



Modular turf evolves to the next level

Michigan State University will be first to grow turf from seed instead of installing sod in modules when it installs modular turf in Spartan Stadium next summer

In the beginning there was sports turf. It was the first and best sports field surface. Then came indoor stadiums and synthetic fields. Sports facility managers searched for a way to combine the best of modern stadiums with the benefits of real turf. Then came modular turf that allowed a natural turf surface to be installed in most any stadium.

Trey Rogers, Ph.D., and the staff of the Robert W. Hancock Turf Research Station at Michigan State University (MSU) have been involved with modular turf since its beginning. Rogers, professor of turf management at Michigan State, was part of the team that installed the first high-profile modular turf field for the men's World Cup Soccer matches at the Pontiac Silverdome in 1993.

World Cup rules specify that all matches must be played on real grass. Using modular turf to install grass inside a domed stadium allowed Detroit to win a bid for a World Cup match that it would otherwise have lost, making history in the process.

Modular turf offers many advantages:

- **Transportability.** Modular turf can be moved in and out of any venue, in part or whole. Facilities can now function with a turf field and hard surface floor, as needed for different events. This allows for more event days per year and supports multipurpose uses that would damage a traditional turf field.

- **Turf replacement.** Modules containing worn or damaged turf can be removed and replaced with ones containing mature turf ready for play.

- **Re-sodding cost savings.** Worn turf is removed, nurtured back to health, and replaced rather than discarded.

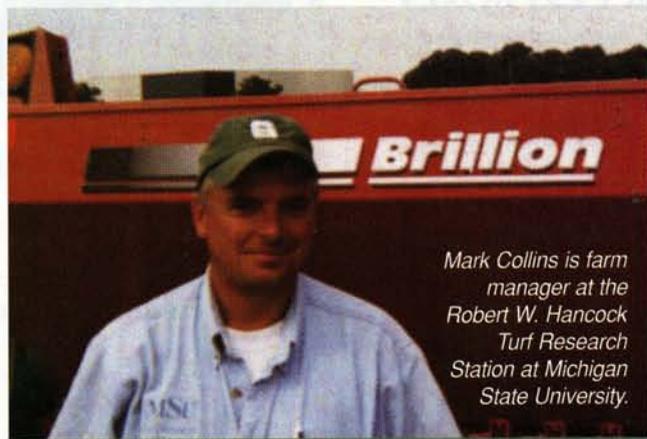
- **Mature sod ready for play at installation.** Modular turf systems can be prepared before a facility is finished. When construction is complete, mature turf is installed, ready for play immediately.

- **Quick conversion to natural turf.** Modular turf can be laid directly on a synthetic sports surface allowing for a fast conversion to natural turf.

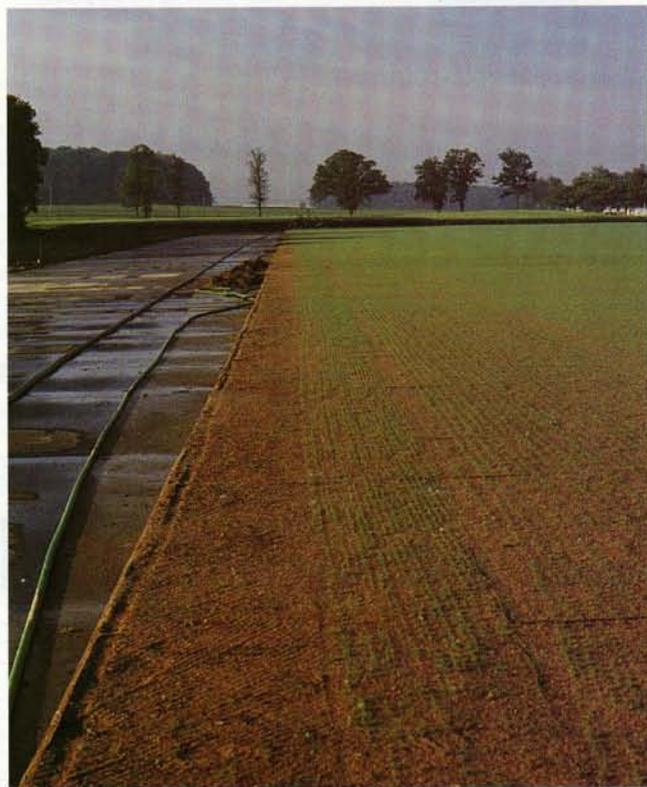
While modular turf has been a dream for decades, it became a reality in 1993.

"For those of us involved, it changed our lives forever. We did something that had never been done before. We pioneered something that will become the standard," says Rogers. "Moving turf in and out of a stadium will be common in 10 years or so."

Now, Rogers and Mark Collins, farm manager at the Hancock turf station, are taking this high-tech sports turf management system to another level as part of a team working on a new modular turf system for Spartan Stadium, where MSU plays Big 10 football.



Mark Collins is farm manager at the Robert W. Hancock Turf Research Station at Michigan State University.



Mark Collins seeded the modular turf using two passes with the Brillion seeder at 90 degrees to each other. Broadcast seeders were used to fill in near the field edges where equipment could not drive. "We could really see the difference between seeding with the Brillion seeder and broadcast," says Collins. "The seeding planted with the Brillion seeder popped up about a week ahead of expectations."



Modules are 46 in. square with channels 22 in. apart on all four sides. These channels can be sealed to create a ventilation system that can draw air down through the turf, provide oxygen to the root zone and provide drainage for irrigation and removal of carbon dioxide.

The new modular field will be the first to be seeded instead of sodded. In all previous modular turf installa-

tions, the field was constructed and used for a sporting event in the same year, making sod the first choice

because it would provide a playable surface faster.

The staff at MSU's nationally recognized turfgrass management program have had the luxury of planning 2 years in advance. The modular turf system is being constructed and seeded this year and will be installed in 2002, in time for the first football game in September.

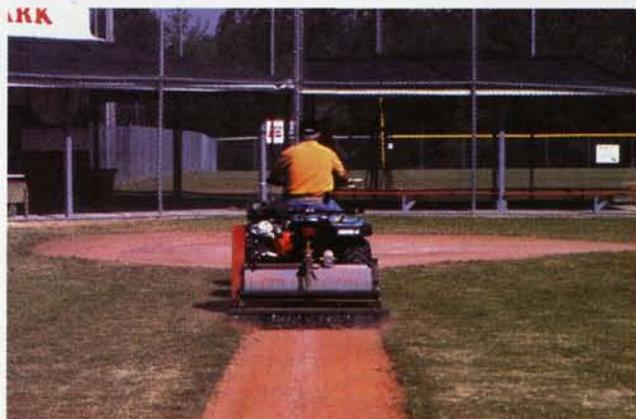
"Seeding is the number one choice. You get the turf you prefer and establish it the way you want," says John Hilson, project manager, Clark Companies, Delhi, N.Y., a construction company that has worked on every modular turf installation in the United States.

Hilson notes that seeded modules will not have soil layering issues that are common to sod placed on top of soil in the modules. By seeding the turf into the modules, this troublesome management issue is removed from the equation.

Since seeding into modules is new, Collins and his team had to determine the best approach. First, there

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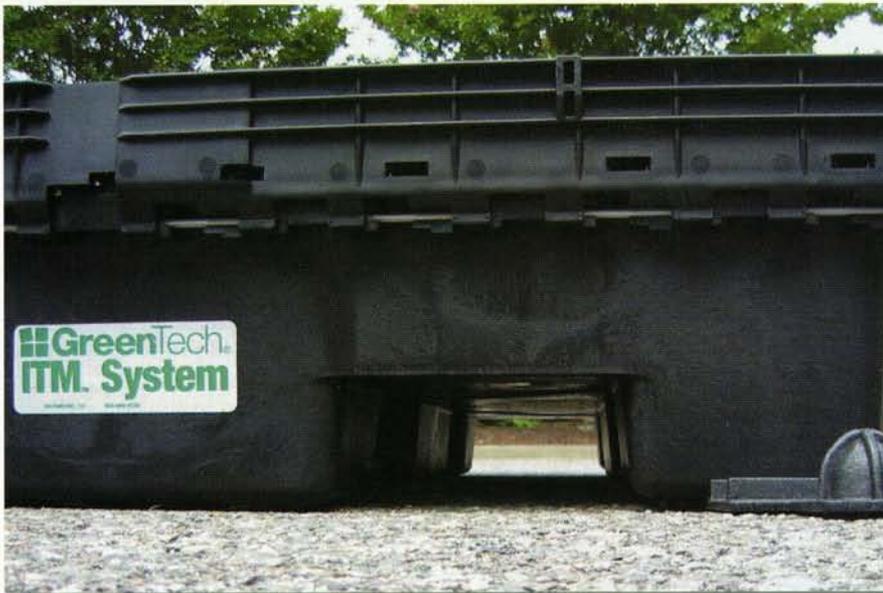
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Channels in the base of modules run the length and width of the installation. These channels can be sealed to provide a ventilation and irrigation network.



GreenTech ITM modules have channels 22 in. apart on all four sides. The channels allow modules filled with growing turf to be moved via forklift. They also create a drainage network. Irrigation water quickly drains through holes in the bottom of each module to prevent saturation.

the issue of seeding accurately into a 90 percent sand and 10 percent silt and clay root zone. To solve that, the team chose the Brillion Turfmaker II seeder.

"We have worked with Brillion seeders at the research station for years. They are known for accurate seed metering and for creating a quality seed bed," says Collins. "We were very confident that we would get a high quality stand."

Second, there was the challenge of getting seeding equipment onto and off of the modules, which are 12 inches tall when installed. To solve this problem, the team built ramps that allowed equipment to drive safely on and off the modules.

The first time the John Deere 5200 tractor and the pull-type 12-foot Brillion seeder were driven on the modules, the weight was too much, sinking the equipment into the sandy

soil. A switch to low-pressure turf tires on the tractor and a smaller 6-ft., three-point-hitch-mounted Turfmaker Junior seeder allowed the equipment to stay on the surface.

In addition, the unusually wet weather complicated the schedule, delaying the seeding date 2 weeks to May 25, nearly a month later than optimum turf seeding time in central Michigan. On seeding day, the weather was overcast and cool, and a fine rain started to fall just as seeding began. After three hours, the process was completed successfully.

"The seeder worked great in the sandy soil," says Collins. "We got excellent seed-to-soil contact which shortened our germination time dramatically. Seeding in the grooves from the seeder popped right up in 10 days."

Collins seeded 93,000 sq. ft. at a rate of 1.3 pounds per 1,000. The Brillion seeder made two passes at 90 degrees to each other and broadcast seeders were used to fill in near the otherwise unreachable field edges.

KY bluegrass planted

"We studied all our options to death," Rogers says. "In our situation Kentucky bluegrass is the best choice." Color, cool tolerance, durability, and texture are important attributes of Kentucky bluegrass, but most important was rhizomatous growth to respond to traffic and abuse.

The two primary reasons for using nine varieties of Kentucky bluegrass were, 1) the diversity allows the turf to better cope with any pests or environmental challenges and, 2) the turfgrass group works with many seed companies and wanted to include as many different varieties as possible.

It's no surprise that an experienced team tackled this project given the new elements of seeding instead of sodding the modular turf. Rogers worked with Hilson and the Clark Companies in the Silverdome in 1993, and they are using GreenTech ITM modules. GreenTech designed and supplied modules for Millennium soccer stadium in Cardiff, Wales; the New York Giants football and New York/New Jersey MetroStars soccer fields in the Meadowlands, NJ; and just announced it is installing its system in Lane Stadium at Virginia Tech for the upcoming football season.

"Our system allows you to transport turf in a self-contained living environment," says Chris Scott, chief executive officer of GreenTech, Inc., Richmond, VA. "Our modules look like a combination flower pot and warehouse pallet."

The GreenTech modules are plastic, measure 46 in. square and have channels every 22 in. on all four sides. Modules are installed on a blacktop surface with a 1-percent grade from field center to the sidelines. The channels allow modules to be moved by forklift but they have another purpose.

The modular turf system at MSU was seeded with a Brillion TurfMaker Junior, 6-ft., three-point-hitch-mounted seeder. The Brillion seeder is known for precise seed metering and overall durability. Nine varieties of Kentucky bluegrass were seeded in four passes with a total seeding rate of 1.3 pounds of seed per 1,000 sq. ft.

When a modular field is installed, the channels provide a crosshatch

network of air ducts beneath the growing medium. One obvious benefit of the duct network is to drain water away. Irrigation water filters through modules, into the ducts and off the field without any backup or saturation.

This network also can be sealed and used to circulate air under the turf.

"I can move air through the root zone using one blower in one corner of the field," says Hilson. "This system seals well enough to give me uniform pressure and uniform flow throughout."

He says using air for heating and cooling is more uniform than radiant heat. By controlling the turf temperature, the growing season can be extended indefinitely. The air ducts also provide the opportunity to remove carbon dioxide from the root zone to promote better growth. The system allows for supplemental oxygen or soil treatments like fumigants or vapor fertilizers to be applied to the field.

Thanks to favorable weather and fast germination, the modular turf installation at MSU shows an excellent stand. The turf will be maintained at 1.25 to 1.5 inches throughout the growing season. Installation at Spartan Stadium is planned for June 2002 for which sportsTURF will provide a detailed report.

Richard Dunn from Charleston/Orwig, Inc., provided this story; they represent Brillion Farm Equipment.

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