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Dr. John Sorochan, professor turfgrass science, University of Tennessee

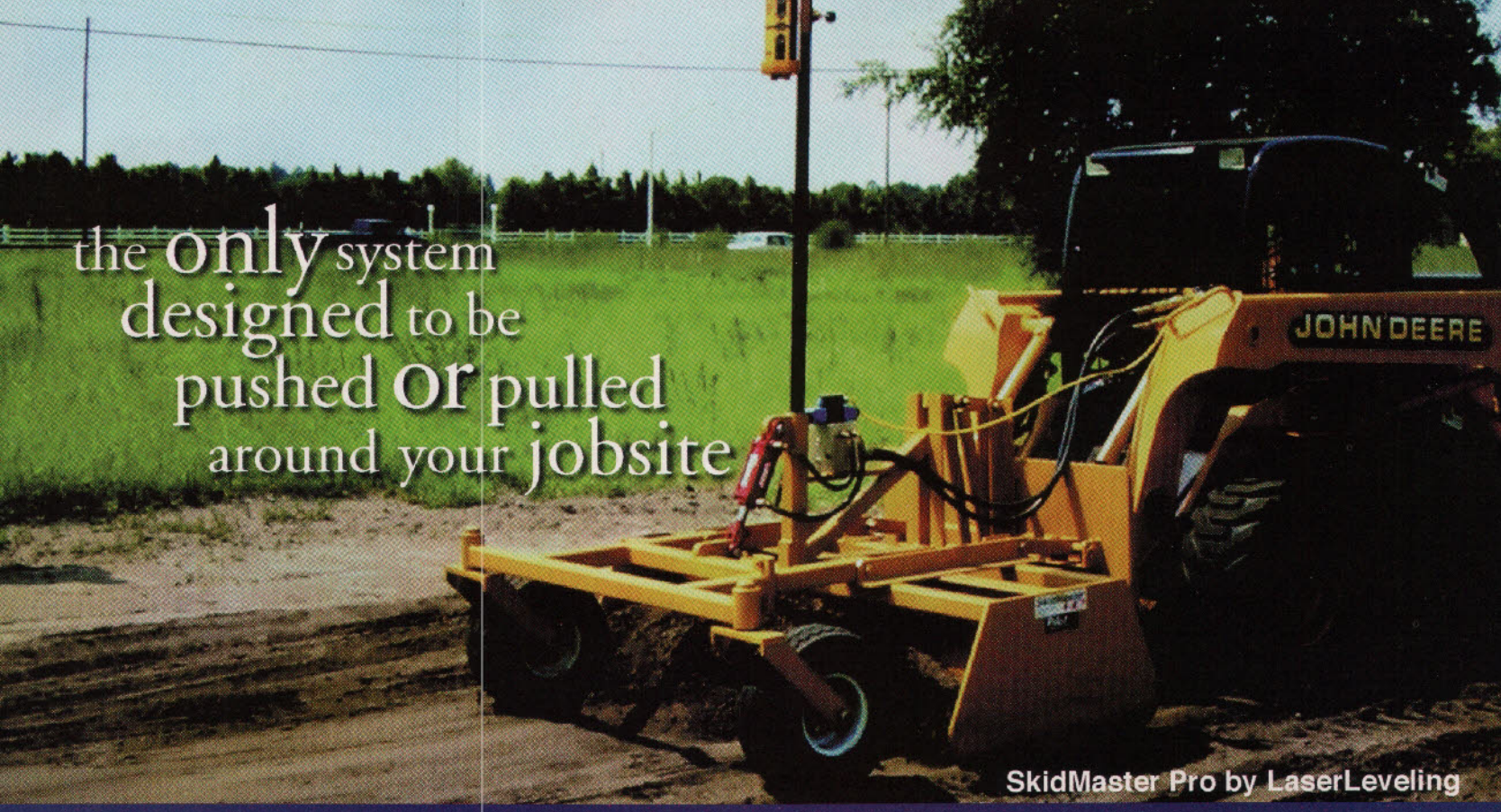
athletic fields in the transition zone and southern climates where turfgrass growth from both cool and warm-season turf occurs 10 to 12 months of the year.

For example, Shields Watkins Field at Neyland Stadium in Knoxville was constructed with a sand-based rootzone that had 0.5% organic matter by weight. Over a 10-year period, even with regular core aerification and sand topdressing, a 4-6% organic matter layer by weight formed in the top 5 inches of the 12-inch rootzone.

For Bob Campbell, University of Tennessee Athletic Field Manager and past president of STMA, the increase in organic matter was not high enough to significantly cause drainage problems, but infiltration rates decreased from the original rates. Because Shield Watkins Field is an overseeded athletic field, organic matter accumulation for the two turf species being used accumulates for 10 months of the year. Compounding the problem is the fact that core aerification was only be done during the early summer and regular sand topdressing amounts and frequencies are limited due to the fall football season.

Since the organic matter accumulation occurred over a 5-inch depth, conventional core aerification can not penetrate deep enough to break up the layering profile, but coupled with sand topdressing the percent organic matter accumulation is diluted. In order to address the layering issue, Campbell used deep tine drill and fill to create a series of channels, backfilled with the original sand blend, for water infiltration. The increase in organic matter was not necessarily a major problem, but was an issue that needed to be dealt with in regards to water infiltration. Conversely, the increase in organic matter by weight over time has helped increase the nutrient holding and water hold capacities of the rootzone.

John Sorochan, Ph.D., is assistant professor, turfgrass science, in the Department of Plant Sciences at the University of Tennessee. ■



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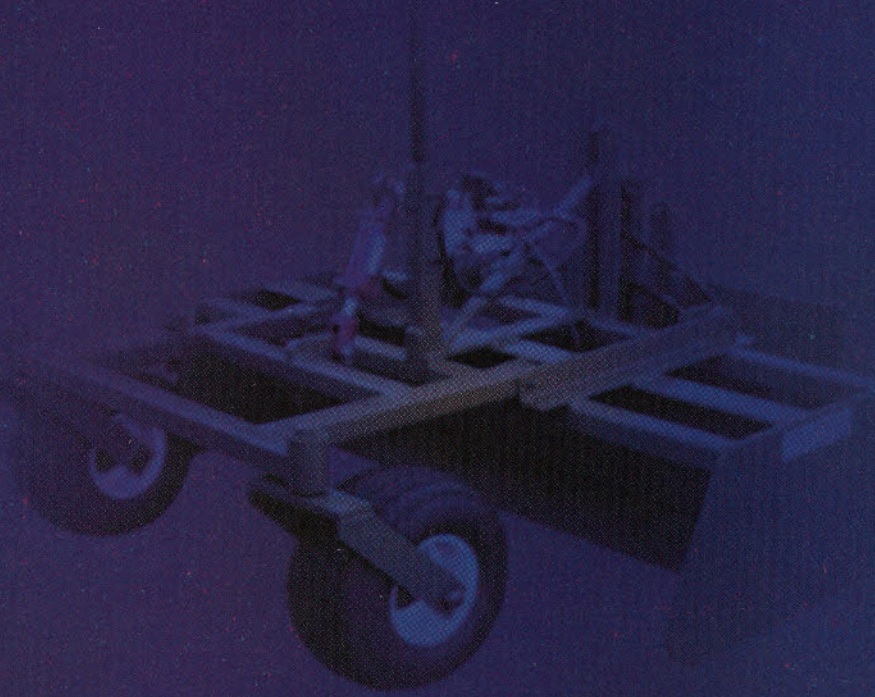

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Synthetic turf maintenance gets closer look

By Eric Schroder

Nate Patrick, business development manager for Redexim Charterhouse, spoke recently about the increased attention being paid to maintaining the synthetic infill surfaces proliferating around the country. The Synthetic Turf Council (STC) says there will be about 1,200 installations in 2006. Patrick said though many buyers may view their fields as "no maintenance" the fibers do get matted down, and the infill gets compacted, which can cause drainage issues if the rubber compacts. So "no maintenance" is out the window as companies such as GreensGroomer, Bannerman, Sisis, Parker Minuteman, as well as Redexim Charterhouse now market products specifically for this purpose.

All the carpet manufacturers that stitch these synthetic fields together have become members of the STC and agreed to use the same Gmax parameters, Patrick said. He and Redexim Charterhouse Vice President Paul Hollis (congrats to your Cardinals!) are members of STC's new maintenance committee that currently is re-writing the organization's maintenance standards. These standards when available should be "must-read" material for synthetic turf managers.

Nate Patrick, business development manager for Redexim Charterhouse

Patrick has talked to a lot of turf managers with synthetic fields. "One big question I hear is 'Is using this machine going to void my warranty?'" he said. Patrick said his company's machines (and others) have been approved by all the synthetic field manufacturers. When asked, "What do I need to do to maintain my synthetic turf field?" Patrick says there are three important maintenance practices that will prolong field life: 1. Keep all surfaces free of debris, 2. Routinely use a grooming brush to vertically stand the field's fibers, and 3. Use a tool that can agitate and fluff your rubber infill so it doesn't become compacted.

The Verti-Air machine blows high-speed air deep into the synthetic turf carpet, then a rotary brush picks up the dislodged infill material and debris and throws it on a filter, which returns the cleaned infill to the field.

Tom Moore, national sales manager for GreensGroomer, said some of the top synthetic manufacturers approached his company more than six years ago about making a machine for their products. "We had a reputation from the golf grooming market and we were fortunate to be asked by the manufacturers to get involved," said Moore. He agrees with Patrick and said it is absolutely necessary to have a machine to stand the fibers upright ("They have a long nap that wants to lay over"), and that the sand and rubber infills will compact and need leveled out.

"We have a lot of sales through our dealers but even more from recommendations from manufacturers or architects," Moore said. Some synthetic marketers include equipment packages as part of the deal, and that some architects are now specifying certain equipment to be used on their fields, he said. "For example, Sportexe installers use our equipment, and then train the field staff on this equipment after the installation," Moore said.

Continued on page 16

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A new range of professional artificial turf care machines have been developed by Redexim Charterhouse. Known worldwide for their reliable and effective range of natural turf care equipment such as the Verti-Drain®, Redexim Charterhouse has produced a complete range of equipment to meet the challenging needs of the artificial turf market.

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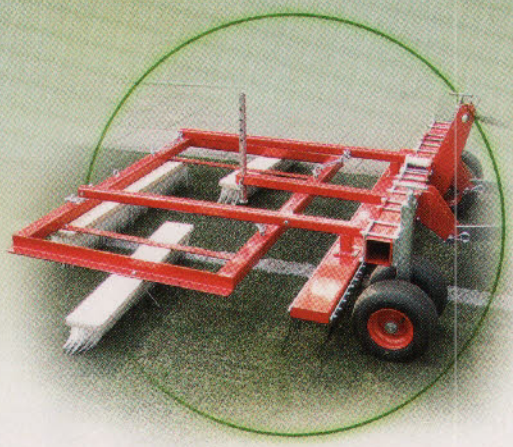

Verti-Groom

To brush, loosen and decompact the hardest infill, the Verti-Groom is equipped with a variety of interchangeable tools.

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The Verti-Air utilizes a rotary brush and turbine compressed air to lift all material out of the turf, dry and filter the material, sift out the debris and return the clean, dry and decompacted infill back into the turf.

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Hardness testing is essential after construction

By Sam Ferro

When constructing a new artificial turf surface there are, of course, many items to consider. While most construction related matters should be dealt with during contract negotiations or during construction, one very important factor needs to be taken care of right after the field has been installed. Field hardness testing (Gmax) is recommended by the Synthetic Turf Council, manufacturers, and turf experts for all new artificial turf installations. Hardness testing should be performed on-site after the infill has been added to the turf system.

Maximum allowable Gmax results or an acceptable range of results should be part of the architect and/or manufacturer specifications. Hardness testing is one of the final steps in the approval of a newly installed field. Results from another field or lab test results should not be used. Testing procedures must use the equipment and techniques detailed in ASTM method F 355A. A Clegg hammer is not acceptable for hardness testing on a synthetic field.

max measurements provide an indicator of the shock attenuation or hardness of a surface. While this test measures field performance, it can also be related to safety. The impact from a fall is either absorbed by the player, equipment, or the field. Fields that are too hard can present an elevated risk of injury to the users. Fields that are too soft can present player performance problems.

Studies, including one by Northwestern on impacts to the head of a middle linebacker, show that a Gmax value of 200 should be the maximum threshold to provide an acceptable level of protection to users.

The turf industry has in general accepted a Gmax value of 200 as the maximum acceptable reading for an older synthetic field. New fields, however, should have much lower readings. Typical acceptable values are in the 90-150 range. These Gmax ratings are comparable to those obtained from good quality natural turf, and they allow for gradual hardening of the field over time.

Hardness testing performed immediately after field installation does not just provide a performance indicator. It also shows that you are performing due diligence to provide an acceptable playing surface for your athletes. This can be very important in case of an unfortunate accident. Annual or routine maintenance testing after construction provides data for determining warranty compliance and for diagnosing or preventing problems. Proper construction, maintenance, and testing are all essential pieces of the puzzle for providing a safe, high performance field.

Sam Ferro is the President of Turf Diagnostics & Design. He can be reached at sferro@turfdiag.com. ■

Continued from page 14

Interestingly, Moore said GreensGroomer sells their synthetic maintenance equipment by the container full to overseas customers.

FieldTurf's recommendations

Troy Squires, VP Marketing for FieldTurf Tarkett, says his company provides a maintenance manual to all clients, and that by following the maintenance procedures outlined in that manual, their fields will be kept in optimum condition and playing characteristics will be maintained longer. Squires says there are two key areas when it comes to maintenance: litter removal and fill displacement.

FieldTurf leaves an estate sweeper with each field sold, which is designed for litter removal, e.g., peanut shells, paper, confetti etc. This kind of sweeping activity should be done on an "as needed" basis, but generally once a week during heavy use.

FieldTurf has a very heavy fill of sand and rubber that is unlikely to float, even in heavy rain, says Squires, but routine grooming of the field will assure that the infill is uniformly distributed at all times over the entire field surface. Intensive and repetitive use of certain areas of the field such as the kicking action of the players may cause the infill material to be displaced. ■

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Current Trend - Today most synthetic turf installations are loose laid instead of being totally glued down. This trend is slowing and may eventually reverse, but for now the individual pieces or rolls of turf are only joined together at the seams by either gluing the turf on top of wide seaming tape or by sewing the turf together. Both seaming methods are good and do not fail if properly done, but for scientific reasons, we think that glued seams are better than sewn seams. When glued, stress is distributed over the entire bond area of the "glue on tape" instead of just being concentrated at spaced holes along the seam where the sewing thread passes through two pieces of turf to hold it together.

Adhesive Importance - We don't claim to be smarter than other adhesive companies. However, we have over a quarter century head start developing sophisticated turf adhesives. Progress means future innovations, so we intend to both cause and/or adjust to the changes. However, from an adhesive standpoint, we already know for certain that:

> *The best synthetic turf; subsurface under it; and the best installers are of little value without the proper adhesive(s), whether the installation be a total gluedown or just adhesive bonded seams and inserts.*

Types of Turf Adhesives - Because the adhesive selected for synthetic turf installations is extremely important, the information that follows should be both educational and helpful.

1) One Part High Green Strength (High Grab) Urethane Adhesives: These are the most widely used adhesives for installing synthetic turf. They are practical to handle under variable outdoor weather conditions, plus have a long history of proven outdoor durability. These type adhesives are more expensive in terms of cost/gallon or cost/kilo but not necessarily from a total job cost standpoint when speed of installation and less call backs are considered.

2) "Oily/slippery" One Part Urethanes as Opposed to High Grab Ones: They have little or no grab and green strength to hold the surfaces in place while the adhesive is curing. They also often foam excessively in high humidity. They are a variable weather nightmare.

3) Two Part Adhesives (Epoxy or Urethane): Great for many uses but for turf installations, we think they are "stone age technology" as compared to one part urethane adhesives. Reasons are: each component of these labor intensive adhesives by itself is not an adhesive. Hence, if they are not thoroughly and accurately mixed on the field, they can have poor durability which shows up after aging and weathering.

Additionally, these adhesives have the common handling problems of being "oily and slippery" with no green strength (no grab), plus when used on very hot days, they have a short pot life and a short time outdoor working window. Oppositely, on cold days, they become very thick and hard to mix, plus they cure slowly, if at all.

4) Hot Melt Adhesives: They require special equipment for them to be used under variable outdoor weather conditions. Also, they may set too quickly when cold or too slowly when hot.

5) Water Based (Latex) adhesives: Low cost because part of the container is full of water. They depend on water evporation so they often: dry too slow in high humidity; too fast in dry desert-like conditions; plus rainfall before they set can wash them away.

6) Private Label Adhesives: Our translation is that another company is making it for the buyer who can change it "at will" for low price or other purposes without the customer or specifier knowing.

by Norris Legue,
Synthetic Surfaces Inc.

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