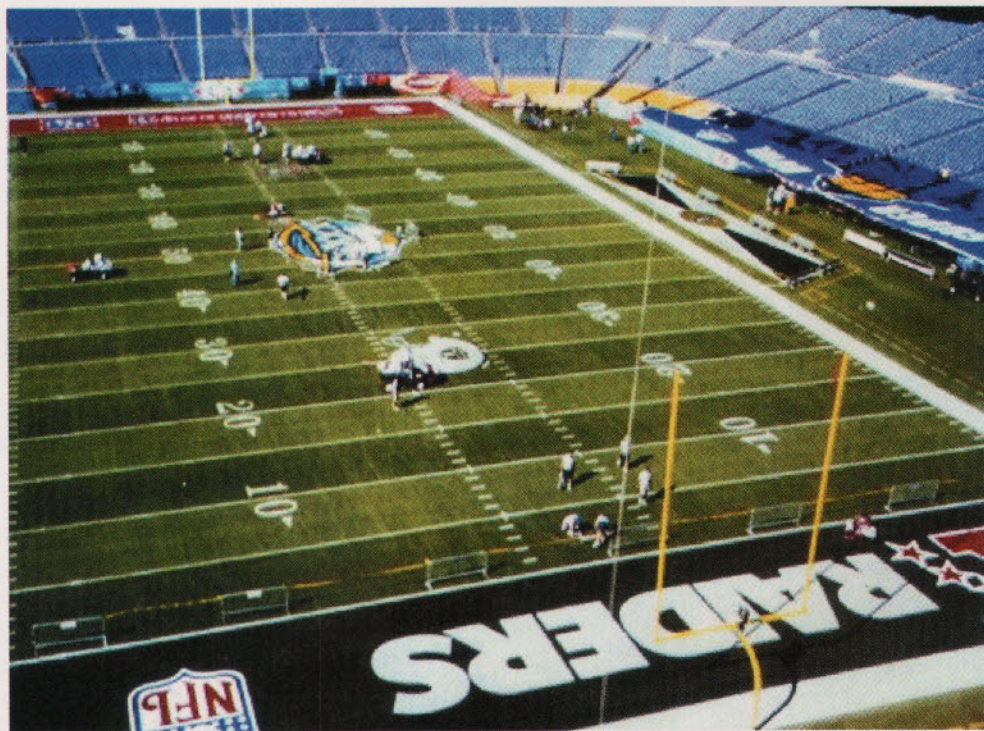


are not allowed into a storm drain; mixing area should be close to the field).

- Mix paint at 1:1 ratio for first application then 3:1 or 4:1 (water:paint) for second coat or touchups.

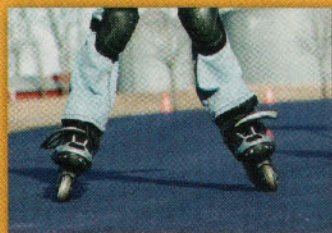
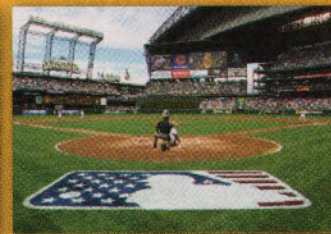
#### 4. Painting

- Use templates, stencils, paint-lining machines, and stringlines for quick professional results.
- Use paint machines that provide a uniform spray at various pressures ("airless" paint machines work very well).
- Use paint machines that are equipped with a hose, gun, and wand for logo and decoration painting.
- Use the least amount of paint possible to adequately cover the surface (paint only the leaf tissue not the soil underneath; proper mixing and spray pressure are key).
- When spray painting a large area in a back-and-forth motion always stop and start the spray gun with each change of direction to avoid excess paint at that point.



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# TOOLS & EQUIPMENT

- To prevent overspray, use “splash boards” (1/2-inch plywood cut 30 inches high x 60 inches long, or so, with handles) and small “bender boards” (masonite or thin plywood/plastic cut 6 inches high x 12-36 inches long, or so, for curves and small logo areas).
- Paint all areas that have the same color then clean machine and change colors.
- Small logos and detail areas can be painted with a pump-up sprayer, brushes, or rollers.
- Always have a bucket of clean warm water and some rags handy for any “oops” that occur.
- Begin the paint job with enough time to complete the task and end the paint job with enough drying time before field activity.
- Always cleanup after each painting day; the paint job is not complete until all equipment and paint area are thoroughly cleaned and all materials are properly stored.

## 5. Pocket Plan B

- Have a contingency plan for painting in case of bad weather or severe seasonal conditions

(frost, rain, heavy snow, high winds may delay scheduled painting days/start times).

- Unscheduled practices/events may cause the painting job to be done in parts or more than once before the game.

*Steve Wightman, Stadium/Field Manager, Qualcomm Stadium, San Diego.*

## Tips from Tennessee

1. Use a good quality paint that is manufactured for use on turf and mix it well. We mix 10 gallons of paint at a time with the proper amount of water in a large trash barrel with a water faucet installed at the bottom of the barrel. To mix the paint use a large electric drill with a mixing blade. Finally, be sure to strain the paint as you fill your paint machine.
2. Use good string and stretch as tight as you can. Then tighten it some more.
3. Purchase or construct your own stencils for numbers, hashmarks, etc. Our number stencils are constructed from plywood with an

old aluminum seat board used as a frame.

4. Use a good paint machine. We are currently using airless paint machines that work well both for lines and stencil work.
5. When finished be sure to clean paint machine well.
6. Paint the grass not the ground!

*Bob Campbell, CSFM, Director, Grounds/Maintenance, University of Tennessee in Knoxville.*

## Lessons from Leonard

1. Keep markings fresh, bold, and bright. Paint will draw attention away from parts of your field that may not look so good. I think all of us at one time or another thought our fields may not look as good as we want them to, but as soon as you get the paint down, presto! Trimming around numbers and the 20's and 50-yard lines in your school or teams colors will go a long way with administration. It really pops the white and shows up great from the stands.



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2. Don't paint too early. I know weather, event schedule, and manpower will dictate when you can paint, but for big events, always try to paint within 48 hours of your event. Most paint will stay fresh within that time.
3. Use stencils, boards, and strings whenever possible. We use string lines every time we paint our lines and hash board and number stencils whenever we have the manpower or time. Keeping lines and stencils straight and crisp will be well received by all. Use boards to block wind to avoid overspray. Simple plywood or a sheet of insulation works well for this. For media lines, make a stencil for the first time. They are easy to use and are a sure way to make sure your marks are accurate.
4. More is not always better. Typically, for white paint, we use a base coat of a 1:1 ratio of water to paint. After that, we back off the paint to a 2:1 ratio of water to paint. This allows the grass to survive after numerous paintings, especially



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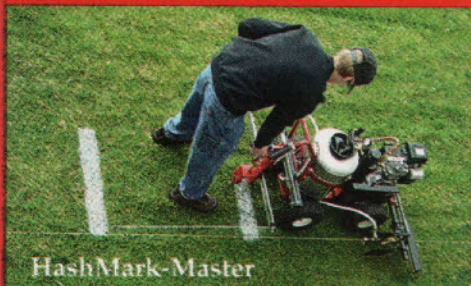


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# TOOLS & EQUIPMENT



through the football season, and still gives us a bold white mark. With colors, experiment with different ratios. For some darker colors, you will find that you may add more water than some of the lighter colors and still get the same quality. This will depend on the paint manufacturer.

5. Keep lines straight with mowers.

One of our biggest challenges is keeping our lines straight while trying to burn in mowing patterns for aesthetics. With Kentucky bluegrass at 1 1/4 inches, the lines will push depending on the mowing pattern, which for us, is parallel to the 5- yd lines. This results in pushing the side-lines and in our grid, where we have painted 15 x 15-foot boxes, pushes the line you mow across. A pushed line will draw attention to the line and your crew's painting ability. Use the mower to go against

the grain to push the line back. Of course, the next time you paint the line will be straight, but may get pushed again. Monitor this before anyone else catches it.

6. Choose the right paint machine.

We are always asked what type of paint machine we use. We use Graco painters because they work best for us and what we are trying to achieve. For your facility, you may find another machine or method works better. Know what type of paint you will be using, whether it's aerosol or out of a bucket, know what type of painting needs to be done and in what time frame, and of course, how much money you can spend.

Demo paint machines or just stick with what you know works! ■

*Tony Leonard, Sports Field Manager, Philadelphia Eagles.*

## product spotlight

### New fungicide

FMC announces EPA registration of Segway fungicide for turf management. Segway offers immediate and season-long control of pythium diseases such as Pythium blight, Pythium root dysfunction and Pythium damping. It has no known disease resistance, making it a foundation for a disease management program that includes other labeled fungicides with different modes of action.

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## New field marking technology

Whitlam offers two new quiet, battery-powered strippers, the EZ-100 and the Eco-Liner. Built for professionals, both come standard with a bi-directional spray head, battery charger, and 18-month warranty. Take the hassle out of field striping.

### Whitlam Paint Company

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## Improved Newstripe machine

The improved Eco-Liner II gasoline powered field-marker now features the hands-free Qwik-Set spray trigger. You can now activate the trigger just once without having to continually squeeze, reducing fatigue. A quick second squeeze of the trigger stops the spray.

### Newstripe

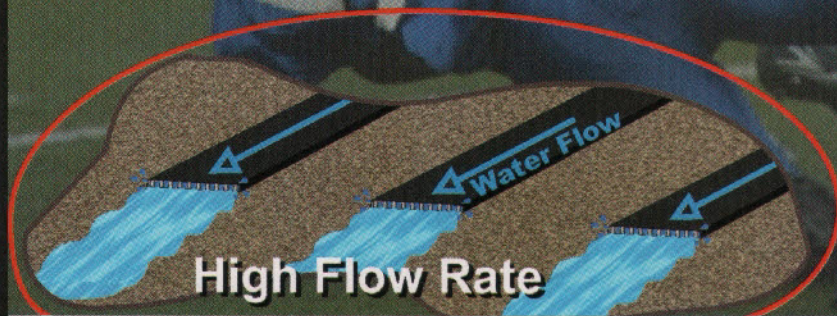
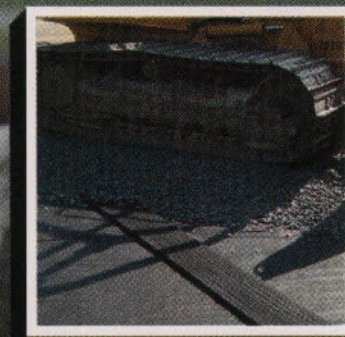
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# Tips to conserve irrigation water

By Heather Kraus

**W**ater conservation through efficient irrigation is not just an environmentally sound practice, it can actually provide greener turf. The goal of any irrigation system should be one that uses just the right amount of water to achieve uniform green grass results. To achieve this goal, turf managers need to know the basics of good irrigation design, installation, and maintenance for their sports fields as these factors can mean the difference between a water-wasting system and one that uses just the right amount. By making sure the basics are in place, you are on your way to a field that is not only adequately irrigated, it's also conserving water.

The principles of good design dictate that

turf receives uniform water coverage across the field. Uniform coverage is achieved through a combination of system design and product selection.

### Spacing

Be sure that your rotors are spaced to achieve "head-to-head" coverage or more. Head-to-head coverage is when the distance of throw of one rotor reaches the next rotor. If you will be irrigating at a particularly windy time of day or your area receives persistent wind, consider reducing the head-to-head spacing by 15 to 20 percent.

When heads are spaced further apart than the distance of throw it is called "stretched spacing." Stretched spacing can cause you to

have dry spots and then to over-water in pursuit of making those spots green. Getting the head spacing right is a critical component of creating a uniform application of water.

Be sure that you are achieving matched precipitation, which is the uniform application of water across the irrigated area. Matched precipitation can be achieved in several ways. The first and most effective way to match precipitation is to zone/valve your quarter, half and full head patterns separately. If your heads are spaced evenly, you will choose the nozzle that performs for the given distance of throw. You will run your half patterns twice as long as your quarter patterns and your full patterns four times as long as the quarter patterns. In this instance, you would run your quarter

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zones for 10 minutes, your half pattern zones for 20 minutes and your full pattern zones for 40 minutes. Zoning your head patterns together prevents them from running for the same amount of time. If you were to run all your rotors for the same amount of time, you would apply four times as much water on your quarter pattern turf area than your full pattern turf. This would be an egregious waste of water!

If you do not have the benefit of separately zoned rotors, nozzle selection is your next best solution. Manufacturers provide performance charts that are readily available through the catalog, a distributor or online. While you won't be able to achieve true matched precipitation when using different nozzle sizes, you can approximate it by choosing a nozzle for a quarter pattern that has half the flow of the half pattern it is zoned with. Some manufacturers sell matched precipitation rate nozzles that are easy to use across several radius and arc patterns.

## Pressure

Pressure is often overlooked as a water conservation tool. However, in order to get matched precipitation, head pressure should be constant or at least not vary too widely between heads. Proper pipe sizing is a key to reducing pressure loss due to friction between the heads and zones. Too much pressure and the spray of the rotor will atomize and the water will evaporate or blow away. Too little pressure and you will also have poor nozzle performance. Unbalanced pressure will lead to mismatched precipitation between rotors on the same zone. Manufacturers' charts indicate the appropriate pressure for the rotor and nozzle. The optimum pressure is generally in the middle of the performance range for the rotor.

Depending on what activities take place on the field, the field most likely sees more use at its center. In that case, you may want to consider



zoning your heads in the center of the field on a separate valve. This way you have more control and flexibility over center field irrigation.

## Slope of field

Because many field designs incorporate a crest or crown in the field, consider placing your heads along the crown or spacing them so that there is even coverage of the crown. Anticipate which way and how quickly your field might generate runoff; this may affect your spacing or run times. Consider your soil type as you design for this situation.

Product selection is an important component to the design but can also help if you are trying to retrofit a poorly performing field irrigation system. Products turf managers can use to improve irrigation efficiency include self-adjusting controllers, heads with even distribution performance, and rain and soil moisture sensors. Some manufacturers also offer damage-resistant heads. These models offer non-strippable gear drives and a feature that returns the rotor arc pat-

tern to its pre-set pattern if its arc setting is twisted, eliminating wasted water from a head that is out of adjustment. In addition, pressure-regulating products, such as pressure regulating swing joints or pressure regulating dials on the valve, can even out pressure for more uniform results.

## Maintenance and troubleshooting

All systems require proper maintenance. While there are many paths you can take to optimize the performance of your field, the first thing to consider is an irrigation audit. From the audit results, you can determine the overall performance of your system, which may help you decide your next steps. An audit may show you performance issues that are not easily spotted by simple observation. Small fixes like straightening heads or replacing nozzles can make a big difference in how well your turf is irrigated.

For older systems, turf managers should consider re-evaluating their systems' performances since significant development changes in the area may have occurred since the irrigation sys-

tem was installed that would affect water pressure. Turf managers should validate their water pressure to ensure it's not too low or too high. Be sure to measure pressure at the time you normally run your system as water system pressure can fluctuate depending on the demands at specific times of day in your area. If you have stretched head spacing, you may need to adjust the location of some of your heads accordingly to optimize irrigation coverage.

In addition, check controller zone run times to ensure your controller is running the zones for the appropriate length of time and don't hesitate to replace a product if it's not performing properly.

By sticking to the basics of good design, product selection and maintenance, sports turf managers will not only conserve precious water resources, they'll be rewarded with greener, healthier turf. ■

*Heather Kraus is Rain Bird Corporation's product manager for commercial rotors.*

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# Venerable Beaver Stadium improves **irrigation** system



Photo by Steve Manuel

There are always good reasons why customers upgrade their irrigation systems. In the case of The Pennsylvania State University's football stadium, the reasons cover a lot of unique circumstances.

The Penn State Nittany Lions have a long, impressive history in college football, with a proud reputation and a huge fan base. PSU's

home games are played in front of 100,000+ people at Beaver Stadium – the fourth-largest stadium in America – and the games are televised for millions of other viewers. Given that high-profile level of exposure, you might assume that the school's turf-maintenance decisions are motivated by the field's appearance.

"The aesthetic value is important, but to us, that's only secondary," said Bob Hudzik, the sta-

dium and athletic field supervisor at Penn State. "The playability of the turf is far more important here. I always tell people that our top priority is for the field to play well. Sometimes when you make the turf greener and more lush, you can increase the potential for slippage."

That emphasis on performance doesn't mean appearance is sacrificed, because Beaver Stadium's field is beautiful. There's much more