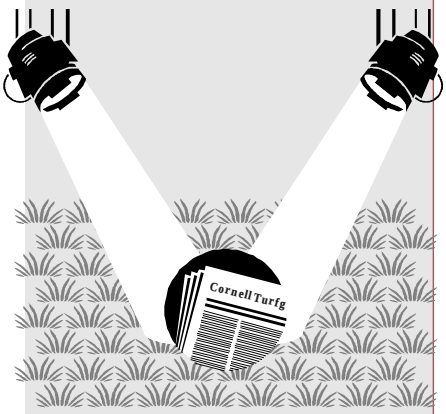

Each year National Football League (NFL) franchises that play their games on natural turf fields are faced with worn out turf between the hash marks. Much of this can be related to the decision to narrow the hash marks, eliminate a strong and weak side attack and open the game up offensively. However, from a turf perspective the decision has been devastating.

The easy (and expensive) solution has been to periodically replace the turf between the hash marks with sod. Often this requires a Herculean effort to remove the existing turf and install new sod in a seven-day period before the next game. Not only is this expensive, it is not a long-term solution that can be adopted by many scholastic sports turf managers.

Interestingly, the increased number of sand-based fields have not alleviated all problems associated with traffic stress. It can be surmised that soil modification is only one component of a high traffic turf strategy. Clearly, the ability to rotate traffic is critical, yet very little effort has been exerted to develop seeding programs to compensate for high traffic fields.

Overseeding Basics

Jim Puhalla, Jeff Krans and Mike Goatley authors of Sports Fields: A Manual for Design, Construction and Maintenance (Sleeping Bear Press, 1999) define overseeding in the cool season zone as a means of improving turf density. This might include coring or slit/slice seeding to improve soil and seed contact. In cool season turf this is performed on an actively growing turf as compared to warm season turf that is overseeded when dormant. The distinction between warm and cool season turf is critical as success for each requires an understanding of the ecology (relationship among the organisms and their environment) of a sports turf.

The presence of an actively growing turf creates challenges to successful overseeding. For example, existing turf has a competitive advantage over young seedling turf in procuring water and nutrients from the soil. Also, if overseeding is performed during the season, the seedling turf must withstand regular mowing and traffic. Therefore, successful overseeding may require a shift in thinking to sacrifice field playability for seedling turf success through field rest, reduced mowing frequency, increased irrigation for establishing seedlings, etc.

Unfortunately, many fields are incredibly overused leaving the existing turf in a non-competitive state. While this can be desirable from an overseeding perspective (bare soil, thin weak turf), overseeding will still be a challenge, especially if the field will not receive rest. Inevitably the success of an overseeding program depends on getting the seed in contact with the soil, resting the field and maintaining the field as a seedbed.

The process will involve thinning the existing turf if necessary with vertical mowing or scalping. After the turf is thin either from traffic or mowing, research here at Cornell University has demonstrated the benefit of multiple core cultivation, allowing cores to dry and pulverizing. The cores are destroyed and dragged with a mat or chain link fence. The area is seeded with a broadcast applicator or some prefer slit seeding.

Following the seed a starter fertilizer high in phosphorus is applied and the area is lightly rolled to ensure good soil-seed contact. The field is irrigated to establish the seedlings and because the field was scalped or thinned, often mowing can be withheld for at least three weeks. Traffic should be withheld for at least 4 to 6 weeks for a perennial ryegrass renovation and 8 to 10 weeks for a Kentucky bluegrass renovation.

Compared to most scholastic sports turf, it is hard to refer to a professional sports field as high traffic that hosts 8 to 10 games of one sport per season. Many scholastic fields host school and community sporting events over multiple seasons. These events occur on a less than desirable root zone and are managed with considerably less resources than a professional sport franchise. Consequently, innovative solutions to high traffic areas, especially the use of overseeding must be employed.

Aggressive Overseeding

Many sports turf managers at the scholastic and community level are challenged with excessive high traffic fields. These fields may start the season with full turf cover but after a few

weeks the turf thins in high traffic areas to expose bare ground. This leaves many questions regarding field safety as well significant weed invasion.

To address the need to maintain turf density during high traffic periods we initiated an experiment to investigate the effect of aggressive overseeding, i.e., high rates of seed applied weekly or monthly under traffic. The experiment was conducted at the Cornell University Turfgrass Research and Education Center, Ithaca, NY on three blocks of turf (Kentucky bluegrass "Coventry", perennial ryegrass "Manhattan III" and Tall Fescue "Jaguar III"). The turf was trafficked in two directions five days per week with a Brinkman traffic simulator. This traffic treatment resulted in significant turf thinning over the twelve weeks of the study.

Within each turfgrass block overseeding programs were applied on Friday of each week following mowing and trafficking. The treatments were six or ten pounds of perennial ryegrass or tall fescue seed per 1000 square feet applied weekly or monthly, and Kentucky bluegrass at two or four pounds of seed per thousand square feet applied weekly or monthly. The plots were not irrigated and were fertilized in May and September with one pound of nitrogen per 1000 square feet. The plots were rated for turf density, weed invasion and overall quality.

Non-overseeded plots were less than 50% covered with turf and in some cases up to 20% weeds. Among the species, Kentucky bluegrass and tall fescue had lower turf density then the ryegrass species without overseeding. Overseeding with Kentucky bluegrass proved completely ineffective under regular traffic most likely due to the long germination requirement.

Weekly overseeding with either perennial ryegrass or tall fescue at six pounds of seed provided excellent season long turf density. In fact, perennial ryegrass was able to maintain almost 90% density when overseeded weekly. Tall fescue overseeded plots were between 70 and 80% dense at the end of the experiment. There was no difference between the six and ten pound seed rates. Interestingly the monthly overseeding of perennial ryegrass provided equal to or better density than the weekly tall fescue overseeding independent of seed rate.

The economics of aggressive overseeding should be considered. We calculated that if ryegrass seed could be purchased at $0.70 per pound and applied weekly at the six pound rate it would cost $4.20 per 1000 square feet per week. The average soccer field is about two acres, but most likely less than 0.5 acre would need this type of program (goal mouth, center of field, etc.). Therefore, for a twelve week soccer season the cost would be about $90 per week for seed or $1100 for the season for seed.

Clearly, aggressive overseeding provides and excellent avenue for high traffic fields. We are currently evaluating spring and summer programs and investigating lower seed rates applied more frequently.

Primary Culture

Interest in athletic competition has significantly increased field use and traffic. A significant amount of effort has been invested to improve rootzones and topdressing amendments (eg. crumb rubber), yet, there is very little research in the area of overseeding. Rich Gaussoin and Dave Minner have been reporting success with using Bermudagrass in cool-season climates as a means of having turf cover during difficult times of the year.

High traffic fields demand an aggressive maintenance program that includes mowing, irrigation and fertility. Core cultivation and topdressing have emerged as key primary cultural practices in the last decade and now overseeding needs to receive the same attention. It makes sense that if bare soil is present weeds will invade and the integrity of the surface is compromised. Regular overseeding either as a renovation a few times per year or in-season to keep pace with traffic will insure a safe and durable sports turf.

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