

"Once the soil problems are alleviated, then rapid growth is needed to close in the turf. This growth process is not merely stimulation of shoot development, but must be complemented with improvements in soil structure and nutrient availability," Dr. Ames says. "These soil improvements relate directly to strong root development, which relates directly to good shoot growth and coverage. Again, this is the basis behind newer fermentation products: improve the soil and plant growth responds accordingly."

"Recent advances in science have led to the commercial development of biological products that provide many of the beneficial microorganisms that help grasses thrive under stressful conditions," says Dr. Kernan. "Such products include mycorrhizal fungi and beneficial rhizosphere bacteria, which can significantly increase water and mineral absorption, provide sustainable soil fertility, improve soil texture, reduce thatch buildup, and in combination with a comprehensive program, can help reduce disease pressure."

"Furthermore, biological treatments can restore some of the natural growth characteristics of turf, and can provide noticeable resistance to various environmental stresses," says Dr. Kernan. "This leads to a smoother transition between warm and cool season grasses and a reduced reliance on the more expensive fertility and pest management treatments. Of course, you will want to maintain your chemical fertility and pesticide treatments. But your turf will not be

completely dependent on these inputs when it has biological partners to support its needs for water, minerals, and stress defense.

"Grasses associate symbiotically with the most common group of mycorrhizal fungi, called 'VAM' fungi," Dr. Kernan says. "These fungi significantly improve water and mineral uptake for their host plants. Additionally, various beneficial soil bacteria colonize the root zone of grasses, where they perform various fertility-enhancing functions. In turf settings under intensive management programs, VAM fungi and beneficial bacteria tend to be scarce. As a result, such turf is quickly undermined by stressful conditions and requires a lot of care. A few simple treatments can reverse this trend, changing a wimpy, stress-intolerant turf into a hardy, stress-resistant turf."

How to incorporate

There are many different types of microbial products, but not every product will fit comfortably into a sports turf management program," says Dr. Ames. "Products that need special handling, mixing, or other conditions for use would be less desirable than products with fewer restrictions. High quality fermentation products will often have a very long shelf life and they do not require special refrigeration or mixing with other ingredients. They can be mixed with herbicides and most fertilizers. Compatibility with fertilizers

John Mascaro's Photo Quiz

Can you identify this sports turf problem?



Problem: Brown Lines on Turf
Turfgrass Area: Athletic Field
Location: Eastern United States
Grass Variety: Bermudagrass overseeded with rye

**Answer to
John Mascaro's Photo
Quiz on Page 37**

*John Mascaro is President
of Turf-Tec International*

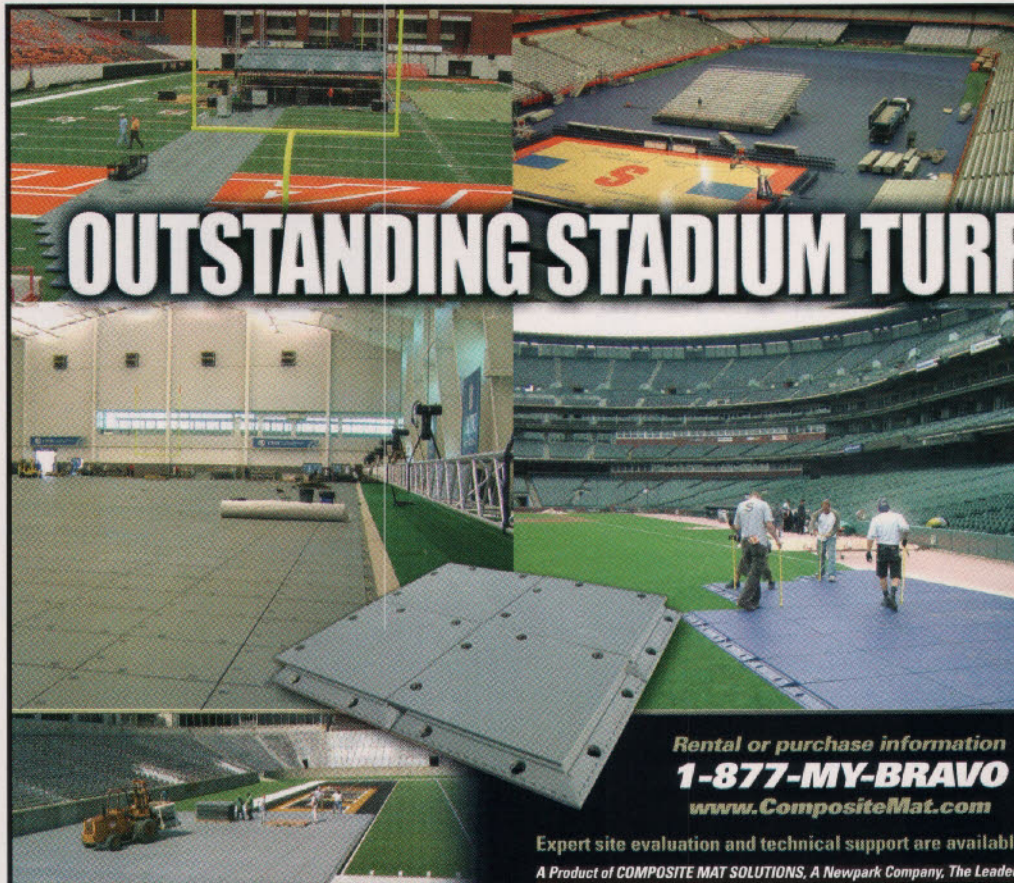
John Mascaro's Photo Quiz



Answer: from page 26

This athletic field was being maintained properly by a well-respected maintenance company when the overseeding mysteriously turned brown. The entire field did not turn brown however, just the areas where the lines were painted for football. The areas between the lines remained green and vigorous proving that the field was being maintained properly. After some intensive investigative work it was determined that a "fan" of good grass took it upon themselves to apply a pre-emergence herbicide and fertilizer blend to the field to ensure the poa annua would remain in check. This was done without the maintenance company's knowledge or approval. They apparently applied it to the field in an "S" pattern in the late fall or early winter and did not water the material in properly. The ryegrass was burned by the fertilizer where the material was applied and new ryegrass would not germinate due the persistence of the pre-emergence. This photo shows that extra help is not always welcome when it comes to growing sports turf. Photo sent anonymously. ■

If you would like to submit a photograph for John Mascaro's Photo Quiz please send it to John Mascaro, 3669 NW 124th Avenue, Coral Springs, FL 33065 or email to john@turf-tec.com. If your photograph is selected, you will receive full credit. All photos submitted will become property of SportsTurf magazine.



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