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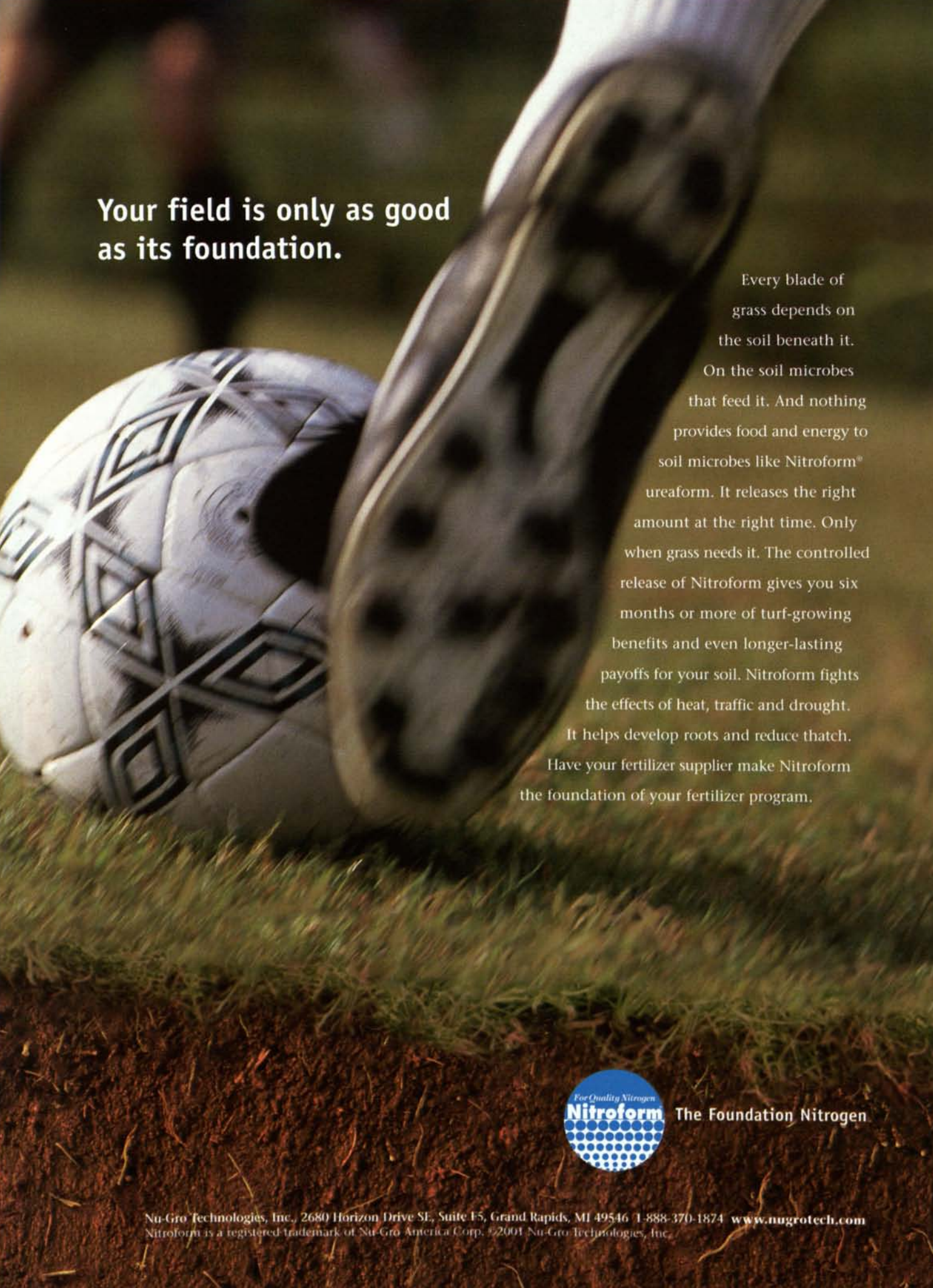
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Nu-Gro Technologies:
Healthy Microbes = Healthy Soil = Healthy Turf

No matter what fertilizer product you're using for turf care, you're not really fertilizing the grass. What you're fertilizing is the soil, and the grass plant is the beneficiary.

"Getting the most out of your fertilizer involves nurturing the soil microorganisms that convert organic matter to humus. This builds a healthy soil layer within the turf root zone," explains Dr. Eliot Roberts, soil microbiology expert, turf scientist, and adviser to Nu-Gro Technologies, Inc.

So, how do we get to healthy turf? The answer... create a healthy soil.

The overall goal is healthy, green turf that is a pleasure to enjoy–turf that requires only a reasonable amount of maintenance to keep it that way.

"Without a good fertilization program, no soil has sufficient nutrients to produce turf that can withstand heavy use and regular close mowing," Roberts says. "For turfgrass to be properly fertilized, it is important to consider the needs of both roots and top growth. Mowing restricts root development by continually forcing plants to re-grow foliage rather than putting the plant energies into root growth."

Why do you need to be concerned about roots if the top looks good? Healthy roots, and the healthy plants they support, make it possible for turf to survive stress more easily. Stress results from heavy use, extreme heat, cold snaps, drought, excess moisture and the added pressure from insects and disease organisms. A fine, healthy turf will have a dense, green, even surface.

So, how do we get to healthy turf? The answer... create a healthy soil.

"Healthy soil is rich in humus, which is formed by decomposer microorganisms," Roberts explains. "These microorganisms consist of bacteria, fungi and actinomycetes, together with lesser numbers of other species that use carbon for energy to produce humus, using–then releasing–nitrogen back to the soil in a form that plants can use.

"Microbes, like all living organisms, need carbon to survive," Roberts says. "While plants get carbon from the atmosphere and use it through photosynthesis, microbes live in the dark soil and don't even contain chlorophyll. Microbes need an alternate source of carbon, and they get it from either naturally occurring sources in the soil–which are often not sufficient–or from an organic fertilizer," he says.

That's where Nitroform® ureaform comes in. As a nitrogen source, Nitroform 38-0-0 consists of carbon:nitrogen-linked polymers of methylene urea having a C:N ratio of approximately one to one. Because more than 70 percent of the nitrogen in the product is water-insoluble, it is released only gradually through microorganism activity. In other words, as the microbes feed on Nitroform to get carbon, they release nitrogen and make it available to the plants. Hence, a consistent, slow release of nitrogen makes your job easy.

You know the grass will get the nitrogen it needs–when it needs it, over many months of growing season, without concern about burning or nitrogen deficiency. Nitroform is resistant to leaching, which means it will stay in place regardless of watering practices.

Do you have a problem soil, perhaps one that's very thatchy or subject to severe leaching or compaction? Nitroform ureaform, along with mechanical and other soil-corrective measures, may quickly reverse a troublesome situation and increase microbial activity at the same time.

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Traditional Refreshment

PIMM'S is the traditional refreshment for visitors to The Championships. James Pimm opened his first oyster bar in the City of London in the 1840s and supplied Londoners with good food and a unique drink, which became famous as PIMM'S No. 1 Cup. The drink has powerful associations with the English and events such as Wimbledon's Championships, Ascot and Henley.

Today, PIMM'S is made to the original recipe, which remains a closely guarded secret known only to six people. Although the original recipe is unavailable to the general public, the maker of PIMM'S has released the two recipes below, which provide a close approximation of the authentic version. Cheers!

Simple PIMM'S

- 1 part PIMM'S
- 3 parts of lemonade (Sprite soda in the U.S.)
- Ice
- Slice of lemon

Classic PIMM'S

- 1 part PIMM'S
- 3 parts of lemonade (Sprite soda in the U.S.)
- Splash of Ginger Ale or tonic
- Ice
- Slice of lemon, cucumber, apple, orange and a sprig of mint

When the first Monday of the event arrives, the grounds crew must ensure that the court preparation is completed before the public is allowed to enter the grounds at 10:30 a.m. If the weather is dry the covers will be removed by 8:00 a.m. to allow work on the courts to commence immediately. If the weather is unsettled, then the covers will remain on the courts to ensure they stay dry. All match court covers can be raised so that work on preparing the courts can continue undercover and on schedule in the hope that play will start on time. As part of this morning routine all the grounds crew have designated work assignments to carry out, whether it be mowing or marking the courts. They have all been previously allocated specific courts on which to work so they know exactly what is required of them. It is vital that they do not require instruction that morning and can work without a great deal of supervision, because at the same time their work is taking place there are other informal meetings underway. These include meeting with the referees and often attending press and television interviews.

Prior to The Championships, a press release is issued on the work of the courts in order to explain our turf cultivation practices. There is no doubt that The Championships focus interest on the grass courts, not only from the media, but also from the public, who will call or write in with questions and observations. We make certain to answer all correspondence as soon as time allows.

Throughout the match days we must be constantly vigilant with regard to the weather situation. If there is a possibility of rain, then all the court attendants must be stationed at their courts the whole time to ensure that the covers can be operated very quickly. It is imperative that all the courts are kept dry so they do not become slippery and dangerous for the players. It takes slightly less than thirty seconds to cover Centre Court and No. 1 Court while the outside courts take a little longer. All 18 match courts can be covered in less than one minute from the time the decision is made to use the covers. When the rain stops and the covers are removed, all courts have to be inspected by an assistant referee to ensure that they are safe for the players to use. On Centre Court, the decision will be made by the Referee and Head Groundsman. As you can imagine, life can be very busy on a day of rain showers!

Each morning, while preparation of the courts is being carried out, measurements are taken to see how the grass plants and the courts themselves are holding up. Measurements are made on soil moisture level, soil hardness, grass cover, ball bounce and a botanical analysis is made to indicate how the grass is standing up to wear. At the end of the day's play, the courts are inspected to ensure no damage has occurred. If the weather is hot and dry then a little water may be applied to the grass leaf to relieve plant stress. However, before any water is applied, it is essential to know in advance what the weather conditions are going to be. The courts must be dry by 10:30 a.m., so water will not be applied if there is any doubt about the weather, even if the grass plants need it.

Each day, many thousands of visitors will come through the gates and it is important that they enjoy their day, so a number of convenience facilities have to be provided for them. These include picnic areas, car parking and of course catering. During two weeks, the caterers (amongst other things) will provide 27 tons of strawberries, 7 tons of Scottish beef, 12 tons of salmon and 300,000 cups of tea and coffee. On top of this, meals have to be provided for the staff throughout the day.

All this effort is clearly worth it. The prestige and importance of The Championships is an international fact in the tennis world. Besides, seeing a large crowd of tennis fans enjoying the event, along with the traditional glass of PIMM'S (see Sidebar above for recipes), certainly makes those of us on the grounds crew particularly pleased with the results.

As The Championships comes to an end and the final "Game, Set and Match" is called, thoughts turn to other events still to come, as well as the autumn renovation and review meetings that start this most productive cycle rolling again.

Editor's Note: *This year, The Championships at Wimbledon will be played from June 25th through July 8th, and will be shown in the U.S. on TNT and NBC.*

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Texas A&M University Earns Soccer Field of the Year Honors

by Steve and Suz Trusty

The women's soccer field of Texas A&M University earned the STMA 2000 Soccer Field of the Year honors in the College Division. The field is located on the University campus in College Station, Texas, approximately 70 miles northwest of Houston. What was once a dairy cow pasture is now a beautifully groomed playing field—a tribute to the expertise, commitment and dedication of the Texas A&M athletic field staff.

The field was built in 1994 by the University Grounds Department as a practice field for the women's soccer team. Instead, it became the game and practice field.

The native soil consists of a few inches of topsoil over a heavy clay base. The 120 yard by 80 yard field area was plowed and disked, mixing the topsoil with the subsoil, and resulting in a heavy native soil profile. This was then leveled with a boxblade to create a one percent grade from sideline to sideline. There is no subsurface drainage system. The field was covered with Tifway 419 sod grown on a heavy clay soil.

Lights and permanent bleachers were added in 1997. Seating capacity is currently 1,500, with expansion planned in the future. Also part of the University's capital improvement program is conversion of the soccer field from a native soil to a sand-based profile complete with internal drainage and a new irrigation system. The timing of this major renovation is yet to be determined.

The soccer field is just part of the 17 acres of turf maintained by the athletic field staff of three full-time operators and four student workers under the direction of Athletic Field Manager, Leo Goertz, and Assistant Athletic Field Manager, Craig Potts. This includes the baseball and softball fields, the track infield, the sand-based football game field, two sand-based football practice fields, and the areas around the stadium. They also maintain the non-turf tennis center.

As shown by the packed stands at this game, Texas A&M University's women's soccer program is very well-supported.

Potts says, "The heavy native soil profile and the sod's base of heavy clay soil both contribute to the drainage issues on the soccer field. Infiltration rates and percolation rates are very slow. We estimate the infiltration rate at about 1/100th of an inch per hour so we need to rely on the slope to eventually move surface water off the field. In addition, the soccer field is the lowest point in our sports complex, lower than the softball and track fields around it. Rain water drains off the softball roof onto the soccer field. In effect, one-half inch of rain on the softball field puts approximately one-inch of rain on the soccer field. Yet, because of the thick stand of turf, this will result in standing water, not mud."

Potts reports the staff's most difficult maintenance challenge is a poorly designed irrigation system. He says, "The design has eight stations that run diagonally across the field. Three stations contain a mix of full and partial circle heads. The half circle heads apply double the water that the full circle heads apply during the same time cycle. The spacing between the heads doesn't provide head to head coverage. These problems will cause some areas to be too wet while other areas will have extreme drought-

stressed 'hot spots.' Two of the stations have heads positioned right in front of the bleachers. If we use the irrigation system to reach sufficient water levels in the hot spots, we will create a muddy mess for the fans to navigate getting to the bleachers."

The obvious answer to the irrigation problems is renovation of the irrigation system. But, the realities of sports turf management all too often make the obvious solution an unrealistic one.

First, there's the issue of field use. Potts notes that the University soccer program keeps the field in nearly constant use for eight months. Practices begin the first of August and last all month. The fall season runs from September through November. Spring practice begins in February, with the spring soccer season running through May. During those eight months, the field is used almost daily, with weekday practices and weekend games. The team will play away games one or two days a week. In addition, the field hosts college tournaments and two or three high school tournaments each year.

Once the official season ends, summer camps move in. Six four-day soccer camps are held, each bringing over 200 young players to the field. The camps run in a series of two, with a one week break in between each series. The field also is used for softball camps during the summer and as a warm up area for opposing softball teams during the season.

"That leaves us December and January with little on-field activity," says Potts. "With the unpredictable Texas weather during that period we've not wanted to tackle a project as disruptive to the field as renovation of the irrigation system. We've also determined it wouldn't be cost effective with the planned conversion to a sand-based field.

"Our solution to the problem has been to depend less on the irrigation system and focus on watering the drought-stressed areas. We accomplish this by utilizing three quick couplers. One is located at the southern end line behind the goal, one at the west side of the field near the mid-line, and the third is on the northeast corner of the bullpen on the adjacent softball field. We attach lawn sprinklers to 5/8-inch hoses running from the quick couplers. It takes up to six hoses to reach the soccer field from the softball field. We'll leave each sprinkler on an area for two hours, applying between 1 inch and 1-1/2-inches of water, then move them to the next area. This will control the 'hot spot' for approximately 3 to 4 days, until we can irrigate the whole field with the irrigation system.

"This method allows us to prevent shallow rooting and conserve water by avoiding frequent irrigation with only minimal benefits to the drought-

Athletic Field Manager Leo Goertz (center), and Assistant Athletic Field Manager Craig Potts (right) accept the STMA 2000 College/University Soccer Field of the Year award from STMA President Rich Moffitt, during STMA's 2001 Conference in Tampa, FL.

stressed areas. It is very labor intensive. Someone from our staff must monitor the stressed areas seven days a week to prevent tissue loss from stress. This was extremely important the summer of 2000 when there was very little rainfall and temperatures exceeded 100 degrees for over a month. Yet, when conditions are right, this is the best-looking field on campus."

The aerification and sand topdressing program, started in 1997, is limited by heavy field use. The program has slightly improved the infiltration rate and had a limited impact on compaction problems. The sand also helps smooth the field surface.

The fertilization program is based on soil and tissue test results and visual appraisal and varies each year. Area soils are high in phosphorus, so no applications are made. Generally, two pounds of potassium per year are sufficient. Nitrogen applications will vary from 8 to 10 pounds per thousand square feet each year. Potts says, "We're forced to push the turf with nitrogen between the end of summer camp until the beginning of fall workouts to achieve recovery from the camp traffic."

The staff considers proper mowing the most important aspect of turf management. Potts says, "The field is mowed 4-5 times a week during the camp season and when growth rate slows. We mow at 5/8-inch from April until the middle of August to promote turf density. We raise the mowing height to 3/4-inch throughout the fall and spring seasons. During the fall season we mow every day because of the increased growth rate and amount of field use. We feel the frequent mowing promotes turf density and faster recovery from damage. We'll pattern the field during the fall season for aesthetics, but mow against the pattern on off weeks to avoid developing any grain in the turf."

The baseball and softball fields are overseeded annually with perennial ryegrass because they can gradually

(continued on page 21)