training, the two clubs overlap. The Pirates hold morning workouts and the Pacific Dolphins hold afternoon workouts. There are 14 to 17 spring training exhibition games in March, plus workouts and practices. The extended spring training season that follows ends the first week of June, when the Gulf Coast League begins. This runs through August 31. The Florida Instructional League season begins in mid-September and runs through the end of October. The two-man crew tackles renovation during the month of November. And finally, in December, a two-week baseball camp, the Mickey Owen Winter School, is held. Come January, the cycle begins anew."

During this period, the practice facility handles overflow from workouts, practices, and games. Little League games are also held at the practice complex — three games a night, five nights a week.

"There's so much going on that teams can't always use the field they want," Hurd says. "We strive to keep the practice fields in 'game field shape' so there's consistency throughout the complex. And we strive for consistency throughout the Pirates facility. I also now go to the Buffalo AAA and Welland A league fields so we can compare notes and keep all the fields at the top pro-level."

Hurd believes in pooling resources. He appreciates the assistance and hands-on education he's gained from those who looked beyond his youthful exterior to the curious, eager, and dedicated person within and gave him the chance to prove what he could accomplish. He's checking out other fields every chance he gets, and keeps in contact with sports turf managers around the country. He continues his own outreach efforts by working with local community colleges, county, and Little League teams to improve the quality of their fields.

He also urges sports turf managers to confer with each other and other grounds care professionals, university personnel, consultants, and vendors — to never stop learning and growing in professionalism.

"If the industry is going forward, we're going to do it as a group," he asserts. "We all need to be on the same page to succeed. Organizations like the regional and national Sports Turf Managers Association help unite our efforts."

One of Hurd's goals has been to host a national STMA meeting. That goal will soon be realized, as the STMA board has selected Bradenton as the site for its 1995 Conference and Exhibition, slated for February 4-8.

His dreams are even more far-reaching. "Some day I'd like to see a groundskeeping academy here, with a combination of courses and hands-on learning under actual conditions," he reveals.

One thing seems certain: For Mike Hurd, the challenges continue and he's more than up to facing them. ❑

Editor's Note: The Beam Clay Baseball Diamond of the Year Award is sponsored jointly by Beam Clay, the Sports Turf Managers Association, and sportsTURF magazine in recognition of excellence and professionalism in maintaining outstanding, safe, and professional-quality baseball diamonds. Winning diamonds are named in three categories: professional, college, and high school/municipal/park.

Bob Tracinski is the public relations chairman for the national STMA and the manager of public relations for the John Deere Company in Raleigh, NC.

Chemical Log: Controlling Chinch Bugs

Chinch bugs (*Blissus* spp.) injure turf during hot, dry periods. The southern chinch bug (*B. insularis*) is a perennial pest of St. Augustinegrass, Bermudagrass, and zoysiagrass grown in the South, Southeast, and some areas of the West. The hairy chinch bug (*B. hirtus*) feeds on bentgrasses, bluegrass, and fescue in more northern climates.

Adult chinch bugs emerge from their overwintering sites during spring or early summer. Females deposit eggs on blades of grass or insert them into soft soil. Each female is capable of laying some 300 eggs. The length of incubation periods are related to temperature and vary greatly throughout the country.

Upon hatching, nymphs are bright red. As they grow through five instars, nymphs turn progressively darker. Adult chinch bugs are about one-quarter inch long. Their bodies are black and their wing covers are white. In the South, chinch bugs have as many as seven generations. One or two generations is common in Northern states.

Chinch bugs pierce leaves with their syringe-like mouths and suck out the sap. While feeding, they also inject a toxic substance into the plant. The poison damages the plant's water-conducting vascular tissues. Together, toxin and feeding cause grass to turn yellow, then brown, and eventually die — symptoms that closely resemble those produced by drought stress. Chinch-bug-injured turf, however, does not respond to irrigation.

Affected areas are at first small and circular but grow progressively larger as feeding insects march out from the center. The pest prefers to dine on lush, overfertilized turf.

Control Options

Chinch bug control can be a simple as watering adequately during hot, dry periods, dethatching regularly, and maintaining proper fertilizer levels. Endophytic tall fescue or perennial ryegrass can be planted in the North to ward off infestations. The resistant St. Augustine variety "Floratam" can be planted in the South.

A number of beneficial organisms prey on chinch bugs, including the egg-parasitizing wasp *Eumicrosoma beneficum* and several species of *Beauveria*, a type of fungus. The big-eyed bug (*Geocoris* spp.) also preys on chinch bugs. This predator closely resembles its prey but is more stout, has more prominent eyes, and moves more quickly.

Carbaryl, applied at six to eight pounds of active ingredient per acre, effectively controls chinch bug infestations. Do not irrigate after applying the product.

Editor's Note: Technical credit — Rhone-Poulenc. Look for White Grub control in next month's "Chemical Log."

Exploring Equipment: Reel Mower Excels On High-Use Turf

Ross Kurcab, turf manager for the Denver Broncos, is almost always pressed for time. It's not his schedule that creates the "time crunch" — it's working around the schedule of a professional football team.

Kurcab has been with the organization for nearly eight years. He helped plan its 13-1/2-acre training facility in southeast Denver, which was constructed in 1989. Maintaining the fields there is his top priority, which isn't easy in light of the heavy use they receive.

"The team conducts five-days-a-week training for three-and-a-half months in the spring," Kurcab says. "There are conditioning camps, mini-camps, quarterback camps — the fields are constantly in use.

"We get about a month's break in late summer when the team goes to Greeley for pre-season training," he continues. "We use that time to get the fields repaired and ready for fall. Then, from August through December, we have at least 65 intense practices."

The training facility includes 2-1/2 practice fields covering about four acres. The sand-based fields were built using USGA specifications for golf greens. One of the practice fields has an electrical soil heating system with 21 miles of buried wire to keep the ground from freezing.

The turf cover is a mix of 70 percent bluegrass and 30 percent ryegrass. There are four varieties of bluegrass and two varieties of ryegrass in the blend.

Cutting Practices

At the Broncos old training facility in north Denver, Kurcab cut the grass with rotary mowers. The team wanted a finer cut on its new practice fields, so Kurcab turned to reel mowers.

"I checked out every mower I could find," he explains. "There are a lot of good mowers out there. Finally, we settled on Ransomes 350D reel mower. It had the features we wanted including the quality of cut. Plus, the local Ransomes dealer, Colorado Outdoor Power, is giving us excellent service and support."

According to Kurcab, the mower's five-gage 11-1/2-foot cutting width reduces cutting time. "We have a relatively short 'window' for mowing," he says. "If there is dew on the grass in the morning, we have to wait to start. Then have to get on and get it cut before the players show up for their first practice."

Kurcab handles most of the mowing himself with just one part-time assistant during the summer. Reduced cutting time translates to an additional advantage: reduced running time, which saves wear and tear on mower and its engine.

Maneuverability was a serious consideration for Kurcab in his search for

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PRESIDENT'S MESSAGE

Sports Turf Managers Association

ByGreg Petry

In the January issue of *sportsTURF*, editor Matt Trulio shared his thoughts with us on the arrangement STMA made with PBI Gordon. PBI Gordon is inserting the STMA membership application in a promotional brochure. Since then, several people have made positive comments to me about that relationship. We have also been approached by others who want to initiate similar projects.

I'd like to further explain this phenomenon of arrangements, cooperation, trading, helping, affiliation or — as it is called in the '90s — *partnership*.

Everyone today is faced with limited resources. Businesses, public agencies, and not-for-profit associations like STMA realize that resources are not endless. STMA is faced with limited funds and staff time to initiate projects. Our members can only give so much time and energy to the association. Our commercial affiliates also have only so much available to give. It is has become increasingly difficult to solicit and obtain outright corporate funding.

Therefore, it's critical that we embark on projects as partners through a process in which everybody wins, works together in problem-solving, and shares the risks and rewards. It is apparent that we must develop through partnerships — sharing a single vision and a mutual goal.

Look at what John Deere has done with STMA. They have worked with us to generate a series of articles that not only helped educate our members, but also brought the company invaluable recognition, which in turn I hope translated to increased equipment sales. In the process, a resource was developed — Sports Turf Topics 1992-1993.

We must continue to pursue long-term relationships such as this. There is much to look forward to when groups unite to form partnerships. In the near-future, there's no telling how quickly and expansively our industry will grow. I hope STMA members actively lobby their fellow members and particularly the vendors they deal with, not only to recognize this process but to get involved in it. Let's raise our level of professionalism and scope of the industry together.

Not long ago, a sponsorship package was sent to sports turf industry vendors. Many responded and have purchased ads or sponsored various events slated for this year. But there are many who *didn't* respond. I will soon make another personal appeal to many of our corporate leaders to partner a relationship with STMA, as I did last year. But out of the 25 letters I sent last year, I received only three responses. I believe the low response was caused by a perception that STMA was down and out. Perhaps people were saying, "I'll sit back and wait to see what happens."

I hope that everyone has recognized the growth in STMA and the industry as a whole, and the potential of our future together. STMA is neither down nor out. We have a clear understanding of where the profession, industry, and the association are going. There is a need and demand out there for information, products, and services. There is a sports turf market, one in which consumers have real purchasing power. Therefore, corporations and STMA must be more involved with one another to pave the way for greater cooperation.

In the past, I've mentioned the support we've received from John Deere and PBI Gordon. Now I can add Netlon, O.M. Scott, Hunter Industries, and The Greenway Group to our list. These four corporations are sponsoring the expenses of four board members. My hat goes off to companies that have formed a partnership with STMA and I hope that the corporations that are profiting greatly by our success and growth will embrace us even more closely to form a partnership in which STMA and the industry wins.

STMA Chapter News

New Chapter Forms

Congratulations to Minnesota, home of the new Minnesota Sports Turf Managers Association chapter! Goals of MSTMA are to provide members with current information, ideas, and solutions to problems. Plans include "hands-on, how-to" workshops, facility tours, and many opportunities for networking with other sports turf managers.

Those interested in learning more about the chapter are urged to contact Acting President Mike McDonald, Bierman Athletic Complex, University of Minnesota, Minneapolis, (612) 625-6097 or acting Secretary/Treasurer Brian Deyak, St. Cloud Sports Center, (612) 255-7223.

Colorado Chapter: STMA — The Colorado Chapter will hold a "Spring Fire Up" meeting March 22 in Greeley, CO. Sessions will include "firing up" an irrigation system, getting turf ready for play, tips for putting a field to bed in the fall for early spring readiness, and more.

For additional information on this meeting, the chapter, or other future activities contact Joe Adams, Greeley Parks and Recreation, (303) 350-9340.

Midwest Chapter: STMA — The Midwest Chapter will holds its Fourth Annual Meeting and Luncheon March 24 at the Schaumburg Golf Course, Schaumburg Park District, Schaumburg, IL. Registration opens at 11 a.m. From 11:30 a.m. to noon, Dick Ericson from the Minneapolis Metrodome will speak on "Natural Grass to Astro Turf." The luncheon will be held from noon to 1 p.m. Scheduled from 1 p.m. to 2 p.m. are the Awards Program and keynote speaker: Tom Weigel, sportscaster for WLS-TV.

For information on this meeting or other chapter activities call the Chapter Hotline, (708) 439-4727.

Chesapeake Chapter: STMA — The Chesapeake Chapter will hold a Field Day April 14, from 8:30 a.m. to 4 p.m., at Camden Yards. Meeting topics

will include: Equipment Maintenance, Motivating Your People, Softball Field Renovation, and A Field Calendar — Scheduling What To Do When. Paul Zwaska will host this event. Further details will soon be announced.

Another event "in the works" is a September regional workshop that will be held in conjunction with the national STMA.

Board meetings are held each month from 4 p.m. to 6 p.m. Members are invited to attend. The April 5, May 3, and June 7 meetings will be held at Camden Yards.

For more information on the chapter or upcoming activities call the Chapter Hotline, (301) 865-0667.

STMA Florida Chapter #1 — The South Florida Chapter is planning to hold a meeting in May in the City of Ft. Lauderdale. Details will be announced soon.

For more information on this meeting, the South Florida Chapter, and other upcoming events contact John Mascaro, (305) 938-7477 or Ed Birch, (305) 938-0217.

The Heartland Chapter: STMA — The Heartland Chapter's first Sports Turf Field Day will be held July 13 at the Heritage Park Sports Complex in Olathe, KS. Further details will be announced soon.

The Heartland Chapter Board will meet the first Wednesday of each month from 4 p.m. to 5 p.m. at the Heritage Park Sports Complex. All members are invited to attend.

For more information on the Field Day, the chapter, or other upcoming activities contact Mark Diller, sports turf manager, Johnson County Parks and Recreation, (913) 782-7625 or Jack Schwarz, J.S. Sports Turf, Liberty, MO, (816) 792-2808 or (800) 344-8873.

The Southern California Chapter: STMA — For information on the Southern California Chapter and its activities contact Chris Bunnell, (619) 432-2421.

Iowa Sports Turf Managers Association — For information on the Iowa Chapter or future chapter activities contact Gary Peterson, (515) 791-0765.

The New England Chapter: STMA — For information on the chapter and its activities contact Mary Owen, University of Massachusetts Cooperative Extension Service, (508) 892-0382. ❑

Making Sense Out of Modified Rootzones

By Steve Wightman

Blood carries oxygen and food to the cells of the human body, giving it life. When the blood vessels and arteries become restricted with fatty waste from an improper diet and lack of physical activity, the body weakens. The mere acts of breathing, walking, and moving become more and more difficult, until one day, from food and oxygen starvation, the body dies.

If water is the lifeblood of turgrass, the rootzone contains the vessels and arteries of the plant's life-support system. When the rootzone begins to compact, the flow of water and nutrients begins to slow until one day the plant dies from food and oxygen starvation. Nowhere is the value of a healthy rootzone more evident than under the surface of a heavily used turfgrass area.

Very few native soils, especially those subjected to heavy traffic, make for an adequate rootzone that will allow the turfgrass to thrive. As a result, virtually all native soils subjected to intense traffic require some modification or amendment if the turfgrass is to have a reasonable chance of survival.

A rootzone that is properly designed, installed, maintained, and managed will provide an optimum growing environment for healthy turfgrass, regardless of the activity that takes place above it. A proper rootzone design acknowledges the soil/water relationships in selecting the physical and chemical properties of the rootzone mix. The design addresses drainage without adversely affecting the avenue for the plant's food and water supply. The design utilizes past research and practical applications as criteria for design parameters.

Proper installation or amending procedures for modified root zones will use extreme caution in avoiding soil contamination of the desired rootzone mix. Installation procedures should exactly mirror, not approximate, and proper design.

Maintaining a modified rootzone is not unlike maintaining turfgrass cover; it means providing optimum health and growth capacity. The rootzone is essential to turfgrass plant health, and providing cultural and renovation practices that benefit the plant are, in essence, benefitting the rootzone.

Proper management of a modified rootzone not only includes maintenance procedures, but also the scheduling of those procedures. Timing is everything. Performing a maintenance procedure out of sequence or at the wrong time can be detrimental and even fatal to the turfgrass.

Management also refers to the scheduled use of the turfgrass area. Mismanagement can be equated to field abuse, which is unfortunately more the norm than the exception, particularly in recreational settings. Remember, the more use a field has, the more care it must be given. Sadly, just the opposite is too often true.

Most modified rootzones take advantage of the various water movement principles in one form or another.

If a heavily used turfgrass field is constantly subjected to concentrated traffic on an inadequate rootzone, it will fail, regardless of the maintenance practice performed. On the other hand, if a properly modified rootzone supports the field, its chances of survival increase dramatically. With prudent scheduling and an adequate maintenance program, the field's playing standards and aesthetic value are enhanced.

Any turfgrass area, regardless of the rootzone composition, can be beaten to death if there is no time allowed for periodic recovery through the prudent scheduling of use. However, with a modified rootzone that properly addresses drainage and compaction, a sufficient "life insurance policy" is present.

Soil/Water Relationships

To adequately discuss modified rootzones it's important to first review the characteristics of various soils and how water reacts with them. Understanding the relationship of water and soils can lead to a better appreciation of the importance of a proper rootzone in supporting a heavy-use area.

If turfgrass is to have a fighting chance for survival in high-traffic areas, then the rootzone mix must possess the appropriate amounts of sand, silt, and clay. All soils contain these three components in various amounts and are classified by "texture." Where we normally get into trouble is when the clay content (small particle size) is too high and restricts the flow of water — encouraging compaction.

Sand ranges in particle size from 2.0 mm down to 0.05 mm, while silt is defined as particle sizes from 0.05mm to 0.002mm. Clay is defined as anything smaller than 0.002 mm. Sand particles are further defined as very coarse (2.0 m-1.0 mm), coarse (1.0 mm-0.5 mm), medium (0.5 mm-0.25 mm), fine (0.25 m-0.1 mm), and very fine (0.1 mm-0.05 mm).

The larger the particle size, the quicker the water passes through, so it's possible to create a rootzone of all coarse sand that would most certainly be capable of accepting just about any amount of rainfall. However, the drainage would be so rapid the roots would not be able to pick up the water and nutrients. It would also be next to impossible to play on a turfgrass that had only a coarse sand rootzone because there would be no stability for footing.

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"Promoting Better and Safer Sports Turf Areas"

Modified Rootzones

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To adequately discuss modified rootzones it's important to first review the characteristics of various soils and how water reacts with them.

Somewhere between a coarse sand rootzone and a predominantly clay rootzone, there can exist a rootzone that provides the maximum benefits of a well-drained, coarse sand base and clay's nutrient and water retention abilities. But just how much of each texture is ideal?

Although there probably is no single "ideal" rootzone mix for all grasses and circumstances, most would agree that a modified rootzone that adequately addresses compaction, drainage, and healthy growth is as close to ideal as possible.

Research and experience indicate that various combinations of particle sizes can be successful. Since many variables come into play in determining the proper percentages of various particle sizes, the exact recipe for a particular rootzone should involve a soil specialist.

Successful high-traffic rootzones have utilized 85 to 90 percent medium sand (0.5 mm-0.25 mm), 5 to 7 percent clay (less than .002 mm) and 5 to 7 percent decomposed matter. Very fine sands (0.1 mm-0.05 mm) and silt (0.05 mm-0.002 mm) should be avoided as much as possible because they offer very little benefit. This combination yields adequate drainage, water and nutrient retention, soil strength, and soil structure for playability and growth.

Soil Structure

Soil structure refers to how the soil particles are arranged. Separate particles are combined into larger units that possess different physical properties than the individual particles. Soil structure can be granular, crumb, platy, blocky, columnar, prismatic or sub-angular blocky where larger groups of particles become attached and act as one particle. Granular and crumb structure types are preferred for healthy turfgrass growth.

Soil structure is created by clay and organic material and is enhanced by microbial activity and the decomposition of plant material. Soil structure contributes significantly to favorable soil conditions for turfgrass growth by providing adequate aeration, nutrient and water retention, and oxygen and carbon dioxide exchange within the soil profile.

Most high-traffic turfgrass areas fail because of the destruction of soil structure. The deterioration of the soil structure is a direct result of soil compaction. To prevent compaction potential on high-traffic areas, a high proportion of sand is maintained within the rootzone.

However, this approach to decreasing the compaction potential does not come without a price. Sands have a very small surface area compared to clay for retaining water and nutrients for turfgrass use. This usually means that rootzones with a high sand content require more frequent irrigation and fertilization (there are modified rootzone designs that address this problem).

Organic Material

Organic matter within the rootzone benefits soil structure and adds resiliency to the soil profile. It benefits turfgrass growth by increasing the soil's water- and nutrient-holding capacity.

The best organic materials for use in a rootzone mix are those that are very well decomposed. Because the process of decomposition requires high levels of nitrogen, incorporating organic matter that is already highly decomposed does not compete with the turfgrass for soil nitrogen.

The amount of organic matter incorporated into the rootzone mix should not exceed 10 percent by volume, or water infiltration and percolation rates could be adversely affected. For high-traffic areas, the organic content should not exceed 5 percent.

Water Movement

Water is basically lazy and travels toward the path of least resistance. When the soil is well-aggregated and flocculated, water movement is quick and easy. However, when the soil is compacted, water movement is not so easy because the large pore spaces that permit water movement are compressed. By relieving soil compaction, large pore spaces reappear and easy water movement is again restored.

Water not only moves through the soil in a downward direction, dictated by gravity, but it also moves sideways and upwards through the forces of adhesion and cohesion. This becomes a critical function of water movement when the rootzone begins to dry after field capacity (the amount of water held in the soil after free drainage has stopped) has been achieved.

The amount of water held at field capacity is determined by the texture of the soil and the amount of organic material present. Once the soil begins to dry because of evaporation and transpiration, water begins to move to the drier areas in the upper portion of the rootzone. The ability and speed of the water's capillary movement within the rootzone is a direct result of the number and size of pore spaces between soil particles and the existing weather conditions. Coarse sand has larger pore spaces and little surface area, making it difficult for water to "wick" from capillary movement, but it provides better gravity drainage. Greater wicking is achieved by the medium and fine sands. Hot, dry days create more soil drying and greater potential for capillary water movement.

Most modified rootzones take advantage of the various water movement principles in one form or another. Effective rootzone designs utilize optimum particle sizes for both gravity drainage and capillary water movement.

Maintenance Of Modified Rootzones

The approach to maintaining modified rootzones should be the same as with any other rootzone mix; to promote a vibrant, healthy growing environment for turfgrass. That means all cultural and renovation practices should be performed in a manner that benefits the turfgrass.

Creating a healthy environment requires constant monitoring of root depth and mass, canopy height and mass, adequate soil moisture, adequate soil and plant fertility, a prudent pest management program, thatch control, soil aeration, and drainage capacity. Cultural and renovation practices that address this environment are mowing, irrigation, fertilization, pest control, dethatching,

aeration, topdressing, overseeding, and sodding.

Mowing

For a particular turfgrass species, and even cultivars within a species, mowing height has a direct relationship with root depth and root mass. Each species enjoys and performs well when mowed within a certain height range. Some cultivars within a particular species will tolerate mowing heights outside of their desired range for a short time period. However, for optimum turfgrass performance, always mow within the desired height range.

Mowing often also promotes a tight-knit and thick canopy, while simultaneously keeping the thatch layer drier, which decreases disease potential.

Irrigation

One of the primary factors affecting optimum turfgrass growth is providing adequate soil moisture. A properly modified rootzone is a tremendous insurance policy for proper soil moisture.

Compaction affects water infiltration and percolation, and since compaction is a continuous process, irrigation must be constantly monitored to coincide with the compaction process. This is true even in modified rootzones.

It's always best to apply water at the same rate as the infiltration and percolation rates. Therefore, it is important to know the field capacity of the rootzone in order to properly schedule irrigation to match the soil's water acceptance rate. Ideally, irrigation should just barely exceed field capacity so unnecessary drainage is prevented.

Factors affecting adequate soil moisture include the precipitation rate of the irrigation system, soil type and percolation rate of the rootzone, and depth of the root system. Knowing these important factors is the first step in properly scheduling irrigation.

Fertilization

Since modified rootzones enhance the drainage capacity of soils, the availability of soil nutrients is diminished somewhat. This is because of the lack of clay particles that serve as holding areas for the nutritional soil solution made available for root absorption. Clay is made up of the small soil particles that inhibit gravitational water flow, and is generally found in small quantities in modified root zones.

Soil fertility requirements in modified root zones are normally greater, as is the fluctuation of the availability of soil nutrients. The buffer zone between the turf's nutritional needs and availability is narrowed substantially with modified rootzones because of the lack of clay particles.

The effectiveness of any fertility program depends not only on the type, rate, and timing of the fertilizer, but also on the soil reaction. Most nutrients are available to the plant if the pH of the soil is neutral (7.0) or slightly acidic (6.5). Modified root zones need to be near neutral to be nutritionally beneficial.

A rootzone that is properly designed, installed, maintained, and managed will provide an optimum growing environment for healthy turfgrass, regardless of the activity that takes place above it.

Thatch Control

A certain amount of thatch provides beneficial microbial activity, cushion, and resiliency to turf. Problems arise when an excessive thatch layer begins to adversely affect water infiltration, microbial activity, and desired plant growth.

Keep the thatch layer at a level that provides maximum field safety without interfering with water movement and desired plant growth. This is normally at three-quarters-of-an-inch.

Aeration

Compaction is inevitable on any heavily used turf area, even those that possess a modified rootzone. The extent of compaction, however, is reduced dramatically in a modified rootzone.

Most of the compaction occurs within the top three to four inches of the rootzone and greatly affects water movement, soil structure and desired plant growth. Soil aeration, therefore, is an effective way to relieve compaction.

Core aeration is probably the most effective way to reopen the soil and relieve compaction on high-traffic areas. Numerous aeration applications may be required throughout a given year.

Topdressing

The purpose topdressing is to re-level the surface area and provide a desirable growth environment for seed gemination and turfgrass growth. The type of topdressing material used should approximate the rootzone's soil texture, providing it is of an acceptable quality for turf growth. Other, the potential for soil "layering" increases.

Sodding

As with topdressing, if the sod's growth medium is substantially different from the soil on which it is laid, then layering problems are not far behind. Layering severely decreases water infiltration and percolation, and as long as it prevails it will have an adverse affect on the soil's drainage capacity.

Core aeration can help to alleviate some of the layering problems if the different textured soil is close to the surface. However, if the soil layer lies well beneath the surface, then deep coring or ripping may be necessary.

Modified rootzones aren't a "cure-all," but they do provide a life insurance policy against the detrimental effects of compaction. And compaction is responsible for the failure of a majority of high-traffic fields.

Properly modified rootzones provide adequate water movement through the soil profile. With free water movement, the oxygen and carbon dioxide exchange can function properly. With these two major components in healthy working order, healthy, strong and stable turf is sure to follow. ❑

Editor's Note: Steve Wightman is stadium manager at San Diego Jack Murphy Stadium. This article was adapted from a session on modified rootzones he gave at the University of California, Riverside, during the Sports Turf Management for Professionals clinic held March 9-10, 1993.

Spring Topdressing and Seeding: Spreading Success

Topdressing programs must be custom-tailored to meet site-specific needs. Variables include field soil type, topdressing mix, weather, timing and application rate, irrigation, equipment, and more.

They seem like such simple processes — spring seeding and topdressing — but often they make the crucial difference in when an athletic field will become playable after winter. They work in tandem and should be thought of, in terms of timing and application rates, accordingly.

There is no single topdressing/seeding formula that works in all situations. Your particular strategy will hinge on a number of variables including turf type, soil type, climate, play schedule, irrigation, and much, much more. Still there are some fundamentals to keep in mind, and here's what the experts have to say.

Build On Basics

Monty Montague
Turfco Manufacturing, Inc.

Consider the objectives of a topdressing program in terms of the existing conditions of the field or fields in question, and the goals you wish to achieve. Conditions requiring topdressing will vary with the individual field. Topdressing will benefit turf on a compacted and/or difficult-to-manage soil. It can help amend or augment the soil profile following aeration or modify the surface layer of soil. It can be used in rebuilding or maintaining the crown of a field, or to smooth an uneven playing surface. Topdressing used properly:

• Protects the crown and lateral roots and shoots of turfgrasses from wear

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