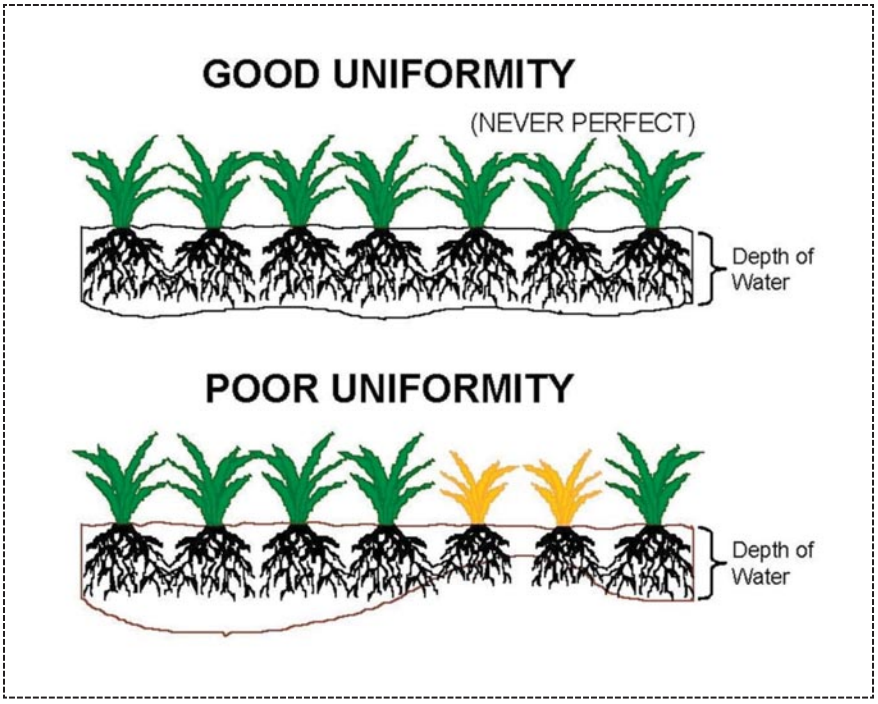
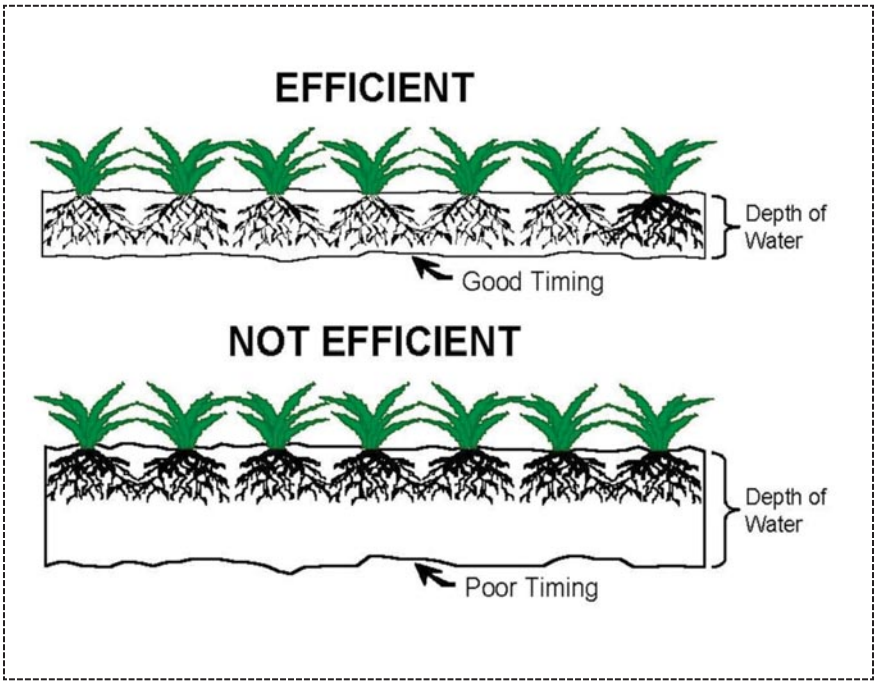
Smart Irrigation Month:
Why it's Important to Sports Turf Managers

Editor's note: *This article was supplied by Warren S. Gorowitz, Ewing Irrigation, Vice President–Sustainability & Conservation, and Danny Motylewski, Hunter Industries, Business Development–Water Conservation.*





WHAT IS SMART IRRIGATION MONTH?

July has been deemed Smart Irrigation Month, first launched in 2005 by the Irrigation Association. In most areas July is typically the month of peak irrigation demand. The focus of Smart Irrigation Month is to promote the use of efficient irrigation products and water conservation practices to the public. This includes reviewing your irrigation system's performance thru an irrigation audit as well as evaluating your irrigation system's various components to ensure they are saving water and energy.

Experts on the Field; Partners in the Game: What does it mean to a Turf Manager? As a sports turf manager your priority is to provide a safe playing surface for those who use your fields. With the increased focus on sustainability everyone in the Green Industry needs to use our resources as efficiently as possible. Why not use SMART Irrigation Month as an opportunity to show your supervisors, players and the public what you're doing to use water efficiently at your facility? By understanding the difference of irrigation "uniformity" (how uniformly the water is being applied to an area) versus "efficiency" (how efficiently the plant uses the amount of water being applied), are some of the first steps to being a better water manager.

WHY IRRIGATION AUDITS ARE IMPORTANT

In order to understand how your irrigation system is performing, doing an irrigation audit is

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critical. Think of this process as the easiest way to diagnose your irrigation system. In its simplest form, the irrigation audit involves placing catch cans in a zone on your field and measuring the consistency of the application of the sprinklers. The measurements are then calculated and can give a uniformity rating, in a percentage. These numbers can help you justify why you might need more funds for updating and/ or retrofitting your system. If you'd like to learn more about irrigation auditing, visit the Irrigation Association's Website (http://www.irrigation.org) and review the Certified Landscape Irrigation Auditor program. Classes are being taught throughout the year, around the country.

WHAT TYPES OF WATER-CONSERVING PRODUCTS SHOULD YOU BE USING?

The Irrigation Association formed a group to create testing protocols for various irrigation system components. SWAT (Smart Water Application Technology), has been testing Weather Based-Climatic Adjustment Controllers for more than 4 years and is now working with the EPA's WaterSense Program, which will provide a WaterSense label on controllers that are 20% more efficient than their counterparts in the near future.

Controllers, with ET or soil moisture sensor adjustment, Water Budgeting, and Central Control software included, can allow the sports turf manager to have constant control over the fields and

landscaping. Many controllers have special features to allow for more efficient scheduling of the runtimes for the zones. Cycle and soak help save water and prevent runoff, especially if there is a clay soil and/ or slope that are being irrigated.

Flow management, which allows a zone to shutoff immediately when there is a break in a line and/ or sprinkler; thus saving valuable water and money! Real-time flow monitoring lets the field manager understand how much water is being used by each zone, with calculations created by the controller.

Understanding the importance of various sprinklers and the nozzles that are included with each one is imperative. Uniformity of the application of water is extremely important as it creates and/or eliminates brown "doughnuts" around the sprinklers and in the turf areas.

Rain shutoff devices are being tested by SWAT, which will bring an important approval to these products. By installing a unit that stops the sprinkler zones from running during a rainstorm, the manager eliminates calls from the public and/or private operation reporting water wasted when it's raining. Included in some of these units are wind and freeze shutoff devices, too.

Understanding the importance of various sprinklers and the nozzles that are included with each one is imperative. Uniformity of the application of water is extremely important as it creates and/or eliminates brown "doughnuts" around the sprinklers and in the turf areas. Depending upon the type of soil, the precipitation rate of the sprinkler is very important to know. High precip rates can leach expensive applied chemicals through a sandy soil, while low precipitation rates allow the water to infiltrate into the soil at a more efficient rate. Matching precipitation rates with various sprinklers on the same zone is vital for proper scheduling of the runtimes. Mismatched nozzles, with differing precip rates promote overwatering and under watering turf and landscape areas.

Pressure regulation is important for saving irrigation water, as the direct correlation between pressure, flow and velocity (basic hydraulics) affect the radius, uniformity and efficiency of a system. Too high of pressure also promotes small, fast moving droplet sizes; prone to going everywhere (but on the turf) in high wind conditions. Too low, and the droplets get larger and the area being wa-

tered is not getting water applied uniformly. The higher the pressure, the more demand of the flow. Pressure regulation can be applied at the valve and/ or in the sprinkler head itself. An example of how much water can be saved with rotors is:

Rotor zone example:

- 3.7 GPM @ 60 PSI
- 3.4 GPM @ 50 PSI (optimum)
- 0.3 GPM X 20 minutes = 6 gallons (saved)
- 120 irrigation days X 6 gallons = 720 gallons
- 20 heads X 720 gallons = **14,400 gallons per year saved**

Programs, Initiatives, Education: All Lead to Excellent Water Managers in the Field. There are many key water-related initiatives taking place throughout the nation today. The United States Green Building Council's LEED Rating System, ASLA Sustainable SITES Initiative, water budgeting per state, rebate programs, only to name a few. Many might be taking place in your region and you need to be aware of what's taking place and how it affects your fields and surrounding landscapes.

Water conservation is not a trend; it's a fact of life. Our most valuable resource is WATER…no two ways about it. Education is key to managing this and sharing your knowledge with colleagues, friends and families; much less your supervisor and your work establishment. There are many classes being offered by the Irrigation Association (online and in classroom settings); distributors conduct many types of irrigation-related classes that pertain to water conservation (Ewing Irrigation, for one); associations such as the Sports Turf Managers Association, have excellent regional and annual meetings with outstanding educational opportunities.

Finally, to ensure that you have a safe, healthy and beautiful playing surface, water conservation and awareness is vital. Professional turf managers need to constantly be ready to learn what is new and upcoming in this realm.

Remember July is SMART Irrigation Month but we should practice water efficiency throughout the year. You are the **Experts on the Field, Partners in the Game**. ■

Water management: using soil surfactants

WE POSED THE FOLLOWING QUESTIONS to Mica McMillan, the senior research agronomist for Aquatrols:

SportsTurf: What soil conditions most often lead to the need for using surfactants?

McMillan: The primary soil condition that leads to the need for using soil surfactants is less than ideal wetting of the thatch layer and/or soil. Soil surfactants, also known as soil wetting agents, are typically used to avoid or alleviate soil water repellency and/or reduce the surface tension water—in both cases to make sure that water effectively and uniformly infiltrates and disperses in the rootzone.

Water repellency in thatch or soil reduces infiltration rates and causes non-uniform soil wetting. It is caused by hydrophobic coatings which interfere with the ability for thatch and soil to accept and evenly distribute water (and spray solutions). Even low levels of water repellency can leads to waste of water and increased need for irrigation.

Soil water repellency occurs in all soil types but is most prevalent in sandy soils due to the small surface area (compared to a clay soil) which more rapidly becomes affected by the coatings. Sandy soils also experience numerous wet to dry cycles, which are a factor in the occurrence and severity of soil water repellency. Numerous other factors also contribute to soil water repellency including fungal pathogens, root exudates, organic matter, organic coatings on soil particles, etc.

Soil water repellency is exhibited all over the world, under most climates and under many different cultural practices such as agriculture, golf courses, bowling greens, parks, forests, sand dunes, etc. So it's no surprise that it is a factor in the maintenance of sports turf as well.

Water Drop Penetration Time (WDPT) test

MATERIALS NEEDED: soil corer, tray, eyedropper, watch with 2nd hand/timer, paper and pen/pencil.

1. Following a dry period, pull some cores from the areas with variable soil moisture readings and lay them on a tray. If the weather is wet – pull the cores and let them dry in-tact at room temperature for several days.

2. Mark paper as follows: thatch/mat, 0 (soil surface), 0.5, 1, 1.5, 2, 2.5, etc.

3. With cores on their sides and beginning at the turfed end of the core, place drops of water on the core at the thatch/mat area, soil surface and at 0.5 inch intervals along the core. Record how long it takes (from 0 to 60+ seconds) for the drop to fully disappear.

Anything above 0 seconds indicates some level of water repellency.

More information can be found in "Soil Science: Step-by-Step Field Analysis" published by the Soil Science Society of America, pgs 97-112.

Turf managers are encouraged to check the soil wettability by collecting numerous soil moisture readings with a hand held moisture sensor. If your soil is wetting well, the readings should be similar. If there is a lot of variation, a simple test for water repellency can be used. (Water Drop Penetration Time (WDPT) test information below). Unless it's ideal (instantaneous and very uniform) then including soil surfactants in your turf management program can be a good way to ensure that you are using your water efficiently.

It's important to not confuse soil surfactants with foliar adjuvants or stickers...

ST: How should a turf manager choose a product when using surfactants as part of a **soil applied** herbicide program? When might he know he should include surfactants in a program?

McMillan: If a turf manager is having problems with water movement on the turf/soil surface and into the root zone, i.e., slow water infiltration, runoff, percolation, groundwater contamination, minor drainage, poor water distribution, it is an indication that water repellency may be present and a soil surfactant could help address these issues. Soil surfactants lower the surface tension of water (influencing the cohesive forces) and, depending on the formulation, improve the wettability of soils (influencing adhesive forces). This allows water molecules to spread outward and more easily move into and through the soil. Since surfactants increase the uniformity of distribution of water, any material applied with that water and surfactant will also be uniformly distributed optimizing the efficacy of products such as fertilizers, soil applied herbicides and pesticides. Before tank mixing soil surfactants with any product, perform a jar test to confirm products are compatible.

It's important to not confuse soil surfactants with foliar adjuvants or stickers, which are formulated to enhance activity of foliar applied herbicides, fertilizers or pesticides. Many different types of surfactants or wetting agents are available just be sure to use the right one for your purpose.

ST: Any recommendations or general guidelines concerning what type of surfactants to use in specific situations?

McMillan: There are numerous soil surfactants on the market today. Certain chemistries are better wetters—helping to restore wettability to water repellent thatch and soil; some are better at helping water to infiltrate more effectively. Know what your needs are when purchasing one, and be a wise buyer.

• Do you need a surfactant to alleviate soil water repellency symptoms curatively or preventatively? Then make sure you choose a wetting agent type of soil surfactant which is designed to do what you need.

• Do you need a surfactant primarily to reduce surface runoff? Then a penetrant type soil surfactant is what you need.

• Do you need a surfactant to maximize benefits of fertilizers or pesticides? Select a product where there is evidence of effectiveness for that use.

• Another question is how the surfactant will be applied. Sprayer or injected – or dry? Different kinds of formulations exist to fit your needs – and it is important to use the formulation designed for your use.

• Some surfactants can be phytotoxic, particularly older chemistries. So make sure phytotoxicity testing has been done on your turfgrass type.

Bottom line, know what you need and ask questions to make sure you get it. Work with distributors that have a good knowledge of the surfactant chemistries they are selling and make sure that there is university research to support claims.

The timing of your turf management program can also be a factor.

ST: Is how much to use always related to square feet being covered or is there any other factor?

McMillan: As with all turf management products, label rates should always be used when applying soil surfactant materials. These are the rates that have been found to be effective via extensive testing to perform as marketed. Because the severity of the water management problem you are addressing can vary, the type and rate of soil surfactant can also vary. The timing of your turf management program can also be a factor. So in addition to square feet being covered being a factor, the depth and severity of the water distribution problem and how long you need a treatment to last are also factors in soil surfactant selection and rate recommendation.

ST: Do you recommend any specific type or brand of sprayer equipment that is better to use when employing surfactants?

McMillan: I do not recommend any particular sprayer or brand for surfactant use. However, I do recommend that when purchasing a surfactant, be clear on how it will be applied. Some surfactants can be very viscous so should not be applied via injection into the irrigation system. If the soil surfactant is to be applied through spray application, remember that the target is not only the surface, but also into the soil, so use a nozzle and water volume that is suited to soil applied materials. ■