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Table 1. Plan devised for submission to a contractor to renovate a high school varsity baseball field in Cumberland County, NJ.

Early August 2008:

- Apply glyphosate at high labeled rate for nonselective control of tall fescue (i.e. Roundup PRO at 3.0 qts/acre)
- Allow for complete turfgrass and weed control (approximately 14 days)
- Mow to 1 inch and remove debris
- Core cultivate using reciprocating tine unit (3/4-inch tines; 2x over field)
- Apply lime at 35 lbs/1000 sq. ft. (Lime requirement determined by soil test)
- Reincorporate cores and incorporate lime via dragging
- Slit-seed tall fescue at 8 lbs seed/1000 sq. ft. (two directions over field; 4 lbs seed/1000 sq. ft. in each direction)
- Apply complete starter at 1 lbs N/1000 sq. ft.
- Irrigate until established using school's water source and temporary, above-ground irrigation pipe
- Apply 1 lb N/1000 sq. ft. approximately 2 weeks following seedling emer gence; 30% of N should be in a slowly available form

Significant improvements in the turfgrass quality of tall fescue have been achieved through breeding since the release of the cultivar Kentucky 31 (foreground) in 1940 (Photo by Brad Park).

The weed population and inconsistency of cool-season turfgrass cover made the baseball field a strong candidate for turfgrass renovation; additionally, the field was not scheduled for use in summer and fall 2008. While the Board of Education would not likely be able to perform the renovation work in-house, funds would be allocated for contracting-out the work.

Site preparation

It was important to provide the high school detailed instructions on site preparation and seeding (Table 1); specifications are often loosely written and contactors subsequently use ineffective methods to attempt to establish turfgrass.

A nonselective herbicide application was justifiable given the high population of undesirable tall fescue in the field. The field would likely take on a very patchy appearance (both in color and leaf texture) if the field were simply overseeded with a dark, fine-leafed blend of turf-type tall fescue varieties without first providing nonselective control of the existing vegetation.

The renovation timing (late summer), core cultivation, and slit-seeding methods were identical to those performed during the successful renovation of Tiger Field, East Brunswick Vocational and Technical School, East Brunswick, NJ in 2004 (see *SportsTurf* March 2005). Similar to Tiger Field, this baseball field would be closed during the late summer and fall renovation process—the ideal time for the establishment of cool season turfgrasses in the Northeast and mid-Atlantic.

A recommendation was made to apply lime at a rate of 35 lbs/1000 sq. ft. (lime requirement determined by soil testing) immediately following core cultivation (Table 1). This recommendation was based on recently published research results where Schlossberg et al.(2008) found that surface applications of lime following core cultivation accelerated the rate of acid neutralization (increasing soil pH) in the top 4.5 inches of soil.

Tall fescue seeding rates are typically recommended at 4 to 8 lbs. seed/1000 sq. ft. The 8 lbs/1000 rate was recommended (Table 1) due to the crabgrass in this field. A denser turf will be more resistant to potential crabgrass encroachment in spring 2009, particularly if a preemergence herbicide application for control of crabgrass is not made.

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Table 2. Commercially-available tall fescue blends identified by contacting local distributors and deemed acceptable for a high school baseball field in Southern New Jersey by examining NTEP and Rutgers-generated traffic research.

Blend A	Blend B	Blend C
35.0% Padre	33.3% 2nd Millennium	33.3% Turbo
32.0% Magellen	33.3% Olympic Gold	33.3% Tempest
31.0% Biltmore	33.3% Avenger	33.3% Magellen

Turfgrass selection

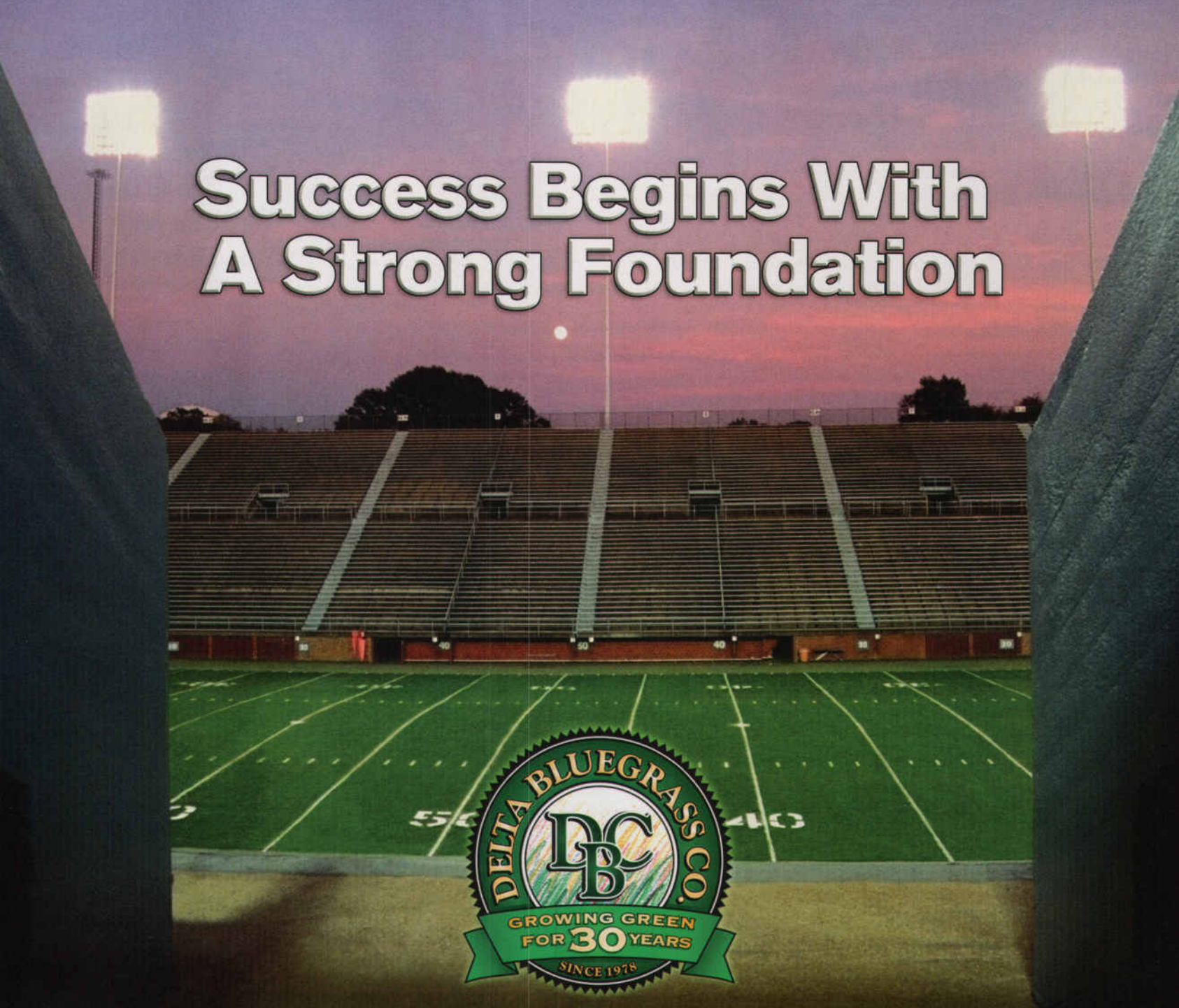
For the following reasons, a blend of improved turf-type tall fescue varieties was recommended for seeding at this field: Regular nitrogen (N) inputs and frequent irrigation is unlikely in the future and tall fescue can exhibit good turfgrass quality under low soil moisture conditions and fewer N inputs compared to other cool season species such as Kentucky bluegrass and perennial ryegrass. Among cool season turfgrasses suitable for sports fields in the Northeast and mid-Atlantic (i.e., Kentucky bluegrass, perennial ryegrass, and tall fescue), Turgeon (1999) classifies tall fescue as the most heat tolerant—a desirable trait for the high temperatures common to summers in southern New Jersey. Similarly, tall fescue is better adapted to this school's mowing program compared to Kentucky bluegrass and perennial ryegrass as the mowing frequency is projected to be 1x per week at 3.0-inch using a rotary mower.

As part of wintertime extension functions, I am frequently asked, "How do I find turfgrass varieties that perform well in National Turfgrass Evaluation Program (NTEP) or other trials?" The answer is simply, "You must do your homework, which involves calling local seed distributors and inquiring about not only seed blend availability but also the varieties that comprise the blend." To illustrate this point, local distributors were contacted and three acceptable tall fescue blends were identified (Table 2).

The performance of tall fescue varieties composed of Blends A, B, and C (Table 2) was assessed by examining nationwide NTEP research (www.ntep.org) as well as tall fescue traffic tolerance research conducted as part of NTEP trials at Rutgers University (www.turf.rutgers.edu/research/ reports).

The 2006 NTEP tall fescue trial at Rutgers was subjected to wear and compaction (traffic) in fall 2007; Padre and Biltmore (components of Blend A) were among the most traffic tolerant (NTEP, 2008b). Also, Padre was among the most traffic tolerant in the 2001 NTEP tall fescue trial at Rutgers when evaluated in 2002-03. Padre, Biltmore, and Magellen were top performing

Instead of simply selecting a "Sports Turf Mixture" for an athletic field, examine the turfgrass species and individual varieties used to comprise commercial seed blends and mixes (Photo by Jan Zientek, Rutgers Cooperative Extension of Essex County).



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entries when assessed for turfgrass quality averaged across 11 locations under a Schedule B level of maintenance in the 2001 NTEP tall fescue trial (NTEP, 2008a)

Schedule B maintenance was defined by NTEP as a 2.5 to 3.5-inch mowing height; 0 to 2 lbs N/1000 sq. ft. annually; and either no irrigation or irrigation only during severe drought stress to prevent dormancy. It was important to assess the varieties under the Schedule B maintenance level because these management inputs best simulated the projected for the baseball field.

The three varieties included in Blend B, 2nd Millennium, Olympic Gold and Avenger were among the highest ranked varieties for turf quality in 2002-05 across all testing locations maintaining trials under Schedule B (NTEP, 2008a). 2nd Millennium and Olympic Gold exhibited superior traffic tolerance in the same NTEP trial at Rutgers in 2002-03.

Within Blend C, Turbo was among the traffic tolerant following fall-applied wear and compaction in 2007 at Rutgers and among the highest ranked entries for turf quality averaged across all locations in 2002-05 and 2007 under Schedule B maintenance (NTEP, 2008a; NTEP 2008b). The variety Tempest was tolerant of traffic stresses applied in 2003 in New Jersey.

Brad Park is Sports Turf Research & Education Coordinator, Rutgers University, New Brunswick, NJ and a member of the Sports Field Managers Association of NJ Board of Directors. He can be reached at park@aesop.rut gers.edu.

Southern NJ case study results

The inappropriate selection of turfgrasses and poor site preparation and establishment procedures often results in the underperformance of natural turf sports fields, leading some board of education and municipal decision makers to prematurely convert natural turf fields to synthetic alternatives.

Turfgrass species selection must be preceded by a thorough examination of existing field conditions, assessing the extent to which site preparation can be performed, and projecting future management inputs such as mowing, irrigation, and fertilization.

Turfgrass variety performance data is now available in a matter of seconds with several clicks using the internet; sports field managers should use these resources to select top-performing blends and inquire with vendors about the availability of top-performing varieties. The turfgrass selection process and renovation steps described in this article can serve as a template to assist sports field managers in their decision-making.

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John Mascaro's Photo Quiz

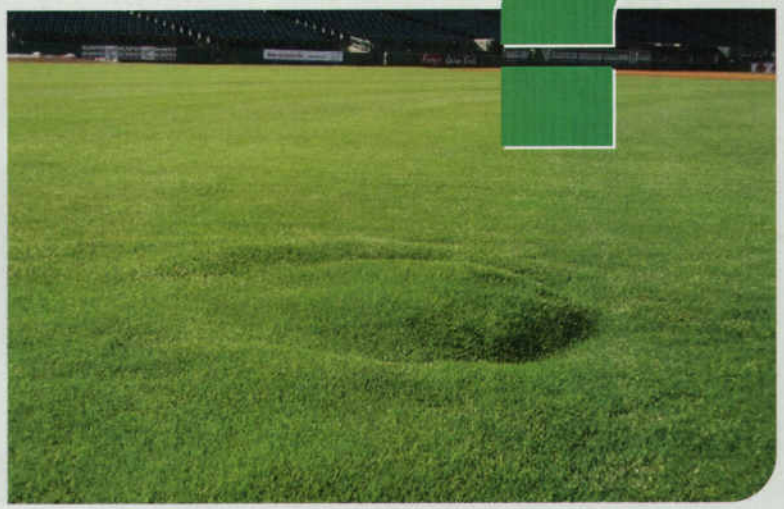
Can you identify this sports turf problem?

Problem: Undulation in turf

Turfgrass Area: Center Field

Location: Louisville Slugger Field, KY.

Grass Variety: Bluegrass, overseeded with Rye



Answer to John Mascaro's Photo Quiz on Page 39

John Mascaro is President of Turf-Tec International

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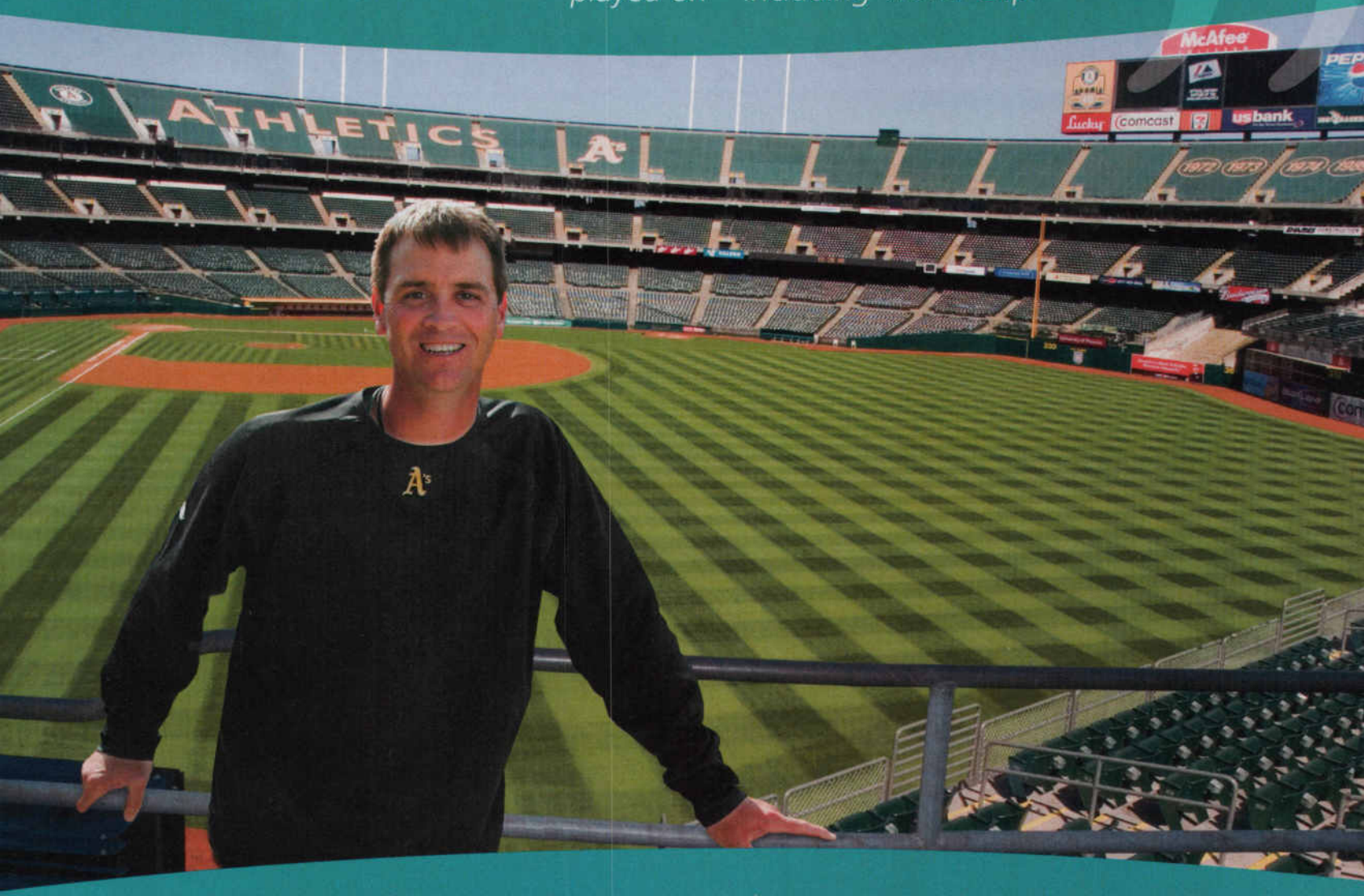

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Managing sports fields during water restrictions

By Dr. Robert N. Carrow

Some things are just not compatible. Severe drought restrictions and safe/playable athletic fields are an example. In fact, all the primary sports field attributes that relate to player safety and playable fields are influenced to the greatest extent by water as it affects the turf and soil conditions. Too often water restrictions are imposed on athletic fields without consideration of the true impact. A player on the field is much less concerned with the visual or aesthetic quality than the ability to maintain footing, avoid injury, and have a predictable playing surface.

Literature specific to maintaining sports fields during drought conditions and for enhanced water-use efficiency are rather limited, but Table 1 lists very good resource materials for a more in-depth treatment of this topic, especially the MAV (6) document. The article by Ernst (4) is unique in discussing water relationships on infield skin management and performance.

Image coutesy of istockphoto.com