The equipment

Toro has created two new large area aerators, the ProCore 864 and 1298, and their names describe their configurations: the 864 has eight coring heads and is 64 inches wide, while the 1298 unit has 12 coring heads and is a full 98 inches wide. Both aerators are tractor mount, PTO driven and offer multiple tine head configurations.

The heavy duty 864 and 1298 units use the RotaLink tine guide system to ensure the tines remain vertical as they enter and exit the turf.

Toro also recently launched the ProCore SR series deep-tine aerators with a hydraulic depth adjustment that allows you to adjust the depth of the tines from the seat of the tractor. These deep-tine models feature aeration widths of 54–72 inches and depth capabilities of up to 16 inches.

The company's new ProCore Processor mounts directly behind a tractor-pulled aerator to sweep, process and disperse cores, all in one continuous operation. The 70-inch wide Processor collects the cores as soon as they are pulled and pulverizes them into fine particles, and then distributes it back as a layer of topdressing.

ly limited to times when the turf is vigorous and best able to recover (spring and fall).

Deep-tine aerification

Deep-tine aeration has become an increasingly popular practice to penetrate through the compaction layer that is created from traditional aeration methods. It increases drainage, improves gas exchange, and promotes deeper root growth resulting in healthier, more vigorous turf. In addition, turf that has been aerated at a deep level more efficiently uses fertilizers, water, and resists disease.

Deep tine aerification to depths up to 12 inches using both solid and hollow tines has become increasingly popular as a way of breaking through deep layers of compaction and improving drainage deeper into the profile. Repeated aerification using conventional 4-inch long hollow and solid tines results in what is known as a cultivation pan or layer of increased compaction just below the depth of aerification. Deep tining can penetrate this cultivation pan. Deep tining can also relieve deeper compaction created during sports field construction when significant earth moving occurs with heavy equipment.

Slicing or spiking

Slicing and spiking are similar to solid tine aerification since their primary benefit is to improve gas exchange by creating channels into the rootzone. Both are generally shallow treatments and cause minimal injury to the turf. As a result they are most useful during mid-summer stress periods when root respiration is high.

Often collecting aeration cores is impractical, so turf managers will destroy the cores using a variety of methods, the most common being a drag mat behind a work vehicle. The traditional drag mat method of processing cores can be a challenge depending on the moisture level of the cores. Too wet, and they make a mess, too dry and the cores are extremely difficult to break up. Hours of drag matting can also be stressful to the turf.

Aeration is essential for promoting healthy and safe turf. While the benefits are known, aeration brings forth many challenges to turf managers. Aeration is an unenviable task for any maintenance crew. Not only is it labor intensive and time consuming, it also is a dirty, messy job that few look forward to. Even more critical is the amount of time the complete aeration process takes the turf out of play. ■

Chris Hannon is a marketing manager with The Toro Company. Dr. Van Cline is an agronomist for the company.

By Larry DiVito

Efficiency and sports turf management

WHEN YOU THINK OF EFFICIENCY and how you manage your athletic fields, what comes to mind initially? Certainly you would think of saving money and maximizing resources. Even before your budget was reduced over the past year, you and your employer were likely conscious of ways to be more efficient with your labor force and your equipment. It's likely you also were reviewing your materials budget and use of water as well.

Years ago, as I was finishing up my slow pursuit of a college degree, I worked for a few months as a waiter at a large, busy restaurant. I had good weekend shifts and the money earned was quite useful. After 3 months, I had learned two significant things: I had no desire to ever work in a restaurant again and, more importantly, the value of constantly thinking ahead to get the job done. I stress the same principles for my crew. If you are mobilizing yourself to get home plate done, bring everything you need with you in the cart one time. For instance, bring clay with you that has different degrees of moisture in it, to get the work done more efficiently. You want to have some moist, medium and dry clay on hand to make adjustments for weather conditions. Every extra trip back to the shop may waste five minutes or more, so think ahead.

You know that within your budget as a turf manager, you have a finite number of hours that your staff can work. The people working for you are clearly your most important resource. To get the most out of your staff, understand that skills and personality can vary a great deal. This is critical when giving out work assignments. Some people excel at working on their own. Others tend to need a partner to be comfortable and meet your expectations. As a manager, strive to put your staff into situations where they will succeed. One basic principle from labor sociology concerns triads. Workers in groups of three tend to have more conflict and diminished productivity. Focus on giving work assignments and projects to individuals or pairs to maximize productivity. Remember, when employees are consistently given tasks in which they can succeed, they will be productive and motivated.

In the future, as you get the opportunity to specify and lobby for new equipment, try to convince the decision makers that spending more on capital expenditures can improve efficiency. One season of using a 100-inch wide five-plex instead of a tri-plex reel mower and you will be amazed at the increase in productivity, as well as the improved density in your turf from more frequent mowing. For baseball, look at infield tractors that have quick adaptability. Any machine that allows you to easily change attachments (i.e. nail drag, finish rake, box grader) will be well worth the higher purchase price. Buying a one-dimensional infield tractor saves you a little money, but in the long run it will hinder productivity.

When you prepare your maintenance plan for a given week, think about factors beyond events that will cause you to make adjustments to your schedule. Understanding weather patterns at least two to three days in advance can greatly improve your efficiency. Again, it comes back to thinking ahead. Monitoring the weather accurately can save you money on painting your fields, watering them and on labor. Making adjustments in your mowing schedule around weather can greatly enhance efficiency. Mowing fields a day earlier can be more efficient than doing so two days late. Longer turf means slower mowing and decreased productivity.

What about offseason maintenance of baseball and softball fields? Perhaps your resources are so limited that you are unable to do any work during the fall season on these fields. Anywhere the ground freezes at all, I would be very concerned with postponing maintenance completely until March. Is it more efficient to do some routine maintenance in the fall as time permits, or would you rather leave it all until early spring, when weather may not be your best friend? Remember, no one can give you all the answers. The goal is to get you, your crews and your employer thinking

about how to be more efficient in your specific situation.

Tarp all of your game mounds! If you remember anything from this article, it's this: TARP YOUR MOUNDS. Committing resources in your budget to purchase mound tarps, and ensuring they are managed effectively, will greatly improve your efficiency. On a baseball field, the mound is equivalent to the transmission on a car. It is that important, at all levels of play. Simply put, from a baseball perspective, a bad mound equals a bad field. Decent mound tarps are affordable and one person can place them or remove them quite easily. By tarping every day and night, you accomplish two things. First, you keep rain or irrigation off your clay. Second, you retain moisture in your mound when conditions are dry. There are so many good clay products available to us today. The key to all of them is maintaining a consistent moisture level, so your mound is safe and durable.

Once your mounds are on a good program, think about ways to improve your baseball fields even though your budget is being reduced. In high school, when I wasn't pitching I played right field. Supposedly, an old creek ran under our outfield before it became a sports field. In spite of it being in sunny California, I spent most of March and April in muck out there. Although it was wet, it was safe enough for us. Later in life, I discovered that I was playing on what we call native soil. No big deal, because in baseball as much as 70% of the game is played in the infield. As long as your outfields are safe, don't lose any sleep if they are not perfect. Focus your resources on the infield. Look at it this way: Imagine you have a complex with five baseball fields, each with 100,000 square feet of turf. The infield turf is just less than 8,000 sq. ft. Of your 500,000 sq. ft. of turf, about 8%, or 40,000 sq. ft., is in the infield.

You are looking for ways to streamline your operations. To give a specific example, consider this scenario. You like to apply granular nitrogen and potassium at equal rates. Perhaps you use a product with a 19-

3-19 NPK ratio. To meet your new budget, you must reduce your annual fertilizer budget for the five-field complex by 20%. To do so, you cut back your total N/K output in the five outfield and foul areas (460,000 sq. ft.) from 4lbs. N/K to 3lbs. N/K annually. By doing so, you still have enough room in the budget to apply 4.5lbs. of granular N/K to the infield each year. You meet your budget goal, while increasing the annual N/K on your infields by 12.5%.

As much as time allows, try and focus resources on areas of stress and importance. Goal areas on soccer fields and baseball infields need more management and fertility to withstand the demands of increased traffic. For instance, when I apply granular products to the infield, I sometimes set the spreader to apply the products at half rate, and then apply the product in two directions. To finish I make one extra pass between the mound and home plate. Wear and traffic between the mound and plate leads to turf that sometimes needs a little extra boost of N and K.

How can your annual fertility plan increase efficiency and produce a better field? Consider the role of late fall fertilization and how it impacts your 12-month maintenance cycle. On any cool-season baseball field, you want to go into winter strong, but not overly succulent, with your turf. The importance of a late fall fertilizer application cannot be underestimated. First, late fall potassium will help strengthen your turf going into the harsh winter months. Second, late fall nitrogen will promote increased storage of carbohydrates and benefit root development. By using a blend of N sources (quick, medium, slow) in late fall, the carbohydrates needed to start spring growth will be stored for you. This will mean in early spring, you are in position to begin growing and can feed your turf judiciously. Being able to avoid a heavy spring N application will be more efficient, as you steer clear of surge growth and the increased mowing demands that come with it.

Finally, what about water? It's not always free and in some places is pretty scarce. You know that your infield dirt needs water to play well and be safe. What is the most efficient way to water dirt? If you only have the resources to water your dirt once a day, try and find time either early in the morning or after dark. You avoid the heat of the day and evaporation by watering early or late, and have a better chance at those times of getting water to move down through the soil profile. At the STMA Conference, you can see new products and talk to irrigation experts. By investing in a trip to the conference and learning about new technology such as Evapotranspiration monitoring, your water efficiency will improve. In conclusion, think ahead, plan intelligently . . . and tarp your mounds. ■

Larry DiVito is the Head Groundskeeper for Target Field, the new home of the Minnesota Twins that opens next spring. He is also a member of the Sports Turf Managers Association's Board of Directors.

 By Mark McSherry

NCAA Athletic Department Sustainability Practices Survey Report

THE PURPOSE OF THIS RESEARCH was to gain insight into the sustainability strategies, practices and perspectives within Athletic Departments at NCAA Football Bowl Subdivision (FBS) universities (formerly known as Division 1A). The survey was conducted from April 10 to April 23, 2009 with the 119 FBS universities as part of a graduate course I took at Harvard.

Participation was exceptional: 97 out of 119 FBS universities (81.5%) answered the survey.

As of May 1st, 2009, more than 620 American university Presidents, representing nearly one third of U.S student population, have signed a pledge to develop an institutional-wide action plan for becoming climate neutral. Nearly three out of four universities report that campus-wide sustainability initiatives are a "very high" or "high" priority. The Athletic Departments at these same FBS schools are, to a degree, lagging behind with less than half reporting that sustainability initiatives are a "very high" or "high" priority.

According to the survey, only 10% of FBS athletic departments have developed a strategic Sustainability Plan with short- and long-term goals. Less than 10% of the surveyed athletic departments are currently measuring or planning to measure the athletic department's greenhouse gas (GHG) emissions, an essential step in prioritizing GHG reduction strategies and evaluating the progress of a sustainability plan. While 80% of athletic departments have implemented "moderate" or "extensive" recycling initiatives, less than 5% are measuring recycle rates and setting recycle rate goals for all operations of facilities and events. Encouragingly, over 15% of the athletic departments are now actively considering the development of a strategic Sustainability Plan, 13% are planning to measure recycling rates and set goals, and more than 75% say that the emphasis on environmental programs is increasing.

University athletic departments face unique sustainability challenges which are often not fully addressed in campus-wide sustainability plans. The overall environmental impact of sport facilities and sporting events, particularly the greenhouse gas emissions associated with team and fan travel, and food and vendor supplies, is largely not being quantified. Fan travel alone is a potentially significant GHG contributor. Over 37 million fans attended NCAA FBS football games in 2007. Attendance at 2007 NCAA Division I basketball games (325 schools - men's and

>> Top: UNIVERSITY OF COLORADO, courtesy of Jason DePaepe, CSFM.
>> Bottom: THICK CUT SOD from Graff's Turf Farms, Ft. Morgan, CO.
>> Background image: RUSS CHANDLER STADIUM at Georgia Tech, won the 2008 STMA College Baseball Field of the Year Award.

women's combined) exceeded 32 million. On average, FBS universities support over 20 intercollegiate sports per school; the overall environmental impact of NCAA sports programs is not being measured and is therefore unknown.

Along with unique sustainability challenges, athletic departments have unique sustainability opportunities. Visionary universities are recognizing that by developing a comprehensive sustainability program in the athletic department, they can leverage the strong brand power, visibility and influence of their intercollegiate sports programs, differentiate their schools, and make meaningful environmental improvements. Athletic departments can greatly benefit from collaborative sustainability initiatives with student-athletes, teams and the increasingly environmentally-aware student body. Eco-efficiency cost savings are only part of the return-on-investment calculation. Importantly, new revenue opportunities exist through specific fundraising/development for athletic department sustainability initiatives, corporate sponsorship of green programs and green advertising.

The overall environmental impact of NCAA sports programs **is not being measured and is therefore unknown.**

Professional sports teams

For a previous graduate-level research project, I conducted a similar sustainability survey among executives from North American professional sports teams (Major League Baseball, National Football League, National Basketball Association and National Hockey League). Of the 122 professional sports teams in the NFL, NBA, NHL and MLB, 79 teams participated in the May, 2008 survey.

Developing a Sustainability Game Plan

1) Athletic Department leadership should be educated on sustainability issues and committed to the cause. Executive-level leadership and responsibility for departmental sustainability initiatives will be the greatest factor in success.

2) Form a cross-functional "green" team within the Athletic Department. Consider representatives from facilities, events, business admin, development, teams, corporate sales, public relations, faculty, campus-wide sustainability team and student-athletes. Encourage athletic department representation on campus-wide sustainability team to leverage expertise and to coordinate programs.

3) Develop a Strategic Sustainability Plan for the Athletic Department with short and long-term goals, business analysis, and organizational and staff requirements. Clearly define responsibilities and integrate goals into performance metrics.

4) Measure the Athletic Department's greenhouse gas emissions and other ecological impacts (i.e., water usage, waste). Prioritize initiatives based on environmental impact, return on investment and resources. Set quantitative reduction goals (i.e., GHG, Water use, waste, recycle rates) and time-lines. Embrace transparency.

5) Assess fan, employee and student-athlete interest in environmental issues via surveys, and focus groups.

6) Assess new revenue opportunities: fundraising/development for sustainability initiatives, corporate sponsorship and green advertising.

7) Actively engage athletic department employees, student-athletes, teams and student body in environmental initiatives. Regularly communicate to stakeholders.

8) Be "authentic." Avoid any hint of greenwashing. Be forthright about your eco-faults.

9) Create active and visible green initiatives that continuously "touch" fans. Big splash announcements without ongoing development and visibility of the green program will be largely ineffective.

10) Aim to stand out—differentiate your program. Still plenty of opportunities to be "the first athletic department that…"

Survey bias

1) Athletic Departments that responded to the Survey may be the "greenest" organizations. Contacts were encouraged to respond even if there had no green program or they were just starting out. It may be that the athletic departments that have the most advanced green programs would be more eager to respond and want the results. And yet, an athletic department that has yet to develop a green strategy may also be likely to respond in order to receive the survey results.

2) Individual contacts within the organization may be more likely to be the most environmentally-friendly and answer questions with a pro-green bias.

3) Individual contacts may not understand the university's overall environmental strategies and plan. 96 out of 97 the survey respondents were Associate or Assistant Athletic Directors, Facilities Directors, Facilities Managers, or Sustainability Managers. 90 out of 97 respondents were from within the Athletic Department; the remaining 7 were from campus-wide departments. More than 8 out of 10 respondents expressed an opinion on key-decision makers' view on profitability and fan loyalty considerations, an indication of the respondents' knowledge of athletic department strategy. However, survey respondents may not be knowledgeable of the university-wide sustainability strategy or practices (e.g., greenhouse gas inventory). Only 16% of the survey respondents indicated that their President had signed the American College and University Presidents Climate Agreement whereas 61 out of 119 (52%) of Presidents of these schools have signed the agreement

4) The survey instructions specified only one response per university. The survey software prevented an individual from submitting more than one response from the same computer. It was possible for an individual to forward the link within the organization presenting the possibility of multiple responses per team. However, the initial email and survey instructions emphasized the importance of a single responder per university. Plus, there were no two people from a university who requested results.

5) Comparisons with the survey responses to the Professional Sports Survey are for identical questions in both surveys except for responses to the question about developing a sustainability plan. In the Pro Sport Survey, it was asked whether the organization was integrating green plans with business plans which typically include defining a strategy and goal setting.

In the spirit of 100% transparency, I am providing a link to the full survey results - all questions, unfiltered answers and comments. It takes very little time to review the results and assess where your organization stands versus the leading programs. For full access to survey results, including all respondent comments, please click on: 2009 NCAA Athletic Department Sustainability Survey Results ■

Mark McSherry is a Harvard University graduate student who holds a Master's certificate in sustainable design from Boston Architectural College. This edited version of his May 2009 report was reprinted with permission.

Although professional sports organizations and university athletic departments have different organizational missions and goals, it may be of interest to look at and compare some of the survey results.

Sustainability Survey Results

	NCAA Athletic Departments**	Professional Teams***
Organization has developed or is actively planning to develop a strategic sustainability plan*	25.0%	72.2%
Key decision makers have a "strongly positive" perception on implementing environmental initiatives	33.3%	55.7%
Organization is currently measuring or firmly planning to measure greenhouse gas emissions (carbon footprint)	8.8%	46.8%
Key decision makers say that environmental programs will "slightly increase" or "significantly increase" profitability	15.8%	38.0%
Key decision makers say that environmental programs will "slightly increase" or "significantly increase" brand loyalty.	30.2%	60.8%
Organization wants to collect more information on fans' concerns for environmental issues.	37.9%	83.6%
"Slightly concerned" or "very concerned" that environmental programs will distract from main goals of organization	43.5%	26.6%

* See comments on survey-to-survey comparisons in "Discussion of Survey Bias" below.

** NCAA Sustainability Practices Survey conducted April, 2009; 97 out of 119 FBS universities responded. Survey error: +/-3.6% at 90% confidence level.

*** Professional Sports Sustainability Practices Survey conducted May, 2008. 79 out of 122 professional teams responded. Survey error: +/- 5.5% at 90% confidence level.

TifGrand bermudagrass bred for shade available next year

THE UNIVERSITY OF GEORGIA has licensed a new variety of bermudagrass to grow well in both full sun and in shade. Called "TifGrand," it is licensed by the University of Georgia Research Foundation to New Concept Turf and is expected to be available in 2010.

New Concept Turf, a Georgia-based company specializing in marketing new turfgrasses, has contracted Ft. Valley, GA-based The Turfgrass Group to exclusively handle licensing of TifGrand for sod production. TifGrand was licensed to a selected number of growers this summer.

TifGrand was developed by Wayne Hanna, professor of plant breeding and genetics in the Department of Crop and Soil Sciences at UGA's College of Agricultural and Environmental Sciences.

"Although TifGrand produces a beautiful turf in full sun, its major contribution will be the production of nice turf in areas with reduced light, up to 60 percent less light than is normally required for healthy bermudagrass growth," Dr. Hanna said in a news release.

TifGrand is the first sterile triploid hybrid with improved shade tolerance. Research testing over the past 10 years demonstrates its excellent growth at 60 percent to 70 percent shade levels. It can tolerate up to 90 percent shade levels, but it will have lower density. Dr. Hanna believes it will be the most shade-tolerant turf commercially available, according to an article in *Carolinas Green* magazine by Chris Hartwiger of USGA Southeast Region, Green Section. Here is more from that article, used here with permission by Sam Williams:

"Due to its semi-dwarf nature, TifGrand is not overly aggressive and it will tend to stay where planted and not encroach into nearby areas. [It] has both stolons and rhizomes and another unique feature is the lack of dew on the leaves in the morning, like paspalum. It has excellent mole cricket non-preference resistance and lower nitrogen fertility requirements compared to Tifway and TifSport.

"Like most bermudagrasses, seed heads are produced during June in full sun locations, but this is the only drawback observed. Few to no seed heads are present in shady locations. TifGrand will be popular for use at shaded rough areas, shaded tees, and shaded lawns. Fairway plantings are only advised for shaded sites initially, but this may change over time. Putting green tests at 5/32-inch are underway and it seems to produce a high quality surface. [It] should do well at shaded putting green sites with up to 60 percent to 70 percent shade. No other putting green bermudagrass ever has shown shade tolerance and this development will help many courses where shade around putting greens is a major issue.

"Sod will be recommended rather than sprigs at shaded sites to ensure the [grass] establishes well. Tests using sprigs at shaded sites didn't work as well as the sod for establishment, especially where there is tree root competition." ■

With new turfgrass, UGA sees green

Here's an excerpt from a June 5 article by Lee Shearer of the Athens Banner-Herald on the financial implications of TifGrand:

"A new Bermuda variety developed by University of Georgia turfgrass researcher Wayne Hanna could let homeowners have their shade trees and carpet of lawn, too, when it becomes available to the public in 2010.

The grass grows in shade as well as sun and has sod-growers lining up for the right to grow the new grass, said Bill Carraway, vice president of marketing for a Fort Valley company called The Turfgrass Group.

"It is so, so big," said Carraway, who is crisscrossing the country from California to South Carolina this summer, signing up sod-producers to begin growing the new grass, called TifGrand.

"This is a breakthrough," Carraway said. Sod producers are "stacked up like cordwood wanting to get license to produce."

Grasses developed in Tifton by UGA and U.S. Department of Agriculture researchers working under Hanna and his predecessor, Glenn Burton, have grown on golf courses and athletic fields around the world for decades.

"Probably the center of the universe for warm-season turf grasses is in Tifton," said Mike Garland, director of the Georgia Seed Development Commission.

Augusta National Golf Club and hundreds of other courses use UGA Tif varieties; most Southeastern Conference football teams (including Florida) play on turf grasses developed in Tifton, said Hanna, who began working in Tifton in 1971.

But the new TifGrand could penetrate a different market, and potentially add millions of dollars to the University of Georgia Research Foundation's bottom line. The foundation owns patents for inventions and discoveries by UGA scientists, and uses some of the income from licensing and royalties to promote research at UGA. Researchers also get a cut.

"This is opening a door for us," said Shelley Fincher of the UGA Research Foundation's Technology Commercialization Office.

"We're pretty excited about it. Everybody wants to have a shade tree in their back yard," Hanna said.

The grass's expected popularity could add millions of dollars to the research foundation's bottom line.

In the five fiscal years from 2004 through 2008, producers paid $3.2 million in fees for the right to grow UGA-developed turfgrasses, Fincher said, about 4 percent of the research foundation's income from royalties and licensing fees.

Hanna and his research team took years to develop the new TifGrand Bermuda grass, using traditional plant breeding techniques. The researchers began by planting 27,500 hybrid varieties in 1992, he said. In 1993, the researchers picked the best 448 candidates from those and have been weeding out the pretenders ever since, he said.

"Every few years, we'd cut the number in half," he said. ■

Conserving water:

what turf managers are doing now

IT'S A FACT THAT WATER IS ESSENTIAL FOR HUMAN SURVIVAL, not to mention its importance in some of the finer things in life such as ice cubes, a hot shower, or lush athletic turf.

But water, or "blue gold" as it is now being referred to by those in the know, is a precious commodity that not everyone has access to equally. Dr. Ali Harivandi from the University of California Cooperative Extension gave a compelling presentation during January's STMA Conference that began with a sobering fact: Every 20 years the demand for "good" water doubles across the globe.

He added that the average person in the United States uses 80-87 gallons of water a day if you factor in everything from showers to food preparation, a "water footprint" if you may.

Dr. Harivandi predicted that drought is coming to a weather pattern near you, especially in the south and southwest regions of the U.S., and that some areas, such as the Tucson/Phoenix region, groundwater is already mostly used up.

Increased use of reclaimed water, especially for use as irrigation for sports turf, will be necessary, Dr. Harivandi said. He named the San Francisco 49ers practice facility as an example, citing that it won an STMA Field of the Year Award last year using recycled water.

Using tertiary/reclaimed water is fodder for another article, since it means increased attention to salinity, nutrient (N, P, K) content, installing drainage, etc.

Here we share responses we received from an informal poll across the country concerning water use. We emailed two questions to dozens of STMA members and selected these responses. The questions were: 1) what are you currently doing to monitor and conserve water in your turf maintenance practices? And 2) Have you been asked specifically this year to reduce your water use?

We basically try and wait for the grass to start wilting in certain areas, the ones that always show up first. Then we know it's time to water that night or the next morning. It of course all depends on the natural rain schedule. We all know you can depend on that like clockwork! Sometimes we water every other day, sometimes the irrigation is off for a week at a time. We have not been told to conserve water at this time. A few years back when conserving water first came on the horizon, we were told to stop watering totally. Three weeks later when the fields went dormant, they said it did not apply to golf courses and high profile athletic fields. We just started monitoring the usage closer.

Mike McDonald, CSFM
Turf Manager
University of Minnesota

Aids such as turf stress detection glasses, soil samplers, moisture meters, and rain gauges are used daily to help us determine moisture levels. We also use various resources (internet) that monitor evapotranspiration rates. All clock timers are adjusted to run manually and set schedules are no longer used. We do our best to use the minimum amount of water to achieve positive results in grass health.

We have not been specifically asked this year (though we have been asked by the utility company in the past) by any specific entity but we have our own goal of trying to minimize use and cost since all irrigation is supplied by the municipal system. The goal is to maximize water conservation and minimize rising utility costs.

Larry Berry, CSFM
Director of Physical Plant
Lee University

We have installed flow meters at all of our pump stations. We have gone to the Toro Sentinel system for programming and monitoring. This interfaces with a weather station that initiates a rain shutdown when we have sufficient rainfall. During the sum-

mer months in south Florida we initiate a 2-day rain hold at 0.2 inches of rain. Any localized dry spots are on a wetting agent program. We strive to keep the irrigation as lean as possible, monitoring through core sampling. We are evaluating some of the new soil sensor technology that is coming out but are in a holding pattern there.

Our area has been under water restrictions (except for reclaimed) for the past 3 years. This year the restrictions have loosened up on sports and golf turf but we have to report water usage to the water management district that monitors surface water withdrawals.

Cindy Unger
Grounds Division Superintendent
City of Palm Beach Gardens, FL

Tough questions to answer after 7 inches of rain in June! I have not been asked to reduce my water use. Things are starting to dry out now [mid-July] but I've been hesitant to run much irrigation and that is more to force the roots to grow deeper than to conserve water since we haven't been asked to conserve. If we run into an extended dry spell then I will water like a typically do—deep, infrequent waterings and only throw water on the infield dirt when I know it will do the most good (before BP and games, not all day)z.

Dan Douglas
Head Groundskeeper
Reading Phillies

I have never been asked about my water use. I monitor all our irrigation systems, which consists of six fields (five baseball, one soccer). I keep things repaired the best I can, especially leaks. I make the decisions on when to water and how much; I do not rely on computers to tell me when to water. I am on the fields every day and I know what they need just by looking at them. I do not over irrigate the fields, just enough to keep things looking good, because I know I will have a week or two where it will rain every day. We are close to the coast so it seems that I have more of a problem with too much water.

I am considering some innovative ways of getting water; one of our fields is close to our gym and the AC system just runs into a ditch. I am looking at collecting this water and seeing how it could help reduce our dependency on the grid.

Patrick Jonas CSFM
SCSTMA President
Director of Maintenance
Charleston, SC

We are very fortunate in that our water comes from two wells that were dug during construction. These wells supply water to our two retention ponds that we use to pump water for irrigation. Also all of our drainage runs back to the two ponds, so we reclaim all the water from rain and any water we use to clean the stadium. We still monitor our water usage because with the summer heat in Texas it is hard for the wells to keep the ponds full with as many fields and as much as we are having to water.

Allen Reed
Assistant Stadium Grounds
FC Dallas

So you heard we had some drought issues here in College Station? How about 45 days with no rain. Before that, between May 1 and May 23 we got rain three times totaling 1.25 inches. Average high temperature the last 3 weeks [late June, early July] has been near 100 degrees. I am lucky that my irrigation system has no water meter as Texas A & M's Physical Plant supplies the water free. They set emergency services as first priority, buildings (drinking, cooking, cleaning, and sewer) as second and grounds as third. As long as there is ample supply for all they do not cut us back.

A & M has its own water system, wells, treatment, and sewer, just like a city so we are independent of outside control. While we are unrestricted and watering heavily right now, we do try not to waste water. By that I mean we water to the highest level possible depending on events and work schedules without allowing runoff. With PET hovering around .3 inches daily from area weather stations, combined with the need to aggressively grow grass to prepare for next fall's intramural season, we are watering about 36 minutes a night between events. Since our high clay soils have low percolation rates we divide it into 3 cycles of 12 minutes spread over 8 hours. This allows about 1.5 hours of absorption between cycles for each station so we don't saturate the surface, causing water to be wasted by runoff. We manually run extra stations during the day to spot treat our driest areas and use water hoses with lawn sprinklers to inject hotspots caused by inefficiencies in the system.

My one fear is a repeat of the situation that occurred in 1999. Problems with wells and pipes supplying the University caused major cutbacks to be mandated across the system. In accordance with University priorities listed above, use of water for grounds was greatly restricted and a rationing system was imposed with priorities set by value to the University. First priority went to Athletic Department fields due to the need for safety for the 200–300 valuable college athletes that played on them, the high cost of replacement and their