FLORIDA TURF DIGEST

FLORIDA TURFGRASS ASSOCIATION

May/June 2016
VOL. 33 / NO. 3

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FLORIDA TURF DIGEST

Florida Turfgrass Association

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DEPARTMENTS

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Advisor Executive Director Pete Snyder

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President's Message

By **John Mascaro**, *FTGA President*

Changes… Turn the page

In my original article this month, I was going to talk about my history and involvement with the FTGA; in fact, I had written the article last month while traveling. However, I will save that for another issue as I would rather address the changes that are occurring with the FTGA.

As many of you know, Pete Snyder, our executive director for the past seven years, has announced his retirement from our organization. His decision is a personal one—he wants to spend more time with his family and less time on the road. His departure will not be abrupt; he will gradually reduce his hours to take us through the 2016 Conference & Show.

Please understand that this is not what any of the FTGA Executive Committee or the board of directors wants; however, it is what is best for Pete. The FTGA is a strong organization with an excellent board, and we are currently in the process of working out all the specifics of this transition.

Heather Russo, our association manager, is also dedicated to assisting us with this transition and will remain a great asset to our organization.

Even though staffing changes are difficult to make, they are inevitable. Thanks to the progress Pete has made over the past seven years, our board, the association, our industry and our profession are stronger than ever. The FTGA will not only strive to continue to have strong leadership and promote the education of our members, we will also continue working to help our members gain community recognition and a more prominent status in their jobs. The FTGA will continue to advocate for strong research-based scientific studies for overall environmental sustainability.

Our organization's strength resides not only in our leadership but also in our members. Our vision, our goals and our growth are poised for exciting things and increasing possibilities. We are still committed to expanding our membership base and to continue advocating for the FTGA and our profession.

We are currently finalizing our educational sessions for this year's Conference & Show at Innisbrook, September 26–8, and we have many new faces presenting quality, relevant education. We will continue to have the USGA educational session along with sports turf, sod and landscape sessions. The Sports Turf Tour will take us to Raymond James Stadium and to the Phillies Spring Training Ballpark. The FTGA Golf Tournament will take place at the newly renovated Copperhead course at Innisbrook. This year, the Conference & Show will expand to allow equipment back onto the show floor. This is sure to be an exciting event, so be sure to save the date and plan to attend!

Wrapping up, I want to thank Pete personally for having a true vested interest in and vision for our organization and our profession. He has advocated on our behalf at meetings, seminars, city council meetings, state DEP meetings and countless other places. He will continue to be active for the FTGA. We have even undertaken some new and exciting projects that you will be hearing about very soon.

In the final analysis of the vision and direction of the FTGA, we will ultimately become a stronger organization because of Pete's vision, and in the future we will be able to face changes and continue to serve our members better than ever!

Changes… Turn the page.

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From the **Executive Director**

By **Pete Snyder**, *Executive Director*

FTGA to Publish *Florida Turf Digest*

Beginning with this May/June issue of *Florida Turf Digest*, your association has added the task of self-publishing the magazine. This decision brings the Florida Turfgrass Association back to its roots when it was the FTA (Florida Turf Association) and it published its own periodicals. We're back in the publishing business again.

Given the proliferation of online communications, the publishing industry has had a difficult time making a profit from publications such as ours. So we want to thank AgNet Media for publishing our magazine in a polished and professional manner for the past two-and-a-half years. We also want to thank AgNet Media for sticking by us and insuring a smooth transition as the FTGA puts on its publisher cap.

There are several positive things to come out of this change.

First, you may have noticed that MJ Plaster has returned to the editor's seat. MJ had been our managing editor for numerous years prior to AgNet Media. We're thrilled to have MJ back as editor-in-chief. She knows the turfgrass industry very well and can call on many old friends to help fill out the editorial pages of our magazine with impactful articles that will be of interest to our readers.

Second, self-publishing allows us to deliver more value to our advertisers. We can do this by increasing the circulation list from approximately 3,600 turfgrass professionals currently receiving the publication to nearly 9,000 individuals and companies. And this list can grow as more companies ask to be added to our online circulation list. There will be no limit to the number of qualified turfgrass professionals who will be able to receive the *Florida Turf Digest* online.

No rate increase

Advertisers will be able to capitalize on this increased circulation without an increase in our advertising rates. That's the power of an online magazine. Still, we will print and mail hard copies of the magazine to our members, our industry partners and vendors, key academic and extension personnel and others requesting a hard, printed copy. But hard-copy distribution will be about one-third of what it had been, thereby saving on printing and mailing costs—and saving thousands of trees in the process. We're going green with the publication of *Florida Turf Digest*.

A final advantage of self-publishing is that more of our advertisers' dollars will go to help strengthen the FTGA. Monies that once went to the for-profit publishers with whom we worked will now be captured by the association. At this point, it is hard to quantify those monies, but it appears that between 10 and 12 cents of every dollar our advertisers spend will come back to the FTGA to help support our programming.

Bottom line—self-publishing is a win-win-win. It's a win for the industry, since we will be able to increase our reach. It's a win for our advertisers because the increased reach broadens our audience base without an increase in advertising rates. And it is a win for the FTGA and its members because we will have increased revenues to enhance our programs and events.

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An Irrigation Problem

By **Phil Busey, Ph.D., CCA, CPAg,**
Emeritus Professor of Environmental Horticulture, University of Florida; and President and Agronomist, Phil Busey Agronomy Consulting Inc.

Landscapes frequently develop irrigation problems that are not noticed until major turfgrass damage has occurred. For example, in the satellite view of the high school football field (Fig. 1), there were green areas near the rotary sprinkler heads where water was obviously reaching the turf. There were brown, damaged grass areas away from the sprinkler heads. It would be impossible for this irrigation system, as configured, to adequately water all areas without wasting a lot of water in areas that are adequately covered.

Background on irrigation performance

Seeing brown grass is a bad way to verify irrigation performance. Brown grass is not a good diagnostic tool. A slightly better way to know what's going on is to visually observe if sprinkler heads achieve sufficient "head-to-head" coverage, which they did not do in the soccer field (Fig. 2). "Head-to-head" coverage refers to sprinkler heads and nozzles that achieve a radius that reaches neighboring sprinkler heads. Sufficient coverage is accomplished by choosing sprinkler heads and nozzles consistent with the effective pressure (the pressure in the

Fig. 1 *Bermudagrass high school football field satellite view showing green circular grass areas near sprinkler heads (black dots added from GPS) and brown, dying grass away from heads. On the ground, a mixture of sprinkler heads from different manufacturers with varying nozzle sizes delivered only 40 psi pressure in the nozzles, with very poor uniformity. Manufacturers' specifications required a minimum of 50 psi for adequate coverage at 54-feet spacing. There were only four rows of sprinkler heads, with the center rows spaced 78 feet spacing, which was much too far apart, and other spacings were 55 feet to 60 feet. Image adapted from Google Earth, 12/31/2011.*

Fig. 2 *Bermudagrass soccer field showing sprinkler arcs failing to achieve head-to-head coverage. This visual assessment is far from accurate.*

nozzles), based on manufacturers' specification tables, and considering that friction loss (loss of pressure) will always occur in the pipes, especially badly if they are too small. Friction loss is the loss of pressure that always occurs in an irrigation system when water flows.

You can't eyeball coverage and uniformity except in extremely bad cases, such as the sprinkler heads in the soccer field that don't reach their neighbors. Visual observation only shows us the result of a problem but does not measure the size of the problem or diagnose whether it is fixable.

To realistically assess the soccer field irrigation, I used a pressure gauge with a pitot tube (Fig. 3) to measure pressure in the nozzles, which was only 15 pounds per square inch (psi) while the system was running. This was a meaningful number because it was the pressure in the nozzles that threw the water. Pressure is always lost, never increased, the farther away and the more the flow of water through pipes, especially when pipes are too small.

Because of low bid contracts, and resulting inadequate pipe sizes and insufficient pump capacity, irrigation systems often cannot provide water at sufficient pressure at the nozzles to be efficient and cover well.

In a special case, I was able to recommend a solution at a low cost.

Irrigation case

A football field had brown areas of dying grass nearest the track (Fig. 4). The brown areas were at regular intervals of about 50 feet around the field because they were outside the reach of the perimeter sprinkler heads. I suspected irrigation uniformity problems throughout the field, so I measured irrigation uniformity by a cup catchment test (Fig. 5), and the test came out poor, with distribution uniformity only 50%.

Pressure at the nozzles in perimeter zones was only 25 psi, compared with 54 psi downstream at the pump. These were Hunter I-40 single-direction sprinkler heads with dark green (#23) nozzles. I looked them up in the table in the manufacturer's catalog and the minimum recommended pressure for this nozzle-head combination was 60 psi at the nozzle, which would result in 21.3 gallons per minute (gpm) per head.

Because the manufacturer provided no estimate of flow at pressures below the recommended minimum, the actual flow was not known. Each of the two perimeter zones had 14 heads; therefore, if the system had run at the required minimum

Fig. 5 *Irrigation uniformity in the football field was measured by catchment cups. After a measured run time, cups were poured into graduated measuring cups, and irrigation volume per cup was measured. Cup volume was divided by the cup surface area and run time to determine precipitation rate (depth per time) and uniformity.*

Fig. 3 *The soccer field sprinkler heads had only 15 psi pressure in the nozzles when the irrigation zone was running. Pressure was measured with a pressure gauge and a pitot tube in the nozzle. This "dynamic" pressure was too small. Ignore "static" pressure when the irrigation system is not running. If you observe pressure anywhere else, such as the pump, realize that it won't tell you about the ability of the irrigation system to cover an area.*

Fig. 4 *Bermudagrass football field showing turf drying out in sections in the perimeter nearest the track.*

Fig. 6 *The selection of the right sprinkler head nozzle can make a big difference in irrigation flow and system efficiency. Changing from dark green #23 nozzles to light green #10 nozzles shown here would reduce flow from 23.9 gpm to 10.3 gpm, per head. Although this would reduce the radius of coverage, it would also reduce the total flow, which would reduce the pressure loss due to friction in the pipes.*

60 psi at the nozzles, there would be 298.2-gpm simultaneous flow for all heads in a zone. After looking at the as-builts (the drawings prepared when the irrigation system was installed), it was obvious that there was no way this system could provide the pressure needed.

For example, the mainline pipe size was only 4 inches, and the zone pipe size was 4 inches descending in steps to 1 inch. The maximum distance from the pump to the furthest head was 1,509 feet. The flow of water to 14 heads was supplied by 4-inch pipe, 10 heads by 3-inch pipe, 8 heads by 2.5-inch pipe, 4 heads by 2-inch pipe, and 1 head by 1-inch pipe.

For these pipe diameters, assuming PVC Schedule 40 iron pipe size (IPS) plastic pipe, at the theoretical 21.3 gpm per head, friction loss per each 100 feet of pipe would be up to 1.94 psi for the 974 feet of the 4-inch portion, greater pressure loss for the 3-inch section, and significant but lesser friction pressure losses at the ends of the lines. So, it is easy to see how there could be almost 20 psi pressure loss before the first head, and much more than that pressure loss cumulatively to the end of the lines. While the actual flow at low pressure was not known, and there were issues with pump capacity, as there often are, clearly pressure was made worse by having too many heads on one zone.

What would you prefer to do?

1. Buy and install a new pump.
2. Install 974 feet of new main line, at 6-inch diameter, cutting through the track.
3. Tear up the field and cut through the track, trenching in lateral pipes and adding new zones and zone valves, with about 1,000 feet of remote control wiring per each zone. Then replant.
4. Something else.

In this case, at my recommendation, the high school replaced the nozzles of the perimeter sprinkler heads. This substantially solved the problem because it reduced the gpm flow per head, reduced overall flow, reduced friction pressure loss, and increased psi pressure at the nozzles to 40 to 45 psi—not great, but enough to get by except for some problem of wind. As an added bonus, the new head and nozzle combination had a recommended minimum 50-psi pressure, close to what was accomplished. With these changes, the distribution uniformity, a measure of irrigation system performance,

increased from 50% to 62%, not very good, but much better.

A general observation

Often I have seen sports turf fields in which an older system has been performing poorly after sprinkler head nozzles were upsized over the years to provide better coverage in dry areas. Unfortunately, this created less uniform irrigation because the increased flow results in greater friction loss of pressure, lower pressure at all the nozzles and worse coverage. Reversing this, sometimes reducing nozzle size and making all nozzles the same can substantially fix the problem at low cost.

Fig. 7 *After sprinkler head nozzles in the football field were downsized, the pressure and uniformity increased because there was less friction loss in pipes and there was much better coverage in all areas including the perimeter areas nearest the track.*

Irrigation Management at the Montgomery Botanical Center

By **Lee Anderson**, *Superintendent*

Within a radius of about 5 miles are five venerable (for Miami, at least) botanic institutions, all sharing certain commonalities, but each with a disparate focus.

- Kampong of National Botanical Garden c. 1918
- Montgomery Botanical Center (MBC) c. 1932
- Pinecrest Gardens c. 1937 (Originally Parrot Jungle)
- Fairchild Tropical Garden c. 1938
- University of Miami Gifford Arboretum c. 1947

These date and royal palms, above, at one of the lakes required a dedicated irrigation zone for several years before establishing themselves. The zone can be seen on the master map in the upper right corner, paralleling the lakes.

Each institution has a particular focus, which dictates the irrigation management strategies. The irrigation schedule at Pinecrest Gardens, for example, a labor-intensive manual system, needs to reflect the hours of park operation. Heaven forbid that an errant zone is still running when patrons arrive a few minutes early and get spritzed on their way to the water park. It's the same with the Gifford Arboretum—students taking a shortcut through the Arboretum after parking their Lamborghinis nearby certainly don't want to show up in class soaked from errant overspray.

The Kampong irrigation system was beset early on in the 1930s by saltwater intrusion, so their challenge is managing domestic, potable water supply and the associated budgetary and regulatory restrictions.

Fairchild Tropical Botanical Gardens also fell victim to saltwater intrusion in the late 1930s, and although the garden has access to reasonably fresh water from adjacent county property, this water still needs to be run through a reverse osmosis (RO) treatment before being used in sensitive collections such as the butterfly garden. (Although based upon my experience with the potential corrosiveness in our greenhouse complex, I don't know just how appropriate RO water is for the fragile lepidoptera!)

At MBC, the focus is on research and conservation, so the irrigation system management needs to be tailored with these objectives in mind. Palms from the tropical rainforests of South America have completely different requirements than palms from the arid regions of North Africa, for example. The two essential elements of the irrigation management program are the central system controller and weather station supplemented by an array of Rain Bird RainWatch field stations scattered across the 120-acre site and an in-depth mapping program that has become more technologically advanced over the years with increasing sophistication and accuracy of survey equipment. The master map of the entire property is broken down into 154, 200′ x 200′ quadrants. Each of the "quad maps" displays every known horticultural and infra-

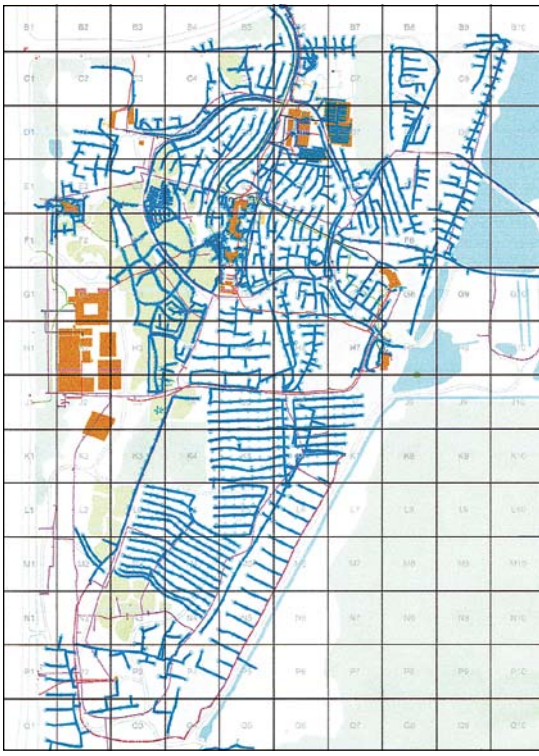
The central irrigation controller and weather station mounted on the main greenhouse, left, is augmented by a half-dozen remote field stations.

These Kapok trees (far left) from Central America, planted in the early 1980s, have thrived since then with no supplemental irrigation.

structural detail available: utility and irrigation lines, hardscapes and every accessioned plant: palms, dicots, shrubs of botanical significance. Since we plant around 500 new specimens a year, it is essential to know exactly where these plants can be installed without damaging existing utilities while still following an exemplary landscape design plan.

The master map also provides a visual account of the evolution of the irrigation system over the years. For example, the irregular circular loop at the top of the map depicts the original layout from the fifties and sixties while the symmetrical rows of irrigation lines at the bottom of the map reflect the original agricultural rowcrop plots, primarily tropical fruit such as mango, avocado and citrus.

Although the details of the equipment inventory will not be addressed in this article, the irrigation management program has evolved over the years with the acquisition of increasingly sophisticated equipment within the confines of the modest budget of this not-for-profit institution. An excellent example is a recent upgrade from basic direct-reading rain gauges to data-logging, tipping-bucket gauges. The direct-reading gauges had a capacity of 6 inches, so if a curator sees a reading of 6 inches after a night of steady rain, he or she doesn't really know if exactly 6 inches fell, or if it could have been 7 or 8 inches or more. The tipping-bucket gauge can record up to 160 inches, which, at least for South Florida, would be around three years' worth of data. Additionally the data-logging feature tracks the intensity of the rainfall. Let's say 3 inches of rain were recorded after an application of granular fertilizer. Three inches over the course of several hours would be perfect. Three inches in one hour would be a true washout, a waste of time and money as well as negative environmental impacts on nearby waterways.



The master irrigation map is divided into 200′ x 200′ quadrants that show in detail all items of infrastructural and botanical significance.

At the MBC, irrigation management means organizing whatever resources are available to provide the most effective and scientifically documentable applications within budget and water supply constraints.

Extensive wall-to-wall palm fairway irrigation, right, is required to maintain turf with sufficient vigor to withstand the foot and vehicle traffic of various tour groups that come through the garden.

Water Shame No More

Every landscape or plant requires water. The trick is to make sure the use of water is a positive one. "With Water Positive, we should be able to use landscape principles to help homeowners use water more efficiently while also protecting it when working out in the yard," says Mark Slavens, vice president of Global Lawns R&D and Environmental Affairs for ScottsMiracle-Gro.

Dr. Jason Kruse, associate professor of turfgrass science at the University of Florida, says, "The plants in our urban landscape, whether they are in your backyard or at a city park, play a vital and important role in our society. While I agree that water resources are and will continue to be limited, I also feel that it is important that we manage and maintain greenspaces for our own wellbeing. The key to this will be to find balance."

Make Water Better

As incredible as it sounds, everyone can help to make sure water is used in positive ways, and the foundation of an initiative in development by Scotts—Water Positive Landscapes™.

"We want the Water Positive concept to be a tool for everyone. The same principles apply everywhere—from residential landscapes to public-use lands. We want to embed the concept in policymakers and all stakeholders," says Slavens.

For example, the homeowner who uses water to create a space for their dog to play is also providing valuable filtration for rain and stormwater runoff. Homeowners can improve water quality by designing landscapes so that water that hits a roof or concrete gets filtered through plants instead of finding its way to a drain.

For too long, people have been shamed for using water. "Applying the 'Water Positive' concept alleviates the tension between having the landscape a homeowner enjoys and having good-quality water," says Slavens. "We shouldn't be flooding our lawns and gardens just to make them look emerald green. We can be mindful of water impact, and ensure that what we get for the water expenditure is positive from environmental, social and economic perspectives—that it has a net positive global impact."

Water Positive Landscapes

Water Positive Landscapes is the culmination of Scotts' 15-year focus on water quality. While the program is still in development, Slavens agreed to give FTGA members a sneak preview. "We're taking

Golf Scorecard

How has golf handled water use in the United States? According to the Golf Course Superintendents Association of America, the 2006 and 2014 Golf Course Environmental Profile Water Use and Conservation surveys showed:

- U.S. golf courses have reduced water consumption by 21.8 percent.
- Golf uses only 1.44 percent of all irrigated water in the United States. Irrigated areas on golf courses have decreased by more than 14,000 acres.
- Water conservation measures have saved 500,000 acre-feet of water. Conservation practices, turf reduction, use of advanced irrigation systems, and tools such as moisture meters have increased efficiency.
- Golf's use of recycled water has increased by 32.7 percent. Recycled water now counts for 25 percent of all water used on golf courses. Use of all other water sources, including potable water, has decreased.

a long-term, multipronged approach to produce a shift in consciousness. We realize that green spaces continue to be relevant for whomever they serve, providing functional, environmental and social benefits. We need to manage and design these spaces in a way that they have a positive impact on water quality and total water use," says Slavens.

Scotts' work with the University of Florida (UF) and other stakeholders such as the Ocean Research & Conservation Association will make the program stronger and insure stakeholders are better informed. "For example," says Slavens, "working with Dr. Jason Kruse at UF has allowed us to make important connections with researchers doing weed control work so that we can design weed control programs that fit into the overall goal of making better water."

"Water conservation and water quality are consistently important to Floridians. Our research efforts at UF/IFAS are focused on a number of key issues related to water use in the landscape in an effort to do the best we can to manage green spaces while using the smartest amount of water," says Kruse.

Other prongs of the program include looking to different plant types, using impervious surfaces, looking at the effects of weed control and pesticides as well as smart irrigation controllers.

"For the past 15 years, water has been top of the mind for our company. Although we were engaged, we took a 'reactive approach,'" says Slavens. "Today we know regardless of our impact and size of impact on the water quality, we said, 'We need to be part of the solution and important work that people are conducting to discovering the true causes of water waste and impairment.'"

"Water positive is a way to demonstrate how homeowners and communities can have a positive effect on water resources by growing the landscape they want. It's about having a positive gardening positive experience, while having a positive impact on water," concluded Slavens.

Florida Water Star: Working Together to Keep Florida Green

By **Robin Grantham**, *Senior Communications Coordinator, Southwest Florida Water Management District*

As Florida's population tops 20 million, our demand for water will only continue to grow. This added growth also means that construction continues to increase on new homes and developments. It's imperative that these new homes are designed with water-efficient systems to help ensure Florida's long-term water supply.

While great strides have been made to conserve water indoors, thanks to initiatives like the Environmental Protection Agency's WaterSense® program, there is still much that can be gained outdoors through the design and installation of efficient landscapes and irrigation systems.

Water-efficient design and installation inside and outside residential homes, communities and commercial developments are the major components of the Florida Water Star℠ (FWS) Program. This green building certification program was developed by the St. Johns River Water Management District to help reduce water use and ensure that our water supply will meet future demands.

The FWS program, which is now administered statewide by Florida's water management districts and the Florida Green Building Coalition, includes indoor criteria such as efficient faucets, showerheads and toilets, as well as outdoor criteria pertaining to irrigation system design and plant selection. The effective outreach, education and implementation of the FWS program has resulted in more than 2,500 homes achieving certification statewide as of April 2016.

FWS-certified homes and buildings are independently inspected by third-party certifiers to ensure that the property meets all program criteria, exceeding Florida State Code requirements. To ensure that FWS certifiers have a comprehensive understanding of the program criteria, they are required to attend a certifier training, pass the FWS certifier exam and demonstrate two successful apprentice inspections. The FWS certifier training offers a full day of classroom and field training concentrated on understanding the program criteria for water-efficient construction.

Additionally, FWS Irrigation and Landscape Accredited Professional training is offered for irrigation and landscape designers and installers and focuses on the technical aspects of how to design and install water-efficient landscapes that meet program criteria and new local codes.

Here are just a few of the FWS outdoor criteria required for FWS home certification:

- **High-volume irrigation not to exceed 60 percent of landscape area**—High-volume irrigation is defined as any sprinkler or emitter with a flow rate of 0.5 gallons per minute (GPM) or greater and is used to irrigate turfgrass and other plant materials that have a greater watering requirement.
- **Use micro-irrigation in landscape beds**—Micro-irrigation includes emitters that apply less than 0.5 GPM. Most types of micro-irrigation deliver water below the plant canopy and directly to the root ball, resulting in higher application efficiencies than sprinklers. Higher application efficiencies allow for effective irrigation while using less water than sprinklers. Also, lower application rates allow more time for water to infiltrate the soil, reducing the likelihood of runoff.
- **Use check valves in low-lying areas**—Water pressure affects sprinkler performance. As gravity pulls on water, the pressure can accumulate at lower heads, which can cause up to 3 gallons of water to leak from low-lying heads every time the system shuts off. A check valve is a component that increases the resistance of the sprinkler pop-up mechanism and prevents water from leaking out.

Through open dialogue and meetings among the water management districts, turf industry leaders, local utilities and irrigation professionals, I am confident we can work together to address Florida's water needs. We must adopt programs and policies that are flexible, comprehensive and long-term to help secure a healthy and abundant supply of water to meet our future needs.

To learn more about FWS and future training opportunities, visit **FloridaWaterStar.com**.

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Great CEU Round-Up Hosted by UF/IFAS and FTGA

It's CEU season, and once again the University of Florida Institute of Food and Agricultural Sciences (UF/IFAS) and FTGA will present the Great CEU Round-Up. For industry professionals looking for the simplest way to earn *hard-to-attain* CEUs, the Round-Up offers attendees the opportunity to earn up to six CEUs across 17 different license categories.

The Great CEU Round-Up 2016 will be held **Wednesday, July 27, from 9:00 a.m.–4:00 p.m. EDT**. The event will be simulcast from the University of Florida, Gainesville to IFAS Extension Offices across the state via MediaSite, an Internet-based service.

Take advantage of the lower-cost, pre-registration prices (see below). Pre-registration ends Friday, July 22, 2016. Beginning Saturday, July 23, 2016, on-site charges apply.

Visit the FTGA website at **www.ftga.org/wp-content/uploads/2016/05/MainAgenda.pdf** to download a list of participating locations, or contact your local Extension Office and ask them to offer The Great CEU Round-Up 2016.

IFAS/FTGA Great CEU Round-Up 2016 Agenda and Courses

Time (EDT)	Topic	Speaker
8:30 a.m.–9:00 a.m.	Registration	
9:00 a.m.–9:50 a.m.	Pesticides, Pollinators, and Politics in Turf & Ornamentals	Dr. Adam Dale
10:00 a.m.–10:50 a.m.	Integrating Biological Controls and Herbicides	Dr. Jim Cuda
11:00 a.m.–11:50 a.m.	When Upland Invasive Plant Control Meets Water: Herbicide Label Interpretations, Application Techniques, and Troublesome Species	Dr. Stephen Enloe
11:50 a.m.–1:00 p.m.	BREAK	
1:00 p.m.–1:50 p.m.	Pesticide Spill Management and Cleanup	Paul Mitola
2:00 p.m.–2:50 p.m.	Aquatic Weed Identification	Dr. Lyn Gettys
3:00 p.m.–3:50 p.m.	Herbicide Injury From Off-Target Application	Dr. Peter Dittmar
3:50 p.m.–4:00 p.m.	Evaluations and CEU attendance form distribution	

Category	Available CEUs
487 General Standards/Core	1
482 General Standards/Core	1
Limited Urban Fertilizer	1
Limited Landscape Maintenance	5
Limited Lawn & Ornamental	5
Commercial Lawn & Ornamental	5
Private Applicator	5
Aerial Application	5
Ag Row Crop	2
Ag Tree Crop	2
Aquatic Weed Control	4
Demonstration & Research	5
Forestry	2
Natural Areas Weed Management	4
Ornamental & Turf	5
Regulatory Pest Control	5
Right-of-Way	5
Total available for full-day participation	**6**

Registration

To register online or download registration forms, visit **www.ftga.org/ceu-round-up/**.
Note: off-site registration closes July 22, 2016, and on-site pricing applies beginning July 23, 2016.

- **UF/IFAS Employees: $15.00 pre-registration | $22.50 on-site**
- **Municipal Employees: $30.00 pre-registration | $45.00 on-site**
- **Industry Professionals: $50.00 pre-registration | $75.00 on-site**

Walk-ins are welcome the day of the event at the participating IFAS Extension Office.
For the latest updates, visit the FTGA site: **www.ftga.org**. Look for course descriptions and speaker bios in the next issue of the *Florida Turf Digest*.

FTGA Marketplace

Harrell's celebrates 75 years

Congratulations to Harrell's for reaching this important milestone. In August 1941, Ormond and Lucile Harrell purchased a feed store in downtown Lakeland, Florida. They aspired to provide quality products and friendly, personal service. Seventy-five years and two generations later, Harrell's maintains the same aspirations through a modified business model.

Today, in addition to being one of the nation's largest distributors of branded fungicides, herbicides and insecticides, Harrell's produces top-quality, custom-blended fertilizers, liquid fertilizers, specialty liquids and soil surfactants for the golf course, sports turf, landscape management, horticulture and specialty agriculture industries.

Third-generation owner, Jack Harrell Jr., has grown the privately held company to an undisputed industry leader serving over 10,000 customers through 18 locations and 300 employees.

Visit Harrell's at **www.harrells.com**.

Newly identified fungal pathogens may help control invasive grass

Researchers with the University of Florida Institute of Food and Agricultural Sciences have found that newly identified fungal pathogens may suppress an aggressive, invasive grass that is spreading throughout the eastern United States.

S. Luke Flory, an assistant professor of ecology in the agronomy department, and his team visited more than 80 sites in 18 states and conducted a multi-year field experiment. They documented the recent emergence and accumulation over time of new fungal pathogens. Flory's results also show that the pathogens have the potential to cause declines in populations of the invasive grass, also known as *microstegium vimineum*.

"Invasive species, in this case an introduced grass, are often successful because they escape their natural enemies. Here, we looked for new enemies in the introduced range—pathogens that might attack the invasive species," Flory explained. "We found that

pathogens are actually reducing the growth and reproduction of the invasive grass. These results are exciting because the invasive grass may not need to be managed by other means."

While researchers have thought that invasive species may eventually be controlled by pathogens or parasites, this is the first documented example of it occurring. Though researchers are excited that the newly discovered fungal pathogens appear to be suppressing the invasive grass, scientists don't know if the new pathogens will harm other species such as native plants, crops or turfgrass. "We don't know if the fungal pathogens will just control the invader, or if they will also affect co-occurring plant species," he said. "The next step is to determine how these pathogens will affect invasive and native species over the long term."

Other members of the team include postdoctoral research associate Kerry Stricker, Phil Harmon (UF Plant Pathology), Erica Goss (UF Plant Pathology and Emerging Pathogens Institute) and Keith Clay (Department of Biology, Indiana University).

Introducing Dr. Adam Dale

Dr. Adam Dale recently joined the University of Florida faculty as assistant professor of turfgrass and ornamental entomology at the Gainesville campus. Dale moved to Gainesville from North Carolina State University in Raleigh, North Carolina, where he researched the ecology and management of insect pests in urban landscapes. His research identified ways in which urbanization increases pest abundance on landscape trees and reduces the condition and services that the trees provide. Dale's work has led to the development of tree planting strategies and recommendations that reduce the occurrence and magnitude of pest infestations on urban trees.

Dale will expand his previous work and build an extension and research program to address the needs of the Florida turf industry. As the turfgrass extension specialist, he plans to utilize various outlets to reach and educate extension faculty and landscape professionals throughout the state. He focuses on plant-insect interactions, predator-prey interactions, and developing more sustainable pest management strategies. As the industry encounters more regulatory challenges and environmental issues, management strategies will have to adapt. Dale is looking forward to getting to knowing and working with the Florida turfgrass community.

Holler Forms Agro-Smart Turf & Ornamental Care

After 20 years with TruGreen, Brad Holler has left to become the owner and operator of Agro-Smart Turf & Ornamental Care of SW Florida LLC. The new venture will be operating out of the Fort Myers area, providing turf and ornamental services to the region. For more information, contact Brad Holler at agrosmartbh@gmail.com, or call 239-628-6974.

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