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THE *SPORTSTURF* INTERVIEW: BRIAN SCOTT

SPORTSFIELD AND FACILITIES MANAGEMENT June 2015

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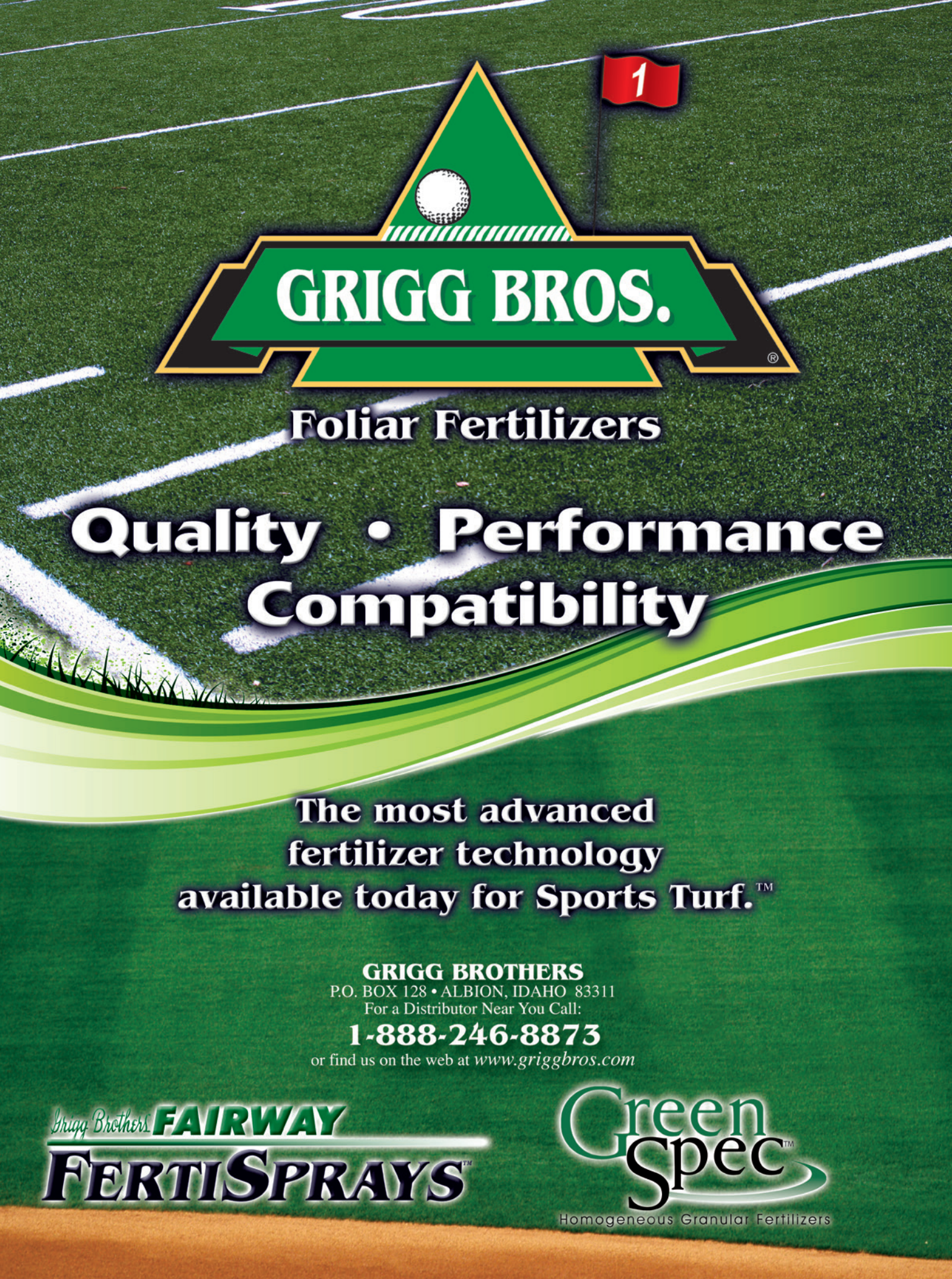
On the cover:
STMA College Soccer Field of the Year winner Georgia State Soccer Complex, Atlanta, GA. Kyle Slaton, CSFM, Director of Sports Turf and Grounds for Georgia State, regularly deals with problems resulting from the winning field's being in a flood plain.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THE "COST" OF FRUSTRATION

Eric Schroder
Editorial Director
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At a middle school track meet this spring I overheard another parent expressing surprise that the large high school host "still had a real grass football field." Later that day I heard a kid tell his mom, "That grass is so thick!"

The comments reminded me of an email I received in March from an industry friend who was irate, to say the least, about an item that had appeared in our e-newsletter, "Synthetic Turf Insider." The piece was about an 8-year-old synthetic field that had been deemed unplayable and at the end of it was a link to an earlier article from the same newspaper, which I had inadvertently included in the posting. My friend had clicked on this link, which took him to a page that had some quotes from the high school's AD; for example, "Maintenance of the field is easy; we sweep every two weeks and cleanse with groom [sic] every year. The total cost is about $2,000, annually, for this; the cost to properly maintain a grass field annually is $40,000."

You can see why my friend was, as my teenagers say, "PO'd," since that $40K figure is way out of line with what it costs to maintain a quality grass field. He referenced the work the late Dr. AJ Powell did a few years ago comparing budgets for natural v. synthetic, and there are other sources of this information available, including on the STMA website.

My friend wrote: "So, even if we accept [the AD's] numbers and it DOES cost $40K per year for grass, and we maintain it for the 8 years this turf field lasted, the total maintenance cost for that grass field would be $320K. To initially put in the turf field probably cost well over $400K and 8 years later they're spending another $300K to replace it. Sounds to me like the field had a total cost of well over $700K for the same 8 year period. If we don't even count the first installation of turf the comparison over 8 years would be $320K for grass, $316K for turf when you add $2K/year maintenance cost for turf field [the figure cited by the AD in the article]. Those are facts using the article's numbers. This [AD] is just spouting verbatim what turf sales people have said to him but he's just misinformed."

I was sorry to have so frustrated my friend, who by the way isn't a natural grass zealot; he understands there is a place for both types of surfaces. He gets agitated though because this kind of misinformation gets circulated all the time by reporters who don't look more deeply into the numbers. But as he wrote, "I'm simply not going to concede the budget argument. If we want budget numbers on what it takes to maintain surfaces we should be talking to Sports Turf Managers!" ST

SportsTurf
SPORTS FIELD AND FACILITIES MANAGEMENT

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The Official Publication Of
The Sports Turf Managers Association

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Subscription Services
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Fax: (847) 763-9569

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SportsTurf (ISSN 1061-687X) (USPS 000-292) (Reg. U.S. Pat. & T.M. Off.) is published monthly by EPG Media & Specialty Information at 75 Pike Street, Port Jervis, NY 12271. POSTMASTER: Send address changes to Sportsturf, PO Box 2123, Skokie, IL 60076-7823. For subscription information and requests, call Subscription Services at (847) 763-9565. Subscription rates: 1 year, $40 US & Poss.; 2 years, $65 US & Poss.; 1 year, $65 Canada/Foreign Surface, 1 year, $130 Airmail. All subscriptions are payable in advance in US funds. Send payments to Sportsturf, PO Box 2123, Skokie, IL 60076-7823. Phone: (847) 763-9565. Fax: (847) 763-9569. Single copies or back issues, $8 each US/Canada; $12 Foreign. Periodicals postage paid at Port Jervis, NY and additional mailing offices.

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Allen Johnson, CSFM.
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One of the consequences of becoming actively engaged in our association has been gaining greater insight into its beginnings and the passionate dedication of the volunteers who helped it become what it is today. It's amazing to learn how many people devoted countless hours of personal time and expertise toward the goal of helping others become better at their jobs. We owe a debt of gratitude to those who have given so much to our industry. Thank you.

STMA has grown from a grass roots organization to become the recognized, professional association for anyone involved in maintaining athletic fields. With our tag line of "Experts in the field, partners in the game" we are poised to address some additional goals of our founding members. Recently, STMA has hired the firm Buffalo Big to help us get our message out. Our association has now given us a tool to help us gain recognition for our profession, and to hopefully convince institutions that if they invest funds in hiring a professional field manager and arm them with a few tools of the trade they will notice great improvements in their playing surfaces.

It seems a shame that school districts are willing to raise large sums of money for capital improvements, when allocating a fraction of those costs annually to their maintenance operating budget would sometimes negate the need of replacing a field.

This is where you can help and possibly have as great of an impact as those who formed our association. We need your stories. We need to share the stories and examples of how having a dedicated, passionate field manager with a few resources made a huge difference in the quality of athletic fields. We need to demonstrate how allocating appropriate financial resources to an operating budget can possibly eliminate the need for a huge capital expenditure. Many times the difference between a poor field and an adequate one is simply having someone with pride looking after it.

STMA has also recently partnered with Project Evergreen. You may have heard about this group for its mission to assist deployed military members in maintaining their lawns and landscapes. They have also just added the goal of refurbishing dilapidated fields across our nation to give kids access to safer sports field surfaces for exercise and play and to connect them with their natural environment. What makes their program different is that they are engaging the end-users in the art of maintaining their fields after the makeover is complete. This is our specialty and where we can offer assistance. This also raises the awareness and importance of qualified field maintenance programs.

I invite you to visit Project Evergreen's website, projectevergreen.org, to learn more about their worthy causes, and I implore you to share your stories with Buffalo Big's representative Glenn Gray at ggray@buffalobig.com. In doing so, you could possibly impact our industry to the same extent as our founding members. There is no better way to say "Thank You." ST

A PERSPECTIVE ON BIOSTIMULANTS AND SPORTSTURF

BY **MIKE FIDANZA, PHD, JOHN CISAR, PHD AND THOMAS WATSCHKE, PHD**

Biostimulants … do they work?

First, what exactly is a biostimulant? From the Latin, "bio" (~life) and "stimulus" (~a thing that evokes a specific functional reaction in an organ or tissue, or a thing that arouses activity or energy in something, *or* an interesting and exciting quality), these terms don't seem to tell the whole story. The European Biostimulants Industry Council (www.biostimulants.eu) has this definition: "Agricultural biostimulants include diverse formulations of compounds, substances and other products that are applied to plants or soils to regulate and enhance the crop's physiological processes, thus making them more efficient. Biostimulants act on plant physiology through different pathways than nutrients to improve crop vigor, yields, quality and post-harvest shelf life/conservation."

The Association of American Plant Food Control Officials (www.aapfco.org) also includes an addition term "beneficial substances", which means: "…any substance or compound other than primary (i.e., N, P, K), secondary (i.e., Ca, Mg, S), and microplant nutrients (i.e., Fe), that can be demonstrated by scientific research to be beneficial to one or more plant species when applied exogenously."

Another version of this definition is that biostimulants are: "…a substance or material, with the exception of nutrients and pesticides, which has the capacity to beneficially modify plant growth."

Interested in gaining a global perspective on biostimulants? You may want to attend the 2nd World Congress on the Use of Biostimulants in Agriculture, Nov. 12-19, in Florence, Italy (www.biostimulants2015.com). The topics covered include biostimulants and plant nutrition, abiotic stress, plant growth and development, and more.

BIOSTIMULANTS … WHAT DO THEY DO?

Dr. Richard Schmidt, Emeritus Professor of Turfgrass Science at Virginia Tech is considered the pioneer of research on turfgrass biostimulants. He once wrote that: "Biostimulants are organic materials that when applied in small quantities enhance plant growth and development."

This is still a good definition. Some commonly reported benefits of biostimulants include: increasing plant tolerance and recovery from biotic stresses (i.e., insects pests, weeds, diseases) and abiotic stresses (i.e., heat, drought and other adverse environmental conditions); improved plant nutrient uptake (i.e., nutrient assimilation, translocation and use); improved rooting; reduced nutrient losses to the environment; enhancing soil physiochemical properties to facilitate the growth of beneficial microorganisms in the soil rootzone; and, when used as a soil amendment, the improvement of soil structure and function which translates to positive plant response, and more.

On athletic fields, mowing and traffic are two common and persistent stressors of turf, which leads to visible and detrimental surface wear. Sports turf managers should keep in mind that the turfgrass species used has an optimal range for mowing height, and that going outside that range by lowering the height-of-cut will add more abiotic stress and wear, and overall this makes the plants less tolerant of any stress. Traffic of course is a reality on athletic turf, and field rotation, goal rotation, use-time limits, overseeding and aerification are all part of reducing stress in addition to a sound fertility program which could include biostimulants.

Keep in mind, the exact mode of

action of most biostimulants is poorly understood, but their function in plants has been associated with the presence of various plant signaling molecules or molecules that facilitate the transport and efficacy of mineral nutrients. Determining the exact function of biostimulants is difficult since many products contain naturally occurring or commercially added micronutrients, sugars, amino acids and other compounds that may have synergistic, complementary or no plant/soil health effects or may have been added merely for marketing or commercial registration purposes. Thus, separating the effect of one or more ingredients from the others is difficult.

Some sports turf managers have to think about reducing their reliance on synthetic fertilizers due to community pressures or fertilizer laws, and look to biostimulants for help. The difference between biostimulants and traditional fertilizers is that biostimulants operate through different mechanisms than fertilizers, regardless of the presence of nutrients in the products.

DIFFERENT "TYPES" OF BIOSTIMULANTS

Biostimulants are derived from a wide range of materials such as living microbial cultures; extracts from microbial, animal or plant products; soil organic residues (i.e., humic and fulvic acids); industrial by-products and chemicals, synthetic molecules, and others. The Biostimulant Coalition (www.biostimulantcoalition.org) is a non-profit group of various companies that cooperate to "address regulatory and legislative issues involving biological or naturally-derived additives and/or similar products, including but not limited to bacterial or microbial inoculants, biochemical materials, amino acids, humic acids, fulvic acid, seaweed extract and other similar materials." From their stated purpose, biostimulants are grouped into several categories.

Plant Hormones. Also referred to as phytohormones (phyto = plant), they are considered "chemical messengers." Abscisic acid (ABA) is involved with water regulation as indicated by an increase in ABA concentrations in plant leaves under drought stress. Auxins are responsible for phototropism (shoots bend toward the light), gravitropism (roots grow downward) and cell enlargement leading to root and shoot elongation. Indoleacetic acid (IAA) is one of the more common auxins used in biostimulant products. Cytokinins promote cell division and delay leaf

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Some biostimulant products may have these certifications on their label and marketing information. The Organic Materials Review Institute (Eugene, OR; www.omni.org) provides manufacturers and suppliers of organic products an independent review based on compliance with their organic standards, and acceptable products are OMRI Listed®. The U.S. Department of Agriculture's BioPreferred program (www.biopreferred.gov) has been reauthorized by the Agricultural Act of 2014 (~the 2014 Farm Bill). Managed by the USDA, the goal of the BioPreferred program is to increase the purchase and use of biobased products, which are derived from plants and other renewable agricultural, marine, and forestry materials. The USDA Certified Biobased Product label assures a consumer that the product contains a verified amount or percent of renewable biological ingredients or "biobased" content.

Biostimulants and Pre-Stress Turf Management

Managing abiotic (environmental) and biotic (traffic, use and wear, pests) stresses on athletic fields must begin before the stress appears. Therefore, pre-stress management strategies are needed to ensure the turf has an abundant about of carbohydrate reserves:

- start with a good fertility program including soil testing to assure nutrient requirements are met;
- apply nutrients using foliar applications, with light rates and frequent applications;
- with foliar applications, include products containing biostimulants (particularly cytokinins, antioxidants and vitamins, and others);
- use growth regulators prudently to manage growth and conserve carbohydrates; be aware of
- using biostimulants that contain gibberellic acid when also using plant growth regulators that inhibit the effects of gibberellic acid.
- monitor rooting to be sure that all cultural inputs are improving rooting and/or preserving the current level of rooting.

Irrigation management also is an important part of pre-stress conditioning. Pay close attention to detail here, and monitor rooting depth and keep adequate moisture available throughout that depth or else roots will be. Soil surfactants can certainly help as well and have become an important water conservation method in turfgrass management. Remember that letting the rootzone get too dry does not encourage deeper rooting, since roots do not have "eyes" and therefore have a hard time "looking" for water. By not letting the rootzone get too dry, localized dry spots will be less of a problem as summer stresses becomes a problem.

Scouting your sports fields and monitoring weather conditions for disease and insect occurrence also should be part of an overall stress management program. Early detection is mandatory in order to insure optimum control and efficient use of pesticides and/or plant and soil health products. Also scout for early indication of excessive wear areas.

▲ **Example of promotional information** for Knife Plus (Floratine Products Group; Collierville, TN).

senescence, and gibberellic acid promotes cell elongation. It has been reported that plant hormones extracted from seaweed can stimulate the production of antioxidants, which scavenge free radicals and thus protect plant cells from damage.

Humic and Fulvic Acids. These substances typically are derived from leonardite or "brown coal," and were named after A.G. Leonard, the first director of the North Dakota Geological Survey, in recognition of his work in this field. Benefits of these compounds include increased nutrient and water holding capacity of soils (i.e., increased cation exchange capacity), prevention or reduction in leaching of soil nutrients, chelators of organic molecules and minerals thus making them readily available for plant root absorption, increase in enzyme and metabolic activity, and more.

Seaweed Extracts. These naturally occurring products can contain phytohormones, amino acid and vitamins, mineral nutrients and other compounds that may affect plants in many ways. A pioneer in the study of humic acids and seaweed in the US is Dr. T.L. Senn, Emeritus Professor of Horticulture, Clemson University. His work dates back to the 1960s, and he published "Seaweed and Plant Growth" in 1987. Currently, Dr. Erik Ervin at Virginia Tech, and Dr. Roch Gaussoin of the University of Nebraska in Lincoln, have led the way on turf research in biostimulants and plant nutrition. Seaweed extracts, humic acids, amino acids and other products that facilitate a turf benefit either through plant hormone effects or by increase antioxidant levels have been shown in their research.

Amino Acids. Amino acids are the building blocks for proteins and enzymes. Evidently, only the "L" form of these amino acids are assimilated by plants. In plants, these L-amino acids are reported to increase roots mass, activate natural defense mechanisms, and enhance photosynthesis. For example, L-proline is an amino acid that has been shown to improve water-stress tolerance in plants.

Microbial Inoculants. There has been an increased interest with including **Bacillus** sp. bacteria and other microorganisms in biostimulant products to help with plant disease defense and nutrient availability. For example, mycorrhizae are fungal organisms that form a beneficial relationship with plant roots, essentially increasing the roots' ability to absorb water and nutrients.

Other Compounds. Vitamins, proteins, various minerals, metabolites and more can be considered as biostimulants. For example, vitamin E, glutathione, beta-carotene and others provide beneficial antioxidant activity in plants. Salicylic acid, which is essentially aspirin, is used to improve plant resistance to diseases and various abiotic stresses.

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Plant growth regulators, soil surfactants, and perhaps other turfgrass maintenance products also may be considered as biostimulants due to their direct and indirect beneficial effects on plants and the soil rootzone environment.

BACK TO THE QUESTION: DO BIOSTIMULANTS WORK FOR SPORTS TURF?

The turf manager has to decide, what is the purpose of using biostimulants? Do you use biostimulants as a component of an overall turf nutrition or plant/soil health program? Do you use biostimulants to prevent and/or alleviate plant stress caused by adverse environmental conditions and excessive turf use and wear? Do you use biostimulants to enhance your current fertility program? Do you use biostimulants to help you sleep at night? Remember, there is no such product as "sunshine in bottle," at least not yet. Ask the distributor or manufacturer for research to support product claims. Recall that AAPFCO includes "any substance or compound … that can be *demonstrated by scientific research to be beneficial*" as part of their definition of biostimulants. Remember, some biostimulant products may include N and Fe and other traditional fertilizer components in addition to plant hormones and various other substances. Also, work closely with local cooperative extension and university researchers to see what has been tested that could provide insight on biostimulants and sports turf.

Conventional wisdom says that the use of biostimulants on athletic fields starts with a sound turfgrass fertility program, and to address/correct any soil rootzone issues first. To really know if a biostimulant product, or any product, is working for you, you should leave a "check plot." For example, place a 4' x 4' piece of plywood within the area to be treated. After the product application is made, remove the plywood and observe the site over the next several days and weeks. That way, you can make a visual comparison between the treated and untreated turf and determine if your program produces the benefit you want. Monitor and observe your turf frequently, both above ground turf and below ground roots, especially during heat/drought stress times. Biostimulants can improve plant and soil health, but does this always translate to improved turf surface characteristics (i.e., visual quality and playability)? You may need to include biostimulants as part of an overall, season-long program. Don't expect to "squirt" once and get instant results. An alternative to treatment large areas would be to apply your chosen product or program to a small test area first and observe.

In conclusion, if you are expecting miracles, then you may be asking a lot from a little bit of product. However, biostimulants may have a place in your turf management program. If you choose to use biostimulants, have a plan. Start with an objective like improved rooting, greater turf density, or healthier turf during heat/drought stress, then develop and turf management program to include a biostimulant product(s) that addresses your objective.

Follow the program and make frequent observations for a period of time, which could be a least several months or a season, and then make evaluation or changes. Did it work or not? Why? What adjustments are needed? If the program works then you have added a valuable tool to your turf management tool box. ST

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John Mascaro's Photo Quiz

John Mascaro is President of Turf-Tec International

Can you identify this sports turf problem?

Problem: Uneven Turf
Turfgrass area: Municipal soccer field
Location: Grenada Island
Grass Variety: Mixture of Bermudagrass, Bahia and Centipede

Answer to John Mascaro's Photo Quiz on Page 17

Background illustration courtesy of istockphoto.com

DIAGNOSING NUTRIENT DEFICIENCIES

BY **JOHN C. FECH AND BRAD JAKUBOWSKI**

Of the many maladies that a field manager has to stay on top of, nutrient deficiencies are difficult to deal with for many reasons. First, you don't see them every day. A manager may ask him/herself, just what does deficiency look like anyway? I know that we had it a few years back, but I don't remember exactly. Second, unlike a turf plot at a university or manufacturer trial, this is a real game field with players and daily/weekly damage from cleats and compaction. Third, other than odd looking leaves, the easy to see signs and symptoms—bugs, spots and rots—are often missing. As we dig into the potential for nutrient deficiency a little deeper, maintain a "wide funnel" of thinking about possible influencers and symptoms.

BEFORE JUMPING TO CONCLUSIONS

When working with the possibility of a nutrient deficiency, it's best to take a reasoned and steady course of action steps. The scenario where a good chunk of the soccer field is looking kinda rough…. yellow, not green…you may be asking yourself, Should I be worrying? Should I run out and buy a bag of fertilizer and dump it on quick? The answer is maybe; or maybe not. It's wise to avoid the accomplishment of Tom Smykowski and create a "Jump to Conclusions mat", (think Office Space) where there would be a set of nutrient deficiencies that you could assume are responsible.

In the case of maybe not, fully consider that there could be lots of other causes of the look of the turf. A process of triage to eliminate other causes is very helpful. Asking questions of other turf

▲ **Example of nitrogen deficiency**, courtesy of Brad Jakubowski, Doane College.

managers, considering recent weather events, thinking about diseases that have been a problem in the past are all good initial actions at the outset of diagnosis.

APPEARANCE CATEGORIES

In the overall context of trying to figure out the cause of the yellowish appearance, a basic set of appearance categories to work through can be useful.

Category 1. Turf is dry, bluish green, wilts, brown on leaf blade edges; possibilities include drought, wilt, uneven watering

Category 2. Turf is pale, yellow, thin or grows slowly; possibilities include nutrient deficiency, over-application of growth regulators

Category 3. Turf suddenly appears scorched; possibilities include fertilizer burn, pesticide burning, mower injury

Category 4. Turf is bare and/or thinned, often in trafficked areas and shade; possibilities include algae, moss, compaction

Category 5. Regular or irregular patches of dead and dying turf; possibilities include thick thatch or buried debris, sod webworms, anthracnose

In the case of maybe, where there aren't obvious other causes, the best place to start is with a soil test.

SOIL TEST

The best way to get a handle on the current level of various nutrients is by conducting a soil test. However, even though a soil test can provide great insights, a report is best thought of as a snapshot of results, not a solid guarantee of what is in the soil. This is especially true for nitrogen, which is a mobile nutrient, one that can leave the rootzone quickly or change from unavailable to available in a relatively short period of time.

The best soil test is a representative one. The key word in the last sentence is representative. The soil sample must mirror the entire affected area as closely as possible. In order for that to be the case, many subsamples must be taken. On a given area that is suspected of nutrient deficiency, an average of 10 soil cores should be taken and mixed together before submission. In order to gain better insights as to the cause of the decline, a set of samples should be taken from the non-affected areas and then compared to the ones from the area of concern. Consider making a soil test when your turf is growing at its optimum, this may give you a baseline to compare against when conditions aren't so good.

When sampling, keep in mind the rootzone for the turf plants; this is generally the upper 8 inches of soil profile. Use a soil probe to extract a sufficient number of cores, then cut off the upper 2 inches of the extracted soil plug. The reason for the removal of the upper portion is that it usually contains a fair amount of thatch and old turf crowns, which can skew the results of the soil test.

Soil testing can be greatly affected by the nature of the soil substrate, namely a native soil vs. a sand based field. Generally, deficiencies are more likely to occur on sand based fields, in that the particles have fewer attachment sites due to the greater glazing of the surfaces. The Cation Exchange Capacity (CEC) is a good measure of this, and will be noted on the soil test report. As such, sand-based fields often lend themselves to the application of light and frequent doses of nutrients as opposed to native soil fields, which are usually best maintained with three or four applications of moderately concentrated fertilizer applications.

Also keep an eye on pH. Since nutrient availability is closely related to soil pH, make sure you know the optimum availability ranges for your turfgrass areas. Interestingly, plant nutrient availability normally decreases when a soil's pH starts to exceed 7.5; however, Molybdenum's availability starts to reach its maximum at that point.

CLASSIC SYMPTOMS OF DEFICIENCY

Visual clues are useful for determining if the lack of nutrients is the cause of a turfgrass malady as well as the amount(s) indicated in a soil test report. Another consideration to keep in mind is nutrient mobility within the plant. Under deficient conditions, the more mobile nutrients will be moved to the younger, upper leaves, causing the older, lower leaves to exhibit

▲ **Example of iron deficiency**, courtesy of Dr. Andy McNitt, Penn State.

▲ **Example of phosphorus deficiency**, courtesy of Dr. Andy McNitt, Penn State.

nutrient deficiencies. Immobile nutrients will exhibit deficiencies on the younger leaves because the plant was unable to move them to the new growth.

Nitrogen (mobile nutrient). Slowing of vertical growth, general yellowing appears first on the lower leaves. This leads to loss of shoot density, leaf dieback at leaf tips and eventually an overall loss of color with older leaf death and lack of tillering. Ask yourself: Do I have sandy soils? Have I experienced high rainfall or irrigation? Do I have low organic matter? Have I been removing clippings? Or do I have compacted or waterlogged soils?

Phosphorous (mobile nutrient). Reddish-purple cast appears from the tip of the lower leaf blades, especially in cool weather, dull blue-green color, poor overall growth, slow root growth, often new sod is slow to knit. Ask yourself: Have I experienced cold temperatures? Do I have sandy, low CEC irrigated soils? Is my soil pH high (7.5-8.5)? Am I growing my turf on infertile or marginal subsoils? Are my soils high in clay?

Potassium (mobile nutrient). Yellow-streaking of the lower (older) leaves followed by browning and death of tips and margins, eventually will become completely yellow. Wilts sooner than normal during a drought, poor resistance to disease and cold injury, reduction in turf density. Ask yourself: Have I experienced high rainfall or leaching conditions? Do I have low CEC or acidic (pH<5.5) soils? Have I been removing my clippings?

Iron (immobile nutrient). Chlorotic between the upper (younger) leaf veins, eventual loss of most chlorophyll. Entire plant may turn white or spindly. Turfgrass stand may appear mottled with some grass exhibiting the symptoms, while others not. Ask yourself: Do I have high soil pH (>7.5)? Do I have excessive thatch or cold, wet soils? Did my soil test high in P? Are we irrigating with reclaimed municipal water that may be high in heavy metals?

Magnesium (mobile nutrient). Green or yellow-green stripes in the lower (older), changing to cherry red, older leaves affected first, increased winter injury. Ask yourself: Do I have low pH (<5.5) sandy soils, with high leaching potential?

Sulfur (immobile nutrient). General yellowing of younger (upper) leaves, gradual firing starting at leaf tip. Ask yourself: Do I have low CEC soils with low organic matter? Have I received high rainfall? Do I remove clippings?

Manganese (immobile nutrient). Chlorosis of younger leaves, yellow green spots on older leaves, withering at tips. Ask yourself: Do I have higher pH soils (>7.0) and have experienced warm, dry weather?

Calcium (immobile nutrient). Reddish-brown between veins along younger leaf margins, tips die and curl. Ask yourself: Do I have sandy soils, low in pH (<5.5)? Have I had leaching problems?

Boron (immobile nutrient). Slow growth, pale green younger blade tips, bronze tint. Leaves may curl. Ask yourself: Do I have leached, calcareous and sandy soils? Are my soils high in Ca and K?

Molybdenum (mobile nutrient). Pale yellow foliage, bleaching and withering of the lower (older) leaves. Ask yourself: Do I have acidic and sandy soils? Did my soil test indicate high concentrations of other micronutrients?

Zinc (immobile nutrient). Younger leaves yellow, smaller, grouped together. Some curling on the leaf edges. Ask yourself: Do I have shady conditions and high pH? Do I have high levels of micronutrients? Has it been wet and cool outside?

TOXICITY, NOT DEFICIENCY?

If not too little, could it be too much? Again, this is where the soil test helps, as well as the overall pattern of appearance of the turf. If it looks burnt, stunted, etc., at least consider that too much of a particular element has been applied.

One way to find out would be the plywood test. Cover a portion of the area to be treated with a sheet of plywood, apply your particular nutrient, remove the plywood and wait to see if there is a plant response over the next few days to a week. ST

John C. Fech is a horticulturist and certified arborist with University of Nebraska-Lincoln Extension; Brad Jakubowski is an instructor in the Environmental and Earth Sciences Department at Doane College, Lincoln, NE.

John Mascaro's Photo Quiz

Answers from page 15

John Mascaro is President of Turf-Tec International

The uneven turf on this municipal soccer field on the island of Grenada is the result of uneven mowing. Even though the playing surface is mowed by a mower, the surrounding area and sometimes the playing surface are also grazed by sheep. They are tied up on long ropes that are staked into the ground and then the owner moves the stakes from one area to another to not only allow the turf to be trimmed, but also be fertilized at the same time. To be honest with you, I was unsure if these were sheep or goats when I took the photograph as they were rather skinny (perhaps the turf might need some additional fertilizer inputs than what the sheep are providing). Anyway, I sent the photo to a researcher at the University of Florida who deals with breeding sheep and goats and she said that they are most likely sheep, "because they look chubby and they keep their tail down (goats tend to keep the tail up)." See, you can learn something new every day!

Photo taken by John Mascaro on the island of Grenada in the southeastern Caribbean Sea.

If you would like to submit a photograph for John Mascaro's Photo Quiz please send it to John Mascaro, 1471 Capital Circle NW, Ste # 13, Tallahassee, FL 32303 call (850) 580-4026 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 and the Sports Turf Managers Association.

INCORPORATING AIR INJECTION SYSTEMS ON COMPACTED NATIVE SOIL BERMUDAGRASS

BY **KYLEY DICKSON, DR. JOHN SOROCHAN AND ADAM THOMS**

Soil compaction is a common problem on bermudagrass athletic fields. The compaction of soil takes place over time, with each traffic event adding to the compaction. As soils become compacted, soil bulk density increases, macro-pore space (air filled) decreases, and water infiltration rates decrease. As a result of the compaction, turf cover is reduced, and player injury potential is increased. Therefore, due to the negative effects of compacted soils, cultural practices are necessary to alleviate soil compaction. Historically, core cultivation has been the primary management practice used to alleviate soil compaction and surface hardness. However, core cultivation is only one method used to relieve compaction.

Some cultivation techniques use water, air, sand, or other soil amendments to relieve compaction. These techniques work by injecting the amendment into the rootzone. These tools have been used for several years as alternative cultivation techniques. One example is the HydroJect manufactured by Toro. The HydroJect reduces soil compaction by injecting high pressure water into the turfgrass rootzone. Another tool used to relieve compaction is the new air injection system. The air injection system has been developed to release high volumes of compressed

▼ **Figure 1.** Air2G2 on a hybrid bermudagrass athletic field in Knoxville, TN in 2014.

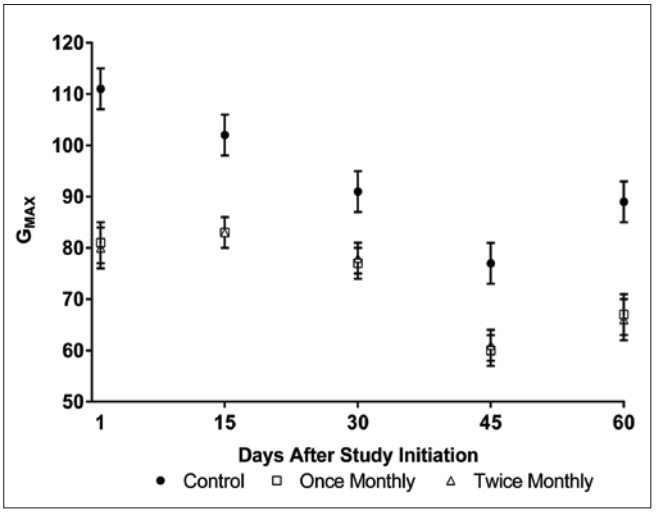
air into the rootzone through injection tines. It uses similar principles to the water injection systems. Currently, there is limited research done on air injection systems; particularly, with regard to impacts on soil physical properties.

The goal of this study was to determine the ability of an air injection machine to reduce surface hardness and soil bulk density as well as increase the total porosity of two compacted silt loam athletic fields. The hypothesis was that an air injection machine can decrease surface hardness and soil bulk density, thereby increasing total porosity.

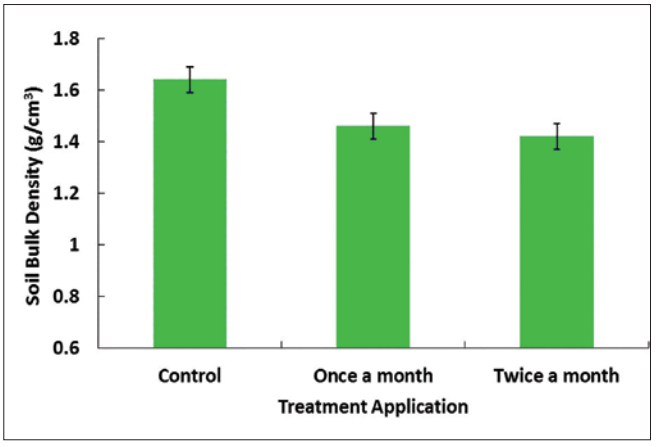
The Air2G2 was the air injection system used during this study. It was manufactured by GT Airinject. The system uses a self-contained air compressor to build up the needed pressure to inject air below the soil surface. The air injection system (Air2G2) is a three-wheeled machine that can be easily maneuvered across a desired area (**Figure 1**). The unit contains three tines that are simultaneously injected into the ground. Once in the ground compressed bursts of air are released at the desired depth. The unit has tine lengths ranging from 8 to 12 inches. Thicker tines can be used to penetrate into more compacted soils. The three injection tines are spaced 18-inches apart. The unit has adjustable pressure that ranges from 0 to 150 psi. There are also two adjustable pressure settings for using the machine. The first setting is for injecting the tine, and the second setting is for releasing the air into the soil. The ability to adjust these pressures enables the unit to be used on all soil types. The company has different recommendations for sand versus native soil fields to maximize the impact on the rootzone.

Research was conducted at the University of Tennessee from July 1 through August 30, 2014. Studies were conducted on two compacted native soil (silt loam) bermudagrass athletic fields. Two application frequencies were compared: once every 15 days and once every 30 days were compared to a non-treated control. Data collected for the study included surface hardness, soil moisture, soil bulk density, total soil porosity, and digital image analysis for percent green cover. Soil cores were extracted every 30 days to run physical analysis to determine soil bulk density and total soil porosities. A Clegg impact surface hammer with a 5-pound missile was used to record surface hardness measurements. Surface hardness was collected before and after the application of air injection. Soil moisture was collected using a Time Domain Reflectometry probe (Spectrum Technologies). The experiment was set up as a randomized complete block design with three replications of each treatment. ANOVA's were conducted in SAS 9.3 using Fisher's protected LSD. No differences were detected between locations; therefore the results are pooled for location.

The surface hardness was found to be reduced immediately after air injection treatments were applied. Both locations saw a 21% reduction in surface hardness immediately after applications (**Figure 2**). Soil moisture content values at location two were on average 20% higher than at location one on all dates (data not shown). Soil bulk density was reduced for both air injection application timings by an average of 15% in the top two inches of soil (**Figure 3**). Total soil porosity increased by an average of 17% in the top 2 inches of soil for both air injection treatments, while the untreated control saw no differences (data not shown).



▲ **Figure 2.** Surface hardness (Gmax) values taken with the Clegg hammer for both locations immediately after air injection applications on hybrid bermudagrass. Data was collected from 1 July – 15 August 2014 in Knoxville, TN. Errors bars represent Fisher's LSD values at $P < 0.05$.



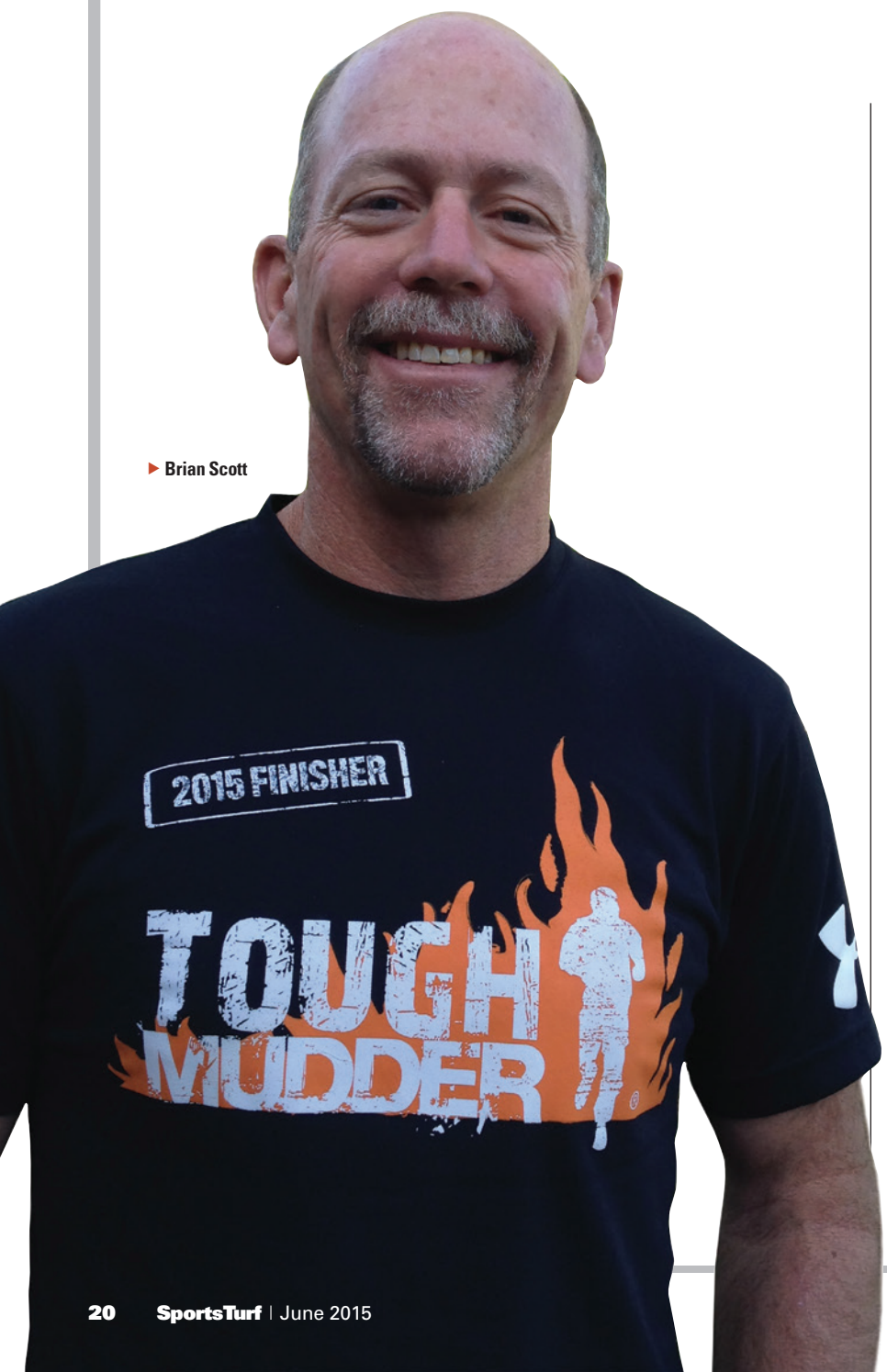
▲ **Figure 3.** Soil bulk density of hybrid bermudagrass subjected to air injection treatments for two locations at the conclusion of the study on 15 August 2014, Knoxville, TN. Errors bars represent Fisher's LSD values at $P < 0.05$.

The results of this study demonstrate that the air injection system decreases soil bulk density, while increasing total soil porosity on silt loam athletic fields. A reduction in surface hardness was found immediately after each air injection treatment application. No differences were found in percent green cover for this study. With minimal surface disruption, play could take place immediately after air injection applications. While this study shows the potential of the unit, future studies are warranted to determine long term effects of air injection aeration equipment on fields during periods of traffic.

See www.sportsturfonline.com for literature cited listing. ST

THE *SPORTSTURF* INTERVIEW: BRIAN SCOTT

Editor's note: *This month in our feature, "The* SportsTurf *Interview," we visit with Brian Scott, professor of horticulture at Mt San Antonio College in Walnut, CA. This past January Scott was honored with the STMA's Dr. William H. Daniel Founders Award, given annually for significant contributions to the sports turf industry through research, teaching or extension outreach. Scott-led teams have consistently placed high in the Student Challenge competition at STMA Conference over the past decade.*



▶ Brian Scott

SPORTSTURF: What are you responsible for in the turf program at Mt. San Antonio?

SCOTT: My primary responsibilities at Mt. SAC include:

1. **Professor of Horticulture** where I teach several courses including Soil Science, Integrated Pest Management, Turfgrass Production and Management, Sports Turf Management, Landscape Design, Landscape Laws, Contracting and Estimating and Horticulture Science. We offer four Associate of Science Degrees and 12 Certificates. Our degrees are Park and Sports Turf Management, Ornamental Horticulture, Equipment Technology and Integrated Pest Management (IPM). Our IPM Degree is aligned with California's requirements for the Pest Control Advisors (PCA) License so that any student who successfully completes that degree and has 2 years of field experience will be able to qualify to take the PCA Exam. I believe we are the only Community College program in California that can make that statement. I developed that degree and implemented it fall 2011. We have certificates in Interior Landscaping, Landscape and Park Maintenance, Landscape Design 1 and 2, Landscape Equipment Technology, Landscape Irrigation, Nursery Management, Landscape Construction, Park Management, Sports Turf Management, Tree Care and Maintenance and Horticulture Science. Two other faculty, Tom Visosky and Jennifer Hinostroza, and I are responsible for updating curriculum program modifications in all of these degrees and certificates.

2. **Agricultural Sciences Department Chair** where I oversee the entire department. In addition to the horticulture side of things, we have degrees in Registered Veterinary Technology, Horse Ranch Management and Agri-Technology. We have a 110-acre farm that includes horses, sheep, swine, cattle, a few llamas, a Zebu and a Watusi named Norma Jean. We also have a state-of-the-art animal hospital in our new Agricultural Sciences facility that was completed in 2011. This new facility has several lecture and laboratory rooms, a computer lab and offices for our nine full-time faculty and several of our classified staff. We also have a 10-acre nursery where we grow a diverse plant palette to sell to raise money for our program.

3. **Turf Team coach** where I have been organizing the team since the first competition in Orlando in 2006. This responsibility includes qualifying students for the team, training the team, acquisition of funds for travel (which in the past has included several landscape jobs installed by turf team members) and organizing all travel details. Chaz Perea has been coaching the team since 2011 and he has taken over the primary responsibility of conducting all training sessions.

4. **Overseeing** our turf plots and sports turf lab, which consists of Kent Kurtz Memorial Stadium, a Wiffle ball field we installed to provide a training area for sports turf students and occasional extremely competitive night Wiffle ball games using glow-in-the-dark balls.

ST: How has your career benefitted from being a member of STMA?

SCOTT: I think it started as a student member when I was attending Cal Poly Pomona. Dr. Kent Kurtz was my advisor and I remember working out of that office in Upland when he was the Executive Director of STMA. Doc encouraged me to apply for an STMA scholarship. I did and was awarded the "Harry Gill" scholarship. It was to be awarded at the first independent STMA National Conference in Vero Beach, FL in 1989. Doc told me I had to go to Florida to receive the award; I told him that it would cost me more to go to Florida than the scholarship awarded me. The next thing I knew he told me that the hotel and airfare were all taken care of by STMA. I came to find out later through sources that he paid it out of his own pocket!

The banquet room that year was very small and I sat at a table with Doc and Harry Gill. I will never forget that evening. It instilled something in me that was rekindled in 2001 when I began my teaching career. Once again, I found myself seeking council from my long-term mentor, Doc. He was still at Cal Poly (which is right next door to Mt. SAC). He welcomed my students as they were his own. He edified my in front of my students even when I was very wet behind the ears. He helped me to plug back in to STMA as he and Steve Dugas were getting ready to start a new local chapter, which became the Greater LA Basin STMA, the chapter of which I am now serving as President. I became an active member of the national STMA that same year when the conference was in Vegas. I have been to every conference since and have met many people who have helped me develop the turf program at Mt. SAC to what it is today. We did not even have a sports turf program when I started and now we have a program that has national recognition through the STMA. The success of my students is what my career is all about. In that light, STMA has provided an avenue of success for my students, thus an avenue of success for me.

ST: How do you explain your students' history of success in the STMA's Student Competition?

SCOTT: I believe that it is my role to give students a vision that overpowers the excuses that would keep them from the immense commitment of time and effort that is required to prepare for the competition. I have always talked about the opportunities that are created by attending the conference and networking and learning from their potential employers. I also speak to the fact that the relationships they build with their teammates through the entire experience will last a lifetime. I share with them that my own experience in college was defined by going "above and beyond," investing time in extracurricular activities that are still paying dividends today. I also live by the philosophy that I would rather have a few extremely dedicated students on the team rather than a larger number of partially committed students. We do not accept partial commitments.

I attribute much of our success in recent years to the coaching efforts of Chaz Perea. He has developed an incredible training system. His expectations of the students are extremely high; but at the same time he dedicates countless hours to their success, and they see that and appreciate it. Chaz and I are not paid for the time we spend developing the turf team. The students do not earn units toward their degree for participating on the team. The only reason

I also live by the philosophy that I would rather have a few extremely dedicated students on the team rather than a larger number of partially committed students. We do not accept partial commitments.

Continued on page 43

BUDGET PLANNING

BY **RICHARD MILLER**

"**Failing to plan is plan**ning to fail." A budget is a plan, albeit a dynamic process that aids in defining your goals. It can help you to map a strategy to manage your facility and situations that arise along with those responsibilities. "You can't play-the-game if you don't know where the goals are, or how to get there."

Good budgeting is based on good recordkeeping that hopefully provides the history on which to base future decisions. A good place to start the budgeting process is to understand the expectations of the facility owners for your areas of responsibility; list those fields and specific areas under your management and consider the entire scope of the facility and its revenues. We all assume that all sports facilities want safe and playable conditions for their fields and all adjacent areas, but the budget parameters must be adequate to produce those levels of safety and playability.

Income, (I'll call it "revenue"), is a starting point before expenditures can be realistically projected. Along with your facility owners, start identifying the revenue sources and available funds from each source as well as the cash flow timeline. You will need to know the "when" as well as the total "how much."

Most of time you will be provided this information, but if you have a new facility or are in a new position, perhaps your predecessor was not a good record keeper and then the challenge to develop a budget from "scratch" presents another task. I would suggest in that situation your tact should be to realistically list your needs as if adequate revenues exist. Note: the emphasis is on need, not a grand wish list. When firm estimates of revenue are realized then you can refine your expenditures knowing that you have identified reasonable needs based upon preset goals.

UNDERSTANDABLE FOR OTHERS

Have a system that works for you and is understandable when explanations are required. I find that spread sheets are basic and are usually clear to most people, but don't get too involved in accounting terminology. It is a piece of paper with columns and rows whether it is a purchased computer based budgeting software program, a system of your own design such as one might develop with Excel or similar systems, or even as simple as a sheet of paper.

Make a budget for the entire year with columns as "months" and rows as "items," which can be delineated as materials or labor (personnel) costs. This system gives you a "visual" on "sub-categories" for allocated costs like equipment amortization or operational expenses (materials) such as gas, parts, repairs etc. These items (called variable costs) include such necessities as seed, fertilizer, pest control, calcined clay, chalk/paint and even water if fees are allocated into potable and non-potable, heating, electrical and other utilities, if metered separately.

There are also fixed costs which happen whether there is any activity or not at your facility. These are items like insurance, taxes and similar overhead items including your salary. Labor costs can also have a variable and fixed component. This is especially true with larger seasonal crews versus a "skeleton"/full time staff. An annual budget has rows for items even if only used for part of a year.

HOW TO USE IT

Now the useful part of effective budgeting. It becomes useful for analysis and future planning if you record actual expenses alongside your "educated guesses." Be diligent to record actual expenses as they occur. You might even "breakout" the monthly column into weekly segments and/or "event" segments. Each day, record actual site expenses and revenues as they occur so nothing is forgotten. This daily activity is helping you also make necessary adjustments in cash flow and improves your creditability as well as efficiency. When you compare "actual" to your budget you are in effect creating the start of the next year's budget.

I strongly advise that you make a daily log/journal to accompany the budget format. Keep rows as your basic system, but now columns can be daily, for the month, and even a weekly period.

This daily activity is helping you also make necessary adjustments in cash flow and **improves your creditability as well as efficiency.**

This can relate to the analysis of such items as labor or even material use by field or general maintenance practice. Here are some examples of practices for which you need data to decide if you are efficient (receiving maximum utility value): events, irrigation, aeration, topdressing, seeding, fertilizing, and many similar agronomic and maintenance functions. You might even add "sub-rows" for miscellaneous or occasional tasks for general landscape practice like end-of-season pruning or overall hardscaping, and any repetitive tasks in your area of management.

However, if it becomes a burdensome or excessive document then remember the adage **(K)eep (I)t (S)hort & (S)imple: KISS.**

Lest I forget, also important to note but not in a budget format, are such items as weather conditions, specific events and even notable current events. Weather-wise, in sports turf management, this should be more than temperature highs and lows at your site. Factors influencing your decision making include precipitation, related humidity, wind speed and direction, ET rates and other factors you use to manage your fields for special events, tournaments, and even restrictions like water use, noise or light limitations, and even vehicle emissions. I am suggesting a lot of items to put in a log book or journal to aid in the future decision-making. However, if it becomes a burdensome or excessive document then remember the adage (K)eep (I)t (S)hort & (S)imple: KISS. The primary purpose is to organize all your notes and data in a quick and simple reference in one place for your decision-making.

Over time these budgeting documents become the history that helps you to create a highly accurate budget and adds validity to your budget requests. It is invaluable when situations arise to refer to your records to show how much labor or what materials have been needed to accomplish a past activity. You will also be able to improve your purchasing process, look for seasonal buys, use quantity discounts or take part in a group buy for materials, as well as track your labor allocations by tasks or field thereby improving efficiency. Labor costs are often a high percentage item in the overall budget so improved efficiencies in that area can often bring noticeable results.

When we deal with any factors not under our control we must also plan for the unexpected. Your efforts to recognize trends in input costs help you to anticipate some expected price increases and simply calculate a percentage increase, but still there are "surprises." Examples of these surprises include weather emergencies, unexpected budget cuts (decline in revenue), unusual price hikes for insurance, fuel and fertilizer. Plan for the unplanned by building in methods to handle the short-term by having long-term budgeting. These are usually called contingencies. I often separate longer life items or higher cost items out of the annual operating budget into a capital budget.

Capital budgets are simply common sense. Why wait until equipment like mowers, topdressers, aerators and utility vehicles wear out and then wonder where the "funds" will come from to replace those items?

Plan ahead to replace those items and similar field facility improvements like updated irrigation system controllers, lighting methods and even computers. These contingency funds (based on amortization and depreciation schedules) are essential and provide that "cushion" for short term emergencies by "borrowing" from the future. Annually you can "borrow" from the operating budget to replace what you borrowed from your future budget. Think of it as replacing the "savings" account after you have transferred funds to your "checking" account to cover an unexpected expense.

Amortization schedules are relatively easy to calculate. Make an "educated guess" of what it will cost to replace an item when it has reached the end of its useful "working life," before repair costs exceed remaining value. Divide that cost by the years of useful life and you have the annual amortized value.

You might even want to put it on a "sliding scale" whereby replacement cost becomes greater as you move along toward the end of its useful life. That replacement (contingency) fund becomes a fixed cost in your annual operating budget.

Generally, major capital improvements for new fields and stadium renovations are covered by the owner's facilities capital budget process, not your annual operating budget.

When revenues don't meet your expectations and your priorities must be able to maintain basic safety levels on all fields, always making sure the absolute essentials are covered. Once those safety considerations are met, then shift remaining resources to higher profile fields and restrict use on lesser use or less visible areas. Remember that you need to establish or retain the degree of confidence in your abilities and management decisions that will earn greater funding in the future.

Try your best to build a good rapport with all decision-makers. Keep them well informed, within your area of management responsibilities. If you have been accurate in budget planning so that your "educated guesses" become closer and closer to actual results, year after year, you will gain greater validity and respect. The history contained in your budget records shows that you know what needs to be done and how to accomplish it. ST

Richard Miller is owner of "A Growing Business" a green industry consulting business based in Janesville, WI. He has been an educator in secondary and post-secondary schools, and has sales and management experience in turf and other horticultural businesses.

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EVERYTHING YOU EVER WANTED TO KNOW ABOUT INFIELD DRAGS

Editor's note: *We asked professional groundskeepers these questions about what infield drags they use and why, before, after and during games: What type of infield drag(s) do you use before and after games? Why do you prefer that type? Do you use something different during a game and if so what and why? We also asked Paul Zwaska, director of education & strategic initiatives for Beacon Athletics, for some basic information on the different types of drags, which leads off the article:*

When one speaks of dragging an infield skin, there are actually two different dragging operations that that person may be speaking about. They may be scarifying the infield skin using some type of a penetrating nail drag or they could be finish dragging or float dragging the field to give it a smooth, blemish-free finish. There are several types of each drag available on the market. Which type of drag you use depends on what you are trying to accomplish, the type of infield soils, or whether you have a topdressing on the infield skin surface.

Let's look at scarifying drags first. The purpose of these types of drags is to loosen the top ¼" to ½" layer of material at the surface of the infield. Remember, a metal baseball cleat is only 3/8" long so you really don't want to penetrate much deeper. Excessive penetration when scarifying an infield can result in too loose of a surface on the skin of the infield, compromising the traction that the ballplayer desires. Too much loose material at the surface will also affect the playability of a ground ball as excess loose infield soil and/or topdressing will rapidly take the energy out of a ground ball and cause it to stay down and not take the proper hop that a fielder would predict.

With that information in mind, you will want a nail drag that is not too heavy or aggressive to prevent scarifying too deep. Lightweight nail drags with the ability to add weight or down-pressure to the unit should deeper penetration be desired tend to be the most versatile. This allows for adjustment according to infield soil moisture conditions. The other feature to pay attention to is the spike or nail used to actually penetrate into the infield skin.

A finer textured spike, like a 40 penny nail, is desired for daily infield maintenance. Aggressive spring tines are also a good fine textured option for scarifica-

Scarifying drag

tion. Nails, spikes or bolts that are larger in diameter than a 40 penny nail can create a washboard-like effect on the infield surface that could possibly cause erratic bounces of a groundball. These coarse and more aggressive scarifier drag options are better used during infield skin renovation projects for cutting skins deeply. The scarifier teeth should be hardened steel whenever possible to extend the life of the teeth/tines.

For the finish drag to smooth your infield, your choice of drag could be dictated by 1) the type of infield soil you have, 2) whether you have a topdressing on the infield, or 3) what you are trying to accomplish during your finish drag.

Steel Mat Drag: This is the universal finish drag. The steel mat can be used in any and all conditions with the exception of damp soils or topdressing. It has the ability to move material around and pulverize small soil chunks which most other finish drags can't do. The ability to transport material around is a god and bad point. It takes some common sense to decide where to start and stop your steel mat drag every day so as not to help create high and low spots. But wise decisions can help cut high spots and fill low ones using these mats.


Steel mat drag


Cocoa mat drag


Drag brooms

Cocoa Mat Drag: These drags literally float across the surface. Due to the density of the cocoa fibers they don't load up and transport material around like the steel mat drags. That means no pile of spoils when you pick up the drag. But it also means that a cocoa mat drag won't move material around for you if it is piled up somewhere, like around second base where sliding players tend to pile up topdressing. If you tow around a cocoa mat drag with a tractor, ATV or whatever, I recommend using a leveling bar ahead of the drag to spread any piles of infield soil or topdressing before being smoothed by the drag. Cocoa mat drags are great for in-game dragging. They also perform real well when your infield topdressing is too damp for a steel mat drag. What cocoa mat drags won't work well in are heavy soils with no topdressing on the field. These drags will not break up the chunks that will get kicked up. Cocoa mats work best on topdressed infield skins or very sandy infield soils.

Drag Brooms: Like cocoa mats, this type of finish drag works best on infields that are topdressed or are very sandy. Drag brooms do not have the ability to pulverize small chunks of infield soil. That being said, on the right surfaces, drag brooms can leave a very smooth, professional looking surface. They will perform fairly on fields with damp conditions. They also don't leave much of a pile at the end of a drag but at the same time they won't effectively move a pile of topdressing around as effectively as a steel mat drag will.

Many groundskeepers have found that having two types of finish drags tends to be the best option so you can adjust to field conditions. A steel mat drag for when you need to move infield soil and topdressing around and then either a cocoa mat or drag broom for when damp conditions prohibit the use of a steel mat or you don't want to move the topdressing around much. They all will provide a professional finish when maintained and used properly.-Paul Zwaska

TJ BREWER, CSFM,
Burlington Bees

I use several types of drags daily for different conditions and outcomes. One is the typical rigid steel mat drag (72"x18") with a 2"x4" attached to one end. These are pulled by hand and used for finish drags (time permitting), in-game drags and checking the consistency of conditioner across my infield. They are good for filling cleat marks, a quick level, and do a great job of general smoothing. When using it to judge conditioner consistency I typically look for 1½ to 2 squares of the mesh full of conditioner caught by the drag.

Next I use the 72" steel finishing drag that came with my bunker rake. This serves similar purposes as the rigid steel mat drag. Being attached to a machine it is quite a bit less labor intensive, but doesn't necessarily give as good of a finished drag as the steel mat drag. This is my go-to drag due to the time and labor savings. I run it across my infield several times a day to smooth the surface or redistribute conditioner after repeated watering, a nail drag or practice. The steel drag makes quick work of redistributing conditioner to create a consistent depth across the entire skin surface.

Then I have the industry workhorse nail drag. I have a 36" and a 72" version. Typically the 36" is pulled by hand and the 72" is pulled by machine. The 36" is actually more aggressive and used accordingly. Although it is lighter there is more pressure per nail and it provides a deeper cut. The 72" makes quick work

of the skin but it isn't as aggressive. I use the 72" daily to control moisture and after every game when I am just looking to scratch the surface to smooth minor fluctuations. The overall conditions, wetness, smoothness and how deep I want to cut are rolled into the decision on which nail drag I am going to bring out. Daily my objective is to maintain the surface; I don't want to cut too deep. I usually try to stay under ¼" and most commonly I am around."

Finally I have the leveling board which is an upside-down nail drag. I use both sizes depending on the situation. My 72" works like a box blade to help keep my infield level and smooth. I use this regularly to help keep my infield level throughout the season. It also does a pretty good job of evenly distributing conditioner across the skin surface.

There are many different ways to drag an infield. Find what works best for you and provides the outcome you are looking for. Don't be afraid to experiment.

DAN BERGSTROM,
director, major league field operations,
Houston Astros

We drag the infield by hand before the game with our 6'x18" metal mesh drags. We use the same hand drags in-game, unless the clay is very wet, in which case we'll use our cocoa mats. Post-game we use a standard three-wheeled bunker rake type machine to finish drag the field. The machine is a bit more aggressive than the hand drags and will break up any small clay bits quickly.

We prefer the metal mesh drags for all finish work to leave the surface completely flat, with no ridges of conditioner at the edges of each drag pass. As the hand-drags get used, the edges can become deformed or bent, so we spend time maintaining those edges to avoid leaving ridges of conditioner on the surface. We replace bent drags as needed for the same reason.

ANDREW SIEGEL,
University of Texas-Arlington

I have a home made nail/ spike drag I will use when needed. I generally try to avoid using it to often so maybe twice a week. Before games I will use 2'x6' screen and we use 5 during the game after the 5th to clean it up. Post game I will also use the screen except after night games. If it is a cool damp night I tend to hand drag again or use a 2'x6' cocoa mat to glide over the top.

PATRICK COAKLEY, CSFM,
Sports Turf Superintendent
Ripken Baseball, Aberdeen, MD

The majority of the time we use a Rahn groomer to drag which has fine spring tines and a broom attachment. This works well depending on the amount of play and level of moisture control. During tournaments on the stadium field, sometimes the tines and broom are not enough, especially when things start to dry out. Then we use a standard steel mat drag that is 8ft wide by 1ft. long.

The spring tines and broom attachment gives you the same result as hand raking and brooming the entire field. The depth of the tines is controlled from the driver seat so you can adjust according to conditions, but usually we just barely scratch the surface so as not to get too loose. This set up allows you to drag the field without moving much dirt at all (like you would with the steel drag mats). So you are able to smooth thing out with less disruption of your grade. The broom then finishes nicely. You do have to make sure you take care of the broom. If you get a couple of bristles bent or out of whack it will leave streaks.

When conditions are less than ideal, like during the days we play four or five games in a day, sometimes the tines and broom are not enough. During these particular days we will dry out even though we water before each game. So we will use one of our 8' wide hand drags that are shortened to 1' in length. We shorten the length to try to minimize the amount of loose dirt we pull out of the position areas that get roughed up during tournament play.

During our professional games (Aberdeen Ironbirds) we drag in the 3rd and 6th inning with four 8' wide drags to make sure we get full coverage. I have tried using the big brooms you can pull by hand but didn't like them. I don't have an abundance of amendment on the top layer of the skin but I would still pull all of it into a pile with the brooms and end up leaving humps. It may have been operator error, but I decided it was safer to stick with the standard mat drags.

OPIE CHEEK,
field supervisor
Philadelphia Phillies, Clearwater, FL

Yes I use a 6x3' steel flex drag before and after game, 4x5' rubber mat if wet. Shorter drag so it won't pull to much material. And five 8x2' steel drags at the 3rd and 6th innings, 8 foot brooms if wet.

ERIC BLANTON, CSFM,
director of grounds, Reno Aces

We use only hand drags/broom on the INF here. The only time a Sand Pro is on the skin is when nail dragging in the morning. All hand drags are rigid and they are used post nail drag, pregame, in-game and postgame. We do use a 6' hand broom following our hand drag before pre-game watering.

On our infield the rigid drags leave the least amount of lines, streak and/or clumps once finished. The finish broom is to remove any imperfections that may have been left on the infield to ensure a smooth playing surface.

JORDAN TREADWAY,
Director of Grounds and Facilities
Roger Dean Stadium

We use a 6' x 2' flex steel mat drag with a leveling bar for our pre and post-game finish drag. We like this particular model because it seems to accumulate less material to take off when finishing. The leveling bar is great for knocking down high areas and collecting the bigger chunks.

For our in-game drags, we use four 8' x 2' non-flex stiff drags with a composite wood board on bottom to pull less material. On the days where weather comes into play and we have a slightly wetter skin area, we go with the 7' drag broom for a nice finish.

Also in our repertoire is a 6' x 2' non flex stiff drag with leveling

bar in an effort to level out our conditioner after adding new material or after a big rain.

When teaching our method, we preach to be patient and go slow to achieve the smoothest infield surface that our players deserve. With our new guys, we like to go with the 4 to 6 inch rule off the edge until they are comfortable getting closer.

KEITH WINTER,
Head Groundskeeper
Fort Wayne TinCaps

On our infield, we use a 2 x 5' piece of steel mat that is welded to a frame that we lift hydraulically with our Smithco three-wheel groomer. During our in-game dragging, or in situations where we can't get the machine on the field, we use the same mat drag that is attached to a 1 x 4 composite board. We finish our baselines and home plate area with drags that are longer but constructed out of the same steel mat.

On our mound, we finish with the back side of a soft-bristled broom.

I am not a fan of cocoa mat, because I don't believe it does any good in terms of leveling and evenly moving the conditioner around the infield/skin. A part of the equation would be what kind and how much "conditioner" you are using. We use about ¾ vitrified and ¼ calcined clay and cover our infield base on the "lighter" side. All materials require different methods of maintenance.

MATT GERHARDT,
field maintenance supervisor
Pittsburgh Pirates

Here at PNC Park, we have a wide variety of drags for our playing surface. Every day, conditions are different with weather issues, so we have drags for every occasion. The amount of moisture in our skinned area dictates what we use.

When the playing surface is dry enough and allows, we use a 4' stiff drag for our baselines, home plate and all our edges around our skin. (Although we do have and will use a 4' wide cocoa mat drag when the conditioner is wet.) This work is all done walking and pulling by hand.

For our actual skin surface, we use a 6 x 4' regular steel drag pulled behind by our 3-wheeler

We have an 11-man game staff and during the game, we drag after the 3rd and 6th innings' we have an eight-man drag team and three guys that rake around and change bases. We typically use a 4' wide cocoa mat drag with an open back. Although this year, we are having sponsorship logos placed on our field materials, so we are switching to 4' wide cocoa mat drags with a rubber backing (where we will apply our sponsor logo sticker to the back).

Again, what we use and when we use it is all dictated by the playing conditions.

JOSEPH E. BARR,
Sports Turf Technician
Milton Hershey School (PA)

In 2014, we were fortunate to purchase a Sand Pro 5040 with a Rahn infield groomer attachment. We do make every effort to drag our fields before and after every game and practice. If you don't, the foot marks and holes can harden or turn into mud bogs overnight if it rains, requiring us to work harder the next day. Nobody wants that.

Our process includes removing the bases and anything noticeable left on the field. Rake down the high areas around bases, using the back of edge of a 24" field/aggregate rack.

Next we will use a plastic leaf rake to pull back any infield mix/dirt that was thrown into the grassy areas. This includes the base paths, home plate area, infield and pitching mound.

Also using the plastic leaf rake, I like to lightly rake back the infield mix, away from the turf about 12" (both these processes are to avoid lip build up).

Now we start to drag the infield using the heavy-duty scarifier to loosen compaction areas. Then using the springtine scarifier both only going about ¾" deep into the infield.

I recommend that when dragging infields go *slow*. This loosens the surface and aids in moving material to low areas and away from high areas. Always drag at least 6 inches from the grass edge to prevent lip build up. Alternate dragging patterns to prevent high and low spots, especially where you stop. Most important, never pull your drag over your lip into the turf. Stop short and pick up the drag mat.

We then finish with the brush broom for a smooth playing surface. This provides players with better and safer playing conditions!

For the base paths we use a 24" field/aggregate rack and finish with a 3'x 5' steel drag mat, working it from home to first base and home to third base. Never go side to side. That will create a lip.

For the pitcher's mound, I prefer an all-hands on method, using the 24" field/aggregate rack 10" x 10" tamp and plastic leaf rake. Batter boxes and home plate area are also completed by hands-on methods using the 24" field/aggregate rack, 10" x 10" tamp and 3'x5' steel drag mat.

At the high school level it is extremely rare we get called upon to do anything to the fields during a game. Rain could play a part in this issue, however schools do not play through light rain like they used to. The trend has become to avoid injuries and postpone for better playing conditions. I agree with this as player safety should always be our top priority

GREG BURGESS,
Head Groundskeeper
Greenville Drive

Before and after games we use a rigid 6' hand drag for basepaths, 1st & 3rd cutouts, and homeplate. We use a Deere 1200 drag for infield, which gives a nice uniform grooming finish to the calcined infield conditioner. The hand drag allows us to get into tighter areas.

During games we use the same 6' rigid hand drags during our infield drags (five of them). We have knots in the ropes to allow us to drag with only the end of the drag mat in wetter, stickier conditions. ST

STARTING FROM SCRATCH IN THE FAR EAST

BY **PHIL SHARPLES**

My adventure in the Far East of Europe and Western Asia started in 2010. Initially I thought it would be a simple 1-year contract; I am now on my fifth contract and it seems I have turned into a nomad.

During this time, and luckily for me, I have been working for some great footballing minds, including Tony Adams (ex-Arsenal) and Gary Stevens (ex-Tottenham), Stanley Brard (ex-Feyenoord), Fathi Terim (ex-Galatasaray), Yuri Semin (ex-Dynamo Kiev) and many more.

So how has this time been spent? Facing challenges in regard to training novice turf managers in the profession of groundsmanship different and rather dynamic environments.

Gabala FC, Azerbaijan. From October 2010 through December 2011, I worked to grow in and develop four suspended water table, full-sized soccer pitches in Azerbaijan. I also managed a number of artificial pitches, while hiring and training all staff.

Gabala FC Project

Jan. 12 through Dec. 12, Azeri Football Association and Football and Sport Management (FSM), Azerbaijan. I developed and managed all match and training pitches for FIFA U17 Ladies tournament. I also trained all staff.

Baku, Bakcell Arena
U17 Ladies World Cup

Jan. 13 through Dec. 13, SIS Pitches. I managed professional pitches in Turkey (Galatasaray FC, Trabzonspor FC, Kasimpasa FC and also one new stadium in Uzbekistan - Bunyodkor FC). I also managed three stadium pitches in Turkey for the U20 FIFA World Cup tournament. And of course trained all staff!

Galatasaray FC

Feb. 14 through present, Gabala FC, Azerbaijan where my duties include formal staff training and development of Gabala FC stadium and training facility playing surfaces. So far I have developed two additional new pitches. I also advise another Azeri premier league team on their stadium surface, Lankaran FC

Academy stadium Gabala FC

A common theme in all my stops was the excellent work by SIS (Support in Sport), a British company, in the initial construction of the natural grass pitches and their professionalism with seeing the job through, no matter what the problem nor the challenge. SIS built them and I grew them.

In Azerbaijan in October 2010 the infrastructure for professional soccer pitches throughout the entire country was poor. Pitches were poor, stadiums were poor (generally Soviet-type constructions that were falling to pieces) and the general set up for professional soccer was, you guessed it, poor!

But things quickly changed, and over the past 5 years the country has rectified this situation. As I see it, there were three catalysts: the vision of my current boss and owner of Gabala FC to build a leading European-style facility; the fact that the country secured their first professional soccer tournament, the 2012 FIFA U17 Ladies World Cup; and the vision of the country's Football Association (AFFA). It also helped a little that we produced fantastic pitches in Gabala to show just what was possible here.

When I arrived in Azerbaijan I was told that you cannot grow quality grass there because they had tried before with little success, due to the high summer temps and high humidity. Not only was there absolutely no data on what to expect from disease pressure, what sports turf grasses are/were suited to the climate (summer 40 degrees; winters to minus 10), what the expected weed types were, what the likely ET rates and humidity would be, no soil testing labs, nothing; there were also no trained staff in the country. So, we needed to start literally from scratch. No sports turf equipment dealer infrastructure, no machinery, no fertilizer, no pesticides. At first we imported everything from the UK.

TRAINING A BIG ISSUE

How do you go about training staff from scratch? How do you begin to train staff with no background in turf management, not just for general groundsmanship, but also for managing first-class professional soccer surfaces and all in a very short period of time? Staff that initially had very little knowledge of the English language let alone sports turf terminology and processes!

There are three key points that are a must when it comes to getting novice guys up to a high standard quickly. Number one is the attitude of the employee and number two is the knowledge and attitude of the trainer, and number three, having a well-thought-out plan. Everything else will follow, so long as these are in place.

We started with the interviews, looking for the right type of personality. Luckily, my background in turf management also included a 9-year stint as a turf lecturer. I understood the training process (and understood how important it is to have a trained "trainer" to carry out the process). So a methodical approach was planned and we set to getting the basics right from the start. When I say basics, I mean ensuring the

guys understand the concept of the growing process and what influences it as you and they can then manage the plant sympathetically to this. Understand when to push, when to rest and allow recovery and how to manipulate the growing process for your advantage without stressing the plant.

The initial theory sessions made sure that all firstly understood the meaning of the job, their role in this job and what was expected from them. Moving onto practical sessions with basic machinery with the supporting theory after each to aid fast learning, we made sure all understood the reasons for doing each task, likely timings and the associated benefits and disadvantages.

I also understood that the more efficiently the guys developed, the fewer mistakes would be made and the best work would be produced in the shortest period of time.

In high temperatures and with pressure to produce the very best results fast (a common theme as we are all aware), there was really no time for repairing damage from workforce, mistakes, slip-ups or mishaps!

As time passed I quickly developed an approach that could be transferred from one stadium situation to another; this was necessary with number of sites being managed now I was based in Baku and this also paid dividends later on when travelling around Eastern Asia.

Modifications of the program were needed to focus on individual stadium micro-climates and usage patterns and focus on what could be achieved within the constraints each situation held. Of course, in the real world, we cannot always do things exactly as we plan them when it comes to maintenance tasks. Flexibility is a requirement too.

I decided to make the training a more formal affair. I opened discussions with the IOG (Institute of Groundsmanship – UK) to develop a more advanced training course for the 10 groundsmen the club now employed, a first for the IOG and Azerbaijan. So, I set to writing a formal course proposal detailing what the qualification would entail, its content, the training process, the expected outcomes and how it would be assessed. For more advanced on-the-job training documents such as this are required to clearly set out the goals and methods.

A groundsmanship lesson at soccer club hotel.

For one year, we worked steadily to achieve the goals. Weekly lessons via PowerPoint held in the club hotel where I lived, practical sessions on the numerous pitches at the club, identification sessions and safety training. All carried out in a real work environment. We covered most all things possible, from grass identification to machinery maintenance, set-up and care to root hair development, to de-nitrification, stripping and re-growing of pitches and simple things like plugging.

Each lesson succeeded the last, methodically working from basic principles to more advanced management in a step-by-step process.

The finale to the course was a 2-hour written exam I developed to assess just how their theory training had progressed and what had been retained over the year. This was delivered in a formal UK style, something that my guys had never experienced before.

Bi-weekly tests were carried out as well as matching and on going practical assessments. The guys got on with the learning, I got on with the teaching and we worked pragmatically through the next year. We must also add to all this, the language barrier involved. Everything must be translated into Azeri or Russian before being delivered. Not an easy task and many hours were put in to develop it. For many sports turf terms there is no translation! My guys here now understand a tremendous amount of words that will be useless to them in their daily life away from work.

So what has been achieved? At Gabala we have a staff made up of very keen and willing groundsmen that have a real passion for their job and all have a keenness to continue learning. Around the region I like to think that the guys now understand the importance of what they do, work to produce the best results for both the plant and the playing surface.

We have few mistakes and no accidents and my staff are a pleasure to manage. Most importantly, they produce a consistent high quality of workmanship, every day and for every task. I am proud of what they know, how they conduct themselves around the work site and how they are developing into mature, sensible, sympathetic professional groundsmen. ST

Results always speak louder than words.

Phil Sharples has spent time as a researcher, lecturer, and practitioner in the sports turf industry, specializing in stadia turf management. He is still working now for Gabala FC in Azerbaijan.

NOTES ON RELOCATING FOR A JOB

Editor's note: Sports turf management, especially at the collegiate and professional levels, can mean moving frequently, most often to take a higher-paying job. If you are considering relocating for work, here are three perspectives that might be of interest.

ABBY MCNEAL, CSFM
Assistant Director of Parks
City and County of Denver

I was actively researching jobs of interest that would allow me to grow more in a leadership role and share my knowledge. I had wanted to get more into an administrative role and did not see that happening in my previous position (director of turf management for Wake Forest University). I was wearing lots of hats (and still am in Denver) but was truly confused about where my expertise was at. I realized that I loved sports turf and would like share what I know in that area as well as the facilities maintenance and field and building construction aspects that I have learned along the way.

I was also missing being closer to family and Colorado is "home" so it was natural for me to look there. I started my career in Parks and Recreation and thought that I would be able to share what I know and grow in the areas that I wanted to, so I focused on that area but in my job search I did not limit my options.

FAMILY

I thought about how this would affect my family and me. Being close with my sister and her family, and having life-long friends nearby would provide me support and great opportunities for my kids to experience. Nothing replaces family and most of my life-long friends are my family. Returning to where some of this extended family were was an easy thing. I already have seen my sister more since relocating than in the past 4 years I was away. My kids were excited to be near their aunt and uncle and cousins and embraced the chance to meet new friends.

We talked about it openly once I accepted the position and we worked together to make it good for all three of us. I addressed various concerns about how things would make it from point A to point B and we talked about what we might miss and what new things we might discover. I feel like I have very resilient twins (6 1/2 years old); we still talk about the friends we miss today and when we will see them again.

My main focus was on the excitement of what was ahead for all of us. I would not have to work as many weekends of late nights and we would be able to spend more time together doing fun things. As a result we are all submersed into various sports and activities that would have been a challenge had I not changed positions.

You asked what was important to my kids about the move… my son needed to understand how everything in the house was going to fit into the moving truck! They both dove in and helped pack things and understood how things would make it

from "here to there." They got to fly back while mom and the dog drove across country. I sent pictures along the way and they followed me via a map. Then they had to help unload things and set their rooms up. Just keeping them involved I think helped a lot.

I spent time asking myself what I really wanted and why I was searching. In the job changes that I have made I've learned that you leave one set of problems and inherit another set. The "grass isn't always greener" but the view maybe a little better. Every job change has presented a new set of opportunities and challenges from which I have developed professionally.

If you chose to search for a new job or relocate take a 360 look at the entire picture. Again, things will not always be better just different. What are you leaving? What are you gaining? And how does this/that get you to where you want to be? It is not an easy process but fortunately for me I have lots of great friends that I came back to (and family) that support me no matter where I am at. Thankfully most of us have moved away from address books because I know I have worn out their pages with my address!

It's always hard being the new person at any job. For me it is submersing yourself into getting to know people and establishing the relationships for the big picture/long haul. I at least have a good sense of directions so no matter which move I have made I could figure out the city! It's an opportunity to explore and be open to adventure. The staff needed to have energy for a team environment and be able to have fun; after all, we get the best office around most days. Having a full understanding of the employer that you are going to is very important, so make sure and research them too. Remember during the interview process it's a two-way street.

TYLER RAMSEY
Assistant Sports Turf Manager
Reno Aces

I was actively searching for an assistant sports turf manager position. In Ohio, I worked for an athletic field contractor; sometimes in that kind of business you don't get to spend as much time perfecting one field since you are responsible for many fields.

I was concerned about leaving my family. Thankfully, they understood that this relocation and job was necessary for me to work toward my ultimate goal of becoming a head groundskeeper. I think anyone who is considering a relocation and new job should ask themselves if the new job will be a step up from their current position. Will it help you achieve your long-term goals? I think researching the city you will be living and working in is a good idea.

You need to know that you can fit into your new environment. Starting a new job is always stressful and adding relocation to the mix can be messy if you don't prepare yourself. As I write this I'm only 2 weeks into my relocation. No matter how much you prepare yourself for it, it will be difficult. You're going to miss your family and friends, but if you love what you do, and you know that this is the right step in your career, I don't think you will regret it. My experience has been great with the Reno Aces. Everybody I have met and worked with are easy to work with and even easier to get along with. I am happy with my choice to relocate.

JOE KOVOLYAN
Manager of Grounds/Automotive
University of Puget Sound, Tacoma, WA

I moved across the country for a new job.

I wasn't looking for a new job that October several years back nor did I have any idea in 3 months I would be living 3,000 miles away. My previous boss, who had hired me at Phillips Exeter Academy in New Hampshire, had a Manager of Grounds position open at The University of Puget Sound. He had left 3 years earlier but we had stayed in touch and he even had his grounds manager at the new place contact me about some things over those years. A

coworker and I called him to harass him about the opening we saw at his place. During that conversation, as he mentioned he didn't think I would be interested in moving, it became clear to me that I might be. I bounced it off my wife and we both felt I had nothing to lose and if anything it would give me a chance to see a part of the country I had never seen.

I fell in love with the location as soon as I saw it and really clicked with some of the other staff and crew. The interview went well I thought and I just needed to see what they thought of me. In the mean time I sat down and made a list of pro and con issues that I felt were important to me. I admit I was disenchanted with running snow operations for years and wanted to gain my life back in the winter. I also had been infected twice with Lyme disease and was convinced I still suffered from its side effects. This list would change during the process but I needed to start somewhere:

Pros	Cons
Little or no snow	Overcast rainy winters
No ticks, very few bugs	Much smaller Campus
Free education for kids	Already have free education for kids
Great growing conditions	Unfamiliar with a host of plant material
Fresh start	Leaving friends and family behind
New and different	Could do job in my sleep (Groundhog Day!)
Life style change	

When I heard that the job was mine if I wanted it and what the pay and benefits would be, we added this information to the list. The two biggest questions I kept asking myself were "Do I want to do what I'm doing right now for the next 10 years?" and "Would I regret not trying this?"

We were in a situation that my wife was also ready for a change in her career; she spent some quality time looking at homes, schools, and jobs in the area of the university. I have two children, one in middle school and the other in high school at the time, and we chose to keep the initial interview and process quiet until we knew more and had thought threw a lot of issue ourselves first.

When it became clear that this was something we may want to do we sat down and talked with the kids. Even though it was a decision my wife and I needed to make, we wanted them to have a voice in the process. One child was all for it, one was not; the concerns were normal, e.g., leaving friends and family, etc.

The last thing my wife and I did was to take a trip at our expense, wrapped into a small vacation we had planned, to go back out for her to see the area and meet the people. We then went on our vacation and made the decision.

One big issue after accepting the job was timing. My interview was at the end of October and I ended up living in Washington by the second week of January, roughly 14 weeks start to finish. I needed to be out in January to start getting the athletic fields ready for spring sports and we still needed to deal with packing and selling the house and the kids finishing the school year. The hardest day in my life was the day I drove off across country leaving my wife and kids behind and going to a place I knew little about and knowing only one person.

BIGGEST REASONS TO DO IT

We wanted a life change and felt we would have better opportunity if this worked. I wanted to move my career in a different direction and to have more freedom in what I did. Although the job was new, I knew who my boss was. We both knew our good and bad points and I didn't have to worry that I wasn't going to fit into his organization. I felt this was a huge plus with such a big change. I also felt I was respected enough that if it did not work I would be able to find a job back in New England.

Professionally I had many conversations with several trusted people in the industry to get their input and opinions. I wanted to hear their concerns and fears along with the benefits and possibilities. I chose not to do that with extended family members, as for me it was a decision for only my wife and kids to be involved with. I also believe that sometimes you have to take a step back to move forward and that can mean anything—financial, title, position, etc.

WHAT I LEARNED

Moving across county sucks! Sell everything and buy new when you get there, it's cheaper. That is not true for everything, but you really need to think about what's important and what you can replace.

The USA is an amazing, beautiful country. I drove across it twice in 4 months and it was a humbling, trying, beautiful experience even with the minivan loaded with a wife, two kids, three cats and a rabbit.

I recommend not going back to where you moved from too soon; it opens up too many emotions. Live the adventure that it is first. All four of us hit home sickness at the 6-month mark. We now live in an area with many military families. I would compare what we went through to what our armed forces families go through; it always helped put things in perspective for me.

Professionally, it was hard to start fresh with all new vendors and suppliers again. It takes time to build up that group of people you count on when things need to get done but it's time that needs to be invested in as the payback is well worth it.

More advice: embrace change but rely on your knowledge and experience; and, take advantage of the clean slate, both professionally and personally.

Reach out to fellow colleagues and educators in the area along with professional organizations to help. STMA, PGMS and ISA and their local chapters all helped in the transition for me. ST

A PROFILE OF THE TURFGRASS PRODUCERS ASSOCIATION

BY **JIM NOVAK**

In just 2 years, one of the most influential turfgrass associations in the world made up of turfgrass producers from more than 40 countries will be celebrating its 50th anniversary. That's quite a milestone, and yet the letters T-P-I, which stand for Turfgrass Producers International, may not be top of mind for sports field managers, golf course superintendents, grounds managers, and other individuals whose primary responsibility is overseeing, managing and maintaining sports fields and/or other recreational sites. The TPI leadership is hoping to change that.

A number of professionals who are responsible for maintaining athletic fields look to members of TPI, not only for quality turfgrass, but for insight and information on how to ensure their playing field and especially their turfgrass can take the day to day punishment that today's sports and recreational activities demand. These business relationships aren't just founded on the quality product these turf producers grow and harvest, it's also based on the knowledge they have to offer, their commitment to understanding the needs their clients, their business ethics and their timely responsiveness when the need presents itself.

Many TPI members aren't just growing sod; they're also making a major contribution to cultivating new varieties of turfgrass through their own efforts or in collaboration with research specialists and universities in the area of turfgrass breeding. Still others are directly responsible for licensed grasses that have revolutionized the industry, producing varieties that withstand different environmental factors such as heat stress, drought, cold weather, etc., but still look great and offer the benefits that only natural grass can.

Numerous licensed grasses graced the stadiums of the FIFA World Cup in Brazil and when the game of golf returns to the Olympic Games in Brazil in 2016 TPI member David Doguet of Bladerunner Farms in Poteet, TX, the company that bred Zeon Zoysia, will see his grass grace the fairways.

The products and services provided by

TPI members vary but many specialize in sports fields, working closely with sports turf managers serving in an advisory role in the decision-making process, such as whether or not to bring a different soil mix into the venue, how the sod should be grown and maintained at the farm then on the field, assisting with post-installation care, etc.

These support services may include everything from new field design to annual maintenance programs from installation to total field renovation and take into account such factors as root zone amendments, drainage, irrigation, etc. It's somewhat safe to say that the list for NFL stadiums, MLB parks, college stadiums, etc., that rely on turfgrass grown and harvested by TPI members is substantial and likely represents the vast majority of stadiums and ballparks throughout the US.

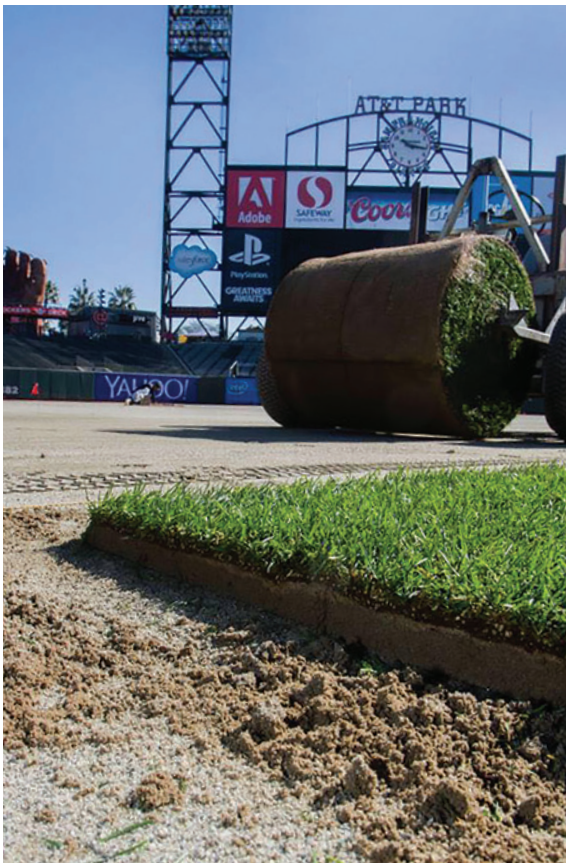
Those turfgrass growers who serve the sports industry have a great deal in common, whether they're involved in prepping an NFL stadium in the US or providing their services and expertise for a soccer stadium in South America or the UK. They want to provide an athletic playing field that offers functionality, stability, safety, requires low inputs, provides wear tolerance, is quick to recover and is visually appealing. Those who specialize to sports fields often analyze every detail in the development, design and execution of a project and offer assurance that the turfgrass they provide serves the specific needs of the customers and the athletes.

TPI remains the only international trade association dedicated to encouraging the use of turfgrass worldwide. Its membership exceeds 700 and the association could no doubt claim that its members easily represents the top turfgrass producers, not just in the US but in the world. It's also worth noting that professional sports turf managers can take advantage of TPI's Industry Associate member class to receive many benefits, including the bi-monthly *Turf News* magazine, which includes information about the latest turfgrass research.

TPI's president, Eddie Keeven, Jr. is quick to point out, "TPI is a global organization: a collection of turfgrass growers, industry suppliers, educators and advocates from all over the world."

Many companies and associations toss about the term "family" to describe the organizational culture, but at TPI the term isn't used lightly. Association members may have a competitive kinship but because TPI is international in scope a turfgrass producer in Tennessee, Texas or California is almost always willing to provide information or assistance to a fellow turfgrass producer from another region or country that may be growing a similar grass or struggling with familiar challenges. In fact, TPI member surveys have consistently shown that networking opportunities are the number one benefit of belonging to the association.

If members have a problem they know they can reach out to a fellow producer to find a resolution. If one of their customers seeks



▶ **Top left image:** Evergreen Turf in Chandler, Arizona installing turf at University of Phoenix Stadium home of the Arizona Cardinals. Photo courtesy of Evergreen Turf, Chandler, AZ. **Bottom right image:** Graff's Turf Farm of Fort Morgan, CO provided the sod for Target Field, home of the Minnesota Twins. Sod was installed by Minnesota Sodding Company. **Right Image:** West Coast Turf /Western Sod, Palm Desert, CA installing turf at AT&T Park home of the San Francisco Giants. Photo provided courtesy of West Coast Turf/Western Sod.

their advice or counsel and they don't have the answer, they have access to an entire network of fellow turfgrass producers, turfgrass extension specialists, sports field specialists and researchers who are closely associated with TPI and can offer sound advice and provide solutions. And if disaster strikes, natural or otherwise, the outpouring of support makes for some great stories. For example, when Bob Weerts of Blue Valley Sod Farm on Winnebago, MN had a fire in one of his equipment buildings and lost the use of valuable equipment, a TPI member-manufacturer shipped a harvester to his farm for him to use while insurance issues were being settled. When turfgrass producer Chip Lane of Pine Island Turf Nursery in Pine Island, NY saw his farm devastated by flooding as a result of Hurricane Irene, he commented, "My phone has been ringing every day with calls of advice and concern over how we are doing. The tremendous support we have received from our TPI friends has been very inspirational."

This personal and professional pride extends to the customers TPI members serve. Members sincerely want to partner with their business associates; they don't want to be viewed merely as vendors trying to make a sale.

When James Graff, co-owner/operations manager of Graff's Turf Farms in Fort Morgan, CO (and also the Commercial VP on STMA Board), was asked about what it takes to serve the needs of professional groundskeepers at major sports stadiums he commented, "When it comes to working with sports field supervisors and managers the most important thing we can do as a supplier is maintain year-round communication. As a producer you have to be aware of the playing surface and you have to make sure you have the turfgrass available should their schedule demand it or should the unexpected arise. You really have to know their schedule, their planned activities, turf replacement requirements, after season renovation, normal schedule demands, they are all factors for consideration. How long will a field last under normal conditions? What are their budget limitations? What are their plans? All this information is important and it allows us do a better job and give the customer a better product and be responsive to the needs of the customer. And the most important thing we can do . . . is listen."

Perhaps that's why a growing number of sports field professionals look to the members of TPI for desired results: they are trusted partners, not just suppliers . . . and they listen.

To learn more about TPI visit their website at http://www.turfgrasssod.org/ ST

Jim Novak is the public relations manager for TPI.

SAFE FIELDS FOR ALL

that's the root of our mission

7 MILLION

SPORTS AND RECREATION–RELATED INJURIES OCCUR IN THE U.S. EACH YEAR

62% of injuries happen during practice

50% IN KIDS UNDER THE AGE OF 15

AS AN STMA MEMBER, SAFE IS YOUR CHARITABLE FOUNDATION. We work to enrich communities by championing safe, sustainable fields for all athletes – providing research, educational programs and scholarships to help meet the industry's need for more qualified sports turf managers.

SO FAR, WE'VE GIVEN OVER

$225,000

in scholarships & travel reimbursement to 120+ students

96% of SAFE scholarship recipient graduates work full time in sports turf management

TOGETHER, WE CAN DO SO MUCH MORE.

OUR GOAL: $1 MILLION OVER THE NEXT 5 YEARS FOR NEW PROGRAMS AND RESEARCH

80% of the 2,600 STMA members from 33 chapters around the country have never donated

We rely on individual donations for **60%** of our total funding

PLEASE DONATE TODAY

SAFE

The Foundation for Safer Athletic Fields for Everyone

Follow us on Twitter @SafeFields

WWW.SAFEFIELDS.ORG

Sources: Centers for Disease Control and Prevention (www.cdc.gov) & The American Academy of Orthopaedic Surgeons (www.aaos.org)

GEORGIA STATE SOCCER COMPLEX, ATLANTA, GA

Category of Submission: College Soccer
Sports Turf Manager: Kyle Slaton, CSFM
Title: Director of Sports Turf and Grounds
Education: Bachelor of Science, The Pennsylvania State University, May 2005
Experience: I'm currently in my fourth year at Georgia State. Previously I was the Head Groundskeeper for a Single-A baseball team for 4 years. I also have experience as an intern with the Milwaukee Brewers, Philadelphia Phillies, and Philadelphia Eagles.
Original construction: July 2007
Rootzone: Native soil; clay
Turfgrass variety: Tifway 419 bermudagrass
Overseed: Field is topdressed heavily each year with topdressing sand forming a current 3-inch sand cap on top of the clay soil.
Drainage: No drainage system

BUDGET BREAKDOWN

- Labor (man hours): Last year 625 hours; this year 745 hours
- Materials (cost/year) (fertilizer, fungicide, herbicide, insecticide, conditioners, amendments, seed, topdressing, marking materials, other turf maintenance products): Last year $11,100; this year $13,900
- Equipment maintenance (cost per year): Last year $2,500; this year $3,125

WHY STMA SHOULD CONSIDER YOUR FIELD A WINNER?

Coaches, players, and referees say the field at the Georgia State Soccer Complex is one of the best surfaces they play on. It's the things we fight on a daily basis that makes us proud of this field and why it deserves the designation of "STMA College Soccer Field of the Year."

The biggest challenge we face is that the field is located in a flood plain. The area around the field floods often and the playing surface flooded this past January. We also have a clay-rich native soil. To improve conditions we started a heavy laser topdressing program 4 years ago. Every June, we put out 150 tons of sand and spread it with a laser grader. We also core aerify at this time to replace some of the soil with sand. This has given us a "sand cap" which has helped with infiltration. We have begun to treat our field as a sand based field in order to maintain that sand layer.

Our yearly hours of use may not look high, but are concentrated into a small time period. The field is used by both men's and women's soccer. We don't have a full-sized practice field so most training is done on the game field. Of the 300 annual hours, more than 2/3 happen during the fall, and only a tenth is for games. Without a practice field, our cultural practices along with our water management and fertility pro rams are that much more important.

The Field of the Year Awards program is made possible by the support of sponsors Ewing, Graff's Turf, Hunter Industries and World Class Athletic Services.

Our crew consists of two full-time workers and one graduate assistant. This would be a great size crew but the soccer is only a small part of our responsibilities. We also maintain baseball, softball, football practice, sand volleyball and common areas. Being a part of a small facility and operations department we also serve as game administrators for games and help out at our sports arena. We spend about 10 percent of our time on the soccer field.

In April we showcased our field when it hosted our football spring game. The game was scheduled at a high school but 48 hours before we were informed the field was double-booked. We already had three men's soccer games scheduled for that day. The field held up excellently. This was not from two days of work but a result 4 years of cultural practices to get the field to where it is today. The football staff was so pleased with the surface they decided to make this an annual event.

We believe our field is as good as any in the country. We do more with what we have than any other field out there.

SPORTSTURF: How did you get started in turf management? What was your first sports turf-related job?

Slaton: Growing up I wanted to be a pro baseball player. It was clear in high school that wasn't meant to be. In high school I worked at a plant and garden center and I loved everything about the job, so when I found out there was an industry that combined plants and sports I said sign me up. I went to Penn State for Turfgrass Science without any prior experience in turfgrass. After my sophomore year I knew I needed some hands-on experience so I was an intern for the Milwaukee Brewers working with Gary VandenBerg and Raechal Volkening. Half way through my first day working with Gary and Raechal, I knew this was what I wanted to do for the rest of my life. And as they say the rest is history.

ST: What channels of communication do you use to reach coaches, administrators and users of your facility?

Slaton: I don't think there is one single way that works for communicating with everyone. College athletics is unique because I have worked with coaches that range from their mid 20's to their mid 80's. So it's all about finding out how each coach works and adjusting. We have started a Twitter account that allows my younger crew members to be creative and helps give our users (coaches and athletes) an inside look at what we do.

ST: Any tips on communicating well?

Slaton: On my interview 5 years ago here at GSU an administrator told me "you have to tell the coaches what they need to hear not what they want to hear." I have lived by that my entire time here and I believe that has helped to build a level a trust between myself and the coaches. The coaches know and trust I will do everything I can to give them the best surface possible, but if I say we can't get it done they trust me. [Building] this trust takes time, it doesn't happen overnight.

ST: What specific job responsibilities do find most enjoyable?

Slaton: We don't have the newest and most state-of-the-art fields and facilities so I really enjoy being creative and finding outside the box solutions to make things work. We have a master plan for a new downtown complex in the works so we are not looking to spend a lot of money on the current complex but still need to give it the attention and detail that it needs. So, I really enjoy finding new ways to solve problems and improve the fields and not spend a lot of money.

ST: How does the student/athlete recruiting process impact your work?

Slaton: The possibility that a recruit could be visiting any day of the year keeps us on our toes. We always have to make sure the field and complex are presentable and clean. Until 2 years ago we never overseeded soccer because it was the offseason sport and we directed our resources toward baseball and softball which were in season. But, a major factor in beginning to overseed soccer had to do with recruiting and when a recruit drives into the complex a green overseeded field portrays a much more positive image than a dormant field.

ST: What changes if any are you considering or implementing for the winning field in 2015?

Slaton: We will be hosting the 2015 Sun Belt Conference Women's' Soccer Tournament in November. We usually hold off on overseeding as long as possible because our coaches like to play as much of the season on just Bermuda and we may have one game in November that our color isn't great for. But, with the conference tournament being on TV and being in November we will be overseeding much earlier this year and at a much higher rate. In the past we would go down with annual ryegrass at 10 lb/M in the beginning of November. This year we will be switching to perennial ryegrass and will go down late September with 15 to 20 lb/M. We are also kicking around the idea of fraze mowing. I have yet to hear someone that has done that say "boy I wish I hadn't." ST

Continued from page 21

I mention that is because I think it speaks volumes as to WHY we do it. There is a passion that is shared every year, with every team to be the best. That is the goal every year. Lynda Wightman is right: there are no losers in the Student Challenge. However, there is something special about holding a trophy, knowing at that moment your efforts paid off and you are the best at what you do. We sometimes tend to minimize the importance of that because we don't want to appear to place too much importance on winning. But everyone who has ever felt that feeling knows it holds a special place in their life.

ST: How has social media impacted your work?

SCOTT: I can't get students to pay attention in class. They are always on social media! Just kidding, sort of. It has probably had more of an impact than I can think of but the main impact is the ability to communicate with students and observe them communicating with each other. It is wonderful to be able to see what students all over the country are doing just by checking social media sights. The networking opportunities are multiplied exponentially. The downside is that students sometimes expect me to be available 24/7! From a professional standpoint, I am able to keep in constant contact with those who are instrumental in my professional development and in giving students job opportunities.

ST: How do you think the profession and industry will change in the next 10 years?

SCOTT: Well we have already seen some of it in California and other places. Many more organic products and methods will be used. Rainwater harvesting and water recycling at facilities will play a major role. Every structure will have solar panels to supply part or all of the power. Turf managers are going to have to be astute in all of these systems as I am sure it will be part of their responsibility to maintain these systems. Battery-operated equipment may become the standard. The demand for quality fields will increase. I am not sure the budgets and resources will ever keep up with that. It will become more important for students to acquire the ability to interact with supervisors, peers and subordinates. These skills are difficult to teach. To sum it up, in the past we were able to focus on a particular field or facility. Going forward we are learning to think about how every decision we makes impacts not only our facility, but the environment around it as well as the footprint that is going to left for future generations.

ST: What are your passions and interests outside of work?

SCOTT: My family is my first passion. I have been married for almost 25 years to my amazing wife. If I include the time we spent dating, we have been together for 30 years. She has been nothing but supporting and encouraging to me. My daughters are 19 and 16 and are incredible young women. I am a blessed man. Because I have two beautiful daughters I have taken a keen interest in shotguns and target practice! All kidding aside, we are a family who likes their firearms. I believed my girls should learn to handle a weapon, and they do a great job.

I love to water ski, wakeboard and pull family and friends up and down the Colorado River all summer long! I also love to fish and camp. I like to golf, although I am a mediocre player at best. Within the past 3 years I have made a commitment to increasing my physical fitness. As a result, I have run several half-marathons, completed three Tough Mudders, some 5k runs and even a Triathlon Express. I also love attending concerts ranging from AC/DC to Blake Shelton.

ST: Who would be included at the table if you could dine with anyone, living or dead?

SCOTT: This is a tough one. I am a social creature. I first thought of so many people, but I narrowed it down to one. I would choose to have one more dinner with my grandpa, Billy Jo Scott, who passed away in 2010 after living for 7 years as a stroke victim. I would want it to be just the two of us, like old times before his stroke.

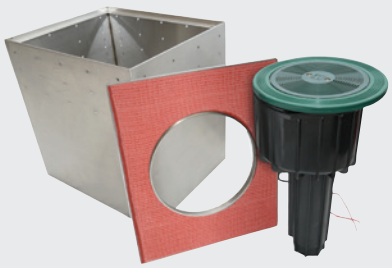
You see, my grandpa was my hero. He did not have a college education. He did not even finish high school. Yet somehow he taught me about the value of being educated. He was one of the best teachers I have ever known. He taught me how to weld. He taught me how to hunt. He taught me how to mold lead bullets for his black powder guns. He taught me the value of family and friends, and how to nurture those relationships. He taught me how to discipline (or be disciplined) but show love at the same time. He taught me about how to deeply love my wife, as he and my grandma were married for more than 60 years. He taught me how to look for the positive qualities in everyone, and see them for what they can be, but love them for who they are. He taught me how to forgive, and how not to hold a grudge. I know this is where I developed my passion for teaching, by watching my grandpa give so much of himself to others every day. I could go on for pages about this man whom I love so much, and miss so terribly.

There was not a day that went by in my childhood that I did not want spend time with my grandpa. And growing up living next door to him, it made it easy to visit. We did not always have long, deep conversations. We just kind of hung out and experienced life together. And that is what I would like to do one more time. Greet him with a hug, break bread together, have a few laughs, shed a few tears, and just hang out, one last time. This time, I won't say goodbye. I will just say see you later. ST

OPTIMIZER PSI DELIVERS SILICON IN TANK MIX COMPATIBLE FORMULATION

Optimizer PSi delivers plant-derived silicon in opaline form with a plant-derived protein nitrogen carrier. Marketed exclusively by United Turf Alliance members and dealer partners, Optimizer PSi contains 25% of the novel silicon in a concentrated dry powder formulation. This formulation delivers silicon in an immediately bio-available form when applied to turfgrass. It is the first silicon product for turf to offer excellent tank mix compatibility with both foliar nutrient products and plant protection products. Optimizer PSi provides quicker plant fortification due to its bio-availability of silicon. Specific plant health benefits include increased turgidity as well as improved tolerance to biotic and abiotic stress, stronger cell walls, thicker leaf blades, better root systems and less transevaporation.

United Turf Alliance



STAINLESS STEEL VALVE BOXES FOR SPRINKLERS

Underhill International now offers seven models in its MSSB Series of stainless steel valve boxes for Mirage long-throw sprinklers that enhance player safety and facilitate installation. The extra-large capacity boxes accommodate Mirage sprinklers, isolation valves, quick couplers, electrical junction boxes and other sub-surface components, such as public address systems. The expanding Mirage sprinkler line-up is designed for natural and synthetic turf, where they are used to cool and clean fields before play. The MSSB boxes are utilized with Underhill's Mirage M-180S, M-160, M-125 and M-115 sprinklers, and can also solely accommodate 300 Series sleeve valves or an isolation valve. The boxes seat below grade and promote safety because they do not present a hazard on sports fields. Additionally they have a uniform edge that adjoins the synthetic turf on all four sides, creating a uniform and unbroken playing surface.

Underhill International

TORO EXPANDS T5 RAPIDSET SERIES PRODUCT LINE

The Toro Company is adding five new ¾" rotor models to its T5 RapidSet Series rotor product line. The tool-free arc adjustment of the patent-pending RapidSet feature allows the arc orientation and angle to be quickly set or changed through a straightforward combination of twists of the nozzle turret. The T5 RapidSet rotor's unique slip clutch makes the no tools arc adjustment possible, while also protecting the turret gears and components from damage. The rotor can be adjusted to cover arcs of 40° to 360°. Similar to the T5 RapidSet lawn model, which was introduced early last year, the Shrub and High Pop models also feature Toro's exclusive Airfoil™ Technology nozzles. The nozzles' geometries are specially-designed for the T5 and create a low pressure zone just beneath the nozzle openings, which delivers a better up-close watering profile and leading overall distribution uniformity.

The Toro Company

PORTABLE TURF GUN KIT FOR SYNTHETIC FIELDS

Underhill International introduces the Turf Gun Kit, a manual alternative to an automated irrigation system for cleaning and cooling synthetic sports fields. The Kit consists of two parts: portable MTG-180 Turf Gun with specifiable nozzle and a stainless steel below-grade enclosure with internal mounting assembly. The enclosure includes all necessary quick connect components and a padlock to prevent unauthorized use. Weighing less than 12 lbs., the Turf Gun delivers up to 180' of coverage and uses the same piston-drive technology found in Underhill's Mirage M-160 long-throw sprinklers, which can cool or clean an entire field in minutes. Typically, the ratio of Turf Gun heads is 4:1 to below-grade MSSB-MTG-Kits, allowing fast and efficient coverage of alternating sides of a field.

Underhill International

CLUB CAR SOLAR CHARGING PANELS

Owners of 48-volt electric Club Car Precedent golf cars, Carryall utility vehicles and Villager LSVs can now capture, store and use solar power with the addition of Club Car's new 100-watt Solar Drive Charging Panel Assembly. As a yearly average, the system generates 29 percent of the total energy required to drive eight miles per day in West Palm Beach, Fla. That reduces the energy needed to recharge the battery by 29 percent. Results may vary depending on area and usage. By continually transferring energy to the batteries, the panels limit how deep into the battery reserve a vehicle must go during a typical use. The panels are made in the United States of a lightweight, impact-resistant, photo-voltaic material with a Teflon-like coating that protects the cells.

Club Car

BALLGAME CHANGER AND PLAYBALL! FOR INFIELDS

EP Minerals, LLC has launched BallGame Changer with KT3, a patent-pending premier infield conditioner, the PlayBall! drying agent, PlayBall! mound clay, and the PlayBall! infield conditioner. "These specially designed products have been successfully performance-tested at major league, minor league, college, and high school fields around the US with excellent results. BallGame Changer and the PlayBall! keep your infields safe with better traction, and your infield remains more playable because they do a great job of controlling moisture," said VP of performance aggregates, Jeff Kitchens. "BallGame Changer with KT3 is a revolutionary new clay product. KT3 is a patent-pending surface technology that changes how the BallGame Changer product interacts with water. You can apply the normal amount of water and conditioner with BallGame Changer as you use today and maintain a higher moisture level for nine innings, reducing dust and additional maintenance factors."

EP Minerals

BE RECOGNIZED FOR YOUR INNOVATIONS IN TWO WAYS!

Commercial members don't miss this opportunity to enter the STMA Innovative Awards program. Fill out a brief, online application at stma.org and highlight a product, service, piece of equipment or technology that substantially improves the sports turf management profession. Innovative can mean many different things. Our non-commercial panel of judges defines innovative as "cutting edge" and "have never been seen before."

You can include links to videos, photos, marketing brochures, testimonials or other promotional materials. Key to helping our Innovative Judging Panel understand the value of this innovation to the industry is to demonstrate *why* the product is innovative. Give examples and/or testimonials, and describe specifically how it solves field manager's problems. This program allows for more than one winner.

All entries will be recognized on signage and in the on-site conference and exhibition guide and will include your booth number. This will help attendees know where to go on the trade show floor to see all of the innovations in the industry. Any STMA Commercial member who is exhibiting at the upcoming STMA Annual Conference and Exhibition is eligible to submit one entry annually. The company must display the innovation in its booth and have introduced it for sale within a 2-year period of the exposition.

Winners are kept confidential until announced on at the show during the first day of the trade show. They will be able to use the special logo in their promotion of their innovation, and STMA will publicize the winners through its communication vehicles and with special recognition during the Awards banquet, held at the conclusion of the conference.

Submittals are due October 15. Go to STMA.org to enter.

INNOVATIVE IGNITE SESSIONS

Up to 10 Commercial companies will be selected to give 5-minute "Ignite" presentations on an innovative product their company offers during the New Trends and Technology in Sports Turf session at the 2016 Conference and Exhibition. This session is always highly attended.

Companies were notified through a specific email sent to all STMA Commercial Members; the deadline to respond is July 1. All those who respond are placed in an electronic random selection program and the top 10 will be offered the opportunity to present. The only requirements are that the company be exhibiting at the conference and did not give an Ignite presentation the year prior.

Don't miss out on this opportunity to promote your company's newest product.

PREVIOUS WINNERS

2015 - GT AirInject Inc.
2014 - None awarded
2013 - Green Source
2012 - G2 Turftools
2011 - Barenbrug USA
2011 - Bush Sports Turf
2011 - Sports Edge

BUILDING ALLIANCES ADVANCES STMA MISSION

Building alliances with organizations that have philosophies and goals aligned with those of STMA supports our mission. That mission is: "STMA advances professionalism in sports field management and safety through education, awareness programs and industry development." In support of the mission, STMA's 3-year strategic plan contains several objectives that focus on building relationships with other organizations.

- Obj. To position STMA as a leader in the sports industry
- Obj. To elevate STMA's profile with peer and green industry organizations
- Obj. Build alliances with appropriate environmental groups to bring credibility to members' and STMA's environmental work
- Obj. Partner with organizations that conduct agronomic research and use to support the use of natural grass in athletic fields
- Obj. Collaborate with appropriate groups to promote the benefits of natural grass athletic fields

During the recent annual conference in Denver, STMA's leadership met with some of our peer and green organizations to discuss ways we can collaborate on like-initiatives or better understand their philosophies. These include the Institute of Groundsmanship, Turfgrass Producers International, Synthetic Turf Council, American Sports Builders Association, and the Western Canadian Turfgrass Association. Discussions with organizations outside of the conference timing include Project Evergreen, Responsible Industry for a Sound Environment, Waters Advocacy Council, Sports Turf Canada, Bulgarian Greenkeepers Association, Irrigation Association, American Seed Trade Association and the Green Sports Alliance.

Look for more information at STMA.org about our efforts to connect with organizations within and outside of our industry.

Profile of our Partnership with Green Sports Alliance

STMA is again a community partner with the Green Sports Alliance in support of its annual Summit, which will be held June 29-July 1 in Chicago. This is the fourth year that STMA has joined the Summit as a Community Partner. The Green Sports Alliance Summit is the world's largest and most influential gathering for the sports community to unite around sustainability. The event brings together more than 800 industry stakeholders to learn and share better practices and the latest innovations in greening operations, advancing the supply chain and engaging fans.

In addition to attending the Summit, networking, and being able to distribute information about STMA's environmental policies and principles, we have been offered a spot on the educational program. Jon Dewitt, CSFM, will be representing STMA and presenting on the panel titled "Controlling the Flow of Precious Resources: Implementing Innovations in Water Management at Sports Venues & Events." Past President Mike Trigg, CSFM, will also be attending the Summit on STMA's behalf.

To find out more or to register, go to greensportssummit.org.

A REFRESHER ON STMA'S ENVIRONMENTAL POLICIES

Do you know that STMA has an Environmental Policy Statement that includes a mission and a vision statement, 11 guiding principles, and put-a-stake-in-the-ground goals? It does, thanks to the very diligent work of the 2010, 2011 and 2012 Environmental Committees under the leadership of Jody Gill, CSFM, Kevin Trotta, and Mike Tarantino, CSFM, respectively. Tarantino also laid the groundwork for the current Environmental Committee's groundbreaking work, which is now under the leadership of Tim Van Loo, CSFM. This committee is developing an environmental certification program for sports facilities. It is in a robust pilot phase and plans are to officially roll it out in 2016 at the STMA National Conference in San Diego.

Please feel free to use this mission statement in conjunction with your environmental practices and communicate your support of these principles and goals to your employers and constituents.

ENVIRONMENTAL MISSION STATEMENT

To practice and promote environmental stewardship and education in the management of sports fields and facilities.

ENVIRONMENTAL VISION STATEMENT

An environmentally sustainable sports field industry for present and future generations .

PRINCIPLES

1. Education is a key to continued improvements in environmental performance.

2. Leadership means performance beyond compliance.

3. Sustainability is not an established set of practices. It's a goal.

4. Natural resource stewardship benefits current and future generations.

5. We can reduce, reuse and recycle.

6. Prosperity and pollution can be disconnected.

7. Sports turf provides communities with social and economic benefits.

8. Appropriately managed turfgrass enhances air and water quality.

9. Best Management Practices are tools for reduced environmental impact.

10. IPM affords a sensible approach to managing turfgrass pests.

11. Trends in equipment and vehicle development promise continued reduction in environmental impact.

GOALS

- Sustainability—ecologically compatible, socially desirable and economically viable sports turf.
- To advance environmental awareness and provide educational opportunities for sports field managers.
- Pursue alliances and collaborations that foster the STMA's Environmental Mission.
- Encourage participation in stewardship and certification programs.
- Openly communicate our actions and intentions.
- Encourage research that integrates environmental stewardship and sports field management.
- Continual improvement in STMA's environmental performance and leadership.

STMA Affiliated Chapters Contact Information

Sports Turf Managers Association of Arizona: www.azstma.org

Colorado Sports Turf Managers Association: www.cstma.org

Florida #1 Chapter (South): 305-235-5101 (Bruce Bates) or Tom Curran CTomSell@aol.com

Florida #2 Chapter (North): 850-580-4026, John Mascaro, john@turf-tec.com

Florida #3 Chapter (Central): 407-518-2347, Dale Croft, dale.croft@ocps.net

Gateway Chapter Sports Turf Managers Association: www.gatewaystma.org.

Georgia Sports Turf Managers Association: www.gstma.org.

Greater L.A. Basin Chapter of the Sports Turf Managers Association: www.stmalabasin.com.

Illinois Chapter STMA: www.ILSTMA.org.

Intermountain Chapter of the Sports Turf Managers Association: http://imstma.blogspot.com/

Indiana - Contact Clayton Dame, Claytondame@hotmail.com or Brian Bornino, bornino@purdue.edu or Contact Joey Stevenson, jstevenson@indyindians.com

Iowa Sports Turf Managers Association: www.iowaturfgrass.org.

Kentucky Sports Turf Managers Association: www.kystma.org.

Keystone Athletic Field Managers Org. (KAFMO/STMA): www.kafmo.org.

Michigan Sports Turf Managers Association (MiSTMA): www.mistma.org.

Minnesota Park and Sports Turf Managers Association: www.mpstma.org

MO-KAN Sports Turf Managers Association: www.mokanstma.com.

New England STMA (NESTMA): www.nestma.org.

Sports Field Managers Association of New Jersey: www.sfmanj.org.

Sports Turf Managers of New York: www.stmony.org.

North Carolina Chapter of STMA: www.ncsportsturf.org.
Northern California STMA: www.norcalstma.org.

Ohio Sports Turf Managers Association (OSTMA): www.ostma.org.

Oklahoma Chapter STMA: 405-744-5729; Contact: Dr. Justin Moss okstma@gmail.com
Oregon STMA Chapter: www.oregonsportsturfmanagers.org oregonstma@gmail.com

Ozarks STMA: www.ozarksstma.org.

Pacific Northwest Sports Turf Managers Association: www.pnwstma.org.

Southern California Chapter: www.socalstma.com.

South Carolina Chapter of STMA: www.scstma.org.

Tennessee Valley Sports Turf Managers Association (TVSTMA): www.tvstma.com.
Texas Sports Turf Managers Association: www.txstma.org

Virginia Sports Turf Managers Association: www.vstma.org.

Wisconsin Sports Turf Managers Association: www.wstma.org.

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for such a heavily used site. Once established, these grasses are tough and they are quicker to establish than Kentucky bluegrass. A question may be raised about Endophytes in tall fescue and perennial ryegrass and their effect on dogs. Endophytes are intercellular fungi that have a symbiotic relationship with turf as they are toxic to surface feeding insects like bluegrass billbugs and chinch bugs. They are regarded as "good" bugs and part of a sound IPM program. Unfortunately, Endophytes can also cause some health problems in horses and other grazing animals so are used carefully in pastures. Dogs generally chew on grass to initiate throwing-up and do not typically ingest grass, which leads us to deduce that endophytic turfgrasses should not pose a threat to any of the dogs. The dogs would have to eat a lot of grass for there to be a problem. The reason we went with a perennial ryegrass program at the dog park, rather than tall fescue, came down to the extreme use at this particular park. There is purely not enough time to establish tall fescue when this park is being used, while perennial ryegrass will germinate in 3 days and provide dense green cover in as little as 21 days.

Weed control will be the final part of the dog park maintenance program since it was overrun with prostrate knotweed. Perennial weeds like clover that grow in compacted soil could be helpful in preventing soil erosion, but summer annuals like crabgrass and prostrate knotweed can cause problems once they die in October. Those areas quickly become mud and then hard, compacted soils. The approach, using an herbicide, will be to use a pre-emergence product, such as prodiamine or dithiopyr in early March, before the park opens. The advantages of this are that there would be reasonably good control of the knotweed and crabgrass and the product would be applied at a time when the dogs are not around. In addition to the application timing, the chemical properties of those herbicides are such that the chances of unintentional exposure to the animals via dislodgeable residues becomes very small.

Q&A with Pamela Sherratt

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HAS YOUR TURF GONE TO THE DOGS?

I did my first Extension visit to an off-leash dog park this spring and I'm certain it won't be the last. Since the first dog park opened in Berkeley, CA in 1979, this segment of the turf management industry has exploded. In fact the fastest growing urban parks are now for dogs. A 2010 study by Trust for Public Land reported a 34% increase in off-leash dog parks in 5 years, compared to just 3% growth for parks overall. Here in Columbus, the City Parks and Rec Department have developed five large dog parks in the past 5 years. These statistics are almost certainly going to increase if you consider that 80% of Americans live in an urban environment and the population of metro area dwellers will grow by 32% over the next 3 decades. Couple that with the fact that the Humane Society states that 47% of households have at least one dog, and usually more. And so with dog parks becoming such a big part of the urban environment, sports turf managers are going to be adding another layer of expertise to their resume.

Challenges of maintaining a dog park are similar to any high-traffic urban green space; soil compaction, sufficient time to renovate, and good public communication. Non-turf aspects to the job includes dealing with pet waste, well-planned fencing (wide enough for turf maintenance equipment to get through but sturdy enough to contain off-leash dogs), installation of water hydrants, providing shade with screens or trees, and managing hard-to-mow corners and very high traffic areas (like entrances) with hard landscaping materials or artificial turf. There is a good deal of information available on all of these topics but not much from a turf maintenance perspective. In fact an Internet search results in very little, if any, mention of turf maintenance at dogs parks.

The dog park I visited had been well planned with two large grassed areas, each just over 1 acre in size, and each surrounded by good quality fencing. There was also water at the park, both for the dogs and for landscape irrigation. Having two separate areas (paddocks) means that the sports turf manager can adopt a two-paddock approach to turf maintenance. The plan is to open each paddock to the dogs for 30 days and then renovate for 30 days while the other paddock gets opened. Thirty days was picked as the ideal renovation time because it is possible to get perennial ryegrass established and "play-ready" in that period of time. In the 30-day renovation period, each paddock is solid tined, seeded with perennial ryegrass, fertilized and irrigated. On-site bulletin boards and social media could be used to inform the park users of the two-paddock program and to seek buy-in. In this particular instance the dog park is closed during winter, since the grass is not growing and the ground is frozen.

From a turf-maintenance perspective the most important challenge is soil compaction and poor drainage, which would need addressing regularly through grading, filling in holes (dogs like to dig, a lot) and soil aeration. Ideally, turfgrasses that are extremely hard-wearing, like Kentucky-31 tall fescue, turf-type tall fescue, and perennial ryegrass would be the grasses of choice

Thirty days was picked as the ideal renovation time because it is possible to get perennial ryegrass established and "play-ready" in that period of time.

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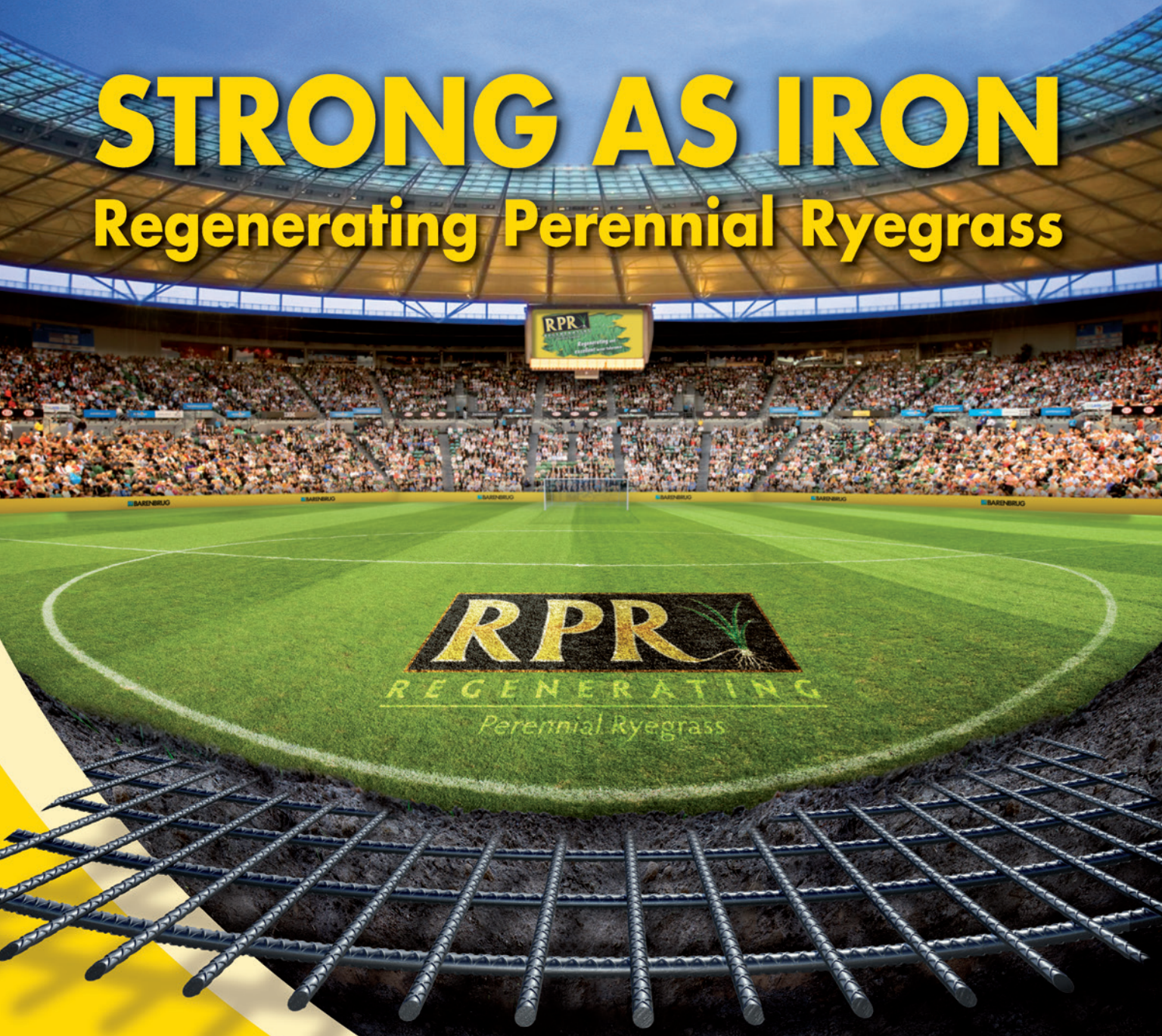

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