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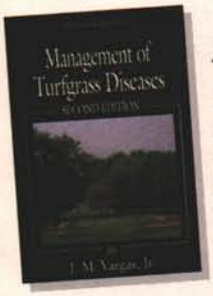
Controlling Turfgrass Pests, 2nd edition, *by T. W. Fermanian, M. C. Shurtleff, R. Randall, H. T. Wilkinson, and P.L. Nixon.* This book concentrates on the diagnosis, fundamental biology, and control of turfgrass weeds. Demonstrates how to identify turfgrass pests, when and why they occur , the damage that may take place, the life cycles of the pest, plus culture, chemical and other management strategies designed to keep pest damage to a minimum. 720 pp. **4031 $85.00**



Management of Turfgrass Diseases, 2nd edition, *by Joseph M. Vargas, Jr.* Completely revised and updated to provide the latest information on maintaining a healthy turf and identifying turf diseases. covers cultural, genetic, biological and chemical approaches to turf management and provides practical solutions to everyday problems. Fungal, bacterial and viral diseases; black layer disease; and diseases caused by nematodes are addressed for all major grasses. Tips on irrigation, fertilization, and grass culture w. 72 full-page photos and more than 100 figures. 320 pgs. **4016 $67.00**

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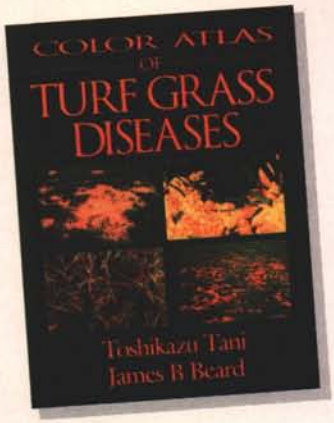

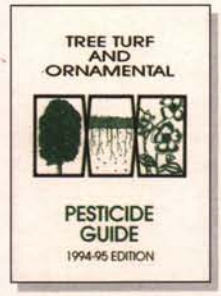

Tree, Turf, and Ornamental Pesticide Guide, *W.T. Tomson.* This is one of the few references today designed as a guideline to pesticide usage in the specialized ornamental field. It lists the major ornamentals grown either in the home or garden, in nurseries, in greenhouses, or in commercial production with a cross reference as to what pesticide may be used on them. Insecticides, herbicides, fungicides, and growth regulators are listed along with what each will control. This is a valuable tool for PCO's, nurserymen, greenhouse operators, grounds superintendents, turf specialists, etc. 200 pgs. **4127 $18.50**

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Continued from pg. 10

The new 100-percent sand fields do require maintenance adjustments. They need a bit more fertilizer to build up the organics in the profile.

In 1997, the crew core aerified the fields in July, and then sliced in the spring and fall. Topdressing media matches the soil profile.

All of the fields were initially seeded with a mix of five bluegrass varieties and five perennial ryegrass varieties. McNeal uses the same ratio for overseeding, though she varies the varieties within the mix according to performance and availability.

McNeal and Fidler are responsible for general and corrective maintenance on the complex's 10 to 12 pieces of equipment. They also serve as the first-response team for general facility care, such as plumbing problems in the restrooms.

Field use

"Colorado's temperate climate allows regular field usage from March up to Thanksgiving," explains McNeal. "Each year they want to play earlier. Our first 1998 event was February 28."

Field use is scheduled in three categories: adult, youth, and collegiate. The adult league has competitive and recreational teams which play 380 games during two eight-week seasons.

The youth league is primarily competitive. Teams play two ten-week, 700-game seasons.

The University of Colorado NCAA Division I women's soccer team uses the fields from August to November. They hold three-hour practices four days a week and play up to nine home games on the championship field.

Pleasant View also hosts two eight-week youth soccer camps during the summer, and each averages 50 participants. Up to six summer tournaments bring in 1,000 more field users at all levels of play. In 1998, Pleasant View will host the Triple-Crown Youth National Playoffs.

Rugby adds to the facility's busy schedule. The Boulder Rugby Club holds two practices a week for approximately six months, and plays 17 home games during the year. In 1997, the complex hosted several semi-professional team competitions and the three-day All-Star Collegiate Rugby Tournament.

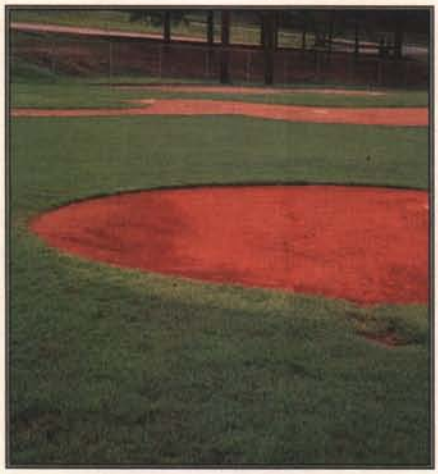
In 1997, Pleasant View also hosted a three-day Ultimate Frisbee tournament and a EuroCross cross-country race. McNeal says, "Field use is by permit only and is scheduled by the City's Recreation Supervisor, Teri Olander. As Turfgrass Manager, I am able to influence what usage the fields can handle. Teri and I work closely together on both long-term and day-to-day scheduling. I make the call if it's too wet to play, but I've done that less than 10 times in three years. I occasionally may cancel morning games only for league play.

"This complex is maxed out for space. If we had a facility twice this size, it might be enough to meet the needs of the community. We focus on excellence, on providing safe, highly playable fields by doing the best with what we have and putting in that extra effort each day." ❑

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

Continued from pg.6

One positive suggestion is to cut your turf from a sod plot. With a square-nosed shovel, cut to a depth of six inches, and replace the bare areas with sod blocks. Topdress your seams, roll or tamp, and hand water. The field will be ready for play immediately, since the roots are already growing in the deeply cut sod.



With community fields and their varying pitching distances, it's penny wise to cut out a keyhole or oval shape in front of the mound. This way, frustrating resodding, poor appearance, and unsafe lips won't bring your fields down in the taxpayers' eyes.

Some facilities choose permanent prevention by using artificial turf surfaces.

Floyd Perry is author of three books: The Pictorial Guides to Quality Groundskeeping: I Covering the Bases; II There Ain't No Rules; and III Maintain It Easy, Keep It Safe. He also produces two videos: The ABC's of Grounds Maintenance: Vol. 1, Softball; and Vol. 2 Baseball. For more information, call: (800) 227-9381, or visit his web site: http://gms.simplenet.com.

Preparing Turf for Overseeding

by Bob Tracinski

Every sports turf manager must provide safe and playable turf. One technique that can enhance these qualities in an athletic field is overseeding.

Overseeding promotes uniform turf coverage that supports play with stability, traction, and cushioning. However, overseeding can also put excessive strain on turf. Just as an athlete needs to train before a big competition, turf needs to undergo careful preparation to be able to handle the unique demands of overseeding.

Filling multiple needs

In areas where cool-season turfgrasses are grown year-round, overseeding thickens established turf by adding more plants of the same species or of similar, compatible species. Overseeding in regions where warm-season grasses thrive generally introduces cool-season turfgrasses that provide active growth during the dormant period. These cool-season species are selected for their ability to transition in when temperatures cool, to thrive during cool-weather play, and to transition out when warmer temperatures bring active growth to the warm-season turfgrasses.

Preparation

Preparation for overseeding is a year-round process. Cultural practices that produce vigorous turfgrass also produce the best circumstances for overseeding. To prepare existing turfgrass areas to support new grass plants without experiencing detrimental effects on the established turf cover, it's necessary to juggle a combination of procedures.

Prior to overseeding, correct high and low spots. Use the same material as the root zone mix to fill in low spots. This will help avoid layering within the soil profile and uneven moisture during seed germination.

Compaction problems also need to be addressed prior to overseeding. You need to improve water, air, and gas exchange to encourage optimum growth of existing turf and to provide better conditions for seed germination. Solving compaction problems will also help eliminate weed problems.

Preparation for overseeding is a year-round project. Maintenance practices that keep turf in top shape also produce the best conditions for successful overseeding. *Courtesy: John Deere*

Selection of aeration methods should be based on the degree and depth of compaction, the condition of the turf, and the field use schedule. More invasive aeration methods will produce extend periods of turf recovery.

Deep levels of compaction (those below three to four inches of the soil surface) will require deep water injection or deep tine aeration. With both of these procedures, surface disruption is minimal.

If compaction is confined to the upper levels of soil and there is little or no break in field-use schedules, slicing is the best aeration method. Spiking is also a good option. It provides greater compaction relief than slicing with minimal surface disruption.

Core aeration offers the greatest amount of upper-level compaction relief. Cores pulled to the surface may be removed or allowed to dry and then pulverized. The method for pulverizing cores varies depending on the equipment available. The rake attachment of a field rake, a drag mat, a section of chain link fence, or an old mower can all accomplish this task. Grassy debris can be removed with a rake, blower, or broom / sweeper attachments. It's best to schedule coring several weeks in advance of overseeding so the existing turf has time to recover.

After handling compaction problems, strike a balance in thatch levels. Healthy amounts of thatch provide an in-season buffer zone to protect plant crowns from the wear of heavy use. Thatch can add more give or spring to the surface for players, and can help turf resist soil compaction and sudden temperature fluctuations. But be careful, too much thatch restricts water, nutrient, and air penetration, and blocks seeds from soil contact.

Dethatcher attachments on mowers can handle minor thatch reduction projects. Some sports turf managers use this procedure regularly throughout the

growing season, and merely adjust the timing of the final dethatching to fit overseeding schedules. For greater thatch reduction, verticutting (vertical mowing) with vertical rotating tines or blades can be used to thin thatch and bring the loosened, excess material to the soil surface.

Prior to overseeding, cutting blades should be adjusted to levels that reach through the thatch layer and slice into the soil surface. A consistent program of slicing provides effective thatch removal, some compaction relief, and good conditions for overseeding.

Immediately before overseeding, begin close mowing. Cool-season turfgrasses should generally be mowed to the lowest acceptable level for the season, field conditions, and field-use schedule. This may entail dropping the height of cut gradually for two or three weeks, or merely mowing at the previously established height of cut the day of overseeding.

Bermudagrass fields require severe close mowing methods. They involve setting the height of cut just above the soil line and scalping the turf with a reel mower.

Timing

Bermudagrass turf stops growing and starts to brown after the first hard frost of fall. It remains dormant until the spring warm-up. When soil temperatures begin their permanent seasonal decline, it's the ideal time to overseed with cool-season grasses.

Overseeding too late in the season may reduce soil temperatures below the effective germination level for cool-season grasses. Overseeding while soil temperatures are still fluctuating may trigger a late-season growth spurt in the bermudagrasses. This will intensify competition between the grasses. Pythium, a disease that is particularly threatening to new seedlings, is also more likely to occur in warmer temperatures.

Scheduling overseeding one to three weeks prior to the anticipated frost date will generally produce good results on warm-season turf. If field use schedules force earlier overseeding, it may be cost effective to make a preventive fungicide application to reduce the risk of pythium. For later overseeding, tarping may be used to bring soil temperatures to a more effective range for seed germination.

Overseeding cool-season turf can be a long-term project on athletic fields. Many sports turf managers periodically augment their early-fall overseeding with lighter seed applications over the entire field, and spot overseeding in heavy-use areas. Timing of the initial overseeding varies by region. Nature provides its own seeding signals with cooling soil temperatures and the beginning of the warm day, cool night, heavy dew combination.

Overseeding in spot applications for heavy-wear areas and divot repair may be made prior to practices and games to allow players to cleat-in the seed. Spot applications can also immediately follow a game as part of the general field repair process.

Some sports turf managers want seed in place and ready for growth from the start of the fall overseeding cycle through the last game of the season. Managers often combine primed or pregerminated seed with the standard divot repair mix for these spot applications to reduce the germination interval.

Process

Turfgrass variety selection will vary with field needs. Several factors must be considered: compatibility with existing turfgrasses; speed of germination and establishment; color; texture; cold hardiness; fertilization and irrigation needs; recuperative ability; and for warm-season turf, lack of spring persistence.

Seed may be applied with a drop or broadcast spreader, or with a slit seeder that combines soil preparation with the seeding process. Adjust the seeding rate for such field specifics as density of existing turf; sun, shade, and wind conditions; anticipated wear; anticipated performance of the overseeding cultivars; planned additional in-play overseeding; and for warm-season turf, the anticipated transition-in and transition-out problems.

Spreading seed too heavily may cause the seed to compete with itself, or to produce a turf stand that is stronger than desired during the transition-out period. A rate that is too light may not provide the desired density for playability and aesthetics. Spreading the seed at half-rate in two different directions (north-south, east-west) ensures more uniform application.

When the seed application is complete, it's necessary to promote seed to soil contact. A number of different methods can be used.

Overall topdressing with the standard topdressing mix for a particular field is the preferred method. Material must be applied in a layer that's heavy enough to increase seed to soil contact and provide cover, but light enough so that it won't inhibit growth of existing turfgrasses. If budget constraints prevent you from treating the entire field, topdress only high-traffic areas. If topdressing isn't an option at all, at least drag the seed into the soil with a metal or mat drag.

Fertilizer and pH adjustment should be based on soil test results. Also, test irrigation water to identify both pH and other elements, especially if reclaimed water is being used.

When overseeding cool-season turfgrasses, plan fertilization to stimulate both new seed and existing turf. This balance is more critical in warm-season overseeding, as it discourages bermudagrass competition while keeping sufficient phosphorous and potassium supplies available for both existing turf and new seedlings. Nitrogen applications should begin shortly after the emergence of the new seed shoots, and should continue throughout the active growing period.

Once the seed is in place, use light and frequent irrigation during the germination and establishment phases. As the new seed takes hold, intervals between irrigation cycles should be extended gradually, and water depth penetration should be increased to promote deeper rooting. Because fields remain in play, this must be done without neglecting the irrigation needs of the existing turf.

Ideally, initial mowing of the new seed should wait until seedlings are 1/3 higher than the recommended mowing height for that species. But again, this must be balanced by the mowing needs of the existing turfgrasses to retain optimum vigor and suitable playing conditions. ❑

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

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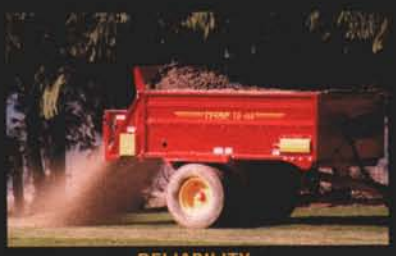

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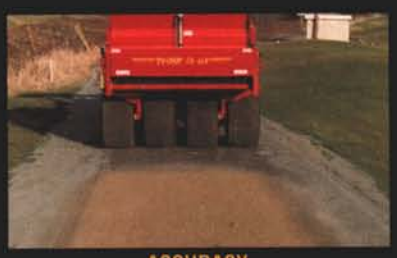

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Research Report

Forward Motion

by Dr. David D. Minner

Sports turf management has its own unique challenges. Researchers at turfgrass centers across the world are exploring issues to qualify and quantify sports turf specific information. Periodically, sportsTURF *will devote this column to reports on research that is in progress or on studies that have recently been completed.*

The following studies represent the work of David Minner and Jeffrey Salmond. These reports provide brief overviews of the research. For more detailed information, see the sources listed at the end of the column.

If you have current research to share with readers, please contact STMA Headquarters: (800) 323-3875.

Modifying athletic field soils with calcined clay and tillage

This study seeks to evaluate calcined clay in a tilling renovation process, and to monitor its effects on turfgrass growth. We're conducting the study on an irrigated football practice field at an Ames-area high school.

The 15,750-sq.ft. experimental plot area is situated between the hash marks and the goal lines. Plots are centered on every yard-line marker, such that 7.5 ft. falls on one side of the yard line and 7.5 ft. falls on the other side of the same yard line. Each individual plot measures 15 ft. by 50 ft.

We treated plots with calcined clay at two different rates in seven replications. Untreated controls balance the study. Treatments have been completely randomized.

We seeded the total plot area in the spring of 1998 with a three-cultivar bluegrass blend. We will continue to topdress with calcined clay for the calcined clay plots and with sand for the control plots through 1998.

Athletic field turfgrass response to calcined clay topdressing

This study seeks to evaluate calcined clay as a topdressing material, and to determine its effects on turfgrass growth. To provide actual-use conditions, we're conducting the study on an Ames-area high school football/soccer practice field. We're comparing calcined clay materials with sand treatments.

We initiated the study in August 1996, on an irrigated practice field containing native clay-loam soil. We arranged a 9,000-sq.ft. experimental plot area between the hash marks and 20-yd. lines. Each of the 12 individual plots measure 15 ft. by 50 ft. We treated six with calcined clay, and six with sand topdressing.

Plots are evaluated each month for turfgrass quality and percent turfgrass cover. We are conducting the study in conjunction with Don Larson, facilities manager of Ames Schools. It will continue through 1999.

Managing cool-season grasses as part of a SportGrass system

New and innovative systems are being developed for natural grass fields. Coaches, athletes, and trainers prefer natural grass, as it reduces physical stress on players. However, artificial surfaces are known for their durability and infrequent maintenance needs. SportGrass is the first product that combines the playability of natural grass with some of the more durable characteristics of synthetic turf.

Most natural-grass systems tend to become raised above the level at which the grass was first established. Over time, the accumulation of thatch and the process of topdressing can add as much as 0.5 to 2.0 in. of material to the original soil line.

Stabilizing materials that were once near the surface can be lowered in the