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SPORTS FIELD AND FACILITIES MANAGEMENT

March 2016

MANAGING INFIELD BALL SPEED

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Leo Goertz tribute
BMPs: What things REALLY cost

OFFICIAL PUBLICATION OF THE SPORTS TURF MANAGERS ASSOCIATION

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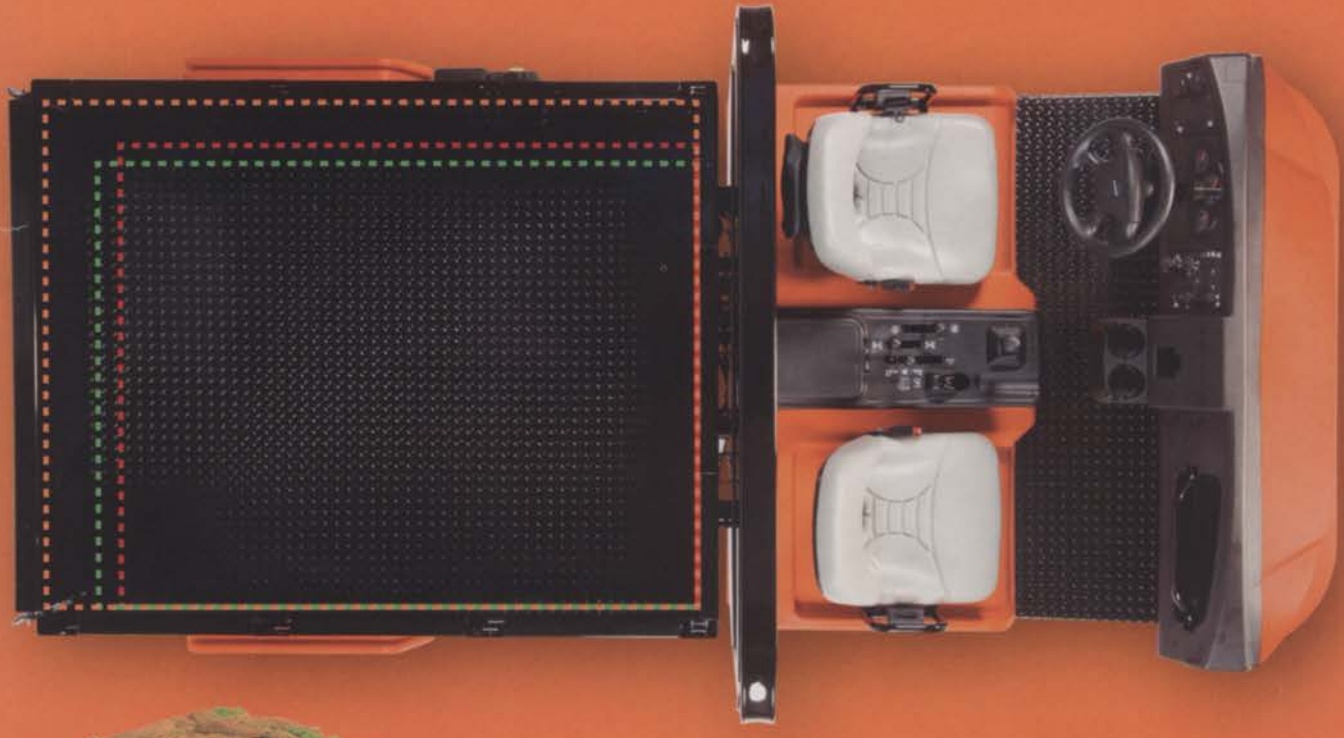

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STARTING LINEUP

March 2016 | Volume 32 | Number 3

FEATURES

DEPARTMENTS

ON THE COVER:

This great shot was submitted by David Presnell, CSFM, the winning turf manager of the STMA's 2015 Schools/Parks Baseball Field of the Year, Ivey-Watson Field, Gainesville City Schools, Gainesville, GA. Please see page 36 to see David's maintenance plan and more information about his winning field. Congratulations, David, you made the cover!

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SAFETY IS JOB #1

Eric Schroder
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The first idea for this month's column was to discuss Major League Baseball's recent recommendation that all teams lengthen the safety netting in their ballparks to increase fan safety. Teams will be encouraged to add netting, or some sort of protective barrier, to shield fans from balls and bats that sometimes go into the stands in all field-level seats between the near ends of both dugouts and within 70 feet of home plate. (We will address how this might affect baseball fields nationwide, and options for such protections, in an upcoming feature in these pages.)

But after attending the opening general session of the STMA Conference in January (see p. 44 for complete coverage), where two speakers addressed research into preventing or mitigating leg injuries, as well as the keynote address by Dr. Timothy Gay at STMA's annual meeting on the current debate over concussions in American football, I thought I'd instead focus on those presentations.

Then my *SportsTurf* colleagues and I sat down for a meeting in San Diego with STMA's executive committee. And Immediate Past President Allen Johnson, CSFM, the Green Bay Packers turf manager, at one point in our discussion said, "When it comes to safety, the field is as important as a helmet."

Allen went on to ask if we would consider the safety angle in every article we publish, saying, "We need to reinforce to the members how important their role us in player safety; we are 'safety agents.'"

Tim Van Loo, CSFM, Iowa State's manager of athletic turf and grounds and STMA President-Elect, added that Dr. Richard Kent said during his presentation on shoes and surfaces and reducing injury that turf managers should consider themselves as part of their organization's medical staff.

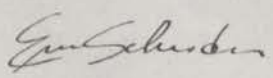
Of course the emphasis on safety of playing surfaces isn't a new concept for the STMA (or this magazine); their mission statement reads, "STMA advances professionalism in sports field management and *safety* through education, awareness programs, and industry development." But with the focus so intense right now on concussions in football, with some commenters asking if the game as we know it may soon change forever, there exists a tremendous opportunity for sports turf managers to not only provide safe surfaces but also show and tell your bosses and tell your bosses and users *how you are doing that.*

CORRECTION

In our January issue in the article "Successful seeding of cool-season grass coming out of winter," Brad Park of Rutgers, a great friend of the magazine, was mis-quoted (p. 16). In response to the question, "How should the soil be prepared to get seed into the soil and growing as soon as possible?" Brad's response began, "To preserve soil structure and avoid severe soil compaction, soils should NOT be manipulated and graded when wet." Unfortunately the "not" didn't make it into our article. We sincerely apologize to Brad for this error.

CLARIFICATION

In our February issue all the photos that appeared with Darian Daily's article on fraze mowing, pages 16-18, were courtesy of Jerad Minnick, growinggreengrass.net. We regret not sharing that in the issue. ST



SportsTurf

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The Official Publication Of
The Sports Turf Managers Association

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TAKING TIME FOR WHAT WE LOVE MOST

Jeff Salmond, CSFM
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As I write this message, many of you will have returned from our 27th Conference and Exhibition held in late January. Attendees highly rated its networking, education and events. Read a full recap in this issue. San Diego is definitely a great conference location!

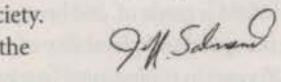
The past few months of the year may have given us a chance to relax, recharge and rethink before our seasons kick in. Many may have heard the story about a jar of rocks, and how the jar represents our lives and with what we fill it up. Agronomically speaking, we can also attribute this analogy to what we learn about soils and the way grass best roots in the soil.

You start with a jar that is full of rocks. The rocks represent the people who we love and cherish the most: our families, parents, siblings and friends who we spend time with and make a lifetime of memories. But the jar is not full. We can then add pebbles. Pebbles represent our jobs and how much our jobs, as much as our love and passion for what we do, can take us away from the people who we love. But the jar is still not full. We can fill up even more open space in the jar with sand. Sand represents all the other clutter in our lives.

But wait, the jar is still not all the way full. We can add water to fill up the remaining microscopic space. Water represents society. When we fill our jar up, or our lives, all the way with our jobs, clutter, and society we forget sometimes what we are really here for, in the lives of our children and families. If we fill the jar up with all the smaller things, it doesn't leave room for all the bigger things in our lives. All the smaller things can clog up the pore space to help us stay rooted and grounded with the people who really make a difference in our lives. Our jobs may be in fact taking us away from our families. But, if we clutter our lives with the smaller ancillary things, life can just pass us by.

Too often in our industry we see the phenomenon called "burn-out." Many young, dedicated and passionate turf managers are leaving the profession because our jobs take us away from the bigger things that matter the most. Our jobs can be high stress that can take a toll on our health and well-being. We do have a tough job in creating safe surfaces for the athletes who are on our surfaces, and making them look good, too. How is our stress inflicted? It can be a multiple of ways, even from our own workplace. Everyone has heard the phrase "Hire smart, manage easy." There could be a lot of truth to that.

I have always tried to keep my jar filled with three things: God, family and church. The rock, pebbles and sand in my life are for a well-aerated soil and with a little bit water to help me grow, but not drown. ST



MANAGING INFIELD BALL SPEED

BY LARRY DIVITO

"What height are you mowing that infield at now?"

For all of us involved with baseball in the sports turf industry, this is a question we are asked quite often, from high school baseball all the way up to the big leagues. The question comes not only from players and coaches. With nearly everybody having mowed a lawn at some point, many in society feel knowledgeable on the subject. Thus, the question on height of cut is directed at us from administrators, executives, media members, fans and parents. It seems to be a straightforward question, and you can provide an answer any way you would like. Some possible responses:

"About an inch and a quarter."
"One and five-sixteenths inches."
"Higher than last season."
"None of your business."
"Twenty-four millimeters."

That last response is the one I like to use here at our ballpark. It is more or less the height we have been at since 2010; it's an accurate answer and makes people think a bit. Twenty-four millimeters is .94 inches by the way. Baseball is interesting with its tradition of not regulating the height of cut for turfgrass in any way. At the major league level, stories have long been told of managers conspiring with groundskeepers to speed up or slow down infield ball speed by manipulating the height of cut. Sometimes this has to do with the makeup of the team.

In other situations, the physical dimensions of the ballpark will influence the team's approach for the speed of the infield. In a small ballpark where the ball carries well and hitters are favored, management may want a slower infield to help out the pitching staff. While soccer appears to be more interested in monitoring mowing heights (the English Premier League Handbook states simply that the height of the pitch grass shall not exceed 30mm), baseball continues without any requirements. The subtle variations in turf and infield management at each ballpark, due to climate or team preferences, are an appealing part of the game for serious baseball fans. Of course, as turf managers we are well aware that height of cut is not the single determining factor in how fast, slow or consistently your field plays on a daily basis. So consider what your infield is made of, and how your cultural practices can influence the speed and playability of your turfgrass.

Having worked for 20 years in professional baseball, my current view is that it is the job of the turfgrass manager to execute a maintenance program meeting the needs of the players and coaching staff. For our discussion here, we will focus on the speed and pace of ground balls. In baseball, we do not have a technical device such as the Stimpmeter used on golf greens. What we do have is an opportunity daily to watch hundreds of ground balls in batting practice, both from fungoes and live hitting. This can serve as a good, preliminary informational resource for the turf manager. From there, you can watch game situations and seek input from key players and members of the coaching staff. Finding the right mowing height/ball speed relationship is something that evolves at the ballpark. Your job is to look to accommodate your team, find what works for them, and manage the turf from there.

Perhaps you have had the opportunity to construct or renovate your infield turfgrass recently. Consider your rootzone material. The physical structure of your rootzone will have a real and noticeable impact on how your infield plays. We value sand for its compaction resistance, drainage capacity and aeration properties. We also know that an ideal rootzone has nearly equal parts of air and water filled pore space. When building or renovating, it is critical to have particle size testing done on your rootzone.

A helpful document to acquire is the ASTM's "Standard Guide for Construction of High Performance Sand Based Rootzones for Sports Fields." This guide has detailed information to help you understand the details within your test results. Two things to consider are particle sizing and Coefficient of Uniformity (Cu). It is recommended that you avoid any extreme percentages of angularity or roundness in your sand particle sizing. Related to that is the Cu calculation, which measures the uniformity in particle sizing. The ASTM range for Cu of sand based athletic fields is at 2.5-4.5, with the lower end of the Cu range meaning a more uniform particle size and better resistance to compaction.

So what does all that mean for your ground balls every day? My opinion is that a Cu near or above 4.0 is higher than you would want for a baseball infield. You do not want the sand or soil below your turf to help accelerate the speed of a ground ball. While you need a certain amount of firmness for footing, a rootzone that compacts too easily can tend to play a little harder than you would like. I feel

that a Cu near 3.0 is a nice target number. With a Cu higher than 3.5, compaction has the potential to prohibit the rootzone matrix from absorbing the force of the batted ball.

TYPE OF GRASS

Your type of turfgrass is of course an important consideration. Be it Bermuda, Kentucky bluegrass or perennial ryegrass, the key point here is to grow a dense, healthy stand of turf. I recall an excellent talk I attended at the STMA Conference in 2012 by Dr. Karl Danneberger from Ohio State University. The lecture was titled "Solar Radiation is the Driving Force of Sports Turf Management." It sounds simple, but after 20 years of doing this, I continue to be astounded by the positive impact of bright sunlight on turfgrass.

Of course, the other side of that is the infield tarp. Quite often, many of us at the college and professional levels have our infield tarp on during daylight hours on a game day. The threat of rain or light snow in the spring leads to a great deal of sunlight being denied to the turfgrass. By blocking light to the plant, the wear tolerance of the turf decreases significantly. Because of that, we like to focus on pre-stress conditioning by keeping potassium levels high and using biostimulants in our spray program. Tarping for extended periods of time also increases the disease pressure on the turfgrass. I find it useful to have the infield and other turf under the tarp on a separate fungicide program. Daily evaluation of the turf and anticipating problematic weather conditions will drive the use of contact and systemic fungicides.

Given that you are likely mowing at your preferred height of cut at least four times per week, keep in mind the goal is to maximize the density of the plant. Along with that, we try to avoid having the turf laying over due to continued mowing of the pattern with reel mowers. At the professional level, the expectation is usually for the turf to

be mowed every game day at a consistent height during the season. If you are looking to speed up or slow down your infield, you can simply increase or decrease your frequency of cut over the course of a week without changing mowing heights.

Our preference here in Minnesota is to mow a neutral cut every third day during a homestand. Starting at first base and mowing to third base, we then mow back over the same path in the opposite direction. When the team is out of town, we mow in that same procedure from different angles. Frequent mowing at a lower end height of cut will help improve turfgrass density in cool season turfgrass. Improved seed varieties of both Kentucky bluegrass and perennial ryegrass will tolerate mowing heights between 7/8" and 1" quite easily. My experience with warm-season grass was during my four seasons at Dodger Stadium, where I had the benefit of working for Eric Hansen. As soon as the team was out of town, Eric's program for the 419 Bermuda turf was to take the height of cut down a bit, maybe 1/8" or 3/16" and mow in three directions. This reduced the grain in the 419, eliminated any puffiness of the turf, and helped transition out the ryegrass by exposing more of the Bermuda to sunlight. With fertility and some time, the 419 would settle back into its game day condition in about a week. Again, remember your goal throughout the season is to increase turf density and maximize the leaf surface of the plant.

One challenge we face in baseball is timing of irrigation during home stands. With games daily for 7-10 days, and start times that vary greatly for TV, infield irrigation is not at all on a set program. Consider also that during a homestand the tarp may be involved quite a bit as well. For about the past 10 years or so, I have been exclusively hand watering the infield turf during home stands. This keeps our baselines, cutouts and dirt edges from being oversaturated and gives me time to evaluate the turf as well. If we are playing a day game, we never water the turf in the morning, preferring to do so the night before if necessary. Working around the schedule, and watching weather patterns, the goal is optimal rootzone moisture while still having time to dry down the upper canopy of the turf.

I use a Turf Guard sensor on the infield, which gives me moisture content readings at a 2" and 7" depth. Depending on time of year and expected weather, we may want to be 12% or 14% moisture on average for the two depth readings on a sand-based field. Regarding wetting agents on the turf, I prefer to use a penetrant type. If I am hand-watering the morning of a night game, I need to be sure that water is moving downward that morning. We don't want to overwater at all, but also try and avoid situations where the rootzone would dry out too much during a game. My goal is for the turf and soil matrix to absorb the force of the baseball. This leads to truer bounces and better consistency.

There is no time to rest when a big league team heads out on a road trip. Cultural practices need to commence right away. In addition to your work plan, there may be other events scheduled for the field. Time of year and type of turfgrass will influence your plan for those weeks. With cool season turf, I like to be sure we slice seed the infield on two different occasions prior to June 1. Core aerification occurs when there is a proper window for recovery prior to our next game. Because our rootzone has a Cu slightly below 3.0, we pull cores on the infield as follows: 1. Topdress with USGA sand. 2. Core aerify 3. Hand rake cores. 4. Roll in two directions with the greens roller. This process eliminates any wheel indentation from the weight of the topdresser, and gives us a pool table effect on our flat infield turf after using the greens roller.

During the summer months and through the end of September, we take every opportunity we can to execute solid tine aerification. Dependent on timing, this can be with either needle tines or slicing tines. Any time we can get oxygen into the rootzone is a positive for us. I have also been very pleased by the benefits of having a lightweight greens roller the past few years. It gives an excellent finish after coring, particularly on newly sodded areas when you are coring to break up the sod layer in the upper rootzone. Again, our goal is a dense stand of turf, with a firm enough but not overly hard rootzone.

FERTILITY

What about your fertility program? It is nice to write up a preseason plan for feeding your infield turf, but I prefer to monitor as I go through the season. Because of the tarp, poor timing with weather may lead to weeks without natural rainfall. Or you may get heavy rainfall when the team is out of town and your tarp is not on. We enjoy that natural rain, but it also can mean nutrients get flushed from a sand-based rootzone. We are trying to grow dense, healthy grass, but we do not want to overfeed it. Excessive nitrogen can lead to lush, slick and divot-prone cool season turfgrass. It may also slow the baseball down more than you would like. I prefer nitrogen to potassium ratios of 1:2 with granular products. For instance, I may apply a granular 6-0-12 product, all soluble nitrogen, at a rate of .25 lbs. N/ .50 lbs. K every 18-21 days. Should rainfall flush any of that application, I will tighten up the interval as needed. Along with the granular applications, spoon-feeding of the infield is supplemented by foliar feeding as well. This allows us in between home stands to apply micronutrients and biostimulants such as humic and fulvic acids, plant sugars, and sea plant extracts. We will also add about .10 lbs. N to our spray just prior to the home stand.

At different points in my career, my favorite infield conditions have been with turf that is primarily perennial ryegrass. I enjoy its uniformity at a lower height of cut and like the way the baseball moves across it. Also, as a finer bladed turfgrass, there is better overall nutrient uptake of foliar spray applications, which means more control of week-to-week fertility.

What about plant growth regulators? PGR use will give you an increase in turfgrass density as well as controlling clippings. Better lateral growth from PGRs improves the overall leaf surface of the plant, forming the dense mat and strong tensile strength you are looking for to get optimum playability. PGR use results in greener turf due to reduced leaf elongation, thus concentrating chlorophyll in the smaller blades. Along with thoughtful fertility and sound cultural practices, PGR use enhances the turfgrass through pre-stress conditioning.

The most commonly used PGR is trinexapac-ethyl. Research into the use of Growing Degree Day models to gauge intervals for applications of PGRs is becoming quite useful to turf managers. The product will break down more rapidly during times with high air temperatures. For the steadiest growth regulation of your turf, it is common to start with a half-rate application, followed by lower rates of trinexapac-ethyl applied more frequently to benefit the turf. If using a PGR, you may consider avoiding areas of extreme traffic where you need aggressive growth to combat wear in those isolated spots.

We have focused quite a bit on the turfgrass and rootzone of the infield. What about the skin areas? First of all, you can help or hinder the playability of your infield tremendously with how you manage the dirt area in front of home plate. That is often where ground balls begin. By keeping the area soft and consistently moist, you can take speed and topspin off the baseball. If it is too hard, it will produce acceleration and increased topspin. This not only speeds up the ground ball, it also can lead to a high bounce on the last hop for the fielder, due to the increase in topspin. To work the dirt in this area, you can drop eight to ten bags of calcined clay there and rototill it into the top three or four inches (stay a foot away from the foul line, where players leave the batter's box). Level it out, roll it and soak it down. Give it at least a week to settle down. The increased volume of calcined clay will retain more moisture for you and help minimize the force of the ground ball off the bat.

Continued on page 15

MANAGING THE "FIELD WITHIN THE FIELD"

BY **RYAN ADAMS**

The most important step in site-specific management is the identification of your high traffic areas. Proper diagnosis of the cause of the problem, whether due to over usage, compaction, poor drainage, weed encroachment or various other factors will provide a better return on investment and create increased safety and longevity of all fields.

A majority of wear and compaction related issues originate in high traffic areas. In general, high traffic areas of a football and soccer field are both around 17,000 sq. ft., assuming you're managing a high school football field with 53 ft. wide hash marks. Soccer dimensions, including the center circle as well as the goalmouths also equate to approximately 17,000 sq. ft. It is important to assess your resources on high traffic areas for each of your fields; however, in between hash marks is not always the biggest concern. All fields present different challenges and require strategies specific to the site and field. The total number of games and practices, as well as the frequency and age of users/athletes can influence the amount of the damage from a single event or weekend tournament. All of these things need to be accounted for when determining resources. For the purpose of this article, we will examine cost analysis strategies for 17,000 sq. ft. or 3.5 times smaller than the entire area in and around the field.

Topdressing. The biggest costs associated with topdressing are the fees required to physically move material to your facility. The standard cost for freight is about $4.03/mile + $0.24 cents per fuel or $4.27 per mile. Transporting a truckload of sand topdressing 100 miles would cost $427 dollars. The freight costs exceed the price of sand ($337) if using $13.50/ton Class 2 USGA sports turf sand. Current estimate of sand costs: USGA sports turf sand 90/10: $31.40 per ton; Class 2 USGA sports turf sand: $13.50 per ton; Mason sand: $12 per ton.

Sand needed for Surface Application (ton/1000 sq. ft.)		
+1/8"	+1/4"	+1/2"
0.56	*1.12*	2.24

Topdressing high traffic areas to a 1/4 in. of sand would require 1.12 tons/1000sq. ft. or 19.04 tons/17,000 sq. ft. In comparison, topdressing the entire field at 1/8 in. would need 0.56 tons/1000 sq. ft. or 33 tons/60,000 sq. ft. With the expense of transportation and difficulty in finding high-quality sand, it is important to consider whether the entire field is worthy of an application. In many cases, an application to the high traffic area is sufficient for field quality, aesthetics and longevity.

The band's repetitive movements can cause significant compaction and wear, resulting in a decrease in turf quality.

Aerification. The best way to combat excessive field use is with an extensive aerification program. Aerification reduces compaction and reintroduces oxygen, water and nutrients into the rootzone. It can also be beneficial in combination with a sand topdressing program to improve the internal drainage of a field, reduce thatch, improve fertilizer uptake efficiency, as well as providing a uniform surface that is safer for playing sports. Consistent aerification can also provide an exceptional environment for new seedling growth and development. Furthermore, aerification encourages deep rooting as seen in the figure.

Native soil fields are more prone to compaction than a sand-based system because of the higher clay content. Clays, especially when wet, are highly prone to compaction. Regardless of the rootzone constituents, using hollow-tine or core aeration is absolutely necessary in the battle to prevent excessive field wear and soil compaction. All fields should be aerated at least two times per year, regardless of budget. On high-use sports fields, it is not uncommon to aerate 4–8 times per year. I am a huge fan of the "beat it up" methodology; anytime the field starts to look great in the off-season or downtime, it is time to aerify, verticut, or topdress. Prepare the field for battle during the off-season, so it can take the wear during the season! For fall sports, you should never allow your field to peak in May, June, or July; you want it to be perfect for that first game which usually arrives in Iowa in mid-August.

As mentioned previously, a great time to seed and build a seed

Core Spacing in.	Holes per sq. ft.	Tine diameter in.	Tine depth in.	Sand needed to fill holes + surface (ton/1000 sq. ft.)			% area removed each pass	Number of passes with aerifier to impact a given area of field		
				+1/8"	+1/4"	+1/2"		50% removed	25% removed	10% removed
2	36	0.5	3	1.22	1.78	2.89	5.0	10	5	2
			8	1.76	2.87	4.00				
		0.75	3	2.04	2.60	3.72	11	5	2	1
			8	4.51	5.08	6.19				
3	16	0.5	3	0.85	1.41	2.53	2.2	22	11	5
			8	1.34	1.9	2.93				
		0.75	3	1.22	1.78	2.89	5.0	10	5	2
			8	2.32	2.87	4.00				
4	9	0.5	3	0.72	1.28	2.40	1.3	40	20	8
			8	0.99	1.55	2.68				
		0.75	3	0.93	1.49	2.61	3.0	18	9	4
			8	1.55	2.10	3.22				

bank is following aerification. Late summer or early fall is the best time to aerify cool-season athletic fields, however, anytime works as long as environmental stresses are low and a period of downtime (>2-3 weeks) exists before the next field activity.

Each year, a majority of the sport turf industry is shooting for 25-35% surface disruption through aerification. It is important to remember that pulling a soil core using 3/4 in. hollow tines can double the area of the field that is impacted, in comparison to a 1/2 in. tine. Selection of the right tines based on future schedule can make the difference in meeting this lofty goal. Below you will find a table created by Dave Minner comparing sand requirements, surface disruption, and core spacing and tine diameter/depth

Using the high traffic area defined above, 17,000 sq. ft.; 0.5 in. aerification holes to a depth of 3 in. on 3 in. core spacing requires 1.41 tons of sand/1000 sq. ft. to backfill holes and surface apply 1/4 in. Therefore, a truckload of sand would cover the 23.35 tons needed for the high traffic area.

PITCHFORK CHALLENGE

I challenge you to go out once a week and open up the exposed soil (soccer goalmouths, field goal kicking areas and baseball outfields) with a pitchfork. To cover the 5-10 sq. ft. area, it takes 5 minutes a week and within a few weeks, you will see a huge improvement and difference in these highly compacted areas. Once exposed, add about 45g/10sq. ft. of seed (10 lbs./1000 sq. ft.). A 50lb. bag of 50-50 Kentucky bluegrass/perennial ryegrass seed costs about $2.25 per pound or $112. A single bag can seed that 10 sq. ft. area more than 500 times and would cost you $0.22 cents per application. The addition of half-pound rate (5g per 10 sq. ft.) of nitrogen using urea

(46-0-0) will increase growth following germination. The current cost of urea is about $16.00 per 50lb. Ultimately, a single urea application at a half pound of nitrogen costs $0.0032 per application. That is correct, not even a cent per application? Means it's free right? A complete fertilizer or starter fertilizer containing phosphorus can also be used to increase germination.

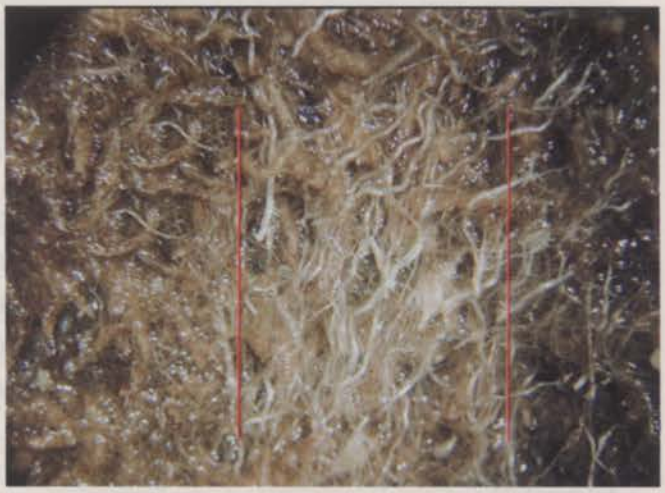
Adding topdressing to a depth of 1/4 in. needs about 1.12 tons/1000 sq. ft. assuming sand weighs 1.45 ton/cu. yd. and there is 100% efficiency on your hand-made aerification holes. A 10 sq. ft. area would need 0.01 tons or 22.4 lbs. of sand. Given that 1 gallon of beach sand is approximately 12.76 lbs., you would need 2 gallons or approximately half a 5-gallon bucket. The topdressing can also be used to level the playing field and fix any divots or depressions that have formed.

Seeding/Fertility. Using high seeding rates for athletic fields allows for faster ground coverage and provides better competition with weeds, especially summer annuals, such as crabgrass. Higher than normal seeding rates of Kentucky bluegrass applied at 3–4 lbs./1,000 sq. ft., and perennial ryegrass at 10–15 lbs./1,000 sq. ft. provides faster coverage. However, it is important to slightly increase the fertilizer rate with these higher seeding rates. I commonly use the analogy of Thanksgiving Dinner, if a 12lb turkey feeds your family of five, would it feed everyone comfortably if you increase your family to 10? The answer is NO! You would need a larger turkey to feed the additional people; the same can be said when increasing the seeding rate.

Applying seed with a drill seeder or drop spreader after core aerification is preferred. Grass crowns that are deeper in the soil are more protected than those on top of the soil, which can be damaged by high traffic and desiccation. In addition, combining different seeding techniques over the course of a year is optimal to begin creating vertical layer establishment (seed bank column in soil profile). Broadcast seed and topdressing, pre-germinated, broadcast and spike, dragging field, verticutting, surface application cleated in by players all increase seed germination and provide multiple layering of seed at different depths. The ultimate goal is to "never be bare." Once the soil is exposed, it will be a difficult to re-establish grass in these areas.

A goal for grass-bare areas is for seeding to occur within 24 hours of discovery. Instead of waiting to seed and re-establish the grass once or twice per year, use multiple seeding events; say 6–10 times during the year. There is no bad time to seed; as some seedlings die, others will survive. Seedlings that survive are the building blocks for the beginning of next season. It commonly takes 12-18 months to develop a beneficial mat after seeding. Seed grass whenever the soil is exposed or loss of turf cover due to heavy traffic is anticipated. If there is any doubt that the field may not withstand the traffic from the next game or practice, the seeding should have happened last week.

Many athletic fields currently use site-specific seeding techniques and those who do often fall into the upper tier of field quality. A blend of high quality Kentucky bluegrass costs about $3.50 per pound while a 50-50 blue/rye mixture is about $2.25 per pound. Seeding the high traffic area (17,000 sq. ft.) alone at 4lbs. of KB/1000 sq. feet would cost $230/application, while a 50-50 mixture would require 165.60 lbs. of seed or $372/application at 10lbs. /1000sq. ft. rate.



The best way to combat excessive field use is with an extensive aerification program.

In comparison, a KB application to the entire field would need 240lbs/application and cost roughly $840. Seeding the high traffic area four times would cost $920. So next time you overseed, consider whether the entire area needs an application, or whether the high traffic area is the priority.

COMMUNICATION AS MEANS TO TRAFFIC CONTROL

It is very crucial to have communication among the administrator, coach, band director, and field manager. Accepting your role as a user of the field is the first step in communication. Below, I will highlight several of the different roles and their influence on overall field quality.

The role of the big bad band. The band director needs to realize his influence on field safety, playability and longevity. A separate practice field should be painted on another grass area, or in a parking lot specifically for the band. The area should be situated so that the practice can be viewed from above, as if you were in the bleachers. Band practice on the game field should be limited to once per week, and only when the soil is dry enough to resist compaction. Just like the football team, the band should never practice on the game field after a substantial rainfall event. Their repetitive movements can cause significant compaction and wear, resulting in a decrease in turf quality.

The coach. The coach must take an active interest in scheduling practice activities and preventing excessive turf wear. The coach and the grounds manager can work together to develop improved grass areas specifically for drills that are conducted on/off the game fields. Field rotations should occur monthly. If you have the ability to change field orientations, and rotating heavy traffic areas, DO IT! Spend time talking with the coach and explaining that this approach works best for them. A majority of practice fields are still poorly used

because of the concentration of drills on certain areas of the field. Commonly, the side of the field nearest to the locker room, parking lot, or some other point of interest is used more often than the far end. Encourage the coaches to use both halves of the field to reduce wear and allow for turf recovery.

Field manager. In most situations, the field manager should realize that he is caring for a multi-use facility rather than a single field. He needs to account for additional labor, equipment, and resources to combat all school functions. Graduation, classes, track meets, concerts, and in some cases soccer games will use a portion of the field or sidelines throughout the season. It is the role of the field manager to be the biggest advocate of using practice fields if and when possible. If practice fields are available, require use and leave game fields for games only. The biggest detriment to poor playing conditions is excess traffic and compaction. Resources should be allocated so that you have at least one "showcase field." This lets your boss and the public know that you are capable of producing high-quality turf when given the proper schedule, tools, and budget. This also helps with job security and reputation. Even if resources are limited, don't spread them out so that all of your fields are average-to-poor quality, or your reputation as a grounds manager may be perceived as average-to-poor. One of the most important things a field manager can do is documentation. Always write down maintenance schedules, and use these to justify how an increase in resources will improve the rest of the fields that are in average-to-poor condition. Don't wait for administrators to allocate more money to field maintenance, show them how their money would be used.

Administrators. Administrators should keep in mind that proper traffic control costs nothing in terms of dollars, and at the same time, offers the most effective means of reducing dangerously worn areas on game and practice fields. The administrator needs to clearly define the conditions for using the field at the beginning of each season. The game field should be reserved for games only. Be prepared to allocate resources on an annual basis for field maintenance, and on a less frequent basis for field renovation. It is important for the turf manager to keep the administrator up to date on what is best for the field. Also, the budget needs to be discussed at multiple points throughout the year with all parties involved.

With budgets shrinking, it is important to concentrate resources on high traffic or problem areas. The best way to combat issues is through site-specific management tools. Just by concentrating resources and incorporating site-specific management tools, you can reduce input in lower traffic areas and increase inputs on high traffic areas. High traffic areas require additional coring, seeding, fertility, and topdressing with amendments such as sand, calcined clay, or compost. The additional attention and resources can go a long way to providing a safe playing field for all.

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Continued from page 11

MORE ON DIRT

What about your infield dirt in general? We always stress keeping good moisture in the infield skin area. You need to think about watering through the entire dirt profile going into a homestand. A heavy soaking needs to saturate the dirt and perc all the way through. The first key to good bounces on your dirt is having that moisture all the way though the profile. The time to do a heavy soaking during a homestand is right after a game, giving you the next day to start your prep work on the dirt. From there, your game day routine involves working the upper ¼" or so of the dirt with your nail drag, rakes, mat drag and walking roller. Pre-game watering should be a touch up for game conditions, taking into effect the sunlight, wind and dew point that day. Topdressing materials and quantities seem to vary due to personal preference. An abundance of calcined clay as topdressing will help hold moisture in the dirt, but it also changes the pace of the ground ball.

It is hard to describe in writing, but the correlation of speed of the infield grass and the infield dirt is a key factor in achieving optimum playability. For instance, a shortstop would generally not like an infield with tall, dense cool season turf and dirt that is a bit dry and fast. The pace of the ball will change in that case. My goal is for the infield to play a bit on the fast side, not excessively though, with the turfgrass evenly cut to form a dense mat, and the dirt to be firm and moist. Part of that program is mowing height and frequency, part of it is turf fertility and part of it is infield dirt topdressing, which we like to be consistent and sufficient rather than excessive in volume.

The other key factor is water management of both the rootzone and the infield skin. The goal with the pace of the ground ball is for it to be consistent from turf to dirt. This is especially important for middle infielders and their mental "game clock" when it comes to making decisions on plays. The consistent pace will lead to an increase in double plays turned and better overall play.

It is not my intent to offer one fixed and absolute way of doing things. Generally, better playability comes when the turfgrass and dirt have enough give to minimize the force of a batted ball. Ultimately, what is most important is to first gain an understanding of what the ideal speed and pace of the ball is for your facility. From there, take into consideration all of the variables discussed here. Put it all together and achieve the level of playability that makes you, the players and your coaching staff happy.

ST

Larry DiVito is Head Groundskeeper for the Minnesota Twins.

MAPPING TO IMPROVE ATHLETIC FIELD MANAGEMENT

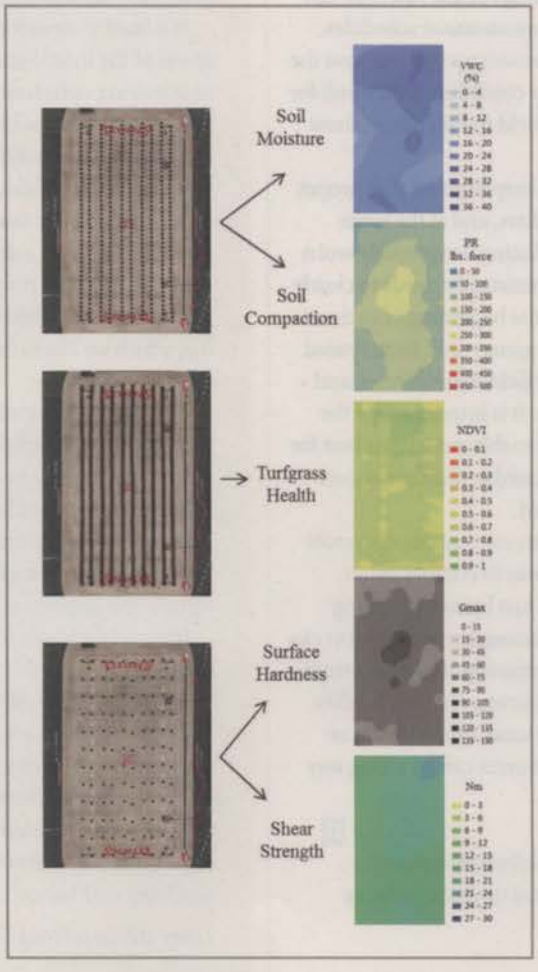
BY CHASE STRAW AND GERALD HENRY, PHD

Performance testing of sports fields is becoming more common to quantify surface properties, such as hardness. Many testing devices now incorporate a Global Positioning System (GPS) and Bluetooth capability to georeference field management locations and send the data to a computer or tablet/phone device. Maps can be created from collected data using Geographic Information Systems (GIS) to visualize the variability (i.e. differences) of a certain property across a field. Maps are gaining increasing attention in the sports turf industry, with several private testing companies incorporating them in their consultation with sports turf managers. However, for you, the sports turf manager, little is known about how they are created and what their practical uses are. This article will discuss in general how maps are made, five ways maps can be used, and the future of maps in the sports turf industry.

CREATING MAPS

Maps are typically made from point data, where each point represents a specific latitudinal and longitudinal location on a field. Determining the latitude and longitude of a given point is called georeferencing and is done using a GPS device. Data that is collected at that location for a specific surface property can be stored within the point using Geographic Information System (GIS) software. Figure 1 depicts maps for five surface properties on a high school football field: volumetric water content (i.e. soil moisture), penetration resistance (i.e. soil compaction), normalized difference vegetative index (NDVI; i.e. turfgrass health), surface hardness, and turfgrass shear strength. The Google Earth images on the left show the points where data were collected and stored for each measured property. The soil moisture, soil compaction, and turfgrass health data were collected using a mobile multi-sensor sampling device, the Toro Precision Sense 6000. The surface hardness and shear strength data were collected using a handheld Clegg Impact Tester and Shear Strength Tester, respectively. All point data were georeferenced using a GPS device.

Once point data are collected, there are multiple methods to create maps using GIS software, all of which use some form of spatial interpolation. Spatial interpolation uses a mathematical formula that estimates values at locations that were not measured, based on the surrounding values at locations that were measured. The result is a continuous surface that shows the variability of a given property across the field, or in other words, a map (right side of Figure 1). Maps are not limited to these five properties. Any quantifiable measurement can be made into a spatially interpolated map.



Now that you have a map, what can you do with it?

Note: Maps can also be created using remote sensing techniques that include thermal heat or NDVI images. Maps made using remote sensing are often used in turfgrass management. Although this article will not discuss remote sensing maps, their application is similar to spatially interpolated maps.

USING MAPS

Implementing site-specific management. Site-specific management (also referred to as Precision Turfgrass Management) is perhaps the most commonly suggested use for maps in turfgrass. Site-specific management simply involves the application of inputs (such as water, aerification, and fertilization) only where, when, and in the amount needed. This

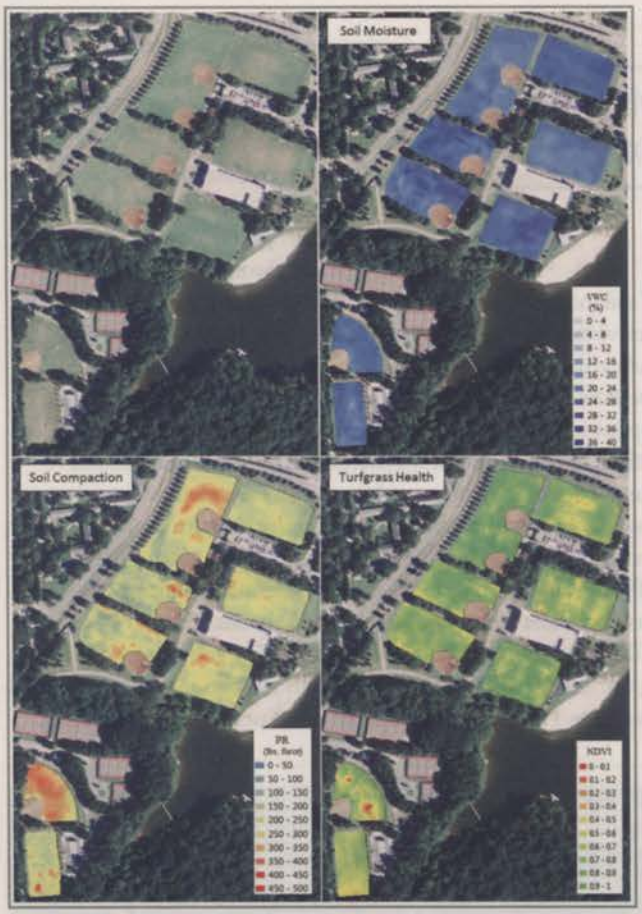
» **Maps can easily highlight deficient areas** within a field or across multiple fields within a sports complex.

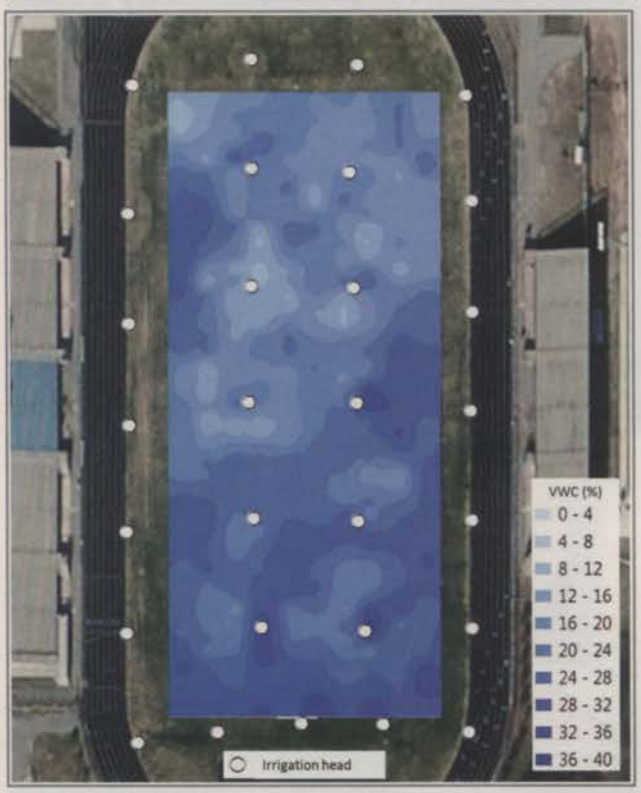
fosters more precise and efficient application of inputs. Current management practices are often based on recommendations designed to provide good results under average conditions over large areas. Athletic field managers frequently use high amounts of resources in order to achieve a safe, predictable outcome. However, this type of management does not take into account the variability of certain measured quantities (i.e. soil moisture, soil compaction, etc.) that may exist within or between fields.

Site-specific management focuses on managing athletic fields on a smaller scale than current practices. This method helps identify site-specific management units (SSMUs) so managers can target "troubled" areas (high or low values). Focusing efforts on smaller areas may reduce management inputs, improve turfgrass uniformity (above- and below-ground), increase the efficiency of management tactics, and enhance turfgrass longevity/stress tolerance.

Whether you manage 10 fields or one field there are certain benefits for conducting site-specific management. Figure 2 is a Google Earth image of the Recreational Sports Complex at the University of Georgia that shows maps of soil moisture, soil compaction, and turfgrass health. These fields receive excessive amounts of student traffic from intramural sports and extracurricular activities. In the fall they are also employed as overflow parking for football games. There are many site-specific applications for athletic field maps: a.) soil moisture maps can detect deficiencies in irrigation systems down to a single head; b.) soil compaction maps can be used to create a site-specific cultivation plan; c.) turfgrass health maps can identify wear/stress patterns that alert managers to rotate field use; and d.) overlaying maps of different variables may highlight imperfections in current management practices or underlying agronomic issues.

Demonstrating sustainability. Terms like "going green" and "eco-friendly" will soon become common lingo among athletic field managers. Public concern over the use of pesticides and synthetic





fertilizers on sports fields and recreational areas has intensified over the past decade. As societal pressure increases for the conservation of energy and natural resources, attempts to implement site-specific management and reduce inputs may become key to increasing the credibility of sports facilities attempting to become "sustainable." Improving field playability and athlete safety through the implementation of site-specific management would further exhibit social sustainability of sports fields by improving player satisfaction. Maps can play a critical role when trying to communicate athletic field efforts of sustainability to the public.

Explaining field closures. Athletic field management often involves more than just taking care of the field. Interacting with coaches, players, and administration may be common and at times difficult. Questions often arise when fields need to be closed for inclement weather or maintenance practices. Sometimes telling them that the field is "too wet" is just not enough. Numbers and data can be confusing for some, but maps are somewhat easy to understand. For example, the bright red color depicting stressed turf on a turfgrass health map is an easy way to highlight areas that need special attention or justify closing/rotating field use.

Proposing new equipment or renovations. Maps can easily highlight deficient areas within a field or across multiple fields within a sports complex. Athletic field managers may be cognizant of these areas, while their administrators are often unaware. Maps can be employed to justify the purchase of new equipment or utilized to rationalize the need for future renovations. Figure 3 is an example of an irrigation system efficiency audit of a high school football field. Soil moisture data used to create this map was collected during a dry period and based solely on the irrigation system. The field manager could use this map to identify malfunctioning irrigation heads and justify the purchase of replacement parts or system renovation.

Conducting research. Although maps by themselves are aesthetically informative, it is important to note that there are data attached to them. Geostatistics are used to analyze and interpret spatial (through space) and temporal (through time) data, which is essentially the point data from which maps are created. Researchers often conduct small plot (≤ 100 ft2) studies to simulate real world scenarios such as the effect of wear and compaction on athletic field turf. However, data generated from small plot research may have limited application. Geostatistical analysis is conducted at the whole-field level allowing investigators to evaluate "in position" research. At the University of Georgia we use mapping and geostatistics in our research to evaluate sampling procedures, to test the effectiveness of site-specific management techniques, and to determine correlations between player injuries and field surface properties at the exact locations that injuries occur.

FUTURE OF MAPS IN SPORTS TURF MANAGEMENT

Mapping technology is making small, but significant strides in turfgrass management. This is evident with the recent increase in GPS-equipped testing devices and independent companies that

provide mapping services. However, adoption and use of maps among sports turf managers has been slow for several reasons. Primarily, educational opportunities to train managers about sensor technology and data collection are very limited. No standards for sampling protocols have been published, because very few universities have conducted research using mapping technology. A lot of the research conducted within our group at the University of Georgia is focused on improving this scenario.

Secondly, testing devices and the accompanying software can be expensive and difficult to obtain. This may be the case for some time until the technology becomes more prevalent and affordable. Lastly, sampling can be a time consuming practice for larger facilities. It takes two people from our research group approximately 1 hour to collect 120 surface hardness samples with a Clegg Impact Tester on an American football field. This could extend to hours or even days for multi-field facilities with limited labor. Mobile sampling platforms can increase sampling efficiency, but very few devices are available for use in turfgrass. In agriculture, sampling devices have been incorporated into a variety of farming equipment. Future research should examine the merger of sensor technology with daily turfgrass maintenance equipment (i.e. mowers, aerators, rollers, etc.) in order to make data collection on athletic fields more efficient.

Even with these current challenges, maps still provide the most detailed analysis of athletic field properties when compared to other performance testing methods. Mapping technology and associated educational opportunities will continue to advance in the future. Maps will become an integral component of athletic field management as the industry begins to focus more on environmental sustainability and player safety. ST

The authors would like to thank Stephen Richwine, Sports Turf Manager, Oconee County School District, and Joe Morgan, Sports Turf Manager and Groundskeeper III, University of Georgia Facilities, for use of their facilities. Thanks are also extended to Troy Carson, Kathy Rice, and Van Cline, The Toro Company, for technical support with the Precision Sense 6000.

Chase Straw is a graduate research assistant, University of Georgia; Dr. Gerald Henry is an Athletic Association Endowed Professor, University of Georgia.

MANAGING WATER FOR PLAYABILITY

BY **BRAD PARK**

This article will attempt to add to the existing base of knowledge on drainage by discussing my own observations in dealing with sports field drainage as well as baseball/softball skin surface water management issues in a University Extension setting.

SPORTS FIELD DESIGN AND CONSTRUCTION

It has been my experience that many sports field architects and engineers have unrealistic expectations concerning the way native soils or sand-modified soils drain internally. Architects and engineers will often develop a specification for a sports field calling for construction using a sandy loam soil (or finer in texture), perhaps native to the site, and design the field with minimal surface pitch (i.e. slope) with the expectation that it will exhibit rapid internal drainage. Following field construction, often performed by a contractor who employs heavy road building equipment to manipulate soils during construction, the field drains poorly, negatively impacting the playability of the surface.

A sports field can be constructed with minimal surface pitch (e.g. 0.5%) if the rootzone conforms to specifications for golf course putting green construction developed by the United States Golf Association (USGA). While subtle deviations (i.e. greater fine and very fine sand, silt, and clay) from the USGA specifications *may* still allow for acceptable internal drainage and limited surface pitch, McIntyre and Jakobsen (see sidebar page XX) do a very nice job describing how the internal movement of water though soil profiles (including "golf" sands with too many fines and sandy loams) becomes increasingly restricted under greater compaction levels — compaction being a more-often-than-not sports field construction reality.

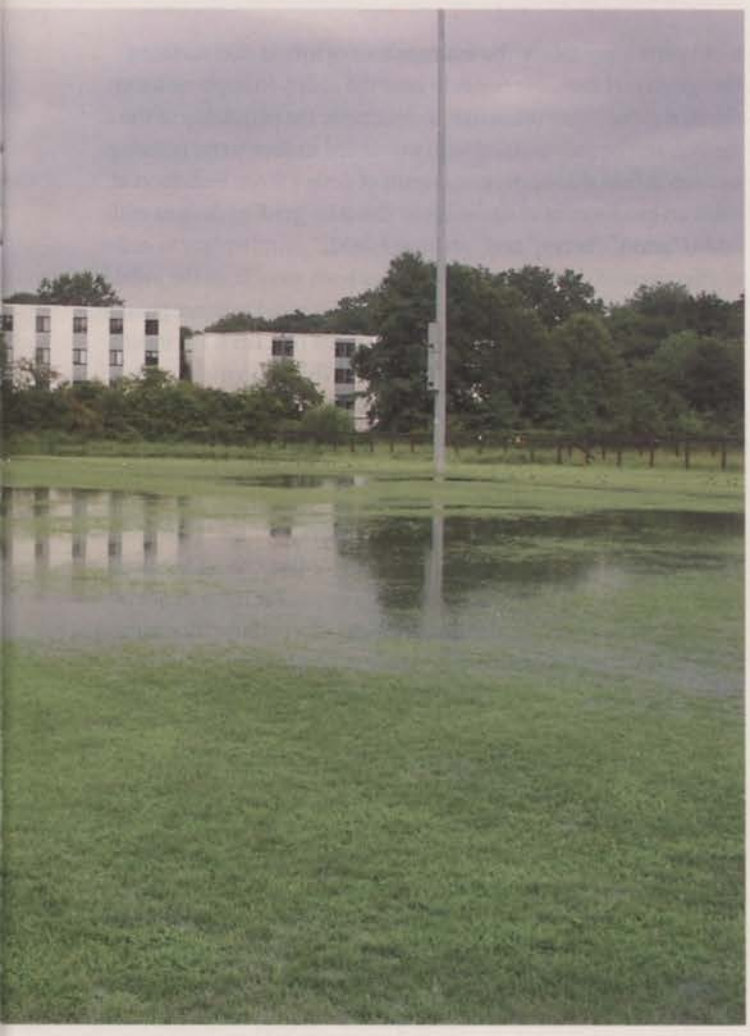
The most pragmatic strategy in working with non-USGA conforming rootzones and certainly native soils is to design sports fields using these soils with adequate surface pitch. For example, in the design of a soccer/lacrosse/North American football field using a native soil (e.g. sandy loam, silt loam, etc.), the plans should include a "crown" that has no less than 1.5% surface slope from the middle of the field (goal to goal; or endzone to endzone) toward the sidelines.

THE MULTIPURPOSE FIELD DILEMMA

A reoccurring sports field design problem entails the creation of multipurpose fields constructed using native soils or soils poorly modified with sand that are tipped diagonally from one corner of the field to the other. These designs are desirable from the perspective of athletic directors, coaches, business administrators and other decision makers as an appearance is created that field space is maximized. Who could not resist fitting a baseball field, softball field, and soccer/lacrosse/field hockey field in one two-and-half acre footprint? I have often observed the placement of a baseball or softball skin surface in the lowest corner of the field where water is forced to surface drain (i.e. run down hill) onto the infield skin.

On the issue of multipurpose fields, Puhalla et al. (see sidebar) note that sports fields should be treated as individual drainage units, and should not be expected to perform acceptably with water running onto a sports field from an adjacent field; moreover, within each field, an infield skin surface should not be lower than the outfield.

Much has been written about sports field drainage, an essential element in the playability of sports fields. Dr. Andrew McNitt, Penn State University, described methods in practical terms to improve sports field drainage in an article titled, "Understanding Field Drainage" that appeared in *Sports Turf Manager*, the Sports Turf Canada publication. The textbook, *Sports Fields: A Manual for Design, Construction and Maintenance* (Puhalla et al., 1999) provides excellent details on sports field drainage. The most comprehensive textbook in which the author is aware on the subject is *Practical Drainage for Golf, Sportsturf and Horticulture* (McIntyre and Jakobsen, 2000).



Fields constructed with fine textured soils and built without adequate surface pitch are highly prone to exhibit poor drainage following rain events (Photo by Brad Park).

Sand-slit drain installation is a dramatically *underutilized* technology in the school/town sector of sports field management. Having made dozens of sports field consultations during the past 13 years, I can only recall a handful of occasions where this sand-slit drainage has been employed. This drainage technique can be installed on both existing sports fields as well as part of the construction of new fields. Unfortunately, in the eyes of many decision-makers a sand-slit drainage system is viewed as an unaffordable "luxury" that is only reserved for the premier field of the school, town, college, etc. During the past 10-15 years, the primary "improvement" made to many school and town premier sports fields has been the removal of natural turfgrass and installation of synthetic turf — considerable costs both at the time of installation and at eventual tear-out and resurfacing.

Newer machines (e.g. BLEC Sandmaster, WaterWick, etc.) have appeared on the market in recent years that mimic sand-slit drainage installation where sand channels can be more rapidly introduced into a sports field in lieu of traditional trenching

IMPROVING DRAINAGE ON EXISTING FIELDS

There are several strategies that can be employed to improve the drainage of existing fields, as field reconstruction is typically not feasible. The following strategies are meant to improve, or "augment," the surface drainage characteristics of a field with some existing surface pitch, either in the form of a crown or tipped from one side to another.

Sand-slit drains can be designed and installed as sand-filled trenches (e.g. 3 to 4-inch; 12-inch deep) with a strip drain embedded in the base of the trench; the goal of this system is to intercept surface-draining water and rapidly move it off the sports field into a collector drain(s) (Puhalla et al.). These authors provide excellent schematics of these systems and note that the drains should be installed at a 45-degree angle to the direction of the surface runoff. Dr. Andy McNitt of Penn State (see sidebar) advises that after installation of a sand-slit drain system core cultivation of the field should be followed by core harvesting and sand topdressing; this management style, similar to that of a "push-up" golf course putting green, will preserve the integrity of the sand-filled trenches.

practices, creation of spoils, etc. While these tools will effectively create sand-filled trenches and improve drainage, they do not provide the advantage of an installed pipe at the base of the trench that will accelerate water movement. Similar to slit drains, operation of these machines should be made at a 45-degree angle relative to the surface flow of water.

BASEBALL/SOFTBALL INFIELDS AND INFIELD SKIN SURFACES

Several useful resources have been developed in recent years that provide practical information on the subject of baseball and softball infield skin surfaces. The Rutgers Cooperative Extension Fact Sheet, "Skin Surface Selection and Management for Baseball and Softball Infields" summarizes infield mix selection criteria developed by American Society for Testing and Materials (ASTM) and management information derived from field research and experienced sports field managers. This document can be accessed by performing a simple search using any web browser. *Baseball and Softball Fields: Design, Construction, Renovation, and Maintenance* is a textbook dedicated to this subject matter (Puhalla et al., 2003) and is a must-have resource for engineers and architects who are in the business of designing sports fields.

INFIELD DESIGN

There are two primary considerations when designing baseball and softball infields: 1) The infield should be designed/constructed in such a manner to move surface water away from the infield toward the outfield and foul territory; and 2) Infield mixes/skin surfaces should not be expected to exhibit acceptable internal drainage and should therefore be part of the larger infield design to direct water toward the outfield and foul territory via surface pitch.

Regarding the first design consideration, as previously noted in the discussion concerning multipurpose fields, surface water should never be directed onto a baseball/softball infield. Moisture management plays a key role in the maintenance of infield skin surfaces; the sports turf manager needs to have the ability to apply water to the skin at his or her discretion to maximize the playability of the surface, *not* be preoccupied with unwanted surface water running onto an infield skin surface as a result of design flaws. Puhalla et al. show an excellent set of drawings to illustrate grading designs with added "good," "better," and "preferred (best)" commentary in order of effectiveness in moving surface water both away from the infield and off the entire playing surface in the most rapid manner possible.

Sand-slit drains can improve the playability of existing fields by intercepting water moving across moderately pitched sports field surfaces. (PHOTO BY BRAD PARK)

All good designs call for some minor pitch (e.g. 0.5%) to infield skin surfaces to provide surface drainage. While extremely sandy infield mixes may allow for some internal drainage, most contain enough fines that under compacted conditions internal drainage will be compromised resulting in surface pitch being a necessity.

INFIELD SKIN SURFACE MANAGEMENT

"Skin Surface Selection and Management for Baseball and Softball Infields" (Park and Murphy, 2009) summarizes the importance of water management in maintaining infield skin surfaces. In the most basic terms, water is needed to soften fine-textured infield mixes (high silt and clay content) and firm coarse-textured mixes (high sand content).

In my experience, outside of natural rainfall events, water is not regularly applied to most school and town infield skin surfaces in New Jersey for the purpose of managing surface hardness and playability. The majority of mixes I have encountered at schools and towns consist of approximately 80% sand and 20% silt+clay. While appropriately applying water could certainly improve the playability of these surfaces, many perform adequately considering the level of play in lieu of supplying water. On a cautionary note, high sand content infield mixes can be over-scarified with motorized infield grooming equipment equipped with large "teeth." Without the ability to apply water to firm these mixes, the loose, cat litter-like conditions that result from overly aggressive grooming are difficult to firm until natural rainfall supplies the necessary moisture.

Similarly, grooming practices should be performed in such a manner to maintain a grade that allows for surface drainage. Water will pool in low-spots, sometimes referred to as "birdbaths," if grooming procedures regularly remove infield mix from one area of the skin surface and deposit on another location of the skin surface (i.e. creating a high spot). Periodic laser-guided grading of infield skin surfaces is a highly effective means of re-setting grades (and good surface drainage).

Conditioners (e.g. calcined clay) can be spread on top of skin surfaces to improve playability over a range of weather conditions. Conditioners are often used to soak-up excess water after rain; finer-textured conditioners work best for this purpose but should be removed from the skin surface after play. Skin surface water retention is a function of the amount of silt and clay in the infield mix, not the amount of calcined clay on the surface; calcined clay applied to the skin surface will often dry before the underlying infield mix resulting in some grounds managers applying unneeded irrigation water.

Water management is an important element in providing acceptable baseball and softball skin surface playability. (PHOTO BY BRAD PARK)

A trained, competent sports field manager can employ the finesse that is required to manage water for playability. Sports fields design parameters and construction methods are not always conducive to good drainage, and the costs and/or field down time necessary to improve these problems dictate that a sports field manager must often "work with what he or she's got." Case in point: Poor sports field drainage can be compounded with bad irrigation management; that is, a timer/clock programmed irrigation system may be allowed to deliver additional water following a natural rainfall event rendering a sports field unplayable. A sports field manager with site-specific experience will have the feel/finesse to properly irrigate a poorly drained sports field to maintain plant vigor yet provide good playability on a surface that is highly susceptible to being compromised with over-watering. ST

Brad Park is sports turf research & education coordinator at Rutgers University; a member of the Sports Field Managers Association of New Jersey Board of Directors since 2003; and editor, SFMANJ Update newsletter. For a complete list of resources discussed or cited in this article, see www.sportsturfonline.com.

BASIC BASEBALL FIELD MAINTENANCE

BY **ANDY OMMEN**

One of the most frequent questions I get asked is "What is the most important tool you can have when maintaining a baseball field?" My answer is always "time."

Baseball fields cannot be maintained on a whim or a moment's notice, especially if you expect to provide your athletes a safe, quality playing surface. It isn't a basketball floor that needs a mop, or a soccer pitch or football field that might need mowing. As long as there is wind blowing, grass growing, or rain falling you need to be on your field. And the result can be a safe, well-manicured ball diamond.

No matter how busy or how vacant your field is, you have to maintain it. So often I see high school fields left unattended and neglected in the off-season because nobody is around to take care of it. This is your time to perfect it with no deadline time constraints. Step up, make the effort and take the time to continue to maintain that field. The better you maintain it the less work and expense it will be when season rolls around and the safer the playing conditions. If your time is limited, prioritize by:

- Safety
- Playability
- Consistency
- Aesthetics

The second most important tool is attention to detail. It is the little things that matter so much. There is no more important area on your field than the 12 inches of grass or 12 inches of dirt from any of your dirt/grass transition areas. Keep your grade level between those areas. I tell my crew if they can close their eyes when they drive a vehicle off the infield skin into the grass and still tell when they are in the grass, we have a transition issue that needs to be addressed.

Take the time after every event to walk each line and pull every single piece of dirt out of those areas you see. It may seem small now, but if it repeats itself over and over hundreds of times, it will not be so small anymore. We walk the edges and hand pull any chunks of infield clay out of the grass, then we walk through with a broom and we broom the 12 inches of grass toward the infield dirt. This will pull loose material out and help maintain grade and prevent lip buildup. It is important to not broom the dirt away from the grass edge however, or this will have a negative effect on maintaining grade between the two areas.

We religiously drag our fields after every use. This is key. Take your time when dragging, pull the bases and stay away from the edges. We make sure we vary our points where we enter and exit the field every time as infield dirt will come off the tires of our vehicle into the grass. As always we stop well short of the grass and lift the drag to deposit any spoils in the drag screen on the field and do not pull it into the grass edges.

We also frequently nail drag our fields. If you can nail drag with some moisture on the field that is the best time. Buy or build a lightweight nail drag. You only want your nails penetrating ¼-½ inch at most so you do not need a lot of weight. I see people piling weights on their drags and digging up their infield skin. If you do that, you lose footing, playability, and you will have a swamp next time it rains. We are only loosening up ¼ inch of material to fill in spike marks and allow your drag to move material around.

After nail dragging we will then drag with a large mesh drag, then finish with just the end of a stiff steel drag using only about 6 inches of it. We try to do this entire process by maintaining moisture in the skin. If we can do this, the weight on the wheels of our vehicle help pack the material back together and provide an optimal surface. We also have a 1500-lb., pull-behind roller we will frequently use to make sure our skin stays packed firm.

These details are what separate a high-quality baseball field from an average to poor field. It not only promotes a safe playing surface but also attracts your better athletes. Are your better athletes going out for a different sport during baseball season? If they are, what does your baseball field look like in the off-season? If your baseball field is maintained to a high standard as they walk by, then they may want to be a part of that sport. If they walk by and see an overgrown infield loaded with weeds, rusted fences, poor playing conditions, why would they want to be a part of it? As an athlete, I would be thinking, "Is that the way the coach is going to coach his team?" Or, if the field is well maintained, athletes may well think that the baseball coaches know what they are doing!

As the groundskeepers of a six-field baseball complex we consider ourselves as having some of the highest quality youth fields in the Midwest. We consistently attract players we normally would not attract simply due to the quality of our facility. It's awesome to hear people say, "I want to play there because of the fields."

EASIER MAINTENANCE FOR MULTIPLE FIELDS

At my level and the budget my facility has and the 230+ games a year played on each one of my fields, it is impossible to maintain every field at a professional level of quality. However that does not mean you cannot put out a very high quality, safe product. Watching the little things and details becomes even more critical. Know the causes of your problems and focus on those.

Andy Ommen

From a turfgrass standpoint, we focus on high traffic areas and get ahead of them. If we wait until it is worn, it will be too late. We frequently solid tine aerate high traffic areas to loosen compaction. We also overseed those areas weekly. These areas are on-deck areas, front of mounds, and grass base-paths (if you have them). We rotate around the fields and try to hit every field at least 1x per week with seed in the wear areas. We also carry bottles of seed with us on our mowers. It is the best time to inspect your fields and put seed in any small areas needing it.

From an infield skin standpoint, it is a constant battle of maintaining grade. The better you maintain your grade, the quicker recovery you will have from rain. The best way to maintain grade is to constantly drag your fields with the bases pulled out. You should never drag a field with bases in place. This will only cause buildup around the bases causing an uneven grade and problems when it rains.

The offseason is when most of our work happens. If you take the time and pick away at little things, you can accomplish a lot during this time and do not need to scramble when season hits. Our fields go into winter dormancy game ready (except for paint).

If your budget is tight, simply start a turf management process with the infield grass only. Buy yourself a quality push mower and dedicate that mower to your infield grass only. Keep the blades sharp and mow a consistent height year around. Your infield grass is flat and square, so it is easy to maintain. Follow the 1/3 rule and never cut off more than 1/3 of your plant. If you do, it can damage the cells and make your turf more prone to injury and disease. You're better off mowing more frequently and not cutting much grass, than mowing 1x per week and chopping off a lot of grass. I have always followed the rule, if it is growing, then mow it. I consistently mow my fields at game height, year around even when we are not playing. We train it to be healthy at game height.

Fertilize your infield. This is easy, inexpensive and not very time-consuming. Most of the game is played through the infield grass, which makes that grass sacred ground. This can be as involved as your budget allows. I recommend a good fertilizer application in the early spring and one in the late fall at a minimum. If you can get another application in during your growing season that is even better. Grass isn't too different from humans; it performs best with constant supply of food.

Continued on page 28

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Continued from page 25

We do not neglect tour infield skin in the off season either. We consistently drag it several times a week so weeds will stay off the field. Not only do you keep it clean from weeds, but with proper dragging techniques you also correct the little grade problems your field has by dragging in dirt to low spots, etc. Vary your dragging patterns and continuously nail drag as well. If you have a heavy roller, roll your field when it is moist. A constant program of nail drag, mesh drag, and rolling will improve your infield skin.

When it comes to drags, I have a wide variety of drags depending on what I am looking to accomplish. My "go-to" drag is a stiff 6 x 2-foot small metal mesh drag. A common mistake I see is people using very large drags that will move a lot of material. This will help grade your field, but will also push around a lot of material. When I have my moisture and my fields dialed in, I may use about 2 inches of my mesh drag to fill in cleat marks and re-distribute my conditioner and do not disturb too much else. I also use a cocoa mat when the fields are a little moist. Again, not a large mat, but a smaller one to eliminate cleat marks and distribute conditioner. All of my drags are treated with the top respect, we properly hang them up and take care of them to maintain their shape.

I tell people this constantly, if you do not know, ASK. What I have learned in the past 13 years of doing this is how close the groundskeeper community is. We all work together to provide our athletes the best possible playing surface for your sport. If you don't know turfgrass, search for a local professional sports turf manager. If you don't know infield mix, reach out to those who take care of other facilities and find out what works for them. The Sports Turf Managers Association community is huge, and notably helpful to those seeking advice.

Take the time, make the effort — your athletes are worth it. ST

Andy Ommen is the head groundskeeper for McLean County PONY Baseball, Bloomington, IL.

John Mascaro's Photo Quiz

John Mascaro is President of Turf-Tec International

Can you identify this sports turf problem?

Problem: Something wrong with goal line
Turfgrass area: Indoor arena
Location: Northwestern United States
Grass Variety: Artificial turf

Answer to John Mascaro's Photo Quiz on Page 35

BACKGROUND ILLUSTRATION COURTESY OF ISTOCKPHOTO.COM

IN REMEMBRANCE OF LEO GOERTZ, TEXAS A&M ATHLETIC FIELD MANAGER

The Sports Turf Managers Association lost a dear friend and colleague on December 7, 2015 in Leo Allen Goertz, a proud member of the Fightin' Texas Aggie Class of 1985. Whoop! Leo got his start as a baseball trainer at Texas A&M in 1978 as a student, but he ended up spending more of his time working outside on the baseball field rather than the players. This time developed the passion that we all came to know Leo had for sports turf management. He was hired as Texas A&M's Athletic Field Manager in 1996, and he managed all the fields from that time forward.

In those two decades, Leo assembled staffs and mentored future turf managers that would succeed at all levels and venues within this industry; however, his influence spread much further than those who worked directly with Leo. Many of the former coaches and players who got to know him during their time in Aggieland offered condolences and well wishes to Craig Potts, who assumed Leo's position at Texas A&M. Craig was overwhelmed by the number of people who offered their positive thoughts and remembered stories of Leo after his passing.

I had a chance to speak to one of Leo's first student workers, Miles Studhalter. Miles started working for Leo in 1996 as a student worker. Leo had such an influence on Miles that he changed majors his senior year from Wildlife Management to Turf, which kept him in school for an additional year. Leo hired Miles as an assistant working on all the athletic fields in College Station for 2 years before moving on to work at Reliant Stadium in Houston and now his current position at FC Dallas' home Toyota Stadium.

When asked about the type of boss Leo was to the students, Miles did not hesitate in saying that Leo was the kind of person who worked with them rather than just the students working for Leo. He was a hands-on type of boss who would get into the irrigation hole with you to repair a leak or fix a problem. He also mentioned that Leo had a friend-first attitude that made him more approachable to turf managers of all levels and educational backgrounds.

Two great Texas turf professionals: the late Dr. Jim McAfee (left) and Leo Goertz (right), at the banquet in 2011 when Leo was awarded the STMA's Harry C. Gill Memorial Award, the association's highest honor. IMAGE COURTESY OF CRAIG POTTS

This same attitude and outlook on life made Leo the joyful and helpful person that many interacted with at the National and Regional STMA conferences. Miles and others mentioned attending conferences and having the opportunity to meet and network with everyone in the room if they stayed around Leo. He knew everyone, everyone knew him, and everyone enjoyed the opportunity to speak to Leo about situations and things he learned in his past. I also heard stories of past Aggie players who ended up in coaching professions contacting Leo about properly managing field conditions at their locations. Leo was quick to offer recommendations or visit the site when possible to suggest management strategies to improve the field. Just like many of us, he had a true love for turf and sports that he shared with others he came in contact with regularly.

Leo was just as influential to members of the STMA, and he was a driving force in developing and getting the initial funding efforts raised for the SAFE Foundation, initiated by the STMA in 2000. Leo served on the SAFE Foundation board from 2006 to 2011 and was always willing to donate or talk his colleagues into donating items for the silent auctions. Leo's influence on this industry will live on forever due to the number of assistants and workers he trained over the years who have worked up through

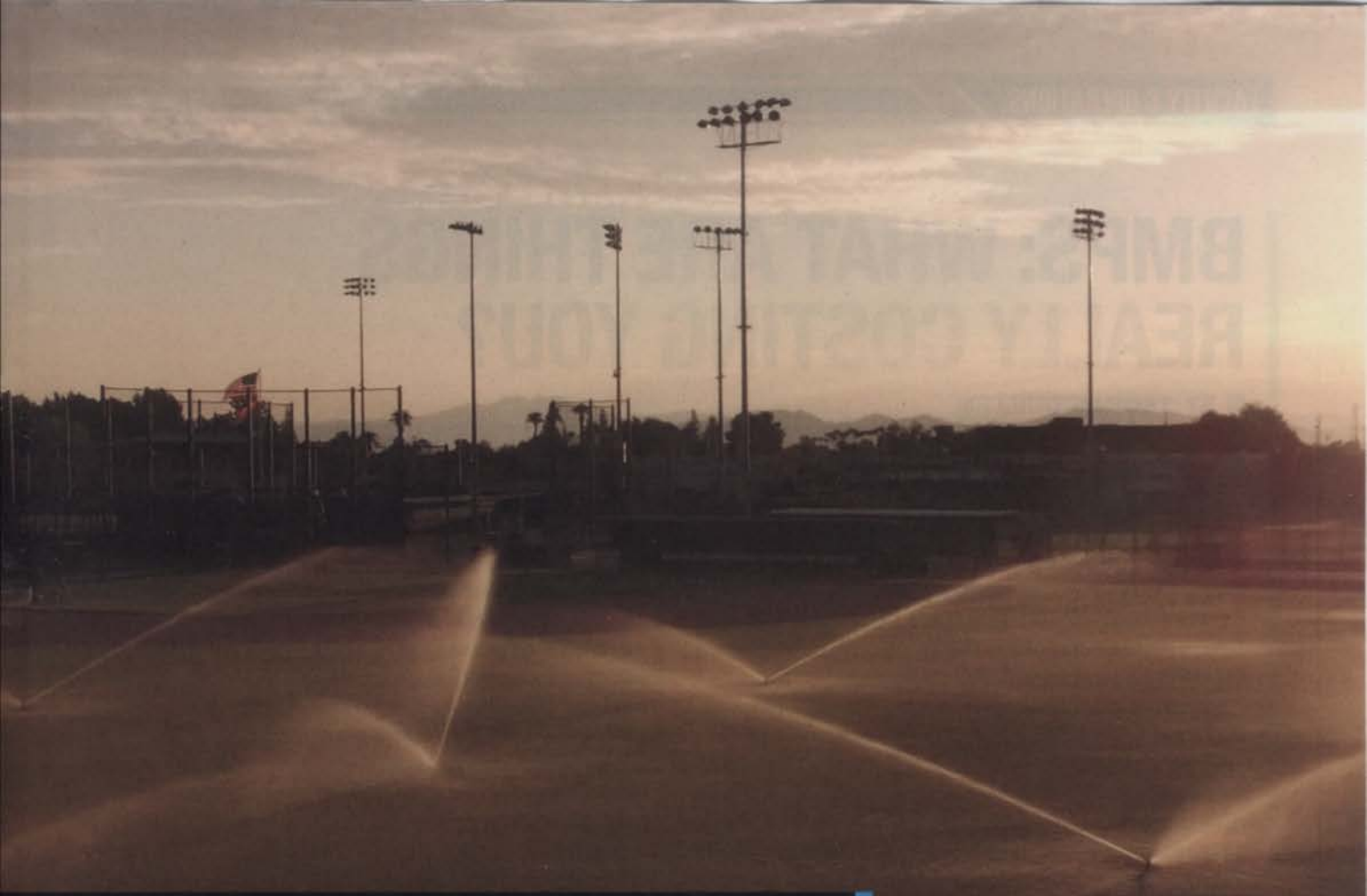
Continued on page 49

DONATE IN LEO'S NAME

If you would like to show your support to Leo, there are a couple of methods to provide financial support to keep Leo's legacy alive in our industry. You can make a donation to the SAFE Foundation by sending a check to the following address and noting in the memo line "in memory of Leo Goertz."

The SAFE Foundation
PO Box 411172
Kansas City, MO 64141-1172

Additionally, the Texas STMA has developed a scholarship in Leo's name to reward students studying or working within the sports turf industry in Texas http://www.txstma.org/leo-goertz-scholarship.html



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BMPS: WHAT ARE THINGS REALLY COSTING YOU?

BY **TROY MCQUILLEN**

The past 10 years I have been preparing students interested in a turfgrass management career. Students are enrolled in coursework like agronomy, introduction to turfgrass management, mathematics, chemistry and golf or sports turf specific coursework depending upon their interest. While advising and teaching many of these classes within the 2-year program, I discovered a few gaps between their education and their long-term success within the industry.

Most students graduating from the program will finish in 2 years and find entry-level management positions within the industry. Students find during their first few years of employment they are very comfortable with the agronomic principles of managing turfgrass and often excel at irrigation maintenance, disease diagnoses, chemical applications, and even managing small crews. The shortfall comes when a student moves from assistant sports turf manager to head sports turf manager with increased responsibility in managing employees, budgets, capital projects, and equipment. After hearing these similar statements from student alumni, employers, and industry advisors, I thought that it was time to develop coursework and labs experiences that expose students to those responsibilities they might encounter in the job.

The coursework project started as two parts; part one was to develop a realistic facilities/grounds plan that would provide students with some administration experiences. The second part was to create for the first time in Kirkwood's history a BMPs (best management practices) and master plan for the college's grounds department.

"LIVING" LAB ON CAMPUS

Kirkwood was a great place to perform this study. The Vice-President of Facilities and Security was looking for a way to inventory, categorize, develop policy and improve the efficiency of his grounds department on campus. The facilities department accepted our study proposal and we started in January 2015 with the following steps.

First, we needed to determine the actual inventory of property for which the grounds department is responsible. The inventory was broken into categories of hard surface, landscaped, turfgrass, native and finally, agricultural acreage. You might be thinking that we send students out with measuring wheels and walk all the property. No! We used a handy website called www.goilawn.com. This website requires a paid subscription that allows users to look up addresses and calculate square feet from satellite imagery. This was a very helpful resource for determining Kirkwood's grounds inventory because it could be done from the comfort of your desk. I would recommend this site or similar to sports field managers looking to update their area inventory.

The second step in the process required the most work. The Kirkwood grounds department had never gone through the process of setting up BMPs or even an IPM program. Over the years the grounds department had strategies for mowing and general maintenance but failed to track their labor and inputs into these areas. Our industry in Iowa also is behind in these efforts. The turfgrass industry in our state is just starting to adopt BMPs from other state turfgrass organizations and universities for their maintenance plans. The Kirkwood students researched many BMP templates and at the conclusion decided to adopt several BMPs for each maintenance priority but also add additional details that best represented our facilities.

While developing the BMPs we also started prioritizing our grounds maintenance areas. We felt it was important to have maintenance priorities for budgeting and logistic purposes. Here is the list of our priorities including a few basic BMP standards that fit our grounds situation:

1. Priority A **enhanced** (athletic surfaces, campus home, hotel)
   a. Mowing to occur 2-3 times per week following the 1/3 rule
   b. Maintain a minimum of 95% turf cover
   c. No more than 3% weed infestation
   d. Perform regular cultivating practices to prevent excessive compaction
2. Priority B **improved** (general lawns and grounds)
   a. Mowing to occur once weekly with the 1/3 rule
   b. 88% turf cover
   c. No more than 10% weed infestation
   d. Aerate only in heavy compacted areas
   e. Fertilizer to be applied twice per year based on soil testing
3. Priority C **semi-improved** (no-mow, fescue areas)
   a. Mowing to occur annually to control weed populations
   b. Controlled burning based on recommendations
   c. 75% vegetative cover
   d. Safety Hazard Maintenance
4. Priority D **unimproved** (wildlife area and agriculture property)
   a. Maintain areas to Iowa DNR natural habitat standards

In addition to these broad BMPs we also included specific procedures for areas of mowing, fertilization, cultivation, pest control and irrigation.

After all the background work of inventory and standards were

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completed it was time to implement and collect data for the cost analysis. We decided as an organization to track the maintenance from each category and assign a cost per acre for those priorities. We focused the cost centers on labor, materials, and contracted services.

If you are looking to get started with a similar program described in this article please e-mail troy.mcquillen@kirwkood.edu for extra resources.

One method of data collection was a daily log for each employee to fill out at the end of their day's activities. Just like anything new it was difficult at first getting employees to buy into the daily log but we had the back up of administration to enforce our efforts. Employees had to record the time it took to perform the actual task and a list of any products or materials used. My recommendation is to keep this simple by creating a three ring binder with separate sheets for each day of maintenance or using a task manager app.

In addition to the daily logs I would also recommend adding soil sample analysis from designated areas, double checking and documenting your equipment calibrations, discussing product options with manufacturer reps, and collecting irrigation details or audits from sites with automated systems. Going through each of these items in addition to creating Excel spreadsheets for the information will be helpful in assembling your final report. I would also stress that there is no need to recreate the wheel on a project of this size. Many people in our industry have data collection spreadsheets that they would be willing to share.

This past 2015 growing season was our first chance to put actual cost with our maintenance priorities. We started with tracking our enhanced priority intramural athletic field (90,000 sq. ft.). Mowing was the first BMP studied. We started with a mowing goal of maintaining the 1/3 rule throughout the growing season, spending more time on maintenance of our rotary mower blades and raising our mowing heights during the sports off-season. We documented at total of 61 mowing and mower maintenance occasions with an average cutting height of 2 inches. This totaled 184 part-time labor hours at a cost of $1886. Almost 94% of our mowing was done with part-time seasonal employees.

The second BMP was fertility. This included a more in-depth soil analysis to decide what nutrients were currently in the soils and what was available to the plant. With all of our athletic surfaces being native soil based, we developed an agronomy plan to include between 3.5-4.0 lbs. of N/1000 sq. ft. The season maintenance plan was to use granulated slow release nitrogen sources but also include liquid fertilizer and biostimulants. The granular application cost for labor and materials for the season was $676. The cost for the liquid nitrogen, calcium and biostimulant package for labor and materials was $1734. We had a lot of success with this combination of fertilizer this season and will keep on the same program for next year.

The third BMP was cultivation. This included both hollow and solid deep tine aerations. With the lack of equipment resources we contracted deep-tine aeration and light topdressing at $1200. We also borrowed a newer core aeration machine for the local golf course in the Fall that had a cost of $65.50 in labor. Most of our cultivation practices were followed by a light sand topdressing and overseeding with a material and labor cost of $2479.

The fourth BMP evaluated was the important pest management strategies. This budget item was important for us to follow the IPM standards set by the facilities department. With the athletic field areas being Priority A, our pest threshold levels were much lower than average around campus but needed to maintain a consistent safe playing surface. We identified a lot of our pest problem before developing the budget and pest management program. Our main issues were leaf spot on the ryegrass, dollar spot and a few localized grubs on the northern half of the field. With these challenges and the favorable season temperatures our pesticide and labor total was $696. Most of this cost included preventative leaf spot and dollar spot controls along with spot treatments for grub damage.

The last of our BMP's was the Irrigation. The system for our athletic fields was well water, so we did not have any actual water cost with irrigation but did have a BMP to improve our system's efficiency. The first irrigation audit back in 2014 had a distribution uniformity of 60%. Many of our issues were dynamic PSI and nozzles. The repairs included PSI regulation at the valve, pump modifications, nozzle changes, and a few full head replacements. Our cost for the past season was a little more than expected at a labor and materials rate of $1105. We did not get a chance this Fall to redo an irrigation audit but is on the schedule for this Spring.

To finalize our seasons cost, we also included additional labor and materials line items like fuel and paint. We determined as a college that our priority A cost was between $.20 and .24 cents per square foot.

In conclusion, this project has provided the grounds department and administration with some valuable decision making information when it comes to how campus grounds priorities are maintained. With this past 2015 growing season we have calculated cost per acre for all priorities. In the future we hope to look at seasonal averages and also begin to forecast the required maintenance for new infrastructure. We are off to a good start but still finding ways to implement all of the written BMPs and other strategies for tracking data.

Troy McQuillen is assistant professor of turfgrass management at Kirkwood Community College, Cedar Rapids, IA.

John Mascaro's Photo Quiz

Answers from page 29

John Mascaro is President of Turf-Tec International

What is wrong with the goal line on this artificial turf football field is that the goal line is missing as shown in the photo on the right. The photo below left shows the other goal line that is doubled up. This indoor complex is used for many different events including arena football. When the removable artificial turf field was constructed they inlaid the goal line on the end zone side on one end of the field and the goal line was inlaid on the green section of turf from the goal line to the five-yard line on the other end of the field. When the contractor assembled the removable field, they started with the incorrect end zone piece and assembled the field with the two end zones on opposite ends of the fields. The field was in place for a couple weeks before someone noticed the error. Because of the artificial turf segment sizes, the pieces cannot be switched out with each other unless the entire field is moved 4 inches toward the end zone. A specialized athletic field maintenance company was brought in to paint a line on the end zone that was missing the white line with temporary paint and the season was played with the field as laid.

Photo submitted by Mike Hebrard, owner of Athletic Field Design in Oregon.

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.

BACKGROUND ILLUSTRATION COURTESY OF ISTOCKPHOTO.COM

Ivey-Watson Field, Gainesville City Schools, Gainesville, GA

Category of Submission: Schools/Parks Baseball
Sports Turf Manager: David M. Presnell, CSFM
Title: Athletic Fields Manager
Education: Associate degree in Environmental Horticulture
Experience: I have worked with Gainesville City Schools since 2003. Prior to that I was in the golf industry and commercial landscape industry. All of my Sports Turf Management experience has been here. I worked my way up to Turf Manager. Along the way I obtained my CSFM and certificates from UGA in Sports Turf Management and Turfgrass Management.
Full-time staff: Nathan Thieme, Travis Partin, Josiah Bowers, and Tyler Hamilton
Students/Interns, Part-time and Seasonal Staff: Cody Thompson
Original construction: 1986
Rootzone: Native clay
Turfgrass variety: Tifway 419 bermudagrass
Overseed: We overseed in mid- to late September. We use perennial rye and go at a rate of 20# per 1000 sq ft. The field is verticut, blown off, seeded, dragged with steel mat and topdressed with 25 tons of USGA sand.
Drainage: No drainage system

WHY STMA SHOULD CONSIDER YOUR FIELD A WINNER?

Ivey Watson Field is home of the Gainesville Red Elephants baseball team. It is located on the shores of Lake Lanier in Gainesville, GA. The complex was built in 1985. There is a rich history at Ivey Watson Field and it has been home to five state baseball championships. Around 5 years ago, we made a decision to take the necessary steps to bring Ivey Watson Field to a championship quality field. We won the Field of the Year award for football in 2008, and we wanted to bring our baseball field up to the same standards.

The next step was to address the issues with the infield material. We realized it was not in the budget to remove and replace all the clay, so it was decided to amend our existing clay. We determined that new material was needed. Therefore, we ordered 100 tons of mound clay and tilled it into the infield. The clay was tilled to a depth of 12" in two directions. The infield was then laser graded and rolled in both directions. The difference was instant. It was a completely different surface. It became apparent that due to the new slope of the infield we would need a tarp. The clay would wash away in heavy rains and we could not get the right side

We started with our clay and infield lips. The clay contained too much sand and we couldn't get it to pack. After testing the clay, it was discovered that the clay was 85-90% sand and needed to be fixed immediately. The lips of the infield had grown up to 18". A list of everything that needed correcting was made and priorities were made. The field was built with a huge elevation drop from home to right field and from left field to right. Management of the field is very hard because the left side stays dry and right side stays wet. This even includes the clay. We began by putting up silt fence and cutting out 10 feet of the lips along the infield. To begin this process, we took a 10-foot 2x4 and a level to evaluate the slope of the infield starting on one side and working our way around. Material was taken out until the transition between the infield and outfield was level all the way around. We resodded the area and kept monitoring the field elevations across the entire infield. After dealing with this issue, we instituted a very aggressive lip management strategy. At the conclusion of every game and practice, the lips are swept clean of infield material and are blown daily with backpack blowers to prevent the buildup of material and creation of new lips.

of the infield to dry. We have to tarp a lot but the playability of the clay is great. Because of the improvements we made to the field, we got approval to budget for annual laser grading. We also began rolling the infield weekly. One variable we discovered was that moisture level is key to the clay. If it dries out, it is as hard as concrete. We strive for the cleat in and out moisture level and really have to stay on top of that. We also started keeping a layer of Turface Pro League on top and that really helped. Now, we take great pride in our clay and players and coaches alike notice it.

That process took us about 2 years. Since then, base paths have been added, the warning track has been extended all the way around, the mound and plate areas have been rebuilt with Mar Mound clay and both sets of bull pens have also been rebuilt. We keep everything tarped now and fix all mounds/plates after every use. We quickly learned that post game or post practice maintenance being implemented was a key ingredient to meeting our goals. We also painted dugouts and pressure washed sidewalks. The foul poles were sanded down to metal and repainted. We moved the flagpole to center field. Everything came together nicely because the grounds crew wanting to provide the best playing surface

The Field of the Year Awards program is made possible by the support of sponsors
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possible fueled it all. It did not take long for the coaches and players to buy into our strategic plan. Now, everyone involved wants to do whatever it takes to maintain a showplace. It is very fulfilling when a visiting coach, player, parent or spectator comments on our field. Throughout the whole process, we never said the field conditions were fine for a high school. We just wanted it to be the BEST POSSIBLE playing conditions for our players.

After all we had accomplished, we really thought we had the field whipped. However, we are not applying for Field of the Year because of all the improvements; we are applying because of the curveball Mother Nature threw us. When you think you have seen it all, believe me, Mother Nature will show you something new.

We overseeded the field October 1, 2014. After not being happy with prior years' overseeding, special care was taken for this season. All edges were done with drop spreaders, infield and hips were done with a push spreader and the outfield was done with a tractor. Everything was done in three directions. We drug the seed in and topdressed with 25 tons of USGA sand. The seed came up great and things were looking good. We were mowing and did our first fertilization. November and December were warm and dry. The bermudagrass went dormant and we started losing ryegrass in our problem areas. Irrigation was turned on and areas were reseeded. The seed came up but it wasn't as thick as the rest of the field and it showed. We kept monitoring the field and were preparing for the team to start. Practice was set to begin on January 20, 2015. We managed to get everything completed in time and even had time to take out the lips on bullpens. This year both sets of bullpens were rebuilt with mound clay and set with a slope gauge. They were rolled and tarped. We managed 3 days of practice and had to tarp for the weekend. We got in 3 days the next week and tarped again. Both of these were multiple days of having the tarp out continuously. This is where we started thinking it was a bad sign. The weather broke for us to have our scrimmage on February 14 (it was scheduled for the 13th). This is where things really started going south.

Meteorologists began predicting an ice storm for Monday night into Tuesday, calling for 1-2 inches of ice. We planned on tarping the field and taking down nets on outdoor hitting cages. By Monday, 2/16/15, the weather reports indicated our area had gone down to 1/4" or less of ice. School was cancelled that day for precaution but most of the staff came in. The decision was made to tarp field and

JANUARY
Fertilize field with 21-0-0 Am. Sulfate (1# of N per 1000sq. ft.) Irrigate as needed in conjunction with temperatures and rainfall. Re-seed any bare spots with perennial rye (30 days prior to pre-m.) Rebuild mounds, batter boxes and catcher boxes. Put up nets, windscreen, top rail and all signage. Mow weekly @ 1.0 inches.

FEBRUARY
Apply pre-emergent to athletic field at mid-month to target summer weed germination. (20-0-20 granular fertilizer w/1% Ronstar.) Irrigate as needed in conjunction with temperatures and rainfall. Spray warning track with round-up. Roll infield and topdress with Turface. Mow weekly @ .75 inch. Twice weekly by end of month as temps begin to rise.

MARCH
Field ready for season. Fertilize field with 29-3-8 +6%FE (1# of N per 1000sq. ft.) Spray fungicide. Spray Trimmet (8 oz/acre.) Apply 3 way liquid post emergent to target broadleaf weeds. Take soil sample and have analyzed. Topdress clay if needed. Begin irrigating as needed (monitor rainfall to allow 1 to 2 inches of water weekly.) Spray warning track with round-up. Mow field twice weekly @ .625 inch. Every other day by end of month as temps continue to rise.

APRIL
Add nutrients/lime as recommended by soil analysis. Apply 3 way liquid post emergent to target broadleaf weeds. Irrigate as needed (monitor rainfall to allow 1 to 2 inches of water weekly.) Core aerification and sweep cores. Spray fungicide. Spray Trimmet (8 oz/acre.) Roll and topdress clay if needed. Spray warning track with round-up. Mow field every other day @ .50 inch.

MAY
Fertilize athletic field with 29-3-8 + 6%FE (1# of N per 1000sq. ft.) Spray fungicide. Topdress clay as needed. Re sod any needed areas at mid month. Irrigate as needed (monitor rainfall to allow 1 to 2 inches of water weekly.) Spray warning track with round-up. Mow field every other day @ .50 inch.

JUNE
Core Aerification w/3/4" tines (remove cores) and topdress (1/4" sand) athletic field. Fertilize field with 32-3-8 + 5%FE (1# of N per 1000sq. ft.) Spray Primo (12 oz/acre) Irrigate as needed (monitor rainfall to allow 1 to 2 inches of water weekly.) Spray warning track with round-up. Mow field every other day @ .50 inch.

JULY
Take soil sample and have analyzed Aerify and sweep cores. De-thatch athletic fields if needed (.5" of thatch or greater.) Spray Primo (16 oz/acre.) Irrigate as needed (monitor rainfall to allow 1 to 2 inches of water weekly.) Spray warning track with round-up. Mow field every other day @ .75 inch.

AUGUST
Fertilize field with 20-0-20 + 5%FE (1# of N per 1000sq. ft.) Core Aerification w/3/4" tines (remove cores.) Spray Barricade (21 oz/acre), Primo (16 0z/acre) and Revolver (20 oz/acre.) Irrigate as needed (monitor rainfall to allow 1 to 2 inches of water weekly.) Spray warning track with round-up. Mow field every other day @ .75 inch.

SEPTEMBER
Mow field to .5 inch. Aerate & remove cores/verticut/overseed field (10#'s per 1000sq. ft. with perennial rye.)(Target date is third week.) Topdress with 50 tons USGA sand. Pay attention to left field for compaction/dry soil. Set irrigation to light frequent times for proper seed germination. Fertilize field with 18-24-12 (2 weeks after overseeding.) Spray warning track with round-up. Mow twice weekly @ .75 inch.

OCTOBER
Irrigate as needed (monitor rainfall to allow 1 to 2 inches of water weekly.) Mow as weekly @ .75 inch.

NOVEMBER
Fertilize field with 32-3-8 + 2%FE (1# of N per 1000sq. ft.) Irrigate as needed in conjunction with temperatures and rainfall. Mow as needed @ 1 inch.

DECEMBER
Irrigate as needed in conjunction with temperatures and rainfall. Edge infield, bullpens and warning track. Add infield material if needed. Till clay, laser grade and roll. Apply 3 way liquid post emergent to target broadleaf weeds. Mow as needed @ 1 inch.

leave nets. On Monday, we mowed field, worked clay and then tarped. School was cancelled for Tuesday and we just waited for the storm. It started icing that afternoon and continued all night. We ended up with over an inch, massive power outages and trees down everywhere. When I finally got out to the field, trees were down in the road so we had to walk in. There were around ten trees down in our parking lots and the batting cages were down. The cables didn't break and it pulled all the poles down (ironically we had straightened and concreted all the poles during offseason). The nets were fine but the entire cage was going to have to be rebuilt. The field seemed fine except for the inch of ice on it. The power was out in the entire complex. They had cancelled school on Monday out of caution and we would end up being out all week. The temperatures had been below freezing for 2 days and the rest of the week didn't look any better. To make matters worse, we had tree damage and power outages at most of our schools and facilities. We had to make a list of district issues and prioritize them. Obviously, getting students back in school was our first priority. The next day the sun was out and it got to around 34 degrees so fans were placed under the tarp and we managed to get the ice off. Only five staff members could get to the field so it was a rough time getting the tarp rolled up and stored. The next day we got the nets and cables taken down but then had to direct all resources to getting school campuses ready to open.

Our first game was a week away and the place was a mess. Two middle school games were cancelled that week. The following week the crew got back in to work. We went ahead and took all the poles down and decided to rebuild the cages from scratch. We mowed and worked the clay and even managed to topdress the clay with Turface. We edged everything, raked warning track and mowed the entire property. A tree company had to be contracted to come in and remove trees. The batting cages were just going to have to wait. Snow accumulation was expected on Thursday, 2/27/15, so we tarped and drained all water lines again. We fared better this time and ended up with about 2-3" of snow. No trees fell and the power remained on. We came in on Saturday and removed the tarp. Things started looking up at this point, or so it seemed. We were 3 weeks into the season and had only played one scrimmage because three middle school, two JV, two varsity and two fundraisers all had to be cancelled. Once March arrived, things started to look better. Our ryegrass was doing great and the clay was perfect for playing.

March was a great month. Things were going better and games kept rolling along. April was a whole different story. April was the wettest month on record for us. It rained and kept raining. It seemed like we were tarped more than not. Pythium developed under tarped areas. Permanent tarp burn was visible. But we managed to keep on playing. We started spraying fungicides both preventatively and curative as needed. We also kept the tarp blown up with fans to help with circulation and hopefully reduce disease pressure. By the end of the month, the entire right field was standing water. The entire field was at field capacity. At this point, we just gave up on aesthetics and concentrated solely on playability. We lost sections of right field from attempting to mow when the turf became so high and also big sections of the infield due to Pythium. The interesting part of this was the other teams in our region were backed up and behind with their schedules. Because we had a tarp and maintained suitable playing conditions, we were

able to stay on schedule and put ourselves in a position to win the region. Despite everything, the team managed to win the region and was in a position to make a run toward a state title. When the coach was interviewed about winning the region title he stated, "the grounds crew won the title for us this year." We were the only team to finish our schedule on time. This allowed the team to rest and prepare for the playoffs while the others were trying to complete their schedules. This also allowed us to try and salvage the field for playoffs.

The field did finally dry out and it began to respond. The turf got a little better each day. We were only guaranteed two play-off series but things worked in our favor and we managed to get all four rounds. By the fourth week, the field looked great. It looked the best it had all year. The team advanced to the championship series but that would be held at the other team's stadium. The adversity we faced really hit home when we were credited with winning the region. It showed us how important we are to the team. They ended up losing in a close series but the year was credited as a success all the way around.

The reason we think we should win the Field of the Year Award is because of when everything went wrong; the grounds crew never lost focus and never gave up. Everything was going against us and we fought through it. We never gave up on the field, the team or ourselves.

SportsTurf: What attracted you to a career in sports turf management?
Presnell: I have enjoyed landscaping and gardening since I was a kid. I actually started in golf coarse and then commercial landscape. Fifteen years ago I decided to try sports turf and it was a natural fit. I was hooked and have loved my career path.

SportsTurf: What are your biggest challenges in providing excellent playing surfaces? And how do you approach those challenges?
Presnell: My biggest challenges would have to be excessive use and use when field is wet. I try and be flexible and really watch my scheduling. Coaches want to play and they don't always understand what goes into to field management. So you always have to keep an open mind and see the bigger picture.

ST: What changes if any are you considering or implementing for the winning field in 2015?
Presnell: We're always looking to improve. I think our basic practices will stay the same. Like everyone we would like to increase aerification. Probably going to look at some chemical changes and keep working to improve facility. I want to keep tweaking our clay till we get it where we would like and working on drainage issues. Overall we're at a great point but we always want to keep improving.

ST : What's the greatest pleasure you derive from your job? What's the biggest headache?
Presnell: The greatest pleasure comes from seeing the joy from players, fans and the community when they're at our fields. The biggest headache is trying to get everything done with the schedules and weather.

ST: What's the best piece of turf management advice you have ever received?
Presnell: Pay attention to the small details and always go the extra mile.

ST: Are you yet involved in "sustainable" management practices? If so, what are you doing?
Presnell: We try and be good stewards of our environment. I do regular soil and tissue samples to make sure we're only applying what's needed. Water conservation is also very important and we constantly monitor water use to make sure it's used wisely.

ST: How are using social media at work?
Presnell: Not at the moment but we're looking into it.

ST: How do you see the sports turf manager's job changing in the future?
Presnell: One the expectation level is so high now. Turf Managers are expected to produce a perfect product all the time. Second is the wide range of events we host. I see that trend continuing and growing. ST

SAFE FIELDS FOR ALL

that's the root of our mission

7 MILLION
SPORTS AND RECREATION-RELATED INJURIES OCCUR IN THE U.S. EACH YEAR

62% of injuries happen during practice

50% IN KIDS UNDER THE AGE OF 15

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

SO FAR, WE'VE GIVEN OVER

$225,000

in scholarships & travel reimbursement to 120+ students

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

TOGETHER, WE CAN DO SO MUCH MORE.

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

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

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

PLEASE DONATE TODAY

SAFE
The Foundation for Safer Athletic Fields for Everyone

Follow us on Twitter @SafeFields

WWW.SAFEFIELDS.ORG

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

NEW PRODUCTS

I-40 POP-UP ROTORS FROM HUNTER

Hunter's I-40 rotor has become a popular choice for infield skins. This rotor has a stainless steel riser and high-speed option to quickly put down just enough water to keep dust down. It's also durable and easy to adjust, making minor adjustments in the field simple. –Tim Lambert, Sports Field Specialist for Ewing Irrigation & Landscape Supply in the Pacific Northwest

HUNTER'S SYNTHETIC TURF IRRIGATION SYSTEM

The enhanced STK-6V is the first and only cost-effective integrated solution designed to exceed the unique and specific needs of the synthetic turf irrigation market. The ST System features total top access to all irrigation components making maintenance simple while keeping the surface intact, playable and safe.

The exclusive IBS Infill Barrier System accommodates every field surface configuration including infill turf, short non-infill turf, synthetic running track, and in-concrete installations. The robust and reliable manifold features 3" galvanized ductile iron components with heavy-duty grooved (Victaulic type) fittings. Also included are a slow-opening, low-pressure loss control valve, isolation valve, drain valve, quick coupler valve, and the powerful ST-1600B long- range gear-driven rotor.

Hunter Industries

UNDERHILL MIRAGE LONG-THROW SPRINKLERS

The Underhill Mirage Series of long-throw sprinklers promotes field safety because they install out of the area of play along the sidelines. The Series includes the M-180S, M-125 and M-115. All feature electric valves-in-heads and can be used to irrigate natural turf or cool and clean synthetic fields. They can be adjusted from 30° to 360° and include a range of nozzles. The M-180S irrigates up to a 177-ft radius and operates from 60 to 115 PSI. Rotation speed adjusts from 100 to 140 seconds. The M-125 reaches out to a 125-ft radius, operates at 45 to 120 PSI and rotates in 60 seconds. The M-115 has a sod cup and covers up to 115 ft. at 45 to 120 PSI with a 60-second rotation. Mirage sprinklers can be specified solely as a sprinkler head or as part of Underhill's Total Solutions Kit with ductile iron swing joints, isolation valves, valve boxes, quick couplers, 2Wire Control System and AutoCad installation details.

Underhill

RAIN BIRD 8005 ROTOR

With its extensive customer identified features and 80 foot radius, Rain Bird's 8005 Rotor is ideal for watering sports fields, parks and other large turf areas. It's built rugged to withstand both the harsh operating conditions and the potential for vandalism that exist in commercial applications. The 8005 features both full- and part-circle operation in one unit, improving versatility. Inserting a slotted screwdriver through the top of the rotor allows for easy wet or dry arc adjustment. A unique Memory Arc feature returns the rotor to its original arc setting, and a non-strippable drive mechanism prevents damage from vandals. A Seal-A-Matic (SAM) check device/riser helps prevent low-head drainage, reducing water waste and harmful erosion. The 8005 can be outfitted with Rain Bird's Rain Curtain nozzles for optimal distribution and close-in watering for superior uniformity. A self-adjusting turbine stator allows for nozzle replacement with no other adjustments required.

Rain Bird

KOCHEK'S NEW QUICK COUPLING KEY

New from the leader in Water Movement solutions for the Sport Turf Manager, Kochek would like to introduce our own Quick Coupling Key designed to fit most manufacturers valves.

Connecting hose complete with patented ball bearing design, full time swivel with reinforced PVC flex hose preventing kinking and valve breakage. Circular handle for uniform function when turning on and off also preventing valve breakage and wear. Our unique pressure relief valve for safe deactivation and also preventing blowback. Kochek's Quick Coupling Key comes in three sizes with the option of our extended version for ease of use or assistance with sunken valves. Visit www.kochek.com for all your "water movement solutions" or 401-742-1177 to find a dealer near you.

Kochek

KIFCO WATER-REELS

Keeping your sports fields irrigated is a vital component in sport field maintenance and in-ground systems can be costly, especially if you have a multi-field stadium. Many maintenance personnel rely on a Kifco Water-Reel for their irrigation needs. Why? Because Water-Reels run you a fraction of the cost of an in-ground system and the portability of the Water-Reel allows them to irrigate

multiple fields with a single unit. Many models allow the user to irrigate an entire field in a single pass. Water-Reels operate unattended and shutdown automatically at the end of the run. With a Water-Reel there are no pop-up sprinkler heads to maintain or winterize. Kifco has dominated the hard-hose traveling irrigation market since 1964 with their outstanding product support and large network of Authorized Kifco Dealers across the US. Our B-Series Water-Reels are proudly made in the USA.

Kifco Water-Reel

SMARTLINE CONTROLLERS

The SmartLine controller from Weathermatic is the weather-based irrigation controller of choice for sports fields from the 2014 Colorado Sports Field of the Year to the Dallas Cowboys stadium. Irrigation Managers love SmartLine because it is easy to use, affordable, and packed with cutting-edge features. The SmartLine controller and SLW weather station are EPA WaterSense labeled, independently certified to be more water efficient than competitive products. Weather data combined with geographical location, sprinkler type, plant type, soil type, and a fine tuning option, enables your SmartLine controller to make precise watering decisions 365 days a year. The optional SmartLink Wireless Network allows you to manage your SmartLine controllers from any computer, tablet, or smart phone. Managing remotely can save thousands of dollars every year in travel and labor. SmartLine's simple, affordable features help you reduce water waste, always stay compliant with local watering restrictions, and keep your customers happy.

Weathermatic

PROSPORT ROTORS

Maintaining athletic fields without proper irrigation is difficult and the demand today for effective, efficient Irrigation isn't just a goal but a prerequisite. K-Rain's ProSport rotor was designed and is built to help

meet this demand. The Pro-Sport has distinguished itself as a rotor that combines proven performance and industry-leading technical innovations. With a solid track record on athletic turf projects, the Pro-Sport delivers the latest in benefits to professional users. It offers the best blend of leading-edge features like true arc memory with a non-strippable clutch drive, heavy-duty spring, same easy top of the head part circle and full 360 non-reversing arc adjustments and a small exposed heavy-duty rubber cover for player safety. The triple-port nozzles design ensures precise water distribution across the entire distance of throw needed for maintaining healthy turfgrass or cleaning and cooling for synthetic turf. Available in plastic or stainless steel.

K-Rain

INTELLIGRO LAUNCHES CIVITAS TURF DEFENSE FOR SPORTS TURF

You need turf that's tough enough for every big game. Turf treated with CIVITAS TURF DEFENSE shows improved wear tolerance and when used as a proactive solution, delivers high-quality turf and enhanced visual aesthetics from preseason to postseason. It has no known pathogen or insect resistance issues and because the health of your turf will improve, so will its playability. In addition to healthier and stronger turf, CIVITAS TURF DEFENSE can reduce your need for other pesticides that are required to produce and maintain game day turf. To learn more or start your trial, visit civitasturf.com.

CIVITAS TURF DEFENSE™

Intelligro

COVERSPORTS 2016 FULL-LINE CATALOG AVAILABLE

Humphrys-CoverSports, the source of the widest range of product options for protective coverings, introduces its 2016, full-color catalog featuring a deep selection of popular products, many of which have enhancements for versatility and longer life. A key theme of this year's catalog, THE POWER OF BRANDING, is an emphasis on the ability for imprinting of customers' brands on gym floor covers, windscreens/banners, padding and field covers. During this era of tightening budgets, high schools, universities and college athletic departments can protect their institutions' walls, floors and fields with CoverSports protective covers and make a huge impact on their budget as well through sponsorship promotion. CoverSports can print logos and lettering on gym floor covers, windscreens/banners, padding and field covers. THE POWER OF BRANDING, using TuffPrint printing process, adds value to the branding program and provides protection for all athletic surfaces and players.

CoverSports

NEW TECH LITERATURE ABOUT SYNTHETIC TURF PRE-FABRICATION

Synthetic Surfaces Inc. has a new Tech Bulletin #557A on Pre-Fabrication of Synthetic Turf Recreational Surfaces, Athletic Fields, Logos, Inserts and Floor Mats. It addresses a growing trend in the synthetic turf industry towards pre-fabricating all or part of a synthetic turf assembly by bonding its components together with an adhesive before transferring it to another location for final installation. The most commonly used adhesives for pre-fabrications are one-component, solvent-based, high green strength curing urethanes. The goal of pre-fabricating is to increase bottom-line profits by fast, reliable, economical assembly beforehand, followed later by faster and better installation. Also, pre-fabrication can reduce or eliminate unexpected delays and other labor-related expenses at the installation jobsite.

Synthetic Surfaces Inc.

Success in Sunny San Diego

STMA's annual conference, which was held in San Diego January 19-22, was a resounding success on all fronts. Education, networking, exposition, and nice weather all came together to provide an exceptional event for all who attended! Participation was a record 1,800, which includes attendees and exhibitors.

Participants took part in more than 60 educational sessions, visited nearly 200 sports turf exhibits and networked with other practitioners. The 4-day event showcased two "Seminar on Wheels Tours" at various professional, collegiate and youth sports complexes in the San Diego region.

SAFE, the association's charitable foundation, raised more than $27,000 during the Conference through its golf tournament, "Night of Bowling" and silent and live auctions throughout the week. Proceeds benefit educational programs, scholarships and grants with the goal of enriching communities through safe, sustainable sports and recreation fields for all athletes.

STMA held its Awards Banquet January 22 to recognize "Field of the Year" winners. Each winner will be featured in an issue of *SportsTurf*. It also bestowed Founders Awards to four members, commemorating significant contributions to the profession.

FOUNDERS AWARDS

Dick Ericson, one of STMA's two living Founders, attended the Awards banquet and helped to present his namesake award to **Michael Buras, CSFM**, Longwood Cricket Club. George Toma, STMA's other living Founder, was unable to attend due to working his 50th Super Bowl. **Ben Polimer**, Town of Weston (MA) earned the Toma Golden Rake Award. **Mary Owen**, University of Massachusetts Amherst, was presented the William H. Daniel Award, and **Michael Goatley, PhD**, Virginia Tech, was bestowed the association's highest honor, the Harry C. Gill Memorial Award.

The STMA Awards program is sponsored by Carolina Green Corp., Ewing Irrigation & Landscape Supply, Graff's Turf, Hunter Industries, Pro's Choice Sports Field Products, and World Class Athletic Surfaces.

INNOVATIVE AWARD

In addition to awarding the Founders and Field of the Year awards during the banquet, STMA presented its 2016 Innovative Award on Thursday at the opening of the trade show to Royse Green Technologies for its LED Turf Tiles. The award recognizes companies that develop new technologies in science, equipment, products and services that enhance the effectiveness of the sports turf manager in making playing surfaces safer and more playable. The 2015 winner was GT AirInject, Inc. for its Air 2G2 pedestrian aerator.

Immediate Past President Allen Johnson awarded the President's Award for Leadership to Jerad Minnick for his tenacity to advocate for natural grass sports fields.

STUDENT CHALLENGE CUP

This year, the "Student Challenge Cup" had participation from 32 teams, which involved more than 120 scholars from across the country. These students represented both 2- and 4-year colleges from 20 states. The Cup featured a proctored exam. Winning the 2-year competition was **Mt. San Antonio College** Team 208. **Penn State University** Team 205 took second place, and **Mt. San Antonio College** Team 202 took third place. Winning the 4-year competition was **Penn State** Team 409. **Iowa State University** Team 402 took second place and **University of Georgia** Team 414 took third place. The Student Challenge is presented by SAFE, Founding Partner Hunter Industries, and supporting sponsor Ewing Irrigation. Each first place team is awarded $4,000 to use to advance their sports field management knowledge.

Innovative winner Royse Green Technologies won the 2016 Innovative Award for its LED Turf Tiles.

STMA Founder Dick Ericson says a few words as the previous winner Tony Leonard (also pictured) prepares to announce Michael Buras, CSFM as the winner. Michael was unable to attend the conference.

Hundreds enjoyed the STMA Welcome Reception on a terrace overlooking the San Diego Bay.

Immediate Past President Allen Johnson presents Jerad Minnick with the President's Award for Leadership.

The Dr. William H. Daniel Award winner, Mary Owen, accepts her award during the STMA Awards Banquet.

Holding the George Toma Golden Rake Award is winner Ben Polimer, who was presented it by previous winner Mike Albino.

J. Michael Goatley, Jr., PhD accepts the Harry C. Gill Award from previous winner Andrew McNitt, PhD.

STMA also introduced a free, customized app. By the conclusion of the conference more than half of the attendees had downloaded it. The app helps attendees build schedules, rate sessions and download speaker presentations.

STMA and SAFE thanks its conference sponsors for their support in making this a valuable learning and networking event for attendees. The sponsors include Barenbrug, Beacon Athletics, Bush Sports Turf, Carolina Green, Covermaster, Diamond Pro, Ewing, FIELDS Inc., Gail Materials, Graff's Turf, Green One Industries, Hunter, John Deere, JSM Services, Kubota, Pioneer, Rain Bird, Syngenta, Team Premier Pro, Toro, Turface Athletics, TurfStar, Vescio Sports Fields, and World Class Athletics.

First, Second and Third Place Student Challenge winning teams are pictured with representatives from sponsoring companies Hunter Industries and Ewing Irrigation.

Seated (l to r): Allen Johnson, CSFM, Jeff Salmond, CSFM, Randy Price; 2nd Row (l to r) Jimmy Simpson, CSFM, Doug Schattinger, Bobby Behr, CSFM, Nick McKenna, CSFM; Back Row (l to r) Dan Douglas, Weston Appelfeller, CSFM, Sarah Martin, CSFM, Tim Van Loo, CSFM and Jeff Fowler. (Not pictured: Beth Guertal, PhD).

SAFE Announces Scholarship and Grant Winners

The SAFE Foundation's outgoing Chair Cathy Bradley and incoming Chair Jay Warnick, CSFM, presented two grants and eight scholarships to 2-year and 4-year students just before the STMA Awards Banquet.

One grant, named in honor of Gary Vanden Berg, CSFM, who was the Director of Grounds at the Milwaukee Brewers until his death in 2011, was awarded to Tyler Carr from the University of Arkansas. This grant commemorates Gary's contributions to the industry in promoting internships and creating excellent learning experiences for our student interns.

The second grant celebrates the life of Terry Mellor, brother of member David Mellor of the Boston Red Sox. The Terry Mellor Continuing Education Grant, sponsored by Turface Athletics, funds an STMA affiliated chapter member's attendance to the conference. The grant honors the importance of continuing education that Terry strongly supported his entire life. The winner of this grant is Doug Watt, West Marshall High School, State Center, IA.

SAFE's top scholarship in a 2-year program is named after Fred Grau, the first turfgrass extension specialist in the US. The Fred Grau winner was Sean McLaughlin, Mt. San Antonio College. SAFE's other winner in a 2-year program is Ashley Simpkins, also from Mt. San Antonio College.

Two students from 4-year institutions received a Dr. James Watson scholarship, sponsored by The Toro Company. Dr. Watson, who was with the Toro Company for 36 years, is considered to be the catalyst for the development of the SAFE Foundation. The winners were Thomas Goyne from Penn State University and Brae Miner from Texas Tech.

SAFE also awarded four additional scholarships to the top students at 4-year institutions. The winners were: Devon Carroll, Pennsylvania State University; Keair Edwards, Mississippi State University; Jeffrey Lenihan, University of Nebraska at Lincoln; and Tyler Carr, from the University of Arkansas.

Two appointed to the STMA Board of Directors

At the STMA Annual Meeting, the 2016 Board of Directors officially took office. Following its introduction to the membership, newly elected President Salmond made two appointments. Those appointed to the Board include Jeff Fowler, Penn State Extension, to the At-Large Director position, and Randy Price, Tri-Tex Grass to the Commercial Director position.

The 2016 STMA Board of Directors also includes:
Immediate Past President: Allen Johnson, CSFM, Green Bay Packers, Green Bay, WI
President: Jeff Salmond, CSFM, University of Oklahoma, Norman, OK
President-Elect: Tim Van Loo, CSFM, Iowa State University, Ames, IA
Commercial VP: Doug Schattinger, Pioneer Athletics, Cleveland, OH
Secretary/Treasurer: Sarah Martin, CSFM, City of Phoenix, Phoenix, AZ
Academic: Beth Guertal, Ph.D., Auburn University, Auburn, AL
Higher Education: Nick McKenna, CSFM, Texas A&M, College Station, TX
Parks & Rec: Jimmy Simpson, CSFM, Town of Cary, Cary, NC
At-Large Elected: Weston Appelfeller, CSFM, Columbus Crew SC, Columbus, OH
Professional Facilities: Dan Bergstrom, Houston Astros, Houston, TX
Schools K-12: Bobby Behr, CSFM, Ashley Ridge High School, Summerville, SC

Directors serve 2-year terms (except the At-Large Directors who serve 1-year terms). The candidate who is elected Secretary/Treasurer is on the presidential track and will ascend to President-Elect and then President.

STMA Affiliated Chapters Contact Information

STMA thanks new chapter sponsor, Team Premier Pro, which is part of Riverside Turf. Their latest grass release, PremierPRO, has a versatility not seen in other Bermudagrass varieties.

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

Colorado Sports Turf Managers Association: www.cstma.org

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

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

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

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

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

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

Illinois Chapter STMA: www.ILSTMA.org.

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

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

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

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

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

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

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

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

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

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

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

North Carolina Chapter of STMA: www.ncsportsturf.org.

Northern California STMA: www.norcalstma.org.

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

Oklahoma Chapter STMA: 405-744-5729; Contact: Dr. Justin Moss okstma@gmail.com

Oregon STMA Chapter: www.oregonsportsturfmanagers.org oregonstma@gmail.com

Ozarks STMA: www.ozarksstma.org.

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

Southern California Chapter: www.socalstma.com.

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

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

Texas Sports Turf Managers Association: www.txstma.org

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

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

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LEO GOERTZ TRIBUTE

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the ranks to the highest of venues.

The former Aggie baseball coach, Mark Johnson, mentioned his amazement in Leo's ability to continually develop a strong, hardworking staff around him from year to year. This quality demonstrated his leadership skills for those he mentored and the fact that Leo was always there for anyone in a moment of need. I read and listened to countless thoughts and stories on social media and news feeds following Leo's passing, but one of my close friends posted this quote from a conversation he had with Leo a couple of weeks before his passing that is a great piece of advice for all the sports turf managers out there: "Don't let it stress you, you're too young to let it get to you."

Craig told a funny story in a radio interview about Leo in which Leo and the grounds crew were behind the first base line fence watching a baseball game. As a high fly ball approached the area where everyone was standing, the crew all began to back away from the fence; all but Leo that is. The Aggie first baseman quickly approached the wall and caught it directly on top of Leo's cap. Needless to say, all parties, including the first baseman got a good laugh out of his close encounter with Leo Goertz.

In closing, I would like to fall back to an Aggie tradition from Texas A&M baseball games. Following the public address announcer's mention of the players and head coach, he would always announce the name of the excellent field manager at Texas A&M's Olsen Field, Leo Goertz. After this announcement the students in attendance would in unison give a loud shout of his name "Leo!" until he acknowledged them with a tip of his cap.

As a send-off to our wonderful friend and colleague in this industry, we chant your name "Leo, Leo, Leo" and tip our caps to you. — By Joey Young, Texas Tech, and *SportsTurf* magazine's Technical Editor. ST

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Q&A with 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 Pamela Sherratt at 202 Kottman Hall, 2001 Coffey Road, Columbus, OH 43210 or sherratt.1@osu.edu

Wet, Wet, Wet

Our soils always tend to be a bit wet during the winter months but we have had so much more rainfall than normal the past couple of months that they are really wet. Our play is not very heavy until early spring but I am concerned about how these fields will hold up. We did overseed a couple of fields but most of our parks just have dormant bermudagrass. Note it was green in December and early January due to abnormally warm temperatures. Do you have any suggestions for us? North Carolina

Your situation seems pretty common across much of the Southeast — warmer and wetter than normal. Our weather people say this it is a result of a strong El Nino. The predictions suggest that we will soon see cooler than normal temperatures but have above normal precipitation.

December and early January were abnormally warm. During the holidays I was comfortable in a pair of shorts working in the yard. That is certainly not typical Carolina weather for December. The extended warm temperatures brought the bermudagrass out of its semi-dormant condition. So, rather than being hardened off to cold and storing carbohydrates, it began using some of those carbohydrate reserves to put out new green tissue. That in itself should not be a significant issue since the turfgrass was green long enough to begin producing (replacing) carbohydrates before the mid-January cold temperatures sent it back into dormancy.

With re-greening of bermudagrass in December there has also been additional disease pressure. Large patch in bermudagrass seems much more prevalent this year in North Carolina. In late fall to early winter, disease pathogens can do a number on slow-growing grasses when the weather is warmer than normal and there is the presence of excess moisture. Unfortunately, once symptoms develop, fungicides provide little relief except to possibly interrupt additional spread.

I noticed that some of the late seeded cool-season grasses actually germinated in December when most years there is little hope for December germination. The ryegrass on your overseeded fields likely got an early boost in maturing from the warmer conditions. With the saturated soils and moderate temperatures, it also seems to be ideal for enhanced germination of *Poa annua* (annual bluegrass) and other winter annual weeds. I believe our fall and winter weather patterns may result in 2016 being a record year for *Poa*. The excessive fall rain may have reduced the effectiveness of many pre-emergence herbicides. So, the weed populations may require a post-emergence application to keep your non-overseeded bermudagrass fields clean.

If we experience any kind of hard winter, turf managers need to watch spring green-up. **Weakened or thin areas, especially in shade, will be more susceptible to lingering diseases.**

If we experience any kind of hard winter, turf managers need to watch spring green-up. Weakened or thin areas, especially in shade, will be more susceptible to lingering diseases. Weakened bermudagrass plants may be more susceptible to late freezes. If that is the case, then fields may require more turfgrass replacement and/or repair than normal.

Another issue to think about is traffic. Anytime fields are saturated they will be more susceptible to damage from equipment and foot traffic. I know that schedules for tournaments and routine use are not easily changed, but do whatever you can to control traffic so that dormant or weak turf is not destroyed and you are left with muddy holes on your fields. Covers are great to use for winter protection as well as to reduce use. People will stay off covered fields and find other places for casual use. I know they are expensive to purchase and a pain to use, but they may be worth the investment for some of your competition-level fields.

Winter is not the time to aerify warm-season grasses, so suppress those thoughts. While it seems like it would be a good idea to aerify the fields now to improve infiltration, opening up the field also increases cooling in the soil profile. This can result in soils freezing quicker and more thoroughly. Some of the worst winterkill I have seen was following winter aerification. Save that practice until after the turfgrass has fully greened up.

So be diligent in watching for disease and weed occurrence while managing your traffic. Without mega-budgets to put in climate-altering measures like grow lights and sub-surface heating, Mother Nature will have a greater impact on the outcome than anything we do this winter. Anticipate what you can, hope for the best, and get ready to grow some grass this spring. ST

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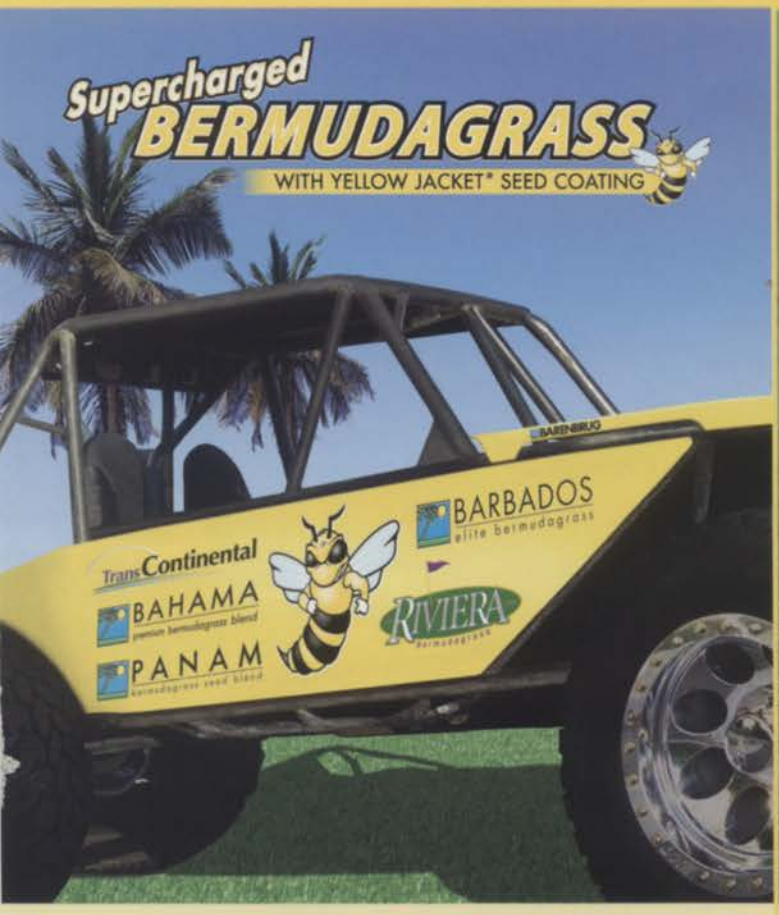

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