Continued from page 6

game day appearance. It's the little things that create a lasting impression, especially in front of large community audiences.

Tender loving care

Walk your property daily/weekly to stay ahead of seasonal problems. Go the extra mile to have quality athletic turf. Mothers and fathers are constantly checking the child for any sign of abnormal behavior to catch any illness early. Do the same with your turf. Irrigation, if present, must be checked and monitored during the year and tell-tale signs observed daily/weekly.

Disease, weeds and pests

This is an area where the family will take the child to a doctor for specialized treatment. It's nearly the same for your turf. Unless your knowledge is extensive, many turf problems can arise quickly in disguised forms. It's easy Here's where the misdiagnose. extension agent enters your picture. Become good friends with quality turf professionals so problems may be discussed by phone and diagnosis and treatment handled immediately, before extensive damage occurs.

Old age

Turf, if abused, mistreated and stressed, may need to be changed out and replaced, no different from any other old piece of equipment. Make recommendations suggestions. Create a lasting impression with professional advice without being overbearing.

You can extend the life of your turf by attempting to handle some of the concerns that cut its life short, such as excessive traffic, inadequate water, playing when the subsoil is holding water and insufficient oxygen for root life. Often coaches and athletic directors want to play at all costs, regardless of abuse, so your suggestions may fall on deaf ears.

Don't give up. There's more demand for contract labor on board of education properties than ever before. Their primary concern should be on the root strength and root zone looseness, not external appearance. If the lawn care company can keep its child healthy by looking below the grass surface you'll make more money and

pick up more referrals because the turf will look great on the surface.

Remember, turf grows by the inch and is killed by the foot, not the contractor.

Floyd Perry is the 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 has also produced three

videos: The ABC's of Grounds Maintenance: Vol. 1, Softball; Vol. 2, Baseball; and Vol. 3, Soccer/Football Field Refurbishment. He travels throughout the United States conducting workshops for men and women who maintain athletic fields. For more information about Perry's tips or other field maintenance questions, call: (800) 227-9381, or e-mail: grounds@digital.net



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Root Zone Properties For Athletic Fields

by Dr. James R. Crum and Dr. John N. Rogers, III—Michigan State University

In athletic field design, construction and maintenance, there is an increasing focus on the agronomic issues that will dictate the playability and safety of the field. The important agronomic properties to be considered are surface and internal drainage, soil porosity, soil strength, soil water holding capacity, and soil cation exchange capacity. For successful design, construction and maintenance, it is necessary to understand how each contributes to the functioning of the athletic field.

Drainage

For lasting field quality in widely variable climatic conditions, the removal of excess and the addition of supplemental water used for plant growth must be addressed.

The soil, in most cases, is considered a three-phase system of solids, water and air. The solids are made up of organic and inorganic particles ranging from microscopic to quite large in size. In the arrangement of these solid particles, void spaces, or pores, of varying sizes surround them. When the soil

pores are filled with water there is very little oxygen in the soil and plants begin to die because of the



A thick root system is the result of a well-managed field.

anaerobic conditions.

Athletic fields are constructed with slopes away from the center portion of the field to provide surface drainage for excess surface water. Slopes for athletic fields should be between 0.5 to 1.0 percent to effectively move water while maintaining a relatively level playing surface.

If excess water does enter the soil, provisions need to be made to allow the water to flow quickly through and away from the field. The rate at which water flows through the soil is controlled by the sizes of the pores through which it flows. Just as one large pipe can handle more water than many small pipes, large soil pores allow much faster drainage than do many small pores. Therefore, providing and maintaining large pores in the soil is extremely important. High sand content soils contain, and are the best at maintaining, large pores.

Soil strength

In general, if the native soil at the facility will not maintain adequate macropores for rapid air and water movement within the root zone, the soil needs to be amended or replaced. High sand content materials now are generally selected for use as an amendment or as a root zone because of their ability to maintain the large pores for water and air movement. Because these sandy materials have less cohesion, they can be somewhat unstable if care is not taken in the

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selection of the material. In most cases, amendment materials have been added to provide the necessary soil strength. Our work suggests that high sand content root zones can be manufactured to have adequate soil strength with precise selection of the content material for the desired particle-size distribution and, when it can be controlled, particle shape. In general, the wider the distribution of different sizes, and the more angular the sand particles, the greater will be the strength. However, too wide a distribution can disrupt water flow.

Soil water holding capacity

High sand content root zones offer the advantage of drainage, but this will normally mean a limit to the water held in the soil that the turfgrass plants can utilize. Layering larger-sized particles below smaller-sized particles increases the storage of plant-available water in the upper layer of soil. This principle, used in USGA specification golf putting greens, also can be used in athletic fields. But, care must be practiced to insure the desired effect.

Amendments also can be added to the sandy material to increase their water holding capacity by increasing the amount of smaller-sized pores that store the plant available water. As long as the amount of larger-sized macropores remains high enough to provide the desired air and water movement, the amendments are beneficial. Problems can occur when the amount of macropores decrease with time, causing a decrease in drainage rate.

Primary athletic field construction types

Both native and layered root zone system athletic fields have advantages and disadvantages. Each type has worked brilliantly or failed miserably depending on their adherence to the soil criteria listed above.

Native

Native soil fields, for the most part, retain the soil native to that location. The obvious advantage of native soil is lower construction cost. Disadvantages include the possibility of poor soil, variability and the degree of native slope.

Turfgrass roots respond to nutrients, water, oxygen and temperature. Native soils high in silt and clay have smaller pores than sandy soils, thus they do not drain as well. In general, they will have shallower roots than sand-based soils because the oxygen level is relatively low deeper in the soil profile.

In some situations, native soils

can be improved to meet the objectives of the athletic field by adding amendments. Common natural amendments used to improve athletic fields are sand, soil, peat or porous inorganic minerals. Sand and porous inorganic minerals are added to increase the amount of macroporosity within the soil and increase the rate of drainage.

To develop relatively high quality native soil fields, core aeration and a sand topdressing program may be used to create consistency across the field and to achieve improvement in the internal drainage and the water and oxygen balance.

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While USGA root zone metods and specifications are used in athletic field design and construction, care in selection of root zone materials is needed to address the greater strength necessary for athletic fields. Also, the growth habits of the grasses used for putting greens and athletic fields are different and therefore will not react the same in similar sandbased systems.

USGA specification greens are layered with larger-sized pores below smaller-sized pores. While this increases the amount of plant available water storage in the upper part of the soil it may, in some



cases, cause problems by not allowing rapid enough drainage, or maintaining higher water contents than desired at certain times of the year. For this reason, some putting greens are constructed without the layer of larger-sized pores below the root zone.

Examination of the root zone after drainage ceases in layered systems

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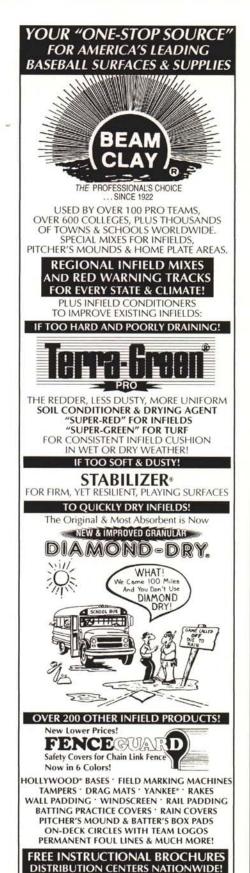
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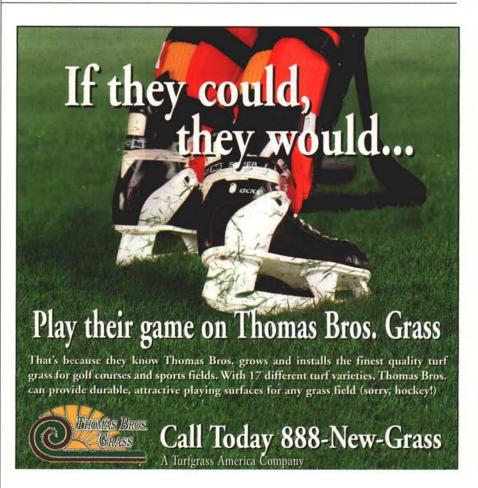
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shows that water content increases with depth. Building on this principle, we've constructed a sloping putting green with decreased thickness of the root zone material above the pea stone at the highest points of the slope and increased thickness of the root zone material at the lowest points of the slope. This variation in depth produces a root zone with higher water contents nearer the soil surface highest level and decreases the water contents near the surface at the lowest level. Theoretically, on a sloping athletic field with the layered system, the same principle might be employed, utilizing a thinner root zone at the center of the field and a thicker (and dryer) root zone on the edges.

In sand profile fields, soil, peat and porous minerals are added to increase the strength and/or water holding capacity of the system. It is very important to have the soil and amendments tested by a reputable laboratory to determine the exact amount to be added to the soil for the desired effect.

Dr. James R. Crum and Dr. John N. (Trey) Rogers, III are members of the Crop and Soil Sciences Department at Michigan State University. .Both were instrumental in the indoor turfgrass research project for World Cup , 1994.



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STMA in Action

he Iowa Sports Turf Managers Association met on June 21 at Jack Trice Stadium at Iowa State University in Ames, Iowa. Concurrent demonstration sessions filled the morning time slot, with each session repeated twice. The Aeration Principles session was led by Dr. Dave Minner; Topdressing Principles by Don Larson; Mowing Principles by Mike Andresen, CSFM; and Painting Principles by Dale Roe. Steve Trusty,

executive director of the STMA, presented an STMA Headquarters and Certified Sports Field Manager Program update following lunch. Afternoon sessions were held on three different fields, each with an hour-long program repeated twice.

Chapter News

Florida #1: The chapter will have a booth at the Florida Turfgrass Association Turfgrass 2000 meeting on Aug. 15 and 16 at the University of Florida campus in Gainesville. Sept. 21 is the date of Florida Recreation and Parks Association and Florida STMA Chapter joint Turf Rodeo at Delray Beach. For information on the chapter, contact John Mascaro at (954) 341-3115.

KAFMO: The chapter will help sponsor a Summer Field Day on Aug. 16. For information, contact Dan Douglas at



ISTMA participants examine a sample of sideline tarp as part of the June 21 Field Maintenance Workshop.

(610) 375-8469, or via the chapter e-mail address: kafmo@aol.com.

Michigan: The chapter will participate in the Michigan State University Turfgrass Field Day on

Aug. 23. For information, contact Kay Patrick at (517) 321-1660. For information on the chapter or other events, contact Rick Jurries at (616) 738-6974 or click on your computer to www.mistma.org to visit the chapter's Web site.

Ohio: The chapter will hold its fall field day on Sept. 12. The deadline for OSTMA field of the year awards and scholarship applications is Oct. 1. For information on the chapter, contact Joe Zelinko at (800) 897-9714 or Boyd Montgomery at (419) 885-1982 x 50, or click on your computer to www.glstma.org to visit the chapter's Web site.

Arizona: Peoria will host the Arizona Chapter Athletic Field Maintenance Workshop on Sept. 15. For information, contact Chris Calcaterra at (602) 412-4226. For information on the chapter, contact Bill Murphy at e-mail: bmurphy@ci.scottsdale.az.us or phone:(480) 312-7954.



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For more information, contact STMA Headquarters at phone: 800/323-3875, 712/366-2669, fax: 712/366-9119 or e-mail: SportsTMgr@aol.com

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Chapter News

Wisconsin: The chapter will meet at Rice Lake High School on Sept. 15. The morning session begins at 8:30 a.m. for a review of the Rice Lake fields. This is followed by a golf outing from noon to 5 p.m. Evening events begin at 6 p.m. at the Rice High School Football Field. For more information on the chapter, contact Rich Riggs at (715) 341-2633.

Southern California: The chapter will meet on the second Monday of each month at 7 p.m. at Filippi's in San Diego. For more information on the chapter, contact The Chapter Hotline: (1-888) 578-STMA.

Iowa: The chapter will meet on Oct. 11 at Rosenblatt Stadium in Omaha, Neb. Stadium Manager Jesse Cuevas will host a workshop on the field. Also featured on the program are Trevor Vance, head groundskeeper for the Kansas City Royal's Kauffman Stadium, and speakers from Iowa State University and the University of Nebraska. For information on the chapter, contact Lori Westrum at (515) 232-8222 (phone), (515) 232-8228 (fax) or e-mail: Lori@iowasturfgrass.org.

Northern California: The chapter is planning their

annual Fall Seminar for early October in Santa Cruz. For information on the chapter, contact Janet Gift at (530) 758-4200.

Colorado: For information on the chapter, log on to the Chapter's Web site: www.cstma.org or call the CSTMA Chapter Hotline: (303) 346-8954.

Minnesota: For information on the chapter, contact Ron Werner at (507) 634-1176.

MAFMO: For information on the chapter, contact the Hotline: (410) 290-5652.

Gateway: For information on upcoming events, contact Jim Anthony at (314) 977-2956.

Indiana: For information on the chapter, contact Terry Updike, at (219) 356-8424.

North Texas: The chapter will meet on Sept. 12 for the Annual Golf Tournament, Home Run Derby and Equipment Show. For information on the chapter, contact: Rene

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New to the program this year are commercial sponsors for the Field of the Year Awards Program. Sponsors and their categories are as follows: Sod - West Coast Turf; Equipment - Textron Turf Care and Specialty Products; Irrigation - Hunter Industries; Covers/Accessories - Covermaster Inc.; Soils/Amendments - Beam Clay® (Partac Peat); and Drainage - Advanced Drainage Systems.

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For entry details, contact:

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Asprion at (800) 228-2987 or Dr. James McAfee at (972) 952-9220, or log onto www. ntstma.org to check out the Web site.

Tennessee Valley: For information on the chapter, contact Bill Marbet at (800) 837-8062.

Midwest: For information on the chapter, call (847) 622-3517.

Mid-South: For information on the chapter, contact Robert Bodi at TURF419@aol.com or Jim Calhoun at (901) 755-1305.

Chapters On The Grow

Nebraska: The newly forming chapter will join the Iowa Chapter for a joint meeting at Rosenblatt Stadium in Omaha, Neb., on Oct. 11. For information, contact Gregg Bostelman at (308) 385-5426.

New York: A chapter is taking shape in Central New York. The group will meet on the first Wednesday of each month at the National Soccer Hall of Fame. Contact Kevin Meredith via e-mail at Kevin@wpe.com or by phone at (607) 432-2953.

Kansas City, Missouri-Kansas: The chapter is planning a September meeting at Liberty School District. For information, contact: Trevor Vance at (816) 504-4271; Gary Custis at (816) 460-6215; Jay Sutton at (816) 795-8873, or Jody Gill at (913) 681-

New Jersey: For information on the forming chapter, contact Jim Gavigan at (732) 248-8979 Eleanora Murfitt at (908) 735-5999.

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