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SportsTurf

JANUARY 2013

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Preemergence herbicide use

Managing summer annual weeds

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SportsTurf Contents

JANUARY 2013 | VOLUME 29 | NUMBER 1

Field Science

Facilities & Operations

Tools & Equipment

Departments

On the cover: Workers harvest sod to be used by the St. Louis Cardinals at Busch Stadium. Photo courtesy of Graff's Turf Farms, Fort Morgan, CO.

Episode 3, Snowmageddon. Every field has a story. This one starts out at Margate Park in Chicago, Illinois. Watch the video. See how 22" of snow put the Chicago Park District, John Deere equipment and local John Deere Service to the test and gave one field a much needed break.

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From the Sidelines

Eric Schroder
Editorial Director

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Fresh starts not that easy, worth an effort

HAVING SURVIVED THE MAYAN PREDICTION of the world's end last month (my deadline was 1 day before 12/21/12 so who knows?), I lived to greet New Year 2013. Simply another day to Mother Nature, January 1 offers us an annual marking period for life—the ultimate continuing education experience.

Goals are good I've been told many times and I have lists of goals written with the best intentions inside covers of old planners. Heading into 2003 I had seven goals, none of them specific enough measure of course, but they were in ink on paper so at least I had made that commitment. Generous scoring rules resulted in my having fully achieved zero of those seven.

I found no list of goals for 2004.

One year I had no list but did note an "objective" involving "tangible results" and "showing evidence." Into the circular archive with that one.

Another Schroder historical document source shows entries dated January 4-8, 1983, followed by August 10. Later that same document reveals steady work January 9, 1990, through the end of February before a big blank until June 24. No stranger to failure am I.

I give myself credit for still even considering New Year's resolutions with my track record. But having that vision of successfully making even the slightest good change in my life means a lot to me. I still believe in the possible.

Regular golf partners of mine laugh at my overuse of the word "karma" during a round. Poking fun of another's OB drive before you hit off the same tee box is bad karma and increases your chances of hitting OB by at least 50%, for example. And raking a steep bunker for a guy coming off knee surgery is good karma that might at least help even out the luck in any round.

That's my approach (bad golf pun) to New Year's resolutions too: make an honest effort, even if I fall short of perfection, that continued effort will be rewarded some day.

PASSWORDS

Another list I made recently was of all the passwords I use at least a few times a year if not regularly. Three of the accounts are business related: a mail server, LinkedIn and Green Media's Twitter account (@GreenMediaMags). Others are retail, like iTunes, and household bill accounts or financial institutions. It's a long list.

My search for historical documentation also turned up an article I wrote for a college class on a manual typewriter; when you consider how we communicate 34 years later, it's astounding. I tell my kids someday there will be a screen conveniently embedded in our skins. No batteries needed, it runs on burned calories!

Happy New Year! ■

SportsTurf

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President's Message

Dr. Mike Goatley

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I resolve to be responsibly cynical…

I AM SURE there are those of you out there that truly keep your resolutions and I admire you and curse you at the same time. I also know there are a lot of you that are like me and you have the best intentions in the world, but come the 2nd week of January (or maybe the 2nd day?) your resolutions are pretty much out the window.

What I have learned on the job now after 24 years of academia and 23 years of marriage is to be as realistic as possible regarding my resolutions from both professional and personal perspectives. As I began my career in academia, I remember being advised by a full professor to "undersell and over deliver" in my teaching and research efforts. I also remember one of the tenured faculty members at a departmental meeting saying "let's get everything out of Goatley that we can before he figures out what is going on." Neither of these perspectives made a lot of sense to me in the late 1980s, but they certainly have a lot more meaning in my career at this point in time.

When you are young and ready to conquer the world, one of your biggest challenges is to figure out an appropriate balance between work and home (my wife would say that it took a while but I've finally figured this out). I admire our students and the young professionals in the sports turf industry and your gusto for your profession and life in general. You all inspire and motivate many of us more, shall I say, "mature" members. However, I join others that are my age and older to remind you to take your time and soak things in as much as possible as the opportunities present. I always remind my students that I doubt they will ever be as smart as they are than the day they graduate from college—when the real education begins.

What? No inspirational New Year's message for success? I do encourage you to identify a few "must do" goals in your personal and professional lives and try to find a balance between ones that you know you are going to achieve, and those that you really want to achieve IF things go as planned. I truly anticipate great things for STMA in 2013 and it is because we have such a well-defined strategic plan to take us forward for the next 2 years. It has what I think is the appropriate balance of "must do" and "what if" goals and we have an immensely qualified staff, a great Board, and some of the most dedicated members of any association with whom I have ever worked. I wish everyone only the best for 2013. And I want you to know, I am not really a stick-in-the-mud. I am fulfilling my resolution of being "responsibly cynical." Trust me; you'll probably get there one day yourself. ■

Preemergence herbicide use on athletic fields

SPRING IS A TIME FOR ATHLETIC FIELD MANAGERS to focus on control of summer annual weeds such as crabgrass (*Digitaria* spp.) and goosegrass (*Eleusine indica*). These species complete their life cycle in 1 year, germinating from seed in spring, growing throughout summer, and finally setting seed in fall. If left uncontrolled, both crabgrass and goosegrass can reduce the aesthetic and functional quality of warm- and cool-season athletic field turf.

Research conducted at the University of Tennessee Center for Athletic Field Safety (CAFS) in 2012 illustrated that high-use areas of fields comprised of predominately crabgrass lose approximately 10% cover after each traffic event compared to only 1% for those containing predominantly Tifway hybrid bermudagrass (*C. dactylon* x *C. transvaalensis*). These losses in cover were associated with increases in surface hardness (measured as Gmax), a property linked with head injury incidence.

An effective means for controlling summer annual weeds is the use of preemergence herbicides. A list of preemergence herbicides labeled for use on warm- and cool-season turfgrasses commonly found on athletic fields is presented in Table 1.

Table 1. List of active ingredients labeled for preemergence control of annual grassy weeds in warm- and cool-season turfgrasses commonly used on athletic fields.

KEYS TO SUCCESS

There are two keys to effectively controlling summer annual weeds with preemergence herbicides. First, be sure to apply these materials before weeds have emerged from soil (i.e., before they are visible). These herbicides do not prevent weed seed germination; rather they prevent germinated seedlings from developing into mature plants. Considering that the timeframe between germination and emergence can be quite short, it is often recommended that these herbicides be ap-

Active Ingredient	Trade Name†	Formulations‡,¶	Labeled Species
prodiamine	Barricade	FL, WG	Bermudagrass Seashore Paspalum Tall Fescue Kentucky Bluegrass Perennial Ryegrass
dithiopyr	Dimension	EW, WP	Bermudagrass Seashore Paspalum Tall Fescue Kentucky Bluegrass Perennial Ryegrass
prodiamine + sulfentrazone	Echelon	SC	Bermudagrass Seashore Paspalum Tall Fescue Kentucky Bluegrass Perennial Ryegrass
pendimethalin	Pendulum	FL, G, EC	Bermudagrass Seashore Paspalum Tall Fescue Kentucky Bluegrass Perennial Ryegrass
pendimethalin + dimethenamid-P	FreeHand	G	Bermudagrass Seashore Paspalum
oxadiazon	Ronstar	G, FL, WSP	Dormant Bermudagrass (FL, WSP only) Bermudagrass (G only) Seashore Paspalum (G only) Tall Fescue (G only) Kentucky Bluegrass (G only) Perennial Ryegrass (G only)
indaziflam	Specticle	WSP, FL	Bermudagrass

† Active ingredients may be available under multiple trade names. Mention of trade names or commercial products in this publication is solely for the purpose of providing specific information and does not imply recommendation or endorsement by the University of Tennessee Institute of Agriculture. The omission of a particular trade name is not intended to reflect adversely, or to show bias against, any product or trade name not mentioned.

‡ FL = flowable; WG = water dispersible granular; EW = concentrated emulsion; WP = wettable powder; WSP = water soluble powder; SC = soluble concentrate; G = granular (not on fertilizer).

¶ Many preemergence herbicides are sold on granular fertilizer carriers. Be sure to follow label instructions to ensure that the correct rates of active ingredient and nutrients are supplied to turf when using these materials.

Table 1

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plied once soil temperatures are favorable for crabgrass seed germination. Athletic field managers should make their first preemergence herbicide application as soon as soil temperatures (at approximately 2 inches) measure ≥ 55°F for a minimum of three days in spring.

Ornamental forsythia plants can be a helpful indicator of when this benchmark soil temperature has been reached. Forsythia plants produce distinctive yellow blooms at soil temperatures similar to those that facilitate crabgrass seed germination. Thus, the presence of yellow petals on forsythia plants serves as an indicator of when preemergence herbicides for summer annual weed control should be applied in spring. Athletic field managers should be sure to apply preemergence herbicides before forsythia plants have completed flowering.

A second key to effectively controlling weeds with preemergence herbicides is to water them into the soil after application. Most labels require that 0.25 to 0.50 inches of irrigation or rainfall be applied within 24 to 48 hours after application. These herbicides are absorbed by germinating seedlings in the soil profile so moving them into the rootzone is critical. Failure to irrigate after application can also lead to material being lost due to volatilization. On fields without irrigation, try to time preemergence herbicide applications around a period of rainfall.

SPLIT APPLICATIONS

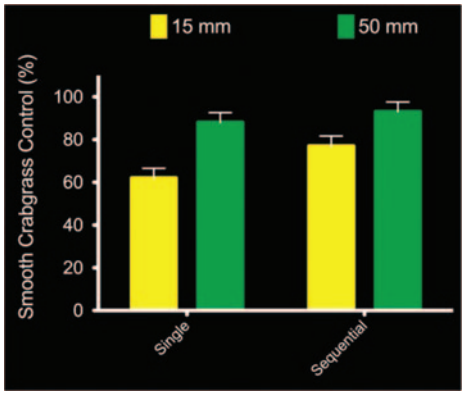
Split (also referred to as "sequential") application programs of preemergence herbicides tend to provide more consistent control of summer annual weeds throughout a growing season. These programs typically apply the total amount of active ingredient for the season in two applications spaced 8 to 10 weeks apart. A single herbicide application in spring for preemergence control of crabgrass will slowly be broken down by soil microbial activity over the course of a summer often leading to crabgrass breakthrough by fall. Split application programs delivering active ingredient two times throughout a season tend to provide a longer period of control. Additionally, split application programs will control species germinating later in the year than crabgrass (e.g., goosegrass, etc.).

MOWING HEIGHT

Research conducted at CAFS in 2012 evaluated the effects of mowing height on the efficacy of single and split applications of preemergence herbicides for crabgrass control. A total of six different herbicides were evaluated. At a 0.6 inch mowing height, split application regimes provided greater crabgrass control than single applications regardless of product. When mowing height was increased to 2 inches, no significant differences were detected between single and split application regimes regardless of product (Figure 1).

Five of the six herbicides tested provided greater crabgrass control when applied to turf maintained at 2 inches compared to 0.6 inches regardless of application regime. While this experiment will be repeated again in 2013, these preliminary results indicate that split application regimes provide better control than single applications at low (0.6 inch) heights of cut. Additionally, increasing mowing height can improve the efficacy of preemergence herbicides for crabgrass control. Increases to 2 inches may reduce the need for split application programs altogether; however, this height of cut may not be acceptable on all athletic fields.

Figure 1. Smooth crabgrass (*Digitaria ischaemum[*) control 5 months after initial preemergence herbicide treatment at CAFS in Knoxville in 2012. Means from the 0.6 inch (15 mm) and 2 inch (50 mm) heights of cut were pooled across six different herbicide chemistries.



CONCERNS OVER TRAFFIC TOLERANCE

It is well documented that many of the preemergence herbicides used to control annual grassy weeds can inhibit bermudagrass root growth. Reductions in root growth in the uppermost portion of the soil profile could potentially compromise bermudagrass traffic tolerance and recovery; thus, rendering the benefits of effective weed control moot.

Research was conducted at CAFS during 2009 and 2010 evaluating the effects of four preemergence herbicides on Tifway hybrid bermudagrass traffic tolerance and recovery. Over the course of the 2-year study, no differences in smooth crabgrass (*Digitaria ischaemum*) control were detected among herbicide treatments after being subjected to athletic field traffic in spring; control measured 95 to 99% by 5 months after treatment. Moreover, no differences in Tifway traffic tolerance or recovery were reported in either year.

We hypothesized that this response was due to Tifway recovering predominately from below ground rhizomes rather than stolons. Follow-up research was initiated in 2012 evaluating the effects of preemergence herbicide applications in spring on Tifway traffic tolerance in fall. After the first year of the study, no differences in fall traffic tolerance were detected due to herbicide treatment in spring. To date, these findings illustrate that use of preemergence herbicides to control weeds on bermudagrass athletic fields does not affect traffic tolerance or recovery.

Numerous preemergence herbicides are available for controlling annual grassy weeds on athletic fields. Always refer to the product label for specific information on proper use, tank-mixing compatibility and turfgrass tolerance. Mention of trade names or commercial products in this publication is solely for the purpose of providing specific information and does not imply recommendation or endorsement by the University of Tennessee's Institute of Agriculture. For more information on turfgrass weed control, visit the University of Tennessee's turfgrass weed science website at www.tennesseeturfgrassweeds.org. ■

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>> **HIGHLY TRAFFICKED** sports fields that receive little or no overseeding during fall and subsequent spring months may consist almost entirely of summer annual weeds such as prostrate knotweed in field centers during summer months. Photo by Brad Park.

Managing summer annual weeds on high traffic sports fields

THERE IS AN OLD ADAGE that the best form of weed control is a healthy, dense stand of turfgrass. Is it any wonder that high traffic sports fields virtually absent of turf cover are often with riddled with summer annual weeds? Solving these weed problems requires more than a phone call to schedule a contractor-performed herbicide application. A long-term seeding program that may involve strategically-timed herbicide applications, or perhaps even sodding, must be employed to fill-in the voids in turf cover caused by traffic.

THE PROBLEM

Sports field locations that are heavily trafficked during fall and receive little to no overseeding during that period typically enter winter as bare soil. These voids in the turf cover are ideal conditions for summer annual weeds to germinate during the following spring months, mature in summer, and produce large quantities of seed in late summer. The weed seed is returned to the soil creating a seed bank that will replenish weed populations for years to come. As temperatures cool and mother nature brings the first frost during fall, summer annual weeds are reduced to fragile skeletons and continued field use quickly reverts the surface back to bare soil—an unsafe surface that can lack stability when wet (i.e. mud) and be hard-as-concrete when dry.

Crabgrass (*Digitaria* spp.), goosegrass, (*Eleusine indica* L.) and prostrate knotweed (*Polygonum aviculare*) are summer annual weeds that are routinely present on high traffic sports fields.

Crabgrass is among the most common summer annual grassy weeds that invade turf areas. It germinates when soil temperatures have been 55 degrees F for 4 to 5 consecutive days, typically corresponding with early April to early May in the Northeast United States.

Goosegrass, sometimes referred to as silver crabgrass, is a grassy weed, has a recognizable zipper-like seedhead structure and germinates later in spring compared to crabgrass when soil temperatures in the upper ½-inch of soil are 60-65 degrees F for 12 to 15 consecutive days. Often observed in goal creases, field centers, and footpaths where pedestrians cut-across turfgrass sites, goosegrass tends to be more tolerant of compacted soil conditions compared to other grasses and broadleaf vegetation.

The earliest germinating summer annual weed that affects sports fields in the Northeast is prostrate knotweed, a weed in which seedlings have been observed in northern New Jersey in the first week of March. Prostrate knotweed seedlings are often misidentified as newly germinated turfgrass; however, prostrate knotweed is a broadleaf weed (i.e. dicot) and has two seed-leaves (i.e. cotyledons). In contrast, grass species (i.e. perennial ryegrass, crabgrass, etc.) are monocots and have a single initial seed-leaf. Similar to goosegrass, prostrate knotweed is a common problem on heavily trafficked sports fields constructed out of compaction-prone native soils.

While summer annual weed lifecycles and the season-specific timing of much sports field use presents an inherent challenge, an added dilemma is that some sports fields are routinely treated with conventional preemergence herbicides (i.e. pendimethalin, prodiamine, or dithiopyr) in March and April yet are predominantly bare soil in field centers and goal

Similar to goosegrass, prostrate knotweed is a common problem on heavily trafficked sports fields constructed out of compaction-prone native soils.

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creases. This decision does not improve turf cover in these high traffic areas. The following sections will examine the choice of seeding bare soil locations in early spring, as soon as soil conditions allow, and applying postemergence herbicides for selective control of summer annual weeds.

>> **SUMMER ANNUAL WEEDS** die during fall and their location in the field is reduced to bare soil entering winter if no action is taken. Photo by Brad Park.

>> **Above: PROSTRATE KNOTWEED** is a broadleaf weed and the earliest geminating summer annual. New seedlings have been observed in early March in northern New Jersey and are often misidentified as seedling turfgrass or crabgrass. Photo by Brad Park.

>> **GROWTH BLANKETS** can be used to cover late fall- or spring-seeded locations of sports fields to accelerate the germination and establishment of desirable turfgrass when soil and air temperatures would otherwise significantly delay the formation of turf cover. Photo by Brad Park.

SEEDING SOLUTIONS

Seed selection. In many school and municipal settings, the decision to seed high traffic fields as opposed to applying preemergence herbicide in the spring will require the Supervisor of School Buildings and Grounds, Department of Public Works Chief, or other manager with multidisciplinary facilities responsibilities to keep records of fields with histories of summer annual weed problems. Record keeping is an integral component of Integrated Pest Management (IPM), a strategy that seeks to reduce pesticide use through, in part, site assessment and monitoring. These records can be used to direct pesticide application contractors to withhold applications of preemergence products from bare soil sports fields that should receive priority for spring seeding, thus reducing unnecessary pesticide inputs.

Blends of perennial ryegrass are the best cool-season turfgrass choice for this purpose, given the ability of this species to germinate and establish more readily in cooler soil temperatures prevalent in late fall and early spring compared to other cool-season species. While seed mixtures may be marketed for "high traffic" locations or "sports turf," these products typically contain Kentucky bluegrass and/or tall fescue, two species better suited for late summer/early fall seeding timings and an allowance for ample grow-in.

Gray leaf spot resistant perennial ryegrass blends are a highly useful tool for sports field managers and should seeded on fields in climatic/geographic regions that had a history of gray leaf spot problems. Gray leaf spot is particularly problematic in late summer and early fall, a time coinciding with the beginning of the fall sports season and a need for routine overseeding. The establishment of site-appropriate turfgrass species and disease resistant varieties will reduce the need for future pesticide inputs and is a building block of IPM in turfgrass.

Seeding methods. Controlling summer annual weeds with postemergence herbicides requires newly seeded perennial ryegrass to be mature enough to withstand such application. This maturity is typically described in pesticide labeling terms as two or three mowings or 28 days after emergence (Note: NOT 28 days after seeding). Efforts should be made to accelerate perennial ryegrass establishment in early spring, before the germination of summer annuals, so that perennial ryegrass is not adversely affected by an herbicide and summer annual weeds are still in an early growth stage, a period when they are most susceptible to postemergence control.

Better perennial ryegrass establishment can be achieved by seeding at 8 to 10 lbs seed/1000 ft2 and improving seed-to-soil contact through slit-seeding or using tractor-mounted machines that incorporate solid tine cultivation and seeding in one pass. Applying a starter fertilizer at the time of seeding and additional fertilizer 2 to 3 weeks following seedling emergence will hasten establishment. Using growth blankets immediately following seeding and starter fertilizer application is a highly effective method to improve turf establishment during periods when soil and air temperatures are not conducive for germination and establishment. This includes seeding projects that occur at the conclusion of the fall sports season. Routine monitoring of perennial ryegrass development under the blanket must occur so that mowing can commence as soon as possible.

Ultimately, an aggressive perennial ryegrass overseeding program must be employed during periods when fields are in use. Before games and practices, perennial ryegrass can be introduced to high traffic filed locations using a rotary spreader and allowing athletes to "cleat-in" the seed to achieve necessary seed-to-soil contact. Caution should be exercised if slit-seeders with vertically spinning blades or solid tine cultivation/seeding devices are used in the midst of in-season overseeding as these machines can potentially injury new seedlings resulting previous overseeding efforts.

The goal of these seeding strategies is to maximize turf cover at all times. This is particularly important heading into winter when seed germination and turf growth is virtually nonexistent and a bumper crop of summer annuals is laying in the soil awaiting germination in the spring.

HERBICIDE STRATEGIES

Herbicides such as mesotrione (e.g. Tenacity) and siduron (e.g. Tupersan) may be applied at the time of spring seeding to provide some preemergence control of crabgrass and not adversely affect the establishment of perennial ryegrass. Preemergence control of goosegrass and prostrate knotweed is not listed on the pesticide labels for either of these active ingredients. Additionally, mesotrione should not be ap-

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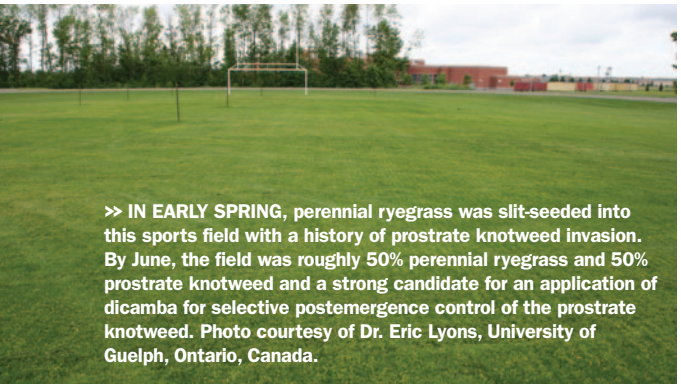
plied at rates higher than 5.0 oz product/Acre to newly seeded perennial ryegrass. An early-to-mid March perennial ryegrass seeding timing may be more than a month prior to crabgrass germination; thus, an application of siduron or mesotrione in-concert with seeding at this time is likely too early relative to crabgrass germination. Crabgrass emergence during late spring and early summer may follow. Addressing crabgrass and other summer weeds on a postemergence basis is likely a better decision.

Newly germinated crabgrass or those plants up to one tiller are susceptible to postemergence applications of quinclorac (e.g. Drive XLR8). Per quinclorac labeling, goosegrass is not on the list of susceptible weeds. Perennial ryegrass may be seeded up until the date of a quinclorac application; however, the application should be withheld for 28 days after emergence of perennial ryegrass. Quinclorac is a very unique herbicide active ingredient as it has postemergence activity on both grassy and broadleaf weeds common on sports fields including white clover, black medic and dandelion.

Fenoxaprop (e.g. Acclaim Extra) is labeled for control of young (1-leaf) to mature (5-tiller) crabgrass and goosegrass and can be applied to perennial ryegrass that is at least 28 days old. Not surprisingly, younger crabgrass and goosegrass plants are susceptible to relatively low fenoxaprop application rates, whereas four to five tiller grassy weeds require higher rates for effective control. Underscoring the need to thoroughly read and understand pesticide labels, as well as having the ability to identify both desirable turf species and targeted grassy weeds, Kentucky bluegrass is susceptible to injury when high rates of fenoxaprop are applied for control of grassy weeds that have eclipsed four tillers in growth.

Mesotrione is also labeled for postemergence control of crabgrass and goosegrass plants that are less than four tillers. Per pesticide label information, repeat applications with a nonionic surfactant are necessary and product rates should not exceed 5.0 oz/Acre on stands of perennial ryegrass. Newly seeded turf should be mowed two times or have emerged at least 28 days before (whichever is longer) before application of mesotrione.

Prostrate knotweed is most effectively controlled when the plant is young and has yet to form the thick spreading mat of vegetation associated with its name. Because it is a broadleaf weed, postemergence herbicides labeled for grassy weeds will not be effective for control. Dicamba (e.g. Banvel) is the most effective broadleaf active ingredient for control of prostrate knotweed. To avoid herbicide injury to new perennial ryegrass, the seedlings should be mowed a minimum of two times prior to dicamba application.



>> IN EARLY SPRING, perennial ryegrass was slit-seeded into this sports field with a history of prostrate knotweed invasion. By June, the field was roughly 50% perennial ryegrass and 50% prostrate knotweed and a strong candidate for an application of dicamba for selective postemergence control of the prostrate knotweed. Photo courtesy of Dr. Eric Lyons, University of Guelph, Ontario, Canada.

>> IN ADVANCE of sod installation, milling equipment can be used to remove unwanted turf and weed cover as well as a portion of the weed seed bank in the soil. Photo by Brad Park.

>> Above: INSTALLING SOD can be a highly effective strategy to reduce summer annual weed populations. In this photo, goosegrass skeletons surround a weed-free sodded location in late November following the fall sports season. Photo by Brad Park.

SOD SOLUTIONS

While more expensive compared to seed, sod installation is a strategy that not only creates instant turf cover but also can also have the effect of suppressing weed emergence.

Modern turf milling equipment (e.g. Koro Field Topmaker, BLEC Combinator, etc.) can be used to remove the existing turf, thatch and 0.25 to 1.5-inch of soil before sodding. Fields with long-time summer annual weed problems would greatly benefit from this site-preparation strategy as a portion of the soil weed seed bank can be removed as part of this process.

Installation of high quality sod (free of annual bluegrass) that consists of improved varieties of Kentucky bluegrass or a mixture of tall fescue and Kentucky bluegrass will serve as new carpeting over bare, weed seed infested soil. Sodding is best performed at the end of the fall sports season; however, if spring sodding is to occur, sod should be installed as soon as it is available from growers and when soil conditions are dry enough to allow installation procedures without adversely compacting the soil. Ample time must be allowed for sod to establish before resumption of field use. Be sure to specify non-netted sod for sports fields.

Sports field managers are under increased pressure to reduce synthetic pesticide inputs. The problem of severe summer annual weed encroachment on sports fields cannot typically be addressed by herbicide applications alone. Establishment of turf cover using seeding or sodding methods must be integrated into the solution.

Additionally, recognize that a pesticide label is a legal document that contains information on product use, tank-mix compatibility, and turfgrass tolerance. The label must be thoroughly read and understood before applying a pesticide product. ■

Brad Park is Sports Turf Research & Education Coordinator, Rutgers University, New Brunswick, NJ; a member of the Sports Field Managers Association of NJ Board of Directors; and a member of the STMA Editorial Communication Committee.

JOHN MASCARO'S PHOTO QUIZ

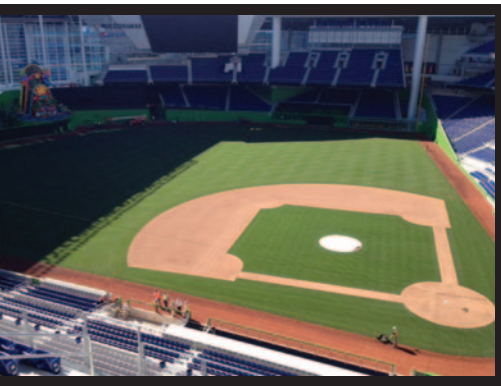
John Mascaro is President of Turf-Tec International

Can you identify this sports turf problem?

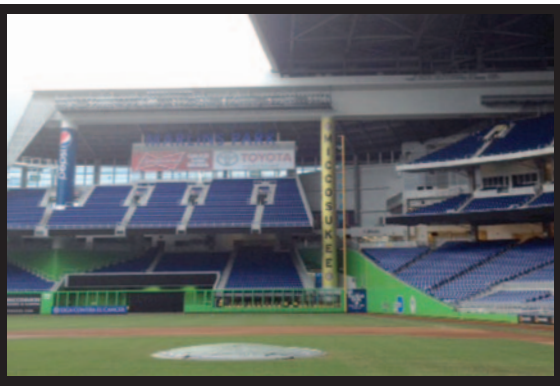
Problem: Slightly uneven turf
Turfgrass area: Baseball outfield
Location: Charleston, South Carolina
Grass Variety: 419 Bermuda overseeded with perennial ryegrass

Answer to John Mascaro's Photo Quiz on Page 33

Background illustration courtesy of istockphoto.com



>> Miami's Marlins Park.



>> ROOF POSITION to protect the press box until All-Star break.

>> WINTER SHADE line with lights out in use soccer mode.

First-year turf review: Marlins Park in Miami

Editor's note: *We asked Chad Mulholland, the director of grounds for the Miami Marlins' new stadium that opened last spring, how his first year went working with the turf in the retractable roof park. Here is his response.*

AS WITH ALL RETRACTABLE ROOF STADIUMS we have had our share of good and bad surprises. You have expectations going in and then you realize it's not what you thought it would be like for some situations but it's better for others.

The Celebration bermudagrass was chosen before I was hired. Alan Sigwardt and his crew had some test plots they had used at Sun Life Stadium (in Miami); I believe they had a few different Bermuda varieties as well as a paspalum plot. Over the course of the summer the Celebration out-performed or was close to the best performer of the tested varieties. Being in Florida I think the comfort level of using Celebration was an easy decision. Jordan Treadway, who manages our spring training site in Jupiter, FL uses Celebration and it is in amazing shape year round. We had some moderate success with our Celebration but ran into some unknowns as well as some predictable issues.

The number one problem was natural sunlight. We either had zero or sometimes up to 3 hours per day depending on the area of the field and the time of year. The other big issue that I think affected us was the constant temperature change inside the building. We would go from an air temperature of 115-120 F in July to a temp of 68-72 F by the end of night games. Then we would open back up and it would be in the mid 90s all night. I have never seen a study of constant air temperature changes but I don't think it's healthy for a plant.

Areas where we had ample sunlight such as the center of our outfield I thought the grass performed well after we established a nutrient base and put some organics into the soil. We are 100% sand and it took a while to keep our nutrients in our rootzone. I believe our sand has some sustainable nutrient base now and we should be better in the upcoming season.

Another issue that was unforeseen was our sod layer. We received some great-looking sod for the install and it was grown on sand, but it was a completely different composition from our rootzone. The sand was approved and appeared compatible, and it was until you added constant shade. The sand the sod was grown on had about 70% fine sands in it; our rootzone had around 17%. Where we had sufficient sun it was not a problem but where we had permanent or a majority of shade it stayed moist and wouldn't shoot any roots.

In those spots the Bermuda thinned out and tried to grow vertically. So we had to resod a significant amount before Opening Day and again in late May. By late May the sun is rising in a different spot and we had sunlight in right field. However, we have a carport type roof in left that blocks sun in left during the summer so our shade issue shifted from right to left. They have a huge window in left that retracts to let in sunlight so we get some early morning sunlight but it is minimal and it shifts quickly as the sun rises. We don't get completely out of shade in left field until about 1:30. We would close the roof about 4-4:30 if weather permitted so on a good game day we received around 3-4 hours of sunlight in left field.

ROOF CLOSED MORE THAN ANTICIPATED

The roof was closed a lot more than initially anticipated and we never had full control of the roof until around the All Star break. It was tested at different speeds and adjusted and re-adjusted and re-tested etc. It was a constant pain in our grow-in schedule. So even though it was 90 degrees outside and bright and sunny, we had the roof closed some days to test air conditioning, fix small roof leaks and seals, and to test the roof itself. The roof shuts in about 13 minutes but it isn't that easy; someone has to physically walk the tracks the roof rides on before any buttons are pushed. The whole process from the time I call for a closure until it's actually closed is usually about 30 minutes.

With our being in South Florida and that constant threat of rain, we have a tarp and it saved us a few times during the year. We have tried to use the roof to the best of our advantage. We have five different positions we refer to when closing or partially setting the roof. Even after commissioning we had other small issues to hammer out before we were comfortable with leaving the roof completely open on rain days when the team was on the road. We never installed windows on the press box and we kept the roof about 1/3 of the way closed for any rain threat until early July. If we left it open the press box would get flooded and it leaked to the luxury boxes underneath them. So the entire 1st base side of the skirts never got rain until July and it also robbed us of about 2-3 hours of sun a day as well basically the shade line ran from over top of the pitcher's mound when it was closed in that position.

Another thing we never anticipated was we could use the roof as a tarp if we had a threat of rain overnight we would close the roof till it

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covered our dirt and leave centerfield and left field open to receive rainwater. With the threat of rain almost every night we saw it was beneficial to us by not having to tarp every night; our disease suppression was kept to a minimum and it helped on labor by not needing extra staff in early to yank off the tarp.

WORKING THE SHADE AREAS

Some of the things we did to keep some of the areas playable were reducing our water in the shaded areas as well as treating them with specific product. We had trouble with rooting in the heavily shaded areas and had to be careful with any aeration so we relied heavily on spike aerating in those spots. If I had it to do all over again we would have overseeded to alleviate the appearance of the Bermuda in the shade as it thinned quickly.

We tried a few products that were meant to emulate sunshine or at least supply protein that sunshine would let the plant produce if it had sunshine. I am reserved on my opinion on them because I don't think they made a difference since we had no sunshine at all. But when we had any sunshine even in small amounts we did notice improved turf conditions. We tried to aerate as much as we could to rid the sod layer of the sand that came in with it and we had a pretty good stand of grass and started to see good rooting once the roof was under our control.

It really turned out to be a blessing that the roof was shut as much as it was in the early part of the year because management saw what a difference the roof made in quality of turf. Since this is our first winter in the building we are not real sure what we can do to improve the situation we are in. We will learn more as the winter time goes on.

When I took this position I knew we were an all-season venue. We have certainly lived up to that in our first season and we are still learning our stadium and what will and will not work and the changes we need to make. It leaves us with very little time for repair or rest. It isn't uncommon to have a dinner event followed up by a sporting event on back to back days or in the same week. What really hurts is that whether we have inclement weather or ideal weather the roof is often shut to accommodate our guests.

Our best tool for repair has become sodding. It isn't our first choice but due to no sunlight at all it is our best tool to guarantee a safe and playable field in our south end. We have tried to customize our maintenance schedule as much as possible to accommodate for the shade but it's just impossible to grow grass without sunlight. We have altered our watering, our feeding and our agronomic practices but still have the same problem shade.

GOING TO PASPALUM IN 2013

We will be changing grass variety and sod producer this coming up season in combination with a more suitable sand profile so we hope that eliminates some of our issues. We will have Platinum TE paspalum on our infield and sidelines and 419 Bermuda in our outfield. In 2014 we will be converted over to all Platinum TE. Dan Bergstrom of the Houston Astros made the switch a few years back and after consulting with him over the past 9 months we feel it is our best way to move forward. Houston's environment is probably the closest to Miami's of all the retractable roof stadiums.

The one thing I have learned is that even though we have retractable roofs we all have different problems due to weather or positioning of our stadiums. I have an even deeper respect for the guys who have been dealing with the roofs for years. In my mind I thought we would be fine due to our air temperature and our soil temperatures but I couldn't have been more wrong; the amount of light is everything.

Our infield material comes from Natural Sand in Pennsylvania. Grant McKnight has been a huge resource not only for his infield mix but his knowledge of soil gradations in general. We made the mistake of not getting the proper compaction for our exhibition games, and Grant came down the next day to help us with our problem. I had worked with the Natural Sand product in the past but never had to use the same compaction method as we did here. Once we had our ideal compaction it performed as expected. We just had to be careful of our watering schedule and the roof closures. If we have a 1 pm Sunday game and we close the roof at 10:30 am we have to have our base saturation already completed and the infield nailed up while we have sunlight.

If we don't get crusting with the nailed up material because we wait too long, the roof traps the moisture and it slows down the drying of the loose material. By closing the roof 10-15 minutes early it has cost us 2 hours of preparation time during the season. So we really have to be in constant communication with our front office. We will not make any changes to the dirt this year other than we now have expectations of how it will perform with the roof open or closed and our time table of when to do certain maintenance practices. We really like our infield mix and have no intention of changing it. The only thing we might change is the color or the sizing of our conditioner.

We did not overseed the turf in 2012; it came from our sod supplier unseeded and very green. It looked fantastic. It only started to change colors when it got limited sunlight and consistent air temp changes from some of the AC testing. This year we will overseed but nothing too heavy. It adds to the visual appeal for our fans and management and also buys us some time with the shade issues. We know once we get sunlight our Bermuda will survive. So our thinking is we can keep the turf's appearance with the grow lights and delay the Bermuda decline somewhat in check with the lights as well. Once summer gets here we will just move the lights to left field and concentrate on the shaded areas affected by the sun's summer position. We think if push came to shove we could probably keep some ryegrass in the turf year round with the roof being closed as much as it is. We would just have to be very alert with the fungicide applications when the team is on the road and the roof is opened as much as possible.

We got mixed reaction from the players; some of them were curious on the decline of the conditions because they are not around during road trips and they assumed the roof is always open or unaware of events held on the field that affect the turf directly or the roof being closed as well as flooring on the turf. Once we educated some of the guys most of them knew we were doing our best but some just never understood the limitations we faced.

We got pretty good feedback as far as some of them knew there would be growing pains. We got compared to Arizona and Houston as they struggled the first few years as well. It was really good to hear some of our players as well as some of the visiting teams tell us of the improvement they saw as we gained more control of our growing environment. Late in the year Jeff Porter, the Braves trainer, told us he thought we looked better at the end of the year than any of the retractable roof stadiums had in their first year. We didn't get many compliments so we took it as a positive sign we were doing something right.

The one thing we realized is we have no wiggle room if we miss something. If we don't anticipate a prolonged roof closure or a week-long spell of bad weather it affects us more than most venues. We just simply don't have the same ability to recover as rapidly. ■

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AS SPORTS TURF MANAGERS there are many challenges we face and many of these are weather related. While working in the Northeast, my biggest challenge was dealing with winter conditions, in football season or in early spring with field hockey or baseball.

I have found through trial and error a number of ways to deal with snow on both synthetic and natural grass fields; the most important strategy was to have a plan of attack ahead of time, before Old Man Winter throws multiple inches of snow or ice at you. If you are not prepared the result will be a lot of lost valuable time in the removing of this frozen precipitation. Establish what the plan of action will be in advance and be sure to factor in "the worst case scenario" while also having a Plan B.

PLOWING OPTIONS

Here are a couple of plowing options that can be used to successfully remove snow on either synthetic or natural grass:

If a rain tarp is available, tarping the surface before the event allows you to remove the snow/ice AS SOON AS IT BEGINS TO FALL. Using high-powered, PTO-driven blowers allows you to prevent as much accumulation on the tarp as possible; this requires being on site as soon as the snow or freezing rain begins to fall, and proactively removing the precipitation, working from the center of the field and working your way out to the sidelines.

The snow has to be a dry snow for blowers to work. If it's a wet snow you can remove the snow by using rubber tip snow plows, or other snow plow options listed below. Do not allow the snow to **accumulate more than 1 inch before beginning the removal**. Also, plowing off the

CAUTION: When plowing off of the rain tarp, plow in the direction in which the tarp was laid, and modifying the plow blade to prevent snagging and tearing the rain tarp.

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rain tarp makes for a cleaner surface in the end.

CAUTION: When plowing off of the rain tarp, plow in the direction in which the tarp was laid, and modifying the plow blade to prevent snagging and tearing the rain tarp.

Plowing an uncovered surface with a pickup trucks or utility work vehicles works fine, but you must **retrofit the plow blades**. Here are some ideas:

Use pressure treated wood/recycled lumber. Hardware needed: long lag bolts, washers, and nuts and one 2 x 4 x 8-inch or 4 x 6 x 8-inch piece of lumber. I remove the snow shoes from the plow (will still be used as the receiver for the pressure treated wood). Take the lumber or whatever you find that will keep the blade from coming in contact with the surface.

On the bottom side of the lumber recess drill two holes (large enough for the lag bolt head with a washer) in alignment with the plow shoe receivers; the recessed drill hole should be deep enough to allow for a lag bolt head to sit flush with the bottom of the board. Place a support washer at the head of the bolt for reinforcement. Run the lag bolt up thru the board and thru the snow shoe ring on the back of the plow. Add washers above and below the lag bolt as you would with the snow shoe for spacers and secure bolt with a locking nut.

Another idea is using a Drain Pipe bucket plow. You need a 15-20-foot by 18-inch diameter drain pipe, ratchet straps, and a tractor with bucket. Strapping the drainage pipe to the bucket increases the plowing swath; when you plow have the lift bucket up, tilt bucket forward, lower to turf and plow.

>> **PLOWING** and snow blowing off rain tarp.

SYNTHETIC FIELDS

When plowing synthetic fields you don't need to scrape the surface clean. If you try it will result in the removal of crumb rubber and the chance of turf damage. Instead, drop the plow to the surface and then raise it slightly (1/8 to ¼ inch). Leaving this small amount of snow is what you want to achieve. Synthetic turf heats up so fast that even 1-2 inches of snow will rapidly melt off if there are slightly exposed areas of green turf.

After the majority of snow has been removed, black crumb rubber (synthetic field) or black sand (natural grass) can be spread over the field. Allow this to sit 20–30 minutes and then run a field groomer over this last bit of snow and it will quickly dissolve. I have also seen green dye sprayed over the last 1 inch of snow that will absorb more sunlight and accelerates the melt.

If only 1-2 inches of snow has fallen on synthetic turf, I have been able to just drive a utility vehicle in a crisscross pattern across the field (like a mowing pattern) to achieve melting; by compressing this little bit of snow in the tire tracks it accelerates the melting.

Snow blowers also work well. But remember to **NOT SCRAPE IT CLEAN**. Leave a ¼ inch of snow, followed by an application of crumb rubber or black sand.

Don't be too concerned with plowing against the seams of the synthetic turf. As long as you're not scraping it clean and take your time, it will be fine. If you try to cowboy plow the removal of the snow and the plow begins to bounce it could result in extreme turf damage.

If a large amount of snow is called for, get after it as soon as there is an inch of accumulation and keep repeating the removal process throughout the storm.

When the field is scheduled to be used in early spring (March/April), I recommend you remove the snow after each storm event throughout the winter. Removing all but 1 inch will prevent a lot of heartache come March. It's much easier to remove 1 inch of snow in the spring than to remove 3 feet of frozen, hard-packed snow. ■

Steve LeGros has been in the turfgrass industry for 28 years as a turfgrass/stadium operations manager, and since 2007 has been consulting with turfgrass management and facilities operations on all levels of athletic fields.

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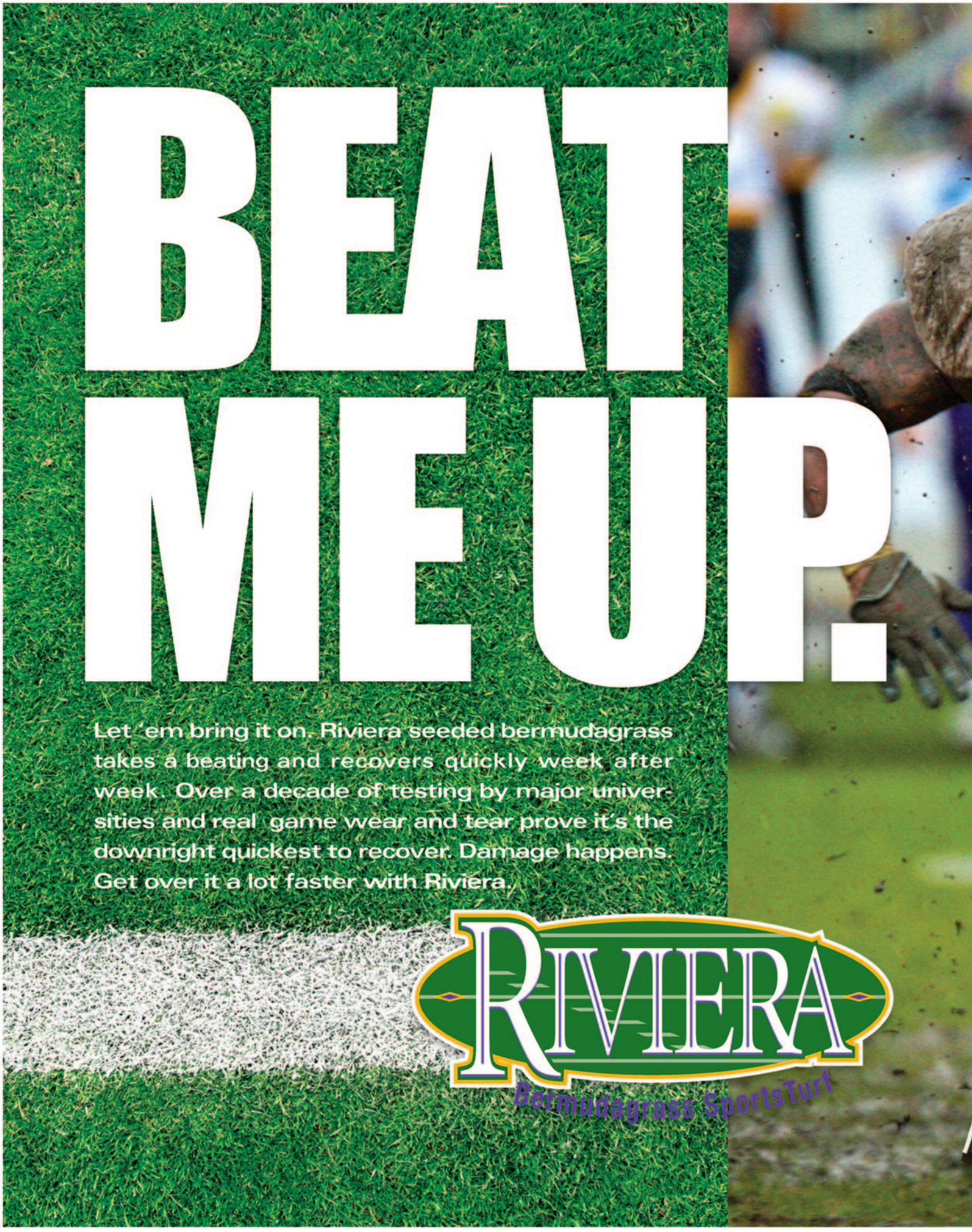
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Non-traditional funding alternatives for public athletic facility projects

By William J. Seymour, PE

FUNDING FOR PUBLIC ATHLETIC FACILITY PROJECTS has changed dramatically in the last decade. The days where a municipality could go to a town meeting and seek an override approval for 100%, or float a bond for 100%, of an athletic facilities project are essentially over. The fiscal reality is that municipalities have been forced to consider steep financial cuts to schools and public safety services (police and fire). The "extras," such as athletic facility enhancements, have, out of necessity, taken a back seat.

Although traditional funding is not readily available, the demand for public athletic and recreation facility enhancements has actually risen. This is due to continued population growth in urban areas, enhanced diversity of sports, and increased gender equity in sports. Municipalities are now compelled to find "out of the box" ways to meet this growing demand, and the solution begins with creative funding. To be successful in raising the funds for an athletic or recreation project, the municipal or non-profit Owner should assemble a fundraising group that considers the following options concurrently:

PUBLIC AND PRIVATE GRANTS

The first constituent of a funding group should always be an experienced grant writer. If there is no grant writer on staff, hiring a professional grant writer will greatly increase the odds of receiving public and private grants.

Public Grants. Public grants vary from state to state and from municipality to municipality. There is a federal program called PARC (Parkland Acquisitions and Renovations for Communities) and each state implements block PARC grants; $97 million was awarded in 2010 alone. The Department of Urban Development has community block grants that some communities will qualify for based on net income and demographics. The EPA provides brownfield grants for the redevelopment of impacted parcels of land. There are ReLeaf grants available from federal agencies for the planting of trees and landscaping that can be associated with park projects. For example, there is a federal land and water conservation fund that has resulted in the funding of thousands of outdoor recreation facilities.

These public grants rely heavily on feasibility studies that demonstrate the viability of the project and accurate cost estimates. It is important for the granting authority to be convinced that the project is valid and feasible, and that the funds allocated for the project would result in the successful completion of a fully serviceable facility that meets a previously un-resourced community need.

Private Grants. Private grants, although a bit more constrained lately, are playing an important role in the non-traditional funding of public projects. Municipalities can apply for grants from US Soccer, US Tennis Association, Nike Endowments and Foundations, the NHL, etc. These organizations and others have been involved in providing funding for public projects. They provide these grants as a way to propagate their particular sport or interest. Therefore, it appears they are more likely to provide grants for building new facilities as opposed to renovating existing facilities. A successful private grant solicitation or submission should demonstrate how the awarded grant will facilitate the propagation of the interested sport. For example: Is there un-resourced soccer demand in your community? If so, and if US Soccer grants $150,000 for your project; will it result in new field inventory that will service that otherwise un-resourced demand (thereby furthering interest in that sport)?

Like public granting authorities, private granting authorities also look for the applicant that has "real" plans, budget, and milestone schedule. Due diligence and feasibility studies are necessary to help convince granting authorities that the project is worthwhile. If the private grant is awarded, they want to know that the financial resource will result in the successful outcome of a project that furthers their interests.

PRIVATE FUNDING

Grassroots fundraising efforts (e.g. selling brick pavers, parking spaces, seats, and candy bars) can sometimes be disappointing as far as how much money they can generate (often less than 10-20% of the project budget). The biggest advantage these efforts provide is public awareness and involvement. This can be quite helpful when seeking permitting and other municipal public funding since you've enfranchised a number of people into the process as advocates.

The first step in developing significant private funding is to form a private fundraising conduit for the money raised: a booster club, a "Friends of (insert name) Field," and/or a 401(c) 3 that can receive tax exempt moneys. The Booster organization can be the conduit for fund raising, corporate sponsors, youth sport user fees,

concessions proceeds, individual donors, etc. The Boosters can gift these revenues to the public owner. Alternatively, the Boosters often complete the sports facility enhancements themselves under a private procurement, which may have cost and project control benefits.

SPONSORSHIP

One of the more lucrative fundraising opportunities is corporate or individual sponsorship associated with naming rights of the facility. The fundraising committee should determine the municipality or school's policy with regard to naming rights before initiating the fundraising drive, and identify naming opportunities (field, track, scoreboard, press box etc.) It's important that you present a possible donor with a policy that details the recognition they would receive. If they can see that their donation would result in significant name recognition; there is a higher likelihood of success.

Another avenue of sponsorship would be approaching prosperous citizens in the community. Part of the fundraising group's challenge is to first determine who these people are through local community groups (alumni groups, philanthropic groups, the Kiwanis, the Rotary, the Elks, the Chamber of Commerce, etc.). The fundraising chairperson is often approached to make presentations to these various community organizations. Oftentimes, these well-heeled individuals of the community can be identified and approached through this type of networking. This is more effective than knocking on people's doors. It's important that these approaches are made with mature marketing materials (glossy project descriptive information with colored renderings, feasibility studies, and budgets) in hand to facilitate the conversation and encourage the potential donor to become involved in the project.

PUBLIC/PRIVATE PARTNERSHIP

A public/private partnership strategy can be a bit more complicated but municipalities are becoming increasingly reliant on them. This type of partnership comes in two forms:

Use. This is the partnership frequently seen between a municipality and an institution. The institution is often a small or community college that is landlocked but has growing athletic requirements. By reaching out to a local community with available land, but constrained funding, the two parties enter into an understanding. The private organization builds an improved/expanded facility on public land with additional capacity for the community, and the institution is able to use it (often with use and scheduling preference). These partnerships are becoming increasingly popular and they are a win/win for both entities to meet their need for expanded facilities of higher quality than either could achieve on their own.

Profit. Under this scenario, a for-profit, private organization enters into an agreement with a municipality whereby they would develop an athletic or recreation facility on public land with facilitated permitting, public services, and tax incentives. They may gift a portion of the facility (e.g. a soccer pitch) outright and retain control of a for-profit facility, or they may operate the overall facility for profit but give the municipality use at reduced rates. One complication that can arise

with this arrangement is that often a public owner cannot simply enter into this agreement with a private entity without going through an RFP process. The municipality typically has to advertise the opportunity, define the selection criteria, review all the proposals, and come to a decision based on the best value for the community. This requirement will vary from state to state.

DONOR IN-KIND GOODS AND SERVICES

The donation of in-kind goods and services is another way to help fund an athletic project. The fundraising group should identify early on the various businesses in the community that could potentially perform in-kind services for the project. For example, stone, asphalt, and concrete; earthwork and landscaping; topsoil and seed; site and athletic lighting; and fencing.

An effective way to learn about, and approach, these companies is through networking with the Chamber of Commerce and various philanthropic groups within the community. There are challenges associated with in-kind contributions. Since these services and goods are donated, they are often the last priority for otherwise profit-making companies. As a result, donor projects can take longer than expected and may not be built to the same quality as a normally competitive, bid project. They can be disjointed since coordinating the various subcontractors and materials as they arrive on the job site can be challenging for the owner. But, if a municipality is willing to put in the extra time and effort necessary, these projects can result in a cost-effective and functional facility that may not exist, were it not for these donated goods and services. Typically, a design professional (who may also donate services) is engaged to provide the design and permitting for the full potential build out of the facility so that permits are in place as the materials and services become available, and the facility is developed over time.

DEVELOPER OFF-SITE IMPACTS

Another potential fundraising opportunity is developer off-site impacts. When a developer comes into your community proposing a multi-family residential or commercial development, they could be exacerbating a traffic problem or putting extra burden on municipal services such as water and wastewater utilities, schools, etc. It is common practice for municipal zoning and planning boards to require the developer to perform off-site impact mitigation by replacing a sewer, widening an intersection, or adding traffic light(s) as part of the acceptance for the developer's project. Some municipalities have told developers that they are beyond their capacity in terms of their ability to support recreational facility use, and as such are requiring developers to develop recreational facilities to mitigate the impact of their proposed project on the community. Town-wide recreation needs assessments documenting recreational facility shortfalls in the town are needed by local planning and zoning boards to set the stage for this discussion.

UTILITY LEASES

There are a number of utility companies willing to provide significant funding for athletic facility enhancement in return for the rights to develop private utilities on public

land such as cell towers, solar power arrays, and wind power. Such endeavors typically involve long term leases which encumber a significant area of land or roof top; however, they can be very lucrative for both parties. Of these funding opportunities, solar power sites currently appear to be the most heavily sought after. In some instances, the solar power developer will actually procure/build the athletic facility as part of their installation project and then turn the resultant facility over to the public owner.

VENDOR FINANCING

Although many recreation product vendors (turf, lighting, surfacing, etc.) offer financing programs; in our opinion, they have not proven to be effective to the municipality. This type of funding may only be effective as a last resort, or to complete the last portion of funding required for a significant project. The typical financial terms vary and may not be more advantageous than conventional financing from a lending institution. Additionally, such vendor financing arrangements can put the municipality in a situation where they are locked into doing business with a particular vendor and the price could reflect the proprietary nature of the procurement. Also, many states have very specific rules prohibiting proprietary specifications for public projects. If vendor financing is relied upon to complete project financing, it will be advantageous and probably necessary for the Booster group to obtain this type of financing in lieu of the public owner.

PROFESSIONAL FUNDRAISING

A professional fundraiser can assist a community with identifying potential corporate and individual sponsors, and developing an approach that is more successful than what the typical layperson could accomplish. A professional can manage "pledged giving" more effectively than most community fundraisers. They are also usually able to organize the grassroots fundraising in a more cost-effective fashion. Keep in mind that their success does depend on having the right materials (feasibility studies, colored renderings, and realistic budgets).

There are two types of professional fundraisers: those that work for a percentage of the funds raised and those that work for a set fee. The Association of Fundraising Professionals strongly encourages professional fundraisers be paid set fees for their services instead of a percentage.

Many athletic facilities constructed in the past decade have been funded to some extent by non-conventional means. Multiple funding sources for one project are common. To get the most out of your efforts, it's important that your fundraising group is organized and everyone has a function, eg, one person is responsible for approaching businesses, one to research grants, etc. It's also imperative that you start off on the right foot with excellent collateral materials. Engaging a design professional to provide realistic budgets, feasibility plans, and color renderings will help to facilitate your community to reach its fundraising goals. ■

William J. Seymour, PE, is the Director of the Civil Engineering Division for Gale Associates, Inc., Weymouth, MA and a member of the Sports Turf Managers Association.

>> A REEL GRINDER is a must for any turf manager; however since they are very expensive most don't have the means to get one so having the work done by others is a great option.

>> Top Left: IF YOU ARE HAVING ISSUES with a unit not starting this battery/starter tester will quickly identify or eliminate some issues.

>> Bottom Left: THESE HOSES ARE FOR TESTING and draining a hydraulic system, which should be done at designated intervals, including during a winter service by a local distributor.

Managing and maintaining your equipment fleet

Now that the turf growing season has ended for most of the country and winter is here, many turf and equipment managers turn their attention to servicing and repairing equipment for the rigorous spring schedule that will soon be here. Whether you have one unit or several units, preparations and planning this winter can help ensure a productive, successful equipment season in the spring.

Winter preventative maintenance programs can be scheduled to cover many of the larger recommended maintenance schedule items that are required. Because these services can include draining of fuel and hydraulic tanks and replacing many of the hoses, scheduling these services with a local equipment distributor can save time, money, and potential down time in the spring. Once spring arrives and the equipment is back out and being put through its paces, many of the common issues that are faced in the field can be prevented by following a regularly scheduled maintenance plan. The minimum maintenance standards that are outlined in the owner's manual for each piece of equipment are essential to ensure the units in your fleet are operating to their maximum level of expected performance.

Changing the oil and filter regularly, checking tire pressure, replacing belts and hoses, changing the fuel filter, and if the unit is diesel draining the moisture from the fuel tank are some simple but important measures aiding in the performance of your equipment. While many of these tasks are performed on a regular or interval basis, there are other requirements that each operator should follow before using any piece of equipment. Doing a walk around inspection of the unit to visually check for issues is something that is often overlooked. Seeing an operator walk up to a unit and get on and ride away without looking on the ground to see if there are any leaks is a common occurrence in a race to be productive. This simple check could identify a potential issue and prevent environmental contamination or damage to playing surfaces.

Training your team in proper pre and post inspections when using equipment is a key element in the maintenance regiment. Checking fuel levels to ensure you start each shift with a full tank of gas is the start of any pre-operation process. If you plan to refuel your equipment during the day, make sure the unit is moved to a flat, concrete surface, turn the engine off and allow the engine to cool. Checking safety devices to ensure they are working properly and have not been tampered with is also a critical step. Manufactures have continued to improve safety features that include automatic shutoffs, ROPS systems, vibration and noise reduction components, and seat belts to help prevent many of the injuries that occur. Tampering with these safety devices or using equipment for tasks not designed for can put the equipment at risk of serious damage. More importantly your operator or even bystanders can be at peril of serious injury or death.

Fleet management system

ONE OF THE KEY ELEMENTS of a maintenance operation is the ability to efficiently and accurately track imperative equipment data to ensure preventative maintenance is performed on schedule. One solution, myTurf, is The Toro Company's fleet management system that offers a unique combination of tools that increase the efficiency of a turf equipment maintenance operation by reducing unnecessary steps and automating others. myTurf has you covered whether it is being able to locate and order parts online, automatically load service schedules, or view purchase and repair histories, whether for Toro equipment or any of the other brands in a fleet. The goal of a good online fleet management tool is to make sure the preventative maintenance gets done on time efficiently, automatically and simply.

JOHN MASCARO'S PHOTO QUIZ

Answers from page 17

The slightly uneven turf is not the result of a mole playing hide and seek; it is actually a water bubble. A couple years ago, this sports turf manager experienced almost perfect weather all winter long with adequate rainfall. Because of this, he did not have to irrigate all winter. In the springtime, the irrigation was needed and the first time he turned the system on, he noticed this rising bubble in the baseball outfield. The turf mat had become so thick during the winter that it had grown over several sprinkler heads and the irrigation head couldn't punch through it. The solution was simple; they got a pocketknife out and cut a slit in the top of the bubble. Care and luck also come into play as you are always hoping the nozzle is not pointing at you. The field was aerated heavily as well as dethatched and the problem has not appeared again. ■

Photo submitted by Patrick Jonas, CSFM, Parks Maintenance Director at St. Andrews Parks & Playground in Charleston, SC.

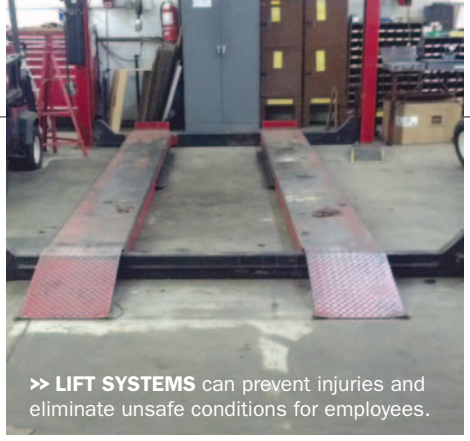
If you would like to submit a photograph for John Mascaro's Photo Quiz please send it to John Mascaro, 1471 Capital Circle NW, Ste # 13, Tallahassee, FL 32303 call (850) 580-4026 or email to john@turf-tec.com. If your photograph is selected, you will receive full credit. All photos submitted will become property of *SportsTurf* magazine and the Sports Turf Managers Association.

When a piece of equipment does break down, the clock to get equipment back up and running starts ticking! Whether you have an on-site service technician or you call to have a service technician come out, your goal is to be productive and keep the plans and tasks for your operation running efficiently while keeping the highest standards of proper equipment repair and safety paramount to your team's success.

There can be several techniques used to properly diagnose the source and extent of equipment issues. Today's technicians are highly trained and skilled professionals. They are able to diagnose issues that may be due to electrical, fuel, hydraulic or mechanical failures. Through planning and staging standard or highly used parts in inventory, this strategy can more often than not make repairs quick and alleviate precious time needed to accomplish daily or weekly tasks.

Having the right equipment to properly diagnose any issue quickly and getting the unit back up and running is another important key to properly keeping your equipment up to par. As many equipment managers have discovered, equipment has become more advanced to meet the challenges and demands of the industry. Making sure that a technician has all the right tools and equipment can be costly and with budgets getting tighter this is becoming more challenging. However, the upfront investment can save you thousands of dollars via proper daily, weekly, monthly and annual costs in equipment and downtime—furthermore, how do you quantify sleepless nights wondering how you will get tomorrow's tasks completed when broken equipment didn't allow for completion of the previous day's agenda?

In addition, the cost of environmental contamination and disposal of used fluids generated at equipment maintenance facilities is becoming more regulated through state agencies. Examples of disposable fluids include; oil, anti-freeze, brake fluid and cleaner, solvents, batteries and fuels. Appropriate, safe disposal has prompted many to upgrade their facilities in order to meet or exceed regulated guidelines. In some cases operations have or will decide to leave a portion or all their service and/or repair to someone else.



>> LIFT SYSTEMS can prevent injuries and eliminate unsafe conditions for employees.

With the many daily activities that equipment and turf managers have to be concerned with, trying to remember when you last did a service or what parts you needed to complete the recommend service can be a challenging task. In some cases, technicians have a dry erase board or a hand written note book somewhere in the shop that they use to track all the equipment services. What if someone accidentally erases something from the board or in case of an accident that destroys those records, what does one resort to as a back up?

Maintaining proper records of equipment maintenance is another large component of keeping your equipment in shape for many years. As technology continues to emerge

some technicians have created elaborate spreadsheets on their computers that they use as part of their documentation process for maintaining equipment as a transition from hand written notes in a book or record keeping on a board.

With the dawn of information technology and Cloud-based software, new fleet management software solutions are attempting to take fleet maintenance to a new level. Fleet management tools are gaining adoption in the market by simplifying the process of tracking preventative maintenance and the inventory management and ordering of necessary parts. Logging and wireless update and reporting of operating hours, for easier tracking of maintenance intervals, is an added benefit of these solutions. When preventative maintenance alerts appear in the software, the system will provide information you need on the unit via a "work order" that includes the service required and what parts are needed to complete this service. Once this information is provided, a technician can simply order the parts online and have them shipped right to their facility the next day. You can also use solutions like The Toro Company's fleet management system, myTurf, to get a total cost of ownership information to help drive equipment upgrade decisions. And, since many of these solutions are now web-based, instead of residing on a desktop computer like prior generations, data is backed up daily for security and work order processing or parts ordering can be accomplished from any web-connected computer with a simple log in and password.

Working equipment is vital to any organization. No matter how big or small the piece of equipment is in size or importance, keeping it running at peak performance is critical. The window of opportunity to complete tasks can sometimes be a huge difference maker and in some cases when things go awry; they become an equipment or turf manager's worst nightmare! Tracking and following proper preventative maintenance practices, ordering appropriate parts per manufacturer's guidelines, including a full winter service plan can help alleviate many of the challenges that are faced in the field every day.

Having the appropriate equipment maintenance practices in place for each unit is essential to every operation whether it's a small one to two acre property or a larger one hundred acre facility. It's all about your users' expectations and your vision and passion to meet or pursue something greater. While equipment is being serviced for the winter this is also a good time to review safety procedures and pre-operation equipment checklist with employees. This includes going over the operator's and safety manual or watching associated video's for the different units that you have. Covering routine maintenance schedules and safety tips with employees can give you an additional set of eyes in the field. Following these suggested guidelines can drastically decrease down time and improve overall team productivity so moral and general operations help keep employees and the environment safe, including better playing surfaces and turf in 2013 and beyond. ■

Jason Kopp has been a sports turf and grounds manager for more than 20 years and is currently territory manager for Turf Equipment and Supply, Jessup, MD.

Report: status of small school turfgrass education programs

WE ASKED SOME EDUCATORS at three community colleges and one 4-year institution about the status of their turfgrass programs. The questions were:

- 1. What is the trend in your turf program enrollment numbers—up, down or steady?
- 2. What are some of the reasons your students give for wanting to study turf management?
- 3. Have you made recently, or are you anticipating making in the near future, any changes to your program? If so, what and why?
- 4. What is your opinion on how turf management will be taught 10 years in the future?

CHAD FOLLIS,
Mineral Area College
Park Hills, MO

Follis is a horticulture instructor, greenhouse supervisor and baseball field manager.

1. Overall enrollment in horticulture is up. Those students wanting turf specific is steady this year.

2. Many of the anticipated answers are love of sports, love of outdoors, working with hands and equipment. In our rural area of southeast Missouri, turf management is still growing and new so there is some aspect of novelty also in the mix.

3. We have increased our end of program testing to assure employers and 4-year colleges our students are meeting necessary competencies. We also put in a NTEP-style variety trial over the past 2 school years. We now have 50 bermudagrasses, 13 zoysia and eight buffalo, two St. Augustine, and two paspalum. We also installed 100+ cool-season grasses. All the basics, KYB, PRG, TTF, FF, Bent and a few outside the norm like faults alkali, poa triv, poa supina, micro clover. The students got behind this project. It allowed us to teach establishment of the various grasses and gave the students some hands on experience using equipment such as vertislicers, aerators, etc. Thanks to all the folks that helped us with samples of live warm seasons and seed, too many to mention in this space. We are also trying to work out articulation with a couple 4-year institutions to smooth the transition process.

4. More and more online distance delivery of education. Students don't want to come to campus or at least want to limit the amount of trips per week. We have to determine how to deliver a hands-on outside careers driven education via a computer screen. How do we engage students fully, not just pass along PowerPoint slides? I also see STMA becoming more involved in how and what we teach in the classroom much in the model of the GCSAA. I think this will allow for increased matching competencies across the industry, which strengthens the knowledge base and gives employers the assurance they are getting individuals that can make a difference in their facilities immediately.

TROY MCQUILLEN,
Kirkwood Community College
Cedar Rapids, IA

McQuillen is a turf instructor.

1. Numbers are remaining steady, but something that is changing is the number of students that are expressing interest in sports turf management. Currently I have 55 students in the program and I could say that 70% express interested in golf course maintenance and the other 30% are pursuing a sports turf career. This percentage is up from past years. I attribute this to increased sports turf opportunities in our area, having student participate in the STMA Conference, and shifting more curriculum and course competencies toward the sports turf experience.

2. Usually I ask the same question when a potential student enters my office for the first time. I would say the most common response is that the student likes the "hands on" portion of the career and the applied education. Students also comment on wanting to work outside, having a passion for the sport, or in some cases have worked a summer job involving a sports turf experience. They come to Kirkwood wanting more knowledge.

3. Every year the Kirkwood sports turf program hosts area sports turf managers for a 1-day advisory committee meeting. These members provide both curriculum and lab experience suggestions to our program so that the education and staying competitive with the industry. Besides the Athletic Field Maintenance class, students in our programs also take Irrigation Installation and Design, Intro to Turfgrass, Horticulture Math, Advanced Turfgrass, and Plant Material Maintenance among other classes that make up the 68-credit curriculum. Recently we have made changes to our internship where students are now required to complete an internship packet, followed by a presentation that identifies internship competencies they need to complete while on the internship, and then share that information with the incoming freshmen. We are also adding more transfer level coursework for those students that have an interest in pursuing 2 more years after

Kirkwood. These classes include Chem 2, Organic chem, Comp 2, etc.

The advisory committee and I also have been discussing the potential of an Advanced Soil Fertility and Chemical Reaction class. What I really like about the community college curriculum is that changes are not difficult to make and the advisory committee keeps up on the same track as the industry.

4. Good question. I see a lot more online training for either current credit students, or as a refresher course for existing industry professionals. The difficult aspect of online education is the "hands-on" factor. For me I always find it difficult to teach an objective without the hands-on lab activity.

I see 2-year institutions working closer with universities to make sure our students have the best transfer route. (We have made great progress already with this). In the near future for Iowa there will be a student shortage. In the state of Iowa the next largest senior classes are now in kindergarten! There will be a competition for students. I think that high schools need to provide more horticulture courses for students that also include sports turf topics to let students know that these [offer] realistic careers.

I also see our curriculum having to make some adjustment with not only teaching students about sports turf, but also more coursework on facilities management, engineering, and lots of MATH. Sports turf managers are expected to perform it all, and we need to back it up with qualified training.

BRIAN SCOTT,
Mt. San Antonio College
Walnut, CA

Scott is a professor of horticulture.

1. It is difficult to get accurate figures for the number of students specifically in the turf program due to the way majors are reported on. Our typical student usually comes in with an unrelated declared major, or as a declared Horticulture Science major. It is quite a process for them to change their declared major and sometimes changing the declared major impacts their financial aid. So, with that said, I will give you some information based on Certificates, Degrees and general observations. It is also important to understand that our typical student is around 30 years old, has a family and works either part or full time and attends school part time. I have students ranging in age from 18 to 70 years old, multi-racial, male and female. A quite eclectic bunch!

I have been at Mt. SAC going on 12 years. When I started we did not have a degree in Sports Turf Management. I implemented the Park and Sports Turf Management degree in 2003. Since that time we have awarded seven degrees. The certificate in Sports Turf Management, in the same time frame, has been awarded to 33 individuals. This certificate encompasses the core courses minus the general education requirements.

In just looking at 'completers', there is a steady trend. I can't say numbers are up or down. The most certificates we awarded in one year were eight in 2008-2009. The least

was one in 2004-2005. Degrees have been fairly consistent with 1 per year.

My general observations are that the program is gaining interest and enthusiasm to a higher degree every year. We have been taking eight students to compete in the STMA Student Challenge every year since 2009. Last year we had 12 students participate. When we first started, I had trouble getting four students to compete. Now we have tryouts and give them qualifying exams. I don't require that they are majoring in Sports Turf Management. In fact, I use the competition as more of a way to promote the sports turf industry. Many of the students have decided to seek employment in the sports turf industry after they go to the national conference and see what it is all about. By this measure, I would say that our program is growing and will continue to do so in the future. Our local industry is consistently seeking people who have knowledge of athletic field management.

2. This past spring (2012), we conducted some student focus groups to answer this type of question as well as several others. While the students who participated were from various disciplines within the Agricultural Sciences Department, I think the answers accurately reflect how students in every discipline within our department feel.

Participants described several attributes about the program that are working well and should be maintained:

- Hands on/practical experiences
- Ample industry contacts, networking opportunities, information about trends and job opportunities
- Teachers who are caring, down-to-earth, knowledgeable, and who convey their love for what they do
- Pride in the program among students and faculty
- Variety of classes/new computer-aided drafting course
- Good use of limited resources
- Everything!

Participants also stated what aspects of the program are less successful, offering program personnel opportunities to improve by:

- Incorporating technology in courses/program
- Developing more design/drawing curricula, as well as more advanced curricula
- Using industry trends to drive offerings
- Addressing class scheduling/availability
- Increasing program's limited resources
- Having more voice-of-the-student opportunities

This is all fairly general information. The students who specifically go into turf management typically like the environment of being around sports and like being outside. Also, it gives them an opportunity to take pride in their accomplishments.

3. We have recently changed our certificate program to be much more specialized. For instance, our sports turf certificate used to require 30 units of courses. Now it is 18. Our previous philosophy in our certificate programs was that we wanted to

make sure students had a very broad knowledge base for all certificates. Now we feel that it is more important to provide certificates for very specialized subject matters. We also provide more certificates now (was 9, now 12) and have included a general Horticulture Science certificate for those who want to go wide but not as deep. We hope this will allow students to achieve certificates in a shorter time frame.

4. I see turf management, just like many other subjects, being taught from more of a "soft skills" and thinking on your feet mentality. When I first started teaching, I put so much emphasis on the details of the trade (for example, disease, insect and weed identification; fertilizer programs, etc.). As I have traveled and had discussions with many turf managers in different regions, it seems like all of the details change from site to site, region to region. It is impossible to consider all of the scenarios. Now, I do recognize the importance of the details, especially to universities who are training researchers. At the community college level, however, I don't see this as being one of my missions. I sure what them to understand the basics, and even the details when I think it will be extremely relevant. But I keep asking myself what details I remember from my college education. It was that I was taught how to think like a diagnostician, how to be a professional on all levels, and how to be resourceful. This sounds pretty basic, but the challenge for the future for me is developing curriculum that incorporates these concepts with the technical knowledge that students need to have when beginning their careers in sports turf management.

DOUG LINDE, PHD, Delaware Valley College Doylestown, PA

Linde is professor of turf management at this 4-year college in southeastern PA.

1. We are staying steady around 30 total students. That number has been around 30 for the past 5 years. Most of our students are 19-22 years of age.

2. Like playing golf and want to work outdoors. Like sports and want to work outdoors on a sports field [are the major reasons].

3. I'm sensing in the near future we will have students take more basic sciences and less specialty classes. This will result in a more broad-based science education that would give them more flexibility in case of a career change. New graduates have no problem getting jobs upon graduation as long as they have work experience; however advancement to head field manager and head superintendent is much more difficult. So some graduates are switching careers. We also will be redesigning our required internship program to increase the academic rigor.

4. Professors will need to continue to adapt to the learning styles and preferences of the students. 18-22 year-old students' learning preferences will likely change due to technology, their habits, and teaching techniques they witness in high school. Also, students need professors less and less for the information about a subject. They need professors to evaluate information and use it to solve problems. ■

2012 Most Influential People in the Green Industry

GREEN MEDIA, a division of M2MEDIA360 — publisher of *Landscape and Irrigation*, *Arbor Age*, *Outdoor Power Equipment* and *SportsTurf* — is proud to present the 2012 selections for "Most Influential People in the Green Industry."

Green Media's "Most Influential People in the Green Industry" were nominated by their peers for their ongoing contributions to the Green Industry. The professionals selected for this honor were chosen from throughout the Green Industry, and exemplify a commitment to the industry and a widespread influence on their peers.

Green Media congratulates all of those selected to this year's list of "Most Influential People in the Green Industry."

Tom Nielsen

Head Groundskeeper, Louisville Bats

Tom Nielsen, Head Groundskeeper at Louisville Slugger Field for the Louisville Bats AAA franchise, was nominated by another groundskeeper. Nielsen, recipient of the prestigious Sports Turf Managers Association George Toma Golden Rake Award for 2011, is known for his mentorship of many in the industry, but in particular students that pass through his outstanding internship program. Several of his assistants, crew members, and interns have gone on to notable careers of their own, including Jake Tyler, head groundskeeper for the Toledo Mud Hens; Chad Laurie, head groundskeeper for the Buffalo Bisons; Thomas Trotter, head groundskeeper for the Nashville Sounds; Steve Ruckman, head groundskeeper for the Richmond Flying Squirrels; Dan Blank, head groundskeeper for TD Ameritrade Park, home of the College World Series; and Ray Sayre, head groundskeeper for the Pensacola Wahoos, just to name a few.

The nomination continued, "However, his 'teaching heart' doesn't stop with his staff and interns. He works tirelessly to convey the importance of sound maintenance practices to the administration, players, and fans in Louisville. The Toma award recognizes a member for a dedicated and enthusiastic attitude to achieve their highest goals. The award acknowledges a strong spirit of commitment to the industry. Nielsen has also won STMA's Field of the Year in 2002 & 2004 and was named the International League Sports Turf Manager of the Year 2009.

Green Media: You were nominated by your peers as one of the most influential people in the green industry. How do you feel you that you influence other industry professionals?

Nielsen: I influence other industry professionals' everyday when I go to work because I love what I do. Both my words (enthusiasm) and actions (mentoring) influence others as I teach upcoming groundskeepers best practices. When you love what you do, it shows.

Green Media: What do you feel has been your biggest contribution to the green industry so far? And what do you see as your role in the future of the industry?

Nielsen: My biggest contribution has been helping upcoming groundskeepers reach their professional goals. In the past 12 years, I have mentored 30+ employees who went on to continue working in the Green Industry as either head groundskeepers or assistants in professional baseball, universities, high school athletics and landscape companies. I am willing to help anyone interested in helping anyone interested in the green industry. I speak with several school and private groups every year.

I plan to continue doing the same work mentoring and promoting the green industry in the future.

Green Media: Who has influenced you both personally and professionally?

Nielsen: My biggest personal influence is my parents, Ted and Gloria Nielsen, who instilled in me a great work ethic and desire to succeed. Professionally, it is George Toma. He taught me professionalism and the "and then some" attitude, which is doing your job as best you can plus some. Don't settle for average. Another big influence was the late Gary Vanden Berg, former head groundskeeper with the Milwaukee Brewers, for giving me my start in sports turf management and being a positive role model.

Green Media: Tell us something about yourself outside of work (hobby, sport or other personal interest) that influences your approach in your professional career.

Nielsen: My hobbies are Civil War re-enacting, camping, mountain biking, running and swimming. These hobbies influence my approach in my professional career in many ways. The Civil War re-enacting makes me appreciate modern conveniences and the things I have. Camping helps me clear my head from work and gives me time with my family without having to run to the stadium to check on the field. My athletic pursuits help me stay in shape so that my job is easier to perform and [because I] appreciate my health. I urge my employees to find a balance between fitness, family and work in order to be at their best in all aspects of their lives.

Green Media: What dreams do you have for the industry? What change(s) are necessary to make those dreams a reality?

Nielsen: My dream for the industry is to help bring up the standards of groundskeepers, which will in turn bring us more respect and higher wages. This is accomplished by increasing expectations both in physical appearance and communications skills. We are all not a bunch of Bill Murrays from "CaddyShack"! This is the stereotype that the general population thinks of when they think of the green industry and we need to work hard to overcome it. There are a lot of very intelligent, experienced professionals in our industry and we all deserve respect.

Green Media: What advice do you have for green industry professionals who want to become influential leaders themselves?

Nielsen: My advice is to work hard, stay enthusiastic, be open-minded to new ideas, techniques and [listening to] new young minds.

Green Media: If you could nominate another person as the green industry's most influential, who would that be, and why?

Nielsen: Eric Fasbender at LSU and

Aaron Boggs at the University of Louisville. Both are very enthusiastic about their jobs. They have a love for the green industry that shows through their willingness to teach others. They both truly care about the profession.

Dan Sawyer

CEO of Brock International

Introducing innovation to an industry takes a lot of perseverance. But that's never stopped Dan Sawyer. As the Founder & Chief Executive Officer of Brock International, manufacturer of base systems for synthetic turf, he has helped engineer safe playing surfaces while actively promoting sustainability.

Sawyer first started redefining possibilities while working for Jay Medical in the early 1990s, a medical products pioneer that significantly improved wheelchair seating. Sawyer then applied his valuable insight on how forces impact the human body in launching Brock in 1999. The company's premier product, Brock PowerBase, is a shock pad and drainage layer used beneath synthetic turf fields that has been proven to reduce G-max, which may reduce the risk and severity of concussion. Nothing like it existed before Dan and his team envisioned the technology. Today over 25 million square feet of Brock products is in play underneath athletic fields worldwide.

Sawyer has become a vocal advocate for concussion prevention education. With the perspective of handling hundreds of installations for clients ranging from NFL teams and major universities to community parks, he feels many brain injuries can be prevented through increased awareness as well as better technique, equipment and treatment. That's why his company became an Official Education Partner of The Sports Legacy Institute, a Boston-based non-profit organization founded to advance the study, treatment, and prevention of brain trauma in athletes and other at-risk groups. In this capacity, Brock has provided funding that helped SLI deliver their two-hour Advanced Concussion Training (ACT) program to over 1,000 football coaches in the Los Angeles Unified School District, 2,500 coaches in The Chicagoland Youth Football League, and over 3,000 Chicago Public Schools coaches and athletic directors, as well as programs for parents and athletes.

The Boulder, CO resident has also worked for the betterment of the Green Industry overall by promoting environmental stewardship. In October 2011, Brock became the first company in the synthetic turf sector to have a Cradle to Cradle Certification CM for its combined drainage and shock pad product. Recognized as the most comprehensive, rigorous environmental certification process, the designation is administered by the Cradle to Cradle Products Innovation Institute, which evaluates products and materials for their impact on human health and environmental health and design for future life cycles.

Late last year the Cradle to Cradle certification was awarded to Brock's PlayBase playground and PaverBase patio underlayment technologies, which is used by landscape professionals and homeowners with do-it-yourself savvy. Offering the only product in the market that can be closed loop recycled, the company's technologies reduce the overall energy cost of constructing a field by 50%. Made in an ISO and TS certified manufacturing facility of 100% recyclable and non-toxic material, Brock PowerBase, PlayBase and PaverBase is certified to the world's most stringent environmental standards.

When we got into this business, most people thought we were crazy.

Green Media: You were nominated by your peers as one of the most influential people in the green industry. How do you feel that you influence other industry professionals?

Sawyer: First of all, our green initiatives and culture are a team effort. So this nomination really goes to everyone at Brock. But I do think an environmentally sustainable approach to doing business is appropriate, and frankly necessary, for any business to be competitive. I'm really honored to see that people in our industry are receptive.

Green Media: What do you feel has been your biggest contribution to the green industry so far? And what do you see as your role in the future of the industry?

Sawyer: I think when we went through a complete redesign of our core product line with the achievement of Cradle-to-Cradle certification; we showed people that it can be done even in a product that was originally developed for safety. Not only that, but the product got better as a result of the process. Today, environmental impact has become a key subject that must be addressed in any project.

I think Brock must continue to educate people that the process of preventing brain injury starts at the playing surface level, and we have to take an active role in educating others about brain injury prevention programs. At the same time, working with clients who set an example by choosing an environmental path to both product selection and construction technique will raise the bar for the industry.

Green Media: Who has influenced you both personally and professionally?

Sawyer: Steve Jobs, without a doubt. His creativity and vision to challenge the status quo, and his belief that, "people don't necessarily know what they want, or what is possible. You have to show them."

It's up to innovators to guide the way, and his trials and perseverance throughout his life and his companies has been a guiding light. Others such as Simon Sinek with his philosophy of "people don't buy what you do, they buy why you do it." I think people respond to our company because they know we have a larger view than just selling a product. We exist as a company to evolve the industry on multiple levels and being an environmental leader is one reason for people to do business with us.

Green Media: Tell us something about yourself outside of work (hobby, sport or other personal interest) that influences your approach in your professional career.

Sawyer: I have always been a person who is a natural "rule challenger." I think we as a society can always operate better and more efficiently, and achieve more, if we challenge the current paradigm. I try to teach my children to think beyond what's in front of them, and ask, "Is there a better way?" I do this a lot in airport security!

In sports, I always push myself to levels beyond what I think I am capable of and there is risk in that. But I find my personal and professional work is the most gratifying

when I achieve something that at the outset seemed overwhelming. When we got into this business, most people thought we were crazy. Here we were, a little company from Boulder getting into an established, conservative market and proposing a new way of doings things. A challenge like that is where I am most comfortable, and I think it brings out the best in us.

Green Media: What dreams do you have for the industry? What change(s) are necessary to make those dreams a reality?

Sawyer: I truly believe that we can use technology to go beyond what even natural turf can do. Just as there have been developments in footwear and helmets, I think the surface can ultimately become one of the key technological components in the sports program to help prevent brain injuries while maximizing sports performance. There are a couple of hurdles to overcome. One is the idea that the cheapest alternative is the best use of public funds. Too often price is placed before quality, but we know that a life-cycle costing approach to the field system today pays off in spades in the long run.

I think the only way to become a leader is to practice what you preach...

The other hurdle is we have to make people understand that laying carpet over stone is not the best we can do, and when it comes to safety, we *have* to do our best. But things are changing due to the attention now being given to head and body injuries through groups like the Sports Legacy Institute, and how the surface can significantly reduce those risks.

Green Media: What advice do you have for green industry professionals who want to become influential leaders themselves?

Sawyer: I think the only way to become a leader is to practice what you preach. You have to create a culture within your organization that embraces environmental choices, whether it's in R&D, how you use transportation, or the demands you put on production. It is typically more expensive to run a business this way, so you have to create value in what you are selling. But in the end, it is the right thing to do, and if Brock is any example, people will respond positively to those efforts.

Green Media: If you could nominate another person as the green industry's most influential person, who would that be, and why?

Sawyer: I think Professor Michael Braungart, the co-author of Cradle to Cradle, was a true visionary when he realized back in the 1990s that we were going to have to fundamentally change the way we use resources and how we develop products. Today, many companies and even governments have embraced his ideals, even though some are not yet technologically achievable. But he set the bar so high he has given us all something to strive for. And I love his optimistic outlook on the use of materials technology to attain greater levels of sustainability. ■

New battery-powered, high-pressure airless sports field striper

Sports field line painting is often an overlooked opportunity for improving the environment and saving money. Painted lines are the final touch that turns a well-manicured green space into a sports field. Lines are applied every week during a sports season using inverted aerosol cans or bulk latex paint sprayed by a field marking machine. Selecting the right field marking machine and bulk paint can significantly conserve resources, improve line quality, and save money!

Inverted aerosol cans emit potentially harmful propellants and typically end up in a landfill after use. A football field (with numbers) requires close to 40 cans. A full-size soccer or lacrosse field uses 12 cans. On average, a typical high-school could use more than 1,000 cans per year. At an average cost of $4 per can, it's a hefty burden on your budget and the environment.

Bulk latex paint use on sports fields has been growing at a substantial rate over the past 10 years. This has primarily been driven by advancements in paint quality, the introduction of professional field marking equipment, and the significant savings in time and cost (up to 75% less) compared to aerosol spray cans.

Maximizing both the environmental and cost savings of using bulk latex paint depends on the field marking machine used. Most field marking machines use low pressure (50-100 psi) pumps and low end spray tips that essentially dump paint onto the ground. Graco changed the game in 2004 with the introduction of the FieldLazer S100. This was the industry's first high-pressure (900 psi) sports field marking machine which is now the brand professional groundskeepers' trust. The combination of Graco's high-pressure technology and precision spray tips provide a fine spray pattern that coats the entire grass blade, not dumping onto the soil. This results in professional, brighter, longer-lasting lines with ½ the paint vs. low pressure machines.

Graco has changed the game again with its new for 2013 Graco FieldLazer S90, the industry's first battery-powered high-pressure airless sports field striper. Battery-powered reduces dependency on petroleum, does not use propellants, and is energy efficient and easy to use.

Graco FieldLazer High-Pressure technology operates at over 10X higher pressure than low-pressure sprayers. The result is up to 50% lower paint consumption, and significantly less waste water than low pressure models.

The S90 makes cleaning green and easy. Save paint and clean with minimal water using the removable Tilt-n-Pour paint hopper. Quickly pour any remaining paint from the 6-gallon hopper back into the original paint bucket for future use. Remove the hopper (no tools required) and clean at a convenient location with minimal water.

Graco

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Chapter name) _____ $_____

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"I know I am a better sports turf manager because of this association. As sports turf managers, we take the challenge seriously to make our fields the best possible for the next game. The resources I have access to through STMA helps me do it."

— Bob Campbell, CSFM
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*There must already be a national sports turf manager from your facility or commercial member from your company before you may sign up in the Associate category.

Phone: 800-323-3875 **www.STMA.org**

KAFMO's involvement with Little League

OVER THE PAST 15 YEARS the Pennsylvania Chapter of STMA, officially the Keystone Athletic Field Managers Organization (KAFMO), comes together at the end of summer as millions from around the world turn their eyes to South Williamsport, PA. Kids from all over the world play the game of baseball in hopes of playing in the Little League World Series. Sixteen teams of players 11 and 12 years old descend on the Little League complex in Lycoming County, PA in hopes of being crowned the only true sports "World" Champion.

The Little League World Series has become a grand event. Television coverage of every game played during the series on the ABC/ESPN family of networks has turned up the exposure that the event has seen. In 2012 the television ratings were high with millions watching and attending. It is estimated that the event injects $20 million dollars into the economy of Lycoming County.

With the players, coaches, managers and umpires on the field, announcers, scorekeepers, security, ushers, cameramen and television production crews in place everything is set to "Play Ball!" But wait, what about the field, is it ready? Is it safe for play? Will it look good on television? That portion of the series is left to members of KAFMO.

"The chapter has been honored to assist Little League Baseball with field preparation for 15 years," says Jeffrey T. Fowler, Penn State Cooperative Extension Turfgrass educator and Board member for the KAFMO chapter (and national STMA). "We arrive before the series begins, we level the playing surface, edge the fields, resod any areas that are worn from summer play, all in preparation for the games that will be played and televised during the 10 days of the series.

"Our number one goal is providing a safe playing surface for the kids to play on," says Fowler. Fowler is quick to credit Seth Whitehill, groundskeeper at the complex, for his hard work and dedication throughout the year. "Seth does a great job year round preparing the fields for the Series; he applies fertilizer, sprays and mows throughout the year when there are no television cameras around to see everything that is going on." Seth graduated from Penn State in 2008 with his bachelors d in Turfgrass Science.

"We have approximately 40 volunteers that are a part of the grounds crew. These volunteers are members of STMA or one of its chapters. People take vacation time from their own work schedules and leave family at home to come to the series to assist with field preparations. Some stay for the entire time (2 weeks), others help out for a few days," Fowler says. "The crew that we assemble for the Little League World Series is second to none; not only do they have the fields at the forefront of their minds, but their professionalism is [supreme]. Having people realize that there is more to having a safe field than putting down lines and mowing grass is also a goal of our group.

"Every night we remove the lines, groom and water the infield, broom the edges of the grass, repair clay in the home plate circle and on the pitcher's mound, and we tarp those areas as well; we groom the warning track and have the field ready for the next day."

Thirty four televised games in 10 days take their toll of the fields in South Williamsport in mid-August. Yet every year the grounds crew manages to battle through whatever is thrown their way to pull off one of the greatest youth sporting events in the world. The grounds crew is proud of what they are able to help out with during the series. Many of the crew members have been attending for 15 years or more. Some have been bring their own children with them to help out. According to Fowler, "That is the next generation of sports turf managers; I tell kids all the time, the fastest way to the major leagues is with a rake in your hand."

STMA recognizes and thanks its 25 & 30 year members

STMA salutes its long-time members for their dedication and commitment to the association and the profession of sports turf management. They have supported STMA through the years in many ways beyond paying annual membership dues. These highly involved members have attended and presented at our conferences, participated in leadership roles in the association, and served as volunteers on committees and in their individual chapters. Their efforts have guided STMA to being a strong and vibrant association of professionals. Thank you!

Celebrated 30 YEARS in 2012

Harold Howard, Ph.D.
Turfscience, Inc.
Phoenix, AZ

Paul C. Zwaska
Technical Sales Support
Beacon Athletics
Middleton, WI

John A. Fik, CSFM
Grounds & Sports Field Consultant
Sodexho Education Services
Vermontville, NY

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Mark Hodnick
(Retired) City of Indio
Beaumont, CA

James R. Watson
(Retired) VP Agronomist
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Brian Petonic
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M-NCPPC Maintenance
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Upper Marlboro, MD

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Head Groundskeeper
Three Village Central
School District
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Ken Mrock
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Chicago Bears Football Club
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Frank T. Bowyer
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Amphitheater Public Schools
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Marc Van Landuyt
President
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Greg Petry
Executive Director
Waukegan Park District
2000 Belvidere St
Waukegan, IL

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Retired Professor/Turfgrass
Management
University of Georgia - Griffin
Campus
Griffin, GA

John Anderson
Arthur Clesen, Inc.
Naperville, IL

Ted Thorn
Director/Grounds
University of Iowa
Iowa City, IA

C. Tom Rudberg, CSFM
Athletic Turf Division Manager
S & S Tree & Horticultural Specialists
S St Paul, MN

Jim Frelich
Turf Consultant
J R Frelich & Associates, LLC
Salem, OR 97305

Timothy M. Burke
Park Superintendent
Town of Westport
Westport, CT

Stephen E. Horne
Director of Field Operations
Scranton Wilkes-Barre Yankees
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Leo A. Goertz
Athletic Fields
Maintenance Manager
Texas A&M University
College Station, TX

David D. Minner, Ph.D.
Professor
Iowa State University
Ames, IA

Committee Corner

STMA HAS 23 COMMITTEES and will be recognizing the work of two committees each month in the magazine. Last month featured the Conference Education and Environmental Committees. The International and Awards Committees are featured this month.

STMA International Committee
This Committee began as a Task Group in 2010 and became a full committee one year later. Its primary purpose is to position STMA as a global leader in sports facility management and as the go-to resource for those who work internationally in the industry. One way it gains recognition is by sharing association and technical information with those in the sports turf profession in other countries. The committee has reached out to international sports organizations to introduce STMA. It has developed a network of contacts in academia and in the commercial sector who work internationally and who will promote the association when traveling abroad. Much of the efforts have been centered on developing appropriate technical resources, and trans-

Continued on page 49

STMA Affiliated Chapters Contact Information

Sports Turf Managers Association of Arizona: arizonastma@gmail.com

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, Scott Grace, scott@sundome.org

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: www.imstma.org.

Indiana -FORMING - Contact Clayton Dame, Claytondame@hotmail.com or Brian Bornino, bornino@purdue.edu

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.

Nebraska Sports Turf Managers Association: sphillips4@unlnotes.unl.edu

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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MAC Athletics	48	www.MACathletix.com
Penn State University	51	www.worldcampus.psu.edu/STMA
Pioneer Athletics	9	www.pioneerathletics.com
PROFILE Products	43	www.turface.com/50years
Redexim North America, Inc.	21	www.redexim.com
SEAGO International	48	www.seagointernational.com
SportsTurf Managers Association	45	www.stma.org
Stabilizer Solutions	44	www.stabilizersolutions.com
SubAir Systems	42	www.subairsystems.com
TifSport Growers Association	29	www.tifsport.com
The Toro Company	11, 47	www.toro.com
Turf-Tec International	48	www.turf-tec.com
Turfco Manufacturing	35	www.turfco.com
TurfTime Equipment , LLC	30, 48	www.TurfTimeEq.com
World Class Athletic Surfaces	30	www.worldclasspaints.com

Continued from page 47

lating them to Spanish. Another outcome of its work is the development of an International Affiliate Organization (IAO) designation, which is awarded to already existing international organizations that have a focus on sports turf. STMA has designated three organizations as an IAO: The Sports Turf Association (Canada), the Institute of Groundsmanship (UK) and the ABGE (Brazil). The committee will be directing its efforts to creating additional educational resources and gaining representation for STMA presenters at international conferences in 2013 and beyond. In addition to members residing in the US, the Committee has representation from members in the Netherlands, the UK, Israel, Canada and Chile.

Committee Members: Chair - Abby McNeal, CSFM; Rene Asprion; Tab Buckner; Murray Cook; Ken Curry; Paul Gillen; Simon Gumbrill; Roberto Gurgel; Johnathan Knight, CSFM; Ian Lacy; Gil Landry, PhD; Marcella Munoz; Dave Radueg; Don Scholl, CSFM; John Sorochan, PhD; Tim Vanini, PhD; Nico van Vuuren; Gerard Van't Klooster; and Doron Zur. Staff Liaison: Kim Heck

STMA Awards Committee

The Awards Committee judges three programs including the Field of the Year, Minor League Baseball Sports Turf Manager of the Year, and the Innovative awards programs. It also develops strategies to enhance these awards programs. For the Field of the Year, the Committee may present awards to five field types: Baseball, Football, Soccer, Softball and Sporting Grounds. For each field type, awards may be given in three categories: Professional, College and University, and Schools and Parks. For Minor League Baseball, it awards in four categories, Triple A, Double A, Class A and Short Season or Rookie. The Innovative Awards program is for commercial exhibitors, and there is not a set number of awards given each year. Last year the Committee re-developed the Field of the Year program to an entirely online process for submittals and judging, and this year it further refined that process. The members of this committee spend a minimum of 15 hours reviewing applications over a 3-week period. The committee is currently discussing the creation of a new "Volunteer of the Year" award.

Committee Members: Chair - Allen Johnson, CSFM; Patrick Coakley, CSFM; Brad Garrison; Stephen Horne; Joe Kovolyan, CSFM; Alec Kowalewski; Sarah Martin, CSFM; Ben Polimer; Mike Schiller, CSFM; George Trivett, CSFM and Charlie Vestal. Staff Liaison: Kim Heck ■

Q&A

BY DR. GRADY MILLER
Professor, North Carolina State University

Questions?
Send them to Grady Miller at North Carolina State University, Box 7620, Raleigh, NC 27695-7620, or email grady_miller@ncsu.edu

Or, send your question to David Minner at Iowa State University, 106 Horticulture Hall, Ames, IA 50011 or email dminner@iastate.edu.

When a prank goes bad

Coach Beam and Principal Aaron Allen of Burns High School in Cleveland County, NC called me in late October with this situation. The week before someone had released goats into Ron Green Stadium. Within this stadium is the school's varsity football and soccer field. The prank came just a few weeks after nearly 100 people were sickened by E. coli *(one 2-year-old died from the illness) at their county fair, believed to be caused by contact with animals in the petting zoo. The state Division of Public Health was consulted and made the recommendation to the Cleveland County Health Department that the athletic field be "off limits" for use for 6 months. The school's question was, "is there anything we can do to get the field opened earlier?"*

This story was picked up by ABC News, putting it in a national spotlight. So, many of you may have first heard about this issue like I did, while watching the nightly news. When I first heard the story, I dismissed it as a prank. I figured a combination of science and common sense would prevail and the field would be re-opened in short order. After all, the goats used in the prank are owned by the school. They are used in their agriculture instruction programs and normally kept in an area adjacent to the stadium. So, why the big fuss, right?

A couple of days after hearing about it on the news, I got the call from Coach Beam. It was then that I realized I had underestimated the seriousness as a potential medical issue and the travesty for the athletics and school supporters from the social and political fallout that followed the prank. Before offering any help, I needed to learn more about *E. coli*. I had studied *E. coli* bacteria when I took microbiology in college many years ago but years had eroded my memory of the subject. I should note that the coach and principal wanted to have the field opened sooner than 6 months, but they also wanted assurance that the field was safe when it was opened.

E. coli, short for *Escherichia coli* are bacteria commonly found in the intestine of warm-blooded animals. Most strains are harmless, but some can cause serious food poisoning in humans. Sickness due to *E. coli*.

is most often associated with fecal contamination. The most virulent strains, such as strain O157:H7, can cause serious illness or even death to those with weaker immune systems. From what I learned, a healthy high school athlete would generally not be considered "at risk" for significant sickness from exposure to the bacteria.

> Their findings indicated that *E. coli* O157 could persist on some plant roots up to 96 days.

During my research, I talked with colleagues and a representative with the state health department. No one I spoke with, including the scientist with the state health department that recommended the 6-month closure, had any idea how long *E. coli* could remain viable in a natural grass athletic field. The representative indicated that some studies and a literature review following a petting zoo incidence at a past NC state fair suggested the bacteria could live about 5 months after animals are removed from the holding pens. So the rationale in this case was to use this knowledge as a worst-case scenario and then apply it to the closing of the athletic field for a 6-month period. The extra month was for added safety.

I did some of my own searching in microbiology journals for evidence that it may not last as long in a turf environment. There seems to be very little research this specific, but I did find two pertinent references. One study reported that when fecal material infected with a general *E. coli* and *E. coli* O157 (one of the bad ones) was applied to grass plots that O157 could only be detected on the grass for the first week after application. The general *E. coli* numbers steadily declined to less than 1 percent of those applied by day 29. It also reported that heavy rainfall reduces *E. coli*. The other study was less specific and just evaluated infected soil and plant roots. Their findings indicated that *E. coli* O157 could persist on some plant roots up to 96 days. So even in these worst case scenarios, the *E. coli* was gone from the grass within a month and may be detectible in a soil out to about 3 months. That would cut the suspension of field use by half.

I sent these references to the State Department of Health and they indicated they would review these findings as well as other information they had solicited from their colleagues in other states. I am no microbiologist, so I cannot definitively say that the two Health Departments overreacted or not. There seems little doubt that their decisions were influenced by previous cases (and litigation) involving sickness from petting zoos. But was the worst-case scenario reaction to close the field for 6 months reasonable? So far this remains an unanswered question, since there has been no change in the closure. Last I heard the field will be re-opened for use April 19. ■

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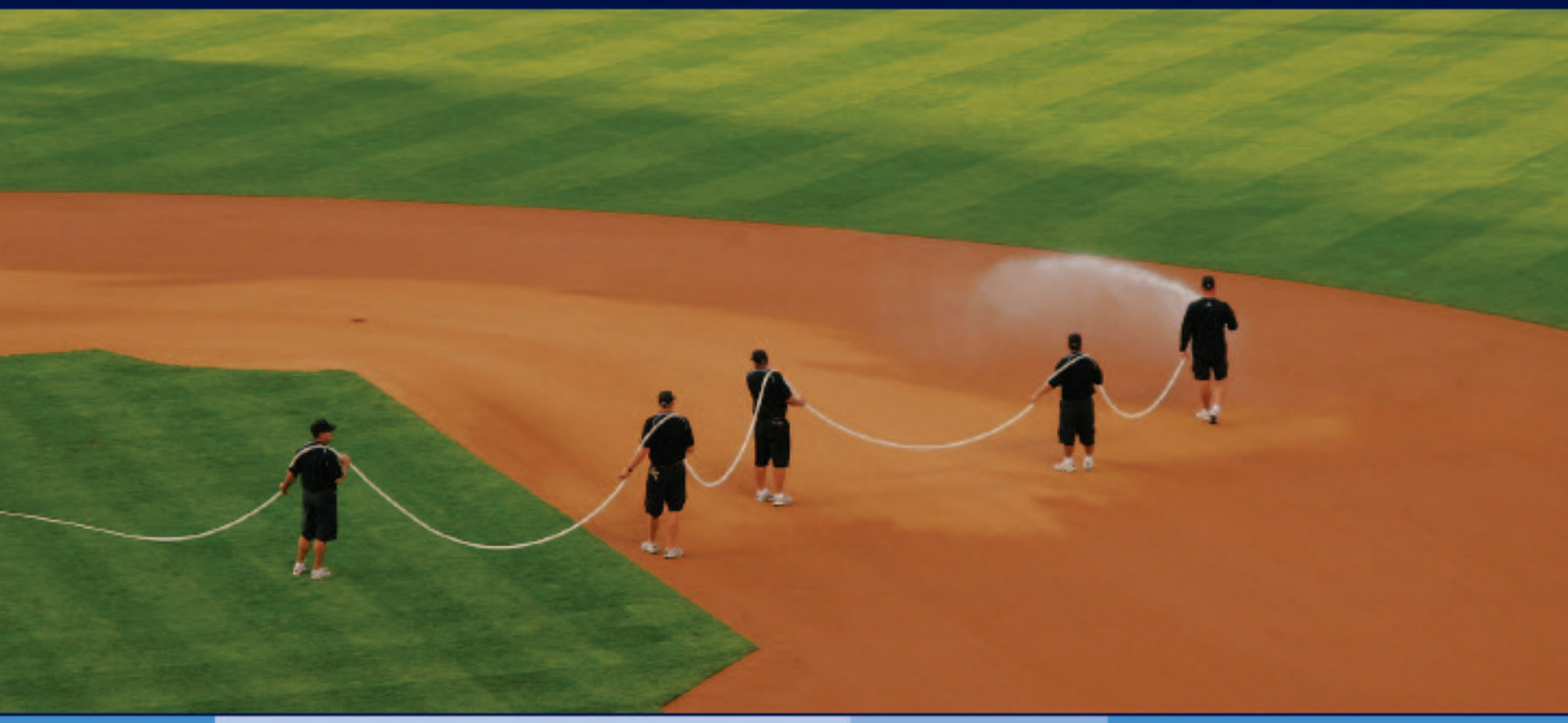

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