



Field painting tips & disaster stories

- ☉ What 3-4 factors do you consider most important for efficient and successful field and logo painting?
- ☉ What is the worst painting disaster you've ever been involved with or seen happen?

MARTIN KAUFMAN, CSFM Turf Managers LLC Nashville, TN

Efficient and successful field and logo painting begins with: 1. Preparation; 2. Planning; 3. Observation; and 4. Focus (& double check).

The worst painting disaster I have been a part of is painting a 30 yard line from the west side of a football field to the 31 yard line on the east side of the field, letting it dry and not discovering the problem until I was painting hash marks on the east sideline. This game was on TV too.

ALLISON MOYER Grounds Manager Collegiate School, Richmond, VA

Pre-paint by planning out on paper what needs to be painted. The colors needed, measurements of the logo and overall look of the project

Timing is crucial in getting a good logo. Give yourself plenty of

time to complete the logo. Also, make sure you paint it in enough time for it to completely dry before players arrive. Check with coaches and find out practice/game schedules before you start. Wet paint on a field does not mix well with people walking all over it!

Equipment. Always check your equipment before beginning. Check rollers, paint, strings, & tapes are good and usable.

Patience. Don't get frustrated. It takes time to create a logo. Things will always turn out better if you do not get frustrated

On the coldest night of the year, I painted an Arena Football field on an outdoor regular football field. It happened to be a synthetic field that had that needed to be painted with embedded regular football hashes, numbers, & lines. After much discussion, the complex made the decision to paint the embedded hashes, numbers, & lines with green paint to cover them up and then repaint

the correct lines for arena football. We tried to get a green as close as possible but in the end it looked tacky.

BILL CONNELL Field Operations Buffalo Bills

First, all equipment is in good working order (cleaned after last use, properly tuned, all parts, spray tips, etc., inspected).

Second, check weather, team schedule or any other source of disruption that would prevent the goals of the task from getting done.

Third, get proper amount of paint ready to go: mixing, cutting, and filtering.

Fourth, start job and be neat and precise. Don't get lazy or sloppy; be consistent from start to finish.

My worst painting disaster was painting the numbers college distance from the sideline (21 ft), not the professional distance (36 ft) from bottom of the template. I had to dye out wrong numbers during

the night. This was a practice field, but a disaster to me none the less!

RYAN NEWMAN Director of Athletic Grounds University of Colorado Athletics

First factor for successful and efficient painting is monitoring the weather. Try to get ahead of forecasted precipitation to make sure the paint dries before it rains. If you can avoid painting in windy conditions, this will minimize the amount of drift you have. Also, as the season progresses, we get colder temperatures and shorter days, so we start the painting earlier to ensure the paint dries in time.

The second factor, and probably the most important, is having a knowledgeable crew; they need to know proper field dimensions, painting equipment operation, and be on the same page with one another. There is a lot of teamwork involved in painting; most processes involve multiple team members so knowing what the other guy is doing and when he is going to do it and vice versa will eliminate most mistakes.

The last one is using quality paint and reliable painting equipment, and making sure the paint is mixed properly and consistently. Taking care of your painting equipment by properly cleaning it when finished will ensure reliability and functionality.

The worst painting disaster I've seen was when I was a student at Iowa State. We had a stand alone unit in the back of a cart and were moving from one end zone to another along the perimeter. We did not wind up the hose for the painter, we were just pulling it behind the cart. We made the turn at the corner and the hose snagged the nail holding the sideline string and it jerked the paint and painter right out of the back of the cart. The other one I witnessed; we had the painter in the back of a truck heading to one of our facilities

ties when the tailgate came down and the painter fell out at about 35 mph. The handle bars were bent a little, but it started up on the first pull and we painted the soccer field with it.

ABBY MCNEAL, CSFM
Director of Turf Management
Wake Forest Athletics

Make a good “game plan” for painting by setting the pathway to get things done with the group; this keeps everyone on the same page so they should know what comes next in the process to best be prepared in case things occur.

Have a clear understanding of the layout and/or the logo and take pictures of the logo and field measurements with you into the field to ensure that you put it in the correct location. The picture also helps to make sure that you paint the logo correctly. Field layout information also helps to make sure you have all the correct markings for that particular sport.

Make sure that you have towels and water as paint spills happen and you will need to be prepared to clean them up. Take extra string, nails, and tape measures of varying lengths to help make sure you layout the field or logo correctly.

Take a picture of the final product to be proud and to learn from in the future (teaching tool).

Worst painting disaster I have seen is an NFL field with the arrows on the wrong side of the numbers. I won't say which one but it was about 15 years ago.

Worst painting disaster I was a part of occurred when paint was spilled onto synthetic turf and the employee flooded/washed the spill are with water. The waste water, diluted white water, washed into a local stream and was reported. We then had to provide information (MSDS and labels) to the fire department and environmental police. The employee did the proper thing by washing the spill out, just a lesson learned to know remember where things drain too. The fire department flooded the area with more water to help the situation.

BRETT TANNER, CSFM
Sports Turf Technician
University of Virginia

Use a clean and dependable painter. A good paint job starts with good equipment. Consistent cleaning and maintenance of your paint machine will help guarantee its performance when called upon. It's also good to have a backup plan as well, aerosol, 4 inch rollers, or even chalk if needed.

Understand and communicate what is being done and expectations. I try to gather everyone who will be involved during the painting process and go over the steps and the order in which we'll complete each one. I also print out diagrams of the field being painted including field measurements and colors of logos.

I always want to make sure we have enough time to ensure we take all the steps to provide the highest quality product possible. It also helps in the event of inclement weather, equipment problems, or reduced staffing.

I think I've been fortunate, if you're prepared and organized I feel that you can avoid most mistakes. Some of the “disasters” I have been involved with the occasional upside down 3, an arrow pointed the wrong way, or stencil burn from marking a logo in the afternoon on a hot day. You learn from those mistakes and take the appropriate steps to avoid them the next time.

KEVIN WHITE
Athletic Grounds Lead
Seattle University

1. Be prepared; make sure you have everything you need and it is ready to go before you start painting.

2. Pay attention to the radar (weather forecasts in Seattle are not always accurate!)

3. Double check the layout from the stands (or higher vantage point) just to make sure everything looks right.

4. Clean-up is just as important as setup!

My worst disaster happened a couple of years ago during our men's soccer home opener against the University of Washington. We had just purchased a new airless sprayer and wanted to use it for the first time to paint the field. Our men's and women's teams use our field for training and games, and because of scheduling we paint before each game so the lines are bright and crisp. We set up the sprayer and ran water through it the day before and thought we were good to go, but for some reason we couldn't get paint to come out of the tip on this day. We discovered we were missing the tip seal, but didn't have a spare and were running out of time. I managed to find an old aerosol sprayer and enough cans to at least put lines on the field (so I thought). Half way down one side, the cable breaks on the handle...I have 30 minutes left before the game kicks off, and I still need to paint AND wind up string. Needless to say, we now have spare everything, including a functioning aerosol sprayer and paint as a backup. ■

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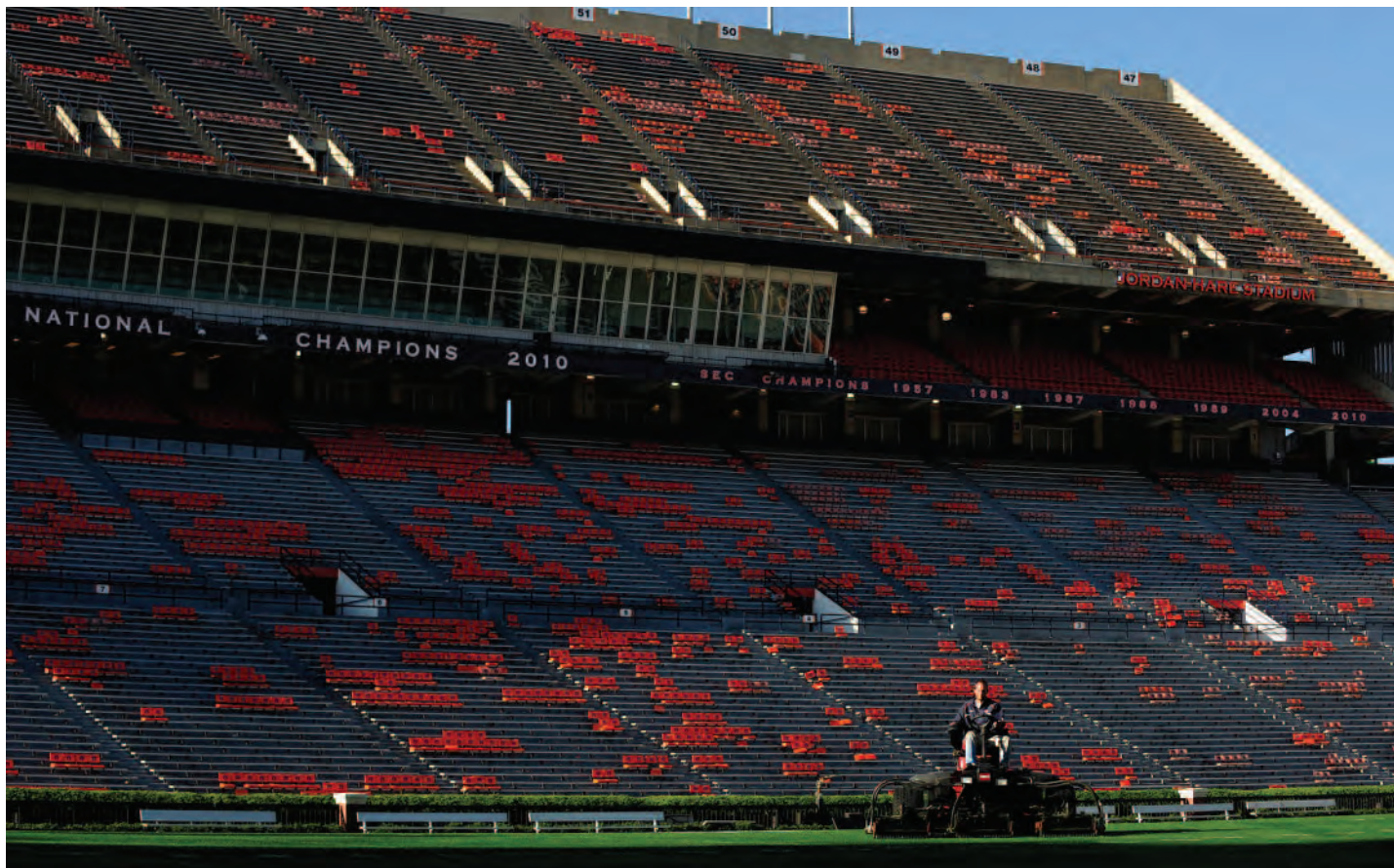
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Gridiron maintenance challenges within the SEC

MEETING THE EVER-CHANGING MAINTENANCE NEEDS of college athletic fields must begin with a winning team of turfgrass managers. The grounds crew at Auburn University is well rounded with turfgrass management and horticulture graduates as well as former athletes who know how an athletic field should perform. The crew of seven full-time employees and six students is responsible for maintaining 15 acres of athletic fields, a 23-acre golf practice facility, and the landscaping around the athletic facilities. Directed by a graduate (BS and MS) of the Auburn Turfgrass program, Eric Kleypas, the crew fully understands the importance of football in the South, and especially in the Southeastern Conference (SEC).

With some of the best athletes in the country, delivering a safe and playable field is a must. Also it is important to keep the fields looking in excellent shape, as they are exposed to tens of thousands of live viewers and millions of eyes through TV coverage on Saturdays in the fall. And it doesn't end there: with a fierce recruiting race for the

best players, it is important to keep the fields in excellent shape year-round. Add special events to the mix, and maintaining fields in the SEC can become extremely challenging.

Facilities used by the Auburn football team include natural grass at Jordan Hare Stadium, with a capacity of 87,451 fans,

▲ **MOWING** at Jordan Hare Stadium.

two natural grass practice fields, and one indoor artificial turf field. Tifway bermudagrass is the turf of choice and all fields are overseeded in the fall with perennial ryegrass to maintain playability and aesthetics throughout the winter. Depending on the time of year, mowing heights range from 5/8" to 7/8". For the majority of the summer, height of cut is at 3/4" and fields are mowed six days per week. Fertility requirements are met with a combination of slow release, polymer coated products and supplemented with quick release, soluble sources as needed. Summers are spent frequently core aerifying to alleviate compaction, remove logo paint, and slow organic matter accumulation.

THE NEED FOR QUALITY TURF YEAR-ROUND

As with other schools in the SEC, recruiting has become a year-round process at Auburn, creating the need for pristine athletic fields 365 days a year. The turf

crew has been asked to transition from perennial ryegrass to bermudagrass in the spring/early summer while keeping the fields game ready for recruiting visits and summer camps.

Southern sports turf managers know and have been told by many experts that in order to maximize the health of bermudagrass, timely removal of the ryegrass in early spring is essential. Dense ryegrass stands can suppress bermudagrass growth and reduce development throughout the summer. Thus applying an herbicide is the most assured way to control the perennial ryegrass and encourage bermudagrass development. The problem with chemical removal is that we normally observe a 3 to 6 week period of low quality turf between perennial ryegrass death and bermudagrass development. Low quality turf is seen as a negative for recruiting.

The Auburn grounds crew has reached out to major league baseball groundskeepers to learn how they manage transitioning in the middle of a baseball season without using chemicals. After many conversations, the decision has been made use lower mowing heights, grooming, aerification, and soluble nitrogen to favor bermudagrass growth without a massive die-out of ryegrass. Mowing height is gradually reduced from 7/8" to 5/8". Vertical mowing occurs every other week as a groomer to remove ryegrass leaves and allow sunlight to reach the bermudagrass. Core aerification further thins the ryegrass canopy and increases sunlight into the soil surface. Light, frequent applications of soluble N supplement a slow release polymer coated urea application to

favor bermudagrass growth.

The needs of recruiting make the effort to minimize the time frame of visible grow-in necessary. If unsuccessful, the final option would be to re-sod the football fields each spring for an instant transition.



► **THE SHADE LINE** created by construction of indoor practice facility on outdoor practice fields.

MANAGING SHADE ISSUES

Recently, the Auburn grounds crew inherited a new challenge in turf management. Completion of an indoor football facility created instant shade issues on the outdoor fields. Building the indoor field on the south end of the football complex allows the athletes to walk straight from the weight room to the field without going outdoors. While convenient for the football team, the indoor facility is

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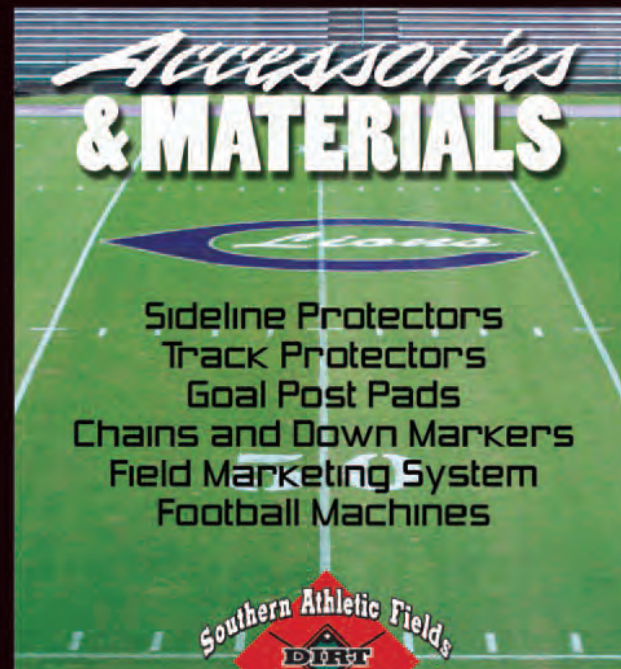
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▲ **BEAUTY SHOT** of Jordan Hare Stadium, home of the Auburn Tigers.

not so convenient for maintaining the natural grass fields located to the north and west of the building. To make things even more interesting, the practice field to the west of the indoor facility also has a tree line on the opposite side of the field creating morning shade by the building and afternoon shade by the trees.

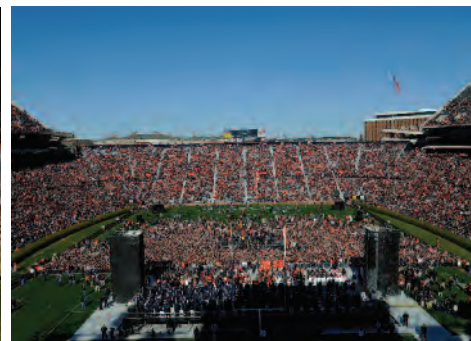
Irrigation zones are designed so that areas of adequate sunlight can be watered differently than shaded areas. Due to the angle of the sun, shade lines extend the farthest onto the fields in the winter and result in a poor stand of bermudagrass each spring. To determine the best strategies and/or bermudagrass variety for maintaining turf in the shade, the grounds crew has turned to the Auburn University Turfgrass Program for help. Auburn graduate student, Philippe Aldahir, is working on his second year of a research project testing bermudagrass varieties under different levels of shade, traffic, and overseeding to determine the best fit for the football practice fields at Auburn.

MORE HAPPENING ON THE FIELDS

For collegiate level turfgrass managers, the saying goes that “everything you see at the professional level will eventually trickle downhill.” While game days are still the first priority, college football stadiums have evolved into multi-use facilities. At Auburn, the turf crew has witnessed several additional events at Jordan Hare Stadium. The field has been the venue for concerts, grad-

uation ceremonies, autograph sessions, a finish line for 10K and half-marathon races, movie nights, television commercials, high school playoff games, and most recently, Café Jordan Hare.

For the 2012 football season, fans were allowed to attend three Friday night gourmet dinners on the field before the Saturday home game. The setup included tables, chairs, leather couches, serving lines, bars, grills, a jazz band, and the kitchen sink. The restaurant was purposefully set up on the home team sideline to allow turf damage to be covered by the sideline tarp each Saturday. The main challenge was moving all the furniture and food without damaging the turf. The turf crew started painting the field earlier in the week so that all paint was dry by lunch for the Friday restaurant setup. Irrigation was also adjusted to prevent rutting the turf while moving furniture for the dinner. Designs have been pro-



▲ **Left: CAFÉ JORDAN HARE**, serving Friday nights before Tiger home games! **Right: CELEBRATING AUBURN'S NATIONAL CHAMPIONSHIP** in 2010.

duced to install a roadway around the field to simplify setting up for Café Jordan Hare, as well as setting up the sideline equipment on game days.

COLLABORATING WITH TURFGRASS TEACHING PROGRAM

With increased events and new challenges each year, how does the Auburn grounds crew stay ahead of the game? Well, having a turf management program right down the road doesn't hurt. As mentioned, the athletic department has partnered with the turf program to develop research projects to help answer the challenges of maintaining athletic fields. The first project was to determine the best bermudagrass variety for shade tolerance that can handle athletic traffic. Future projects may include seedhead control of the bermudagrass varieties sold as shade tolerant grasses, infield skin research, and the relationship of spring moisture on bermudagrass transition.

Over the years, networking and discussing ideas with turf professors has developed into an extremely valuable relationship. Whether the crew is properly indentifying a turf problem, researching new products on the market, or questioning a management practice, the Auburn professors are eager to help.

The most exciting benefit of Auburn's turf management program has been working with the students. Each year, six turf students work with the grounds crew to gain experience with routine maintenance procedures, game preparations, and working special events. Students provide much appreciated help to the full-time members of the grounds crew. In return, the students are able to gain valuable experience and transfer knowledge from the classroom onto the athletic fields at Auburn.

Recently, the Auburn crew has concentrated on placing the turf students in professional level internships. Relationships established among professional level groundskeepers have benefitted both the students and the full time members of the turf crew. The goal is for Auburn turf graduates to obtain desirable jobs within the sports turf profession and, in turn, create a beneficial networking community between the Auburn University grounds crew and former students.

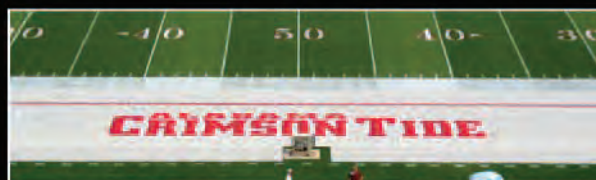
For the turf crew at Auburn University, each year seems to bring new challenges. Networking has become a crucial skill to prevent mistakes when special events occur on the football fields. As bizarre as some of the events appear, someone else in the sports turf profession has faced something similar and can offer valuable tips to ensure success. In today's era of recruiting, any opportunity to promote your brand must be explored. Marketing strategies to maximize the fan experience will only bring more events onto the gridirons of the SEC. Turfgrass managers must take a proactive approach and communicate effectively to meet each challenge, while never compromising the safety and playability of the playing surface. ■

Eric T. Kleypas is Director of Athletic Turfgrass, Auburn University; Philipe C. F. Aldahir, is a graduate research assistant in the Department of Agronomy and Soils.

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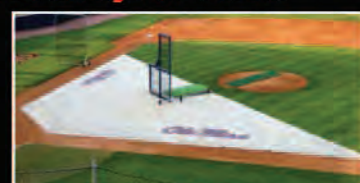


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Maintenance & performance guidelines for synthetic turf fields

RECENTLY the Synthetic Turf Council (STC) published its “Suggested Guidelines for the Maintenance of Infilled Synthetic Turf Surfaces.” The STC says routine maintenance, along with periodic intense maintenance, is essential to the life and performance of infilled synthetic turf. This maintenance manual provides owners and end-users with a way to realistically evaluate the maintenance recommendations for a synthetic turf surface, based on its intended use. To access the entire document, visit www.syntheticurf.org.

The STC says there are four key areas that drive the need for objective synthetic turf maintenance guidelines:

- Maximize the appearance and longevity of your synthetic turf. Improperly maintained fields will degrade faster and compromise playing conditions.
- Ensure maximum performance and playability.

Proper maintenance is essential for the performance and quality of any synthetic turf system. Through a combination of regular maintenance and performance testing, it is possible to track the synthetic sports field’s performance and anticipate the end of its useful life.

- Address field usage topics and special circumstances. Factors such as age, hours of use, type of use, climate, contamination and other situations impact the performance of the synthetic turf.

- Meet your field’s warranty requirements. While a maintenance regimen can support the requirements of a warranty, the details of a maintenance plan should be carefully reviewed with the field builder to assure that it complies with and does not



▲ **BAG OF DEBRIS** collected from the playing surface at Lucas Oil Stadium, Indianapolis.

Address field usage topics and special circumstances. Factors such as age, hours of use, type of use, climate, contamination and other situations impact the performance of the synthetic turf.

void any provisions of the warranty.

The information provided here focuses on infilled synthetic turf systems designed for sports fields. Please note that here a “field builder” is defined as the company having primary responsibility for installing the synthetic turf sports field, either directly or indirectly through a subcontractor or distributor, and providing the overall warranty for the installation and the field materials.

A field owner should take the following approach toward maintenance:

BEFORE YOUR PURCHASE

- Understand that no synthetic turf system is “maintenance free”.
- Obtain the field builder’s warranty and maintenance guidelines. Ask questions to understand the implications and requirements of each throughout the useful life of the synthetic turf.
- Discuss the anticipated usage of your field with your field builder. Obtain a maintenance plan that is designed for your field and its planned usage.
- Include in your purchase specific maintenance equipment, extra infill and repair materials (extra synthetic turf, seaming tape and glue).
- For synthetic turf fields with an irrigation system, consult an irrigation specialist to ensure that the system will not cause the field to become over saturated when irrigated. Only potable water should be used for irrigation.
- Design and locate the field to avoid contamination from adjacent areas.
- Ensure player walkways to the field are clean, and install a brush mat at the en-

trance. Where necessary, cross over covers can be used for player entry onto the field.

- Consider installing paved areas around the field to prevent contamination from nearby vegetation, spectators, maintenance vehicle tires, etc.

- If possible, locate the field away from sources of airborne pollutants, flood plains, and other problematic situations.

- Ensure that all surrounding surface water is directed away from the field.

- Understand who will perform the ongoing maintenance, including repairs and infill replacement, and its cost throughout the useful life of the field. The maintenance can be performed by the field owner with its own equipment and personnel, or outsourced to either a qualified maintenance firm or the field builder. If a third-party maintenance firm is to be engaged, make sure it is pre-approved by the field builder and it agrees to maintain your desired performance criteria.

- The field builder should confirm in writing before any maintenance work is performed on the field that the ongoing maintenance program, service provider, and maintenance equipment are acceptable, comply with and will not void any warranty provisions.

ACCEPTING YOUR NEW FIELD

Field owner personnel should be trained on the synthetic turf warranty, the field builder's maintenance guidelines and these STC Maintenance Guidelines. Training should include information about the specific components and materials of the installed system, the proper use of the synthetic turf maintenance equipment you will be operating, and the steps to ensure that optimal benefits are obtained while satisfying warranty requirements.

After a period of several months of initial use of the field and rainfall, the infill material will settle into the synthetic turf. During this period, more frequent brushing may be advised by your field builder. Once settling occurs, check the infill depth for consistency around the field and to ensure it is within the field builder's guidelines.

Conduct any on-site field testing by a recognized third-party lab that may have been specified during the purchase or bid process to determine if the field meets de-

sired performance criteria. This will help benchmark the performance characteristics of the field when it is new against test results taken throughout its useful life.

PROTECTING YOUR FIELD

- Establish signage and local rules for the use of the field to avoid field contamination and damage.

- If the field is in a flood plain, cover it when the threat of flooding exists with a specialized tarp designed to limit silt and debris from contaminating the field surface.

- Encourage coaches and players to rotate activities to different sections of the field to prevent high wear areas.

- Provide trash and litter containers on site and make sure there are enough containers to eliminate overflow.

- Route field access traffic in such a way as to minimize the tracking of mud and dirt onto the field.

- Set up drinks for players during practice breaks off of the field, if possible.

- Do not perform any maintenance or other activity that may invalidate the warranty.

- Report any field damage to the field builder immediately. Damages need to be immediately repaired to avoid an escalating problem.

- Plan to perform the maintenance recommended by your field builder. In terms of time, you should budget 1 hour of inspection and maintenance for every 10 hours of playing time.

- Ensure a maintenance and activity log is maintained. This is often required by the warranty. It is important that each and every maintenance operation, no matter how minor, be recorded in the log.

Please ask your field builder for a form, but in general, the following information should be logged: type of Activity during week; estimated number of hours used during week; average number of participants per hour; type of maintenance activity performed; remarks/notes; and signature of maintenance supervisor

ONGOING ROUTINE MAINTENANCE

- The basic components of effective, routine maintenance are to:

- Conduct inspections and perform minor repairs to avoid playing hazards.

- Keep the playing surface clean and free of debris and contaminants.

- Check and maintain proper infill levels to provide a consistent surface.

- Brush the surface to preserve appearance, keep grass fibers upright, and maintain even infill levels, making sure to use only approved bristles that will not overly abrade the fibers.

- Maintain a maintenance and activity log.

A maintenance person should walk the field daily and conduct more detailed inspections according to your field builder's recommended schedule. To avoid permanent damage to your synthetic turf or safety hazards, check regularly for and address such critical items as foreign debris, low infill levels, open seams, etc. Pay special attention to the most heavily used areas, such as midfield, goal mouths, corner kick areas, etc. Add new infill or redistribute migrated infill, where necessary, to the recommended depth. Look for foreign debris or contamination.

Check seams and joints where panels or any field markings are joined together. Open joints can create a tripping hazard and should be immediately repaired. An open joint of 12 inches in length or less may not be an indication of seam failure. Discuss with your field builder in advance for self repair techniques and if self-repairs are recommended. Note that open joints of greater than 12 inches in length should be reported to and reviewed with your field builder. Note any deteriorating grass fiber or infill conditions, visual or excess wear concerns, drainage concerns, performance concerns, etc. and report them to your field builder.

KEEP THE PLAYING SURFACE CLEAN

- Remove all waste items regularly.

Sweepers can assist in this process. Every loose foreign object, no matter how small, can damage your field by abrading the grass fibers and/or contaminating the infill.

- Remove airborne contaminants, such as leaves and other debris. If allowed to remain on the surface for any length of time,



they will migrate into the system, inhibiting drainage and causing infill compaction. Consider covering the field with pre-approved tarp when it is not in use.

- Remove organic material, including animal waste, as soon as possible to impede the growth of algae, weed or moss growth. Leafy trees should not be located next to a field, if possible. Brushing will help deter organic growth, as will the use of approved fungicides and anti-bacterial treatments.

- Don't allow food, sodas, chewing gum, sunflower seeds, chewing tobacco, smoking, etc. on the field.

- Do not use cleaning chemicals containing alcohol or acetone solvents. Chemicals should not be used without consulting with your field builder. Take care to avoid spilling any petroleum-based liquids including fuel onto the surface.

MAINTAIN PROPER INFILL LEVELS

The proper amount of infill is vital to the performance of the field. Infill also protects the grass fibers from damage, and helps keep them upright. Ask your field builder for the recommended infill levels. Be aware that:

- High use areas are prone to greater infill displacement.
- Brushing, drag mats, and proper rakes can help redistribute infill evenly.
- Infill may accumulate at the edges of a

field. If so, clean the material prior to brushing back into the main field.

- Replacement infill should meet the field builder's specifications.
- Using an infill depth gauge or a nail and tape measure on a grid pattern is the preferred way to measure infill depth and consistency.

GROOM THE SURFACE

Regular brushing is an important function that must not be overlooked or neglected. Brushing helps to maintain uniform infill levels, keep the grass fibers upright, remove debris, and improve the field appearance.

Conversely, the flattening of grass fibers can create a possible acceleration of wear as well as reduced field performance. While grooming, inspect the field for unsafe conditions. Use a static brush for general infill leveling and to stand up the grass fibers. A mechanical sweeper or other specialty synthetic turf cleaning equipment should be used to remove surface debris. Do not use maintenance equipment before receiving proper use and safety training. Use only equipment and vehicles that are approved by the field builder. Use only synthetic fiber bristles of recommended stiffness. Do not use metal or wire bristles. Do not use 6-wheel vehicles.

Using an average all-purpose vehicle, brushing a standard sized multi-purpose field takes about an hour. The vehicle speed should be low and sharp turns must be avoided. It is most effective to brush the surface when it is dry. The high-wear areas will require additional attention as these zones will obviously have the most disrupted infill and pile flattening due to the intensity of play.

The surface should be brushed in a number of directions, alternating the direction in consecutive activities, but generally in the direction of the individual panels to avoid crossing over the main seams. On different days, start at different locations so as to alternate the brushing direction for each panel.

The optimum brush height setting will depend on the model and type of equipment. Do not set the brush so low that it digs into the turf pile or backing. Too low a setting can damage the turf, the seams and

disturb the infill. Ask your field builder for the recommended grooming frequency. In general, the frequency will be related to the intensity of use; however, excessive brushing can cause fiber damage which over time will compromise the field's performance characteristics and longevity.

COMPREHENSIVE MAINTENANCE: SEMI-ANNUAL TO ANNUAL

Over a period of time, the following situations may arise which will require the need for more comprehensive maintenance: grass fibers become significantly bent, creased and flat; the playing surface becomes hard and compacted. While common to infilled systems, this impacts the players and also can create drainage issues. Dirt, debris and metal accumulate on or within the system despite routine maintenance. Seams become loose or panels shift creating a safety hazard. Infill levels become uneven, particularly in high wear areas, such as in front of soccer goals. This will impact player biomechanics and surface consistency, and will provide inadequate support of the grass fibers. When these situations or other concerns arise, contact the field builder and/or a third-party maintenance contractor approved by the field builder.

Comprehensive maintenance generally includes the use of specialty maintenance equipment by trained maintenance professionals. Depending upon the situation, the following actions may be performed:

Professional field inspection and corrective action. Assess the field surface, especially heavy wear areas, identify weak or loose seams and inlays, and repair the damage. Sport performance testing may also be desirable.

Decompaction of infill. Infill decompaction is important for improving shock absorption and synthetic turf drainage. Use only equipment specially designed to decompact and create loft in infilled synthetic turf systems.

Redistribution and leveling of the infill. Measure infill depth on a grid pattern, and add and level infill as needed to return the surface to the field builder's specifications.

Deep Cleaning. Use special equipment

that combines mechanical brushing, suction, and an infill return system to remove surface debris and embedded contaminants.

Metal removal. Use a magnet attached to your maintenance equipment to remove ferrous metal objects from the field.

Weed and pest treatment. Treat with herbicides or pesticides, as required.

Partial removal and reinstallation of infill material. Remove the infill, as necessary, to get rid of embedded foreign matter that has contaminated the infill system, relieve grass fibers that may be trapped in the infill, or improve drainage.

FIELD REJUVENATION— AS NEEDED MAINTENANCE

As fields mature, the accumulation of unwanted or foreign contaminants is inevitable, especially deep within the infill layer. Events, such as flooding or dust storms, may introduce extreme levels of contamination.

This may cause surface hardening and water permeability issues, and compromise field performance. When a field begins to show signs of deep compaction, such as g-max readings that exceed desired levels or significant drainage issues, full field rejuvenation may be desired. These maintenance services are performed using specialized field rejuvenation equipment and personnel and may include: removal of the vast majority of dirty and contaminated infill; untangling matted and compacted fibers; a combination of re-installation of new infill and/or the cleaning of the original infill; and removal of dust, debris and application of a disinfectant to treat for bacteria, if the original infill will be processed and cleaned.

SPECIAL CIRCUMSTANCES— AS NEEDED MAINTENANCE

While not intended as a complete list, the Synthetic Turf Council wishes to provide guidance on certain special circumstances which may require solutions on an “as needed” basis.

Field Markings: Temporary paints can be used if formulated specifically for synthetic turf. Ideally, paint should be applied only to the turf fibers, and not into the infill; although this will not be possible if infill levels are too high. Remove and reapply paint after a maximum of four applications to

avoid hard-to-remove build-up.

Service companies with specialized equipment are available that can paint and remove lines, logos, end zones, graphics, etc. Permanent lines, logos, etc. can age differently than the playing field turf. They may harden or shrink at different rates that will affect Gmax. Special grooming or other techniques may be required.

Heavy Rain: If significant ponding occurs after heavy rainfall, it may be an indication of a variety of factors, such as clogged or damaged underground drain pipes or discharge outlets, base unevenness, debris in the infill, or infill surface tension. For infill surface tension, a field builder approved surfactant or laundry fabric softener can be used to break the surface tension allowing the turf to drain. After heavy rainfall, it is advisable to check the infill levels in case of migration with the field slope.

Snow and Ice: Generally snow and ice should be left to melt and drain off the system without assistance. At times, however, it is necessary to remove snow or ice to make the field playable for a scheduled event. The working principle for removing snow is to do so as near to game time as possible. This reduces the likelihood of new snow build-up and will reduce the risk of ice from cold winds whipping across a damp, newly cleared surface. Because ice and wet snow removal is particularly difficult, it is important that you take measures to prevent the build-up of ice and wet snow. Use only pneumatic tires on equipment used for the removal of snow and ice. If a snow plow is used, make sure the blade is guarded with PVC pipe and corner elbows or rubber tips, and the height is adjusted to leave ¼-½” inch of snow on the surface. This is to avoid surface damage. The remaining snow should be left to melt in the sunlight as brushing the remaining snow may also remove the infill. Avoid using a tarp on the field during freezing weather.

Tarps, unless vinyl or poly-coated, can freeze to the surface, and will be very difficult to remove.

In some cases it may be necessary to use a weighted lawn roller over the field to break up ice. The broken ice can then be swept off the field. Generally, if the sun is out and the ice or frost is not excessive, it tends to melt rapidly, especially when

players are on the field.

Static Electricity: Surfactants like liquid laundry fabric softeners can reduce static electricity.

Stain Removal: Most stains can be removed easily with a solution of hot, but not boiling, water and a field builder’s approved household detergent. Brush the stain with a stiff bristle brush, scrub the area with soap and water, rinse with clean water, and pat dry.

Equipment Leaks or Spills: Prevent leaks or spills by checking equipment and its components thoroughly before use on turf; do not fill fuels, oils, fluids while equipment is on the field. Wipe any excess grease from any/all fittings. Petroleum-based spills can damage the synthetic turf. Use only the newer biodegradable fluids, if available for your equipment. Don’t use petroleum-based fluids. Check with the equipment manufacturer to verify the biodegradable fluid is compatible with the equipment and its warranty. If a leak occurs when using petroleum-based fluids it is important to minimize the damage by stopping and capturing as much fluid as possible. If it gets on the turf, use spill leak towels to soak up the majority of the fluid. Vacuum out the infill in the affected area, use a solution of household dishwashing liquid and water to break down and clean any remaining fluid from the turf. Once the turf is clean, you will need to install new infill.

Gasoline and diesel: Don’t fill equipment while it is on the turf. Do not overfill. Newer equipment has an overflow tube that drains directly under the equipment and onto the ground. Use a catch pan while filling to prevent accidental spillage. Use



grease sparingly and wipe any excess off of all fittings, bearings, chains, etc.

REMOVING FOREIGN OBJECTS AND CONTAMINANTS

Chewing gum can best be removed by using either ice or an aerosol to freeze the gum, which can then be chipped or broken off the turf fibers. If gum has been smeared across fibers, peanut butter will soften and breakdown the gum so that it can be wiped off.

Sunflower seeds, peanut shells, pistachio shells, etc. should be removed as soon as possible by using a hand held or back pack blower. To minimize or eliminate the movement of infill, do not point nozzle directly into the turf. Use minimal throttle to decrease the volume of air.

Metal objects should be picked up by a magnet that is attached to grooming and brushing equipment.

Moss, mold, or algae may appear in underutilized areas of the synthetic turf, particularly if it is in shade and damp. Specialty products are available to treat these organisms and fungi; consult your field builder. If moss, mold, or algae are allowed to harvest and spread, the field may need to be rejuvenated.

Weeds are easily removed by hand if the infestation has not become too excessive. Treatments are also available.

USE CONSIDERATIONS

It is very important for a field owner to understand that certain activities, use and other circumstances may impact the field quality, wear and tear, appearance, warranty and performance of a synthetic turf field. If any doubt exists, the field builder should be consulted. The following are some of the suggested considerations for the field owner:

- Make sure in advance any maintenance equipment, personnel, techniques, repairs and materials comply with the field builder's specifications and warranty.
- Verify that the design, synthetic turf system and maintenance specifications will result in the desired performance outcomes prior to selecting your provider.
- Monitor the performance of your field throughout its useful life with periodic field testing and frequent inspections.
- The following may damage the syn-

thetic turf: accidents, vandalism, spiked shoes, animals, wire brushes, fires, fireworks, floods, chemical reactions, acts of God, the use of dry cleaning fluids or improper cleaning methods, high pressure sprays exceeding 500 psi, storage of heavy materials on the field; non-approved infill materials, and non-approved artificial lights.

- Certain activities may damage the synthetic turf such as bicycle traffic, track and field events, golf activities, concerts, etc. Special events and activities should be reviewed with the field builder before the event occurs to ensure that damage is not done. You should also consider consulting with a company that sells field protection.

- The quality of the sub-base will directly affect the appearance and performance of the synthetic turf system. Select a base contractor only after carefully checking synthetic turf experience and capabilities. Significant importance should be assigned to grade, stone quality, drainage, etc. If the base is compromised, then the surface will be compromised.

- Footwear. Suitable footwear should always be used. Metal spikes should be prohibited and cleats are preferred. Flat-soled rubber shoes greatly intensify the wear and tear on the synthetic turf.

- Use patterns. It is very important to spread the field use to various locations on the field to prevent uneven or accelerated wear in certain areas.

- Vehicles. Do not park vehicles on the field, especially in the heat of the day, or leave vehicles on a wet or hot field for long periods of time. Engine exhausts should not be faced down toward the playing field, and a hot muffler or exhaust pipe should not touch the surface. Use lighter vehicles with LGP (Low Ground Pressure) tires with round edges to prevent rutting. Do not use cleated or traction tires. Heavy vehicles (over 300 pounds) should have a maximum tire pressure of 35 psi. Make wide, not sharp, turns, and only when the vehicle is in motion. All vehicles should move at slow speeds. All vehicles should move at a slow speed. Avoid abrupt and sudden braking, as well as sudden acceleration or spinning of the wheels, especially on wet surfaces. Consult the equipment manufacturer to learn load limits. All vehicles must be checked before use on the field to determine if they are

leaking oil or gas. If so, they should be repaired before entry onto the field.

- Concentrated heavy use protection. Stage or other set-ups for special events or activities, such as graduations, are normal. Proper field protection of the synthetic turf must be provided to prevent damaging it. Use plywood, interlocking plastic panels or similar weight distributing materials under all chairs and tables; consult the field builder or a field protection company. Use field protection that does not have a dimensional profile, e.g., corrugation, because the profile will transfer onto the turf and require heavy grooming to remove. It is imperative that no anchoring spikes, posts or footing be driven into the turf. Once the field protection is removed, the area should be groomed and swept with a magnet to remove any misplaced or dropped nails, screws, etc.

- Helicopter landings may be necessary to remove an injured player, for example; the rotor wash will likely cause infill to be displaced. As soon as possible evaluate the area and groom or brush as needed.

- Protect the synthetic turf as needed with approved tarps when nearby renovations, e.g., running track recoats or installations, cleaning or painting of bleachers, construction or repairs to lighting, renovations of adjacent natural turf fields, etc., may cause harm to the synthetic turf. Contact the field builder for a protection recommendation. Improper plastic protection will cause heat damage.

- Prevent heavy equipment from accessing the field or, if necessary, cover the field with appropriate protection to distribute the weight of the equipment.

DISCLAIMER

Due to the unique situation of each synthetic turf installation, other considerations may arise that are not addressed by these guidelines. Such considerations should not be ignored or minimized, but should be addressed by your field builder or industry specialists. This document does not in any way, imply, suggest or guarantee that a warranty, environmental, or performance issue could not arise if these guidelines are followed. These voluntary guidelines are not standards, and are not to be used as the basis for warranty or other claims. ■

Mobile Weed Manual: A New Resource for Turf and Ornamentals

HERBICIDE SELECTION is an important step in effectively managing weeds throughout the landscape. Individuals caring for ornamental plants as well as warm- or cool-season turfgrasses can face unique challenges in selecting herbicides for weed control. Weeds that persist in ornamental areas are often different from those found in turfgrass stands. Additionally, desirable ornamental plants found throughout the landscape can be quite diverse and thus exhibit variable tolerance to herbicide applications. Lastly, many herbicide products labeled for use in turfgrass are not labeled for use in ornamentals and vice-versa. All of these factors make the process of herbicide selection in turf and ornamentals quite challenging.

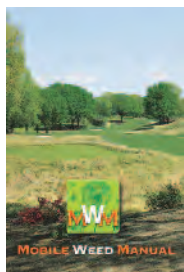


Figure 1 - Mobile Weed Manual (<http://www.mobileweedmanual.com>) is a new turf and ornamental weed control resource.

WHAT IS MOBILE WEED MANUAL?

The University of Tennessee Turf & Ornamental Weed Science Team has developed a new resource to help green industry professionals meet this challenge. Mobile Weed Manual is a new mobile website (www.mobileweedmanual.com; see Figure 1) to assist practitioners selecting herbicides for use in both turfgrass and ornamental areas.

The site contains weed control efficacy data and turfgrass and ornamental tolerance information for over 2,300 different species, as well as labels for nearly 100 different herbicides; all of which are optimized to be easily accessible from the palm of one's hand.

HOW DOES MOBILE WEED MANUAL WORK?

Mobile Weed Manual is a mobile website that will work on any mobile device (i.e., smartphone, tablet, etc.) regardless of manufacturer or operating system. The site will also

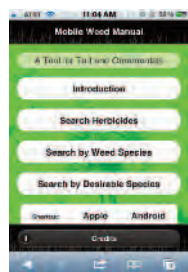


Figure 2 - Mobile Weed Manual provides three options for selecting herbicides.

function on a desktop or laptop computer; however, it was designed for use on devices with touchscreen capability. Mobile Weed Manual offers users three means of selecting herbicides for weed control (Figure 2):

Search by Herbicide. This option is designed for individuals curious about what products are labeled for preemergence (PRE) or postemergence (POST) weed control in either turfgrass or ornamentals, regardless of species. How could this be useful? Select PRE herbicides for turf and the site will populate a list of all active ingredients labeled for PRE weed control in turf. Interested in POST weed control in ornamentals? This function will populate a list of all products labeled for such use.

Search by Desirable Species. This option is designed for individuals curious to know what herbicides are labeled for PRE and POST weed control in or around the specific turf/ornamental species that they manage. For example, this option would allow a lawn care professional to view a list of all the herbicides labeled for PRE weed control in tall fescue turf or determine products labeled for POST weed control in a species of *Liriope*. The opportunities are endless.

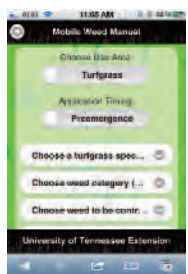


Figure 3 - Search by Weed Species function of Mobile Weed Manual

The steps are simple (Figure 3):

- Select a use area

(i.e., turf or ornamentals)

- Select a type of application (i.e., PRE, POST)
- Select the desirable species (i.e., the type of turf or ornamental planting in which weed control is needed)
- Select the weed type
- Select the specific weed to be controlled.

These steps serve as filters to narrow down the 100 different herbicides and 2300 different plant species to best fit the situation of interest. All of these filters must be completed for the site to function properly and provide correct herbicide recommendations. Users will be alerted in the event they omit required information.

The site will then populate a list of herbicides labeled to control the weed selected. Herbicides are color coded according to the level of control that can be expected by an application made according to label directions (Figure 4).

These rankings are based on the results of research trials conducted at the University of Tennessee. It is important to note that it is impossible to research the efficacy of every herbicide for control of every weed that could possibly invade a landscape. Thus, herbicides coded gray are labeled for control of the weed selected but have not been evaluated in research trials at the University of Tennessee.

Within each color code, herbicides appear in alphabetical order by trade name.

Users can select a particular product from the list to access additional information about how to best use this herbicide for weed management (Figure 5). Mobile Weed Manual will populate a page that provides users information on the full

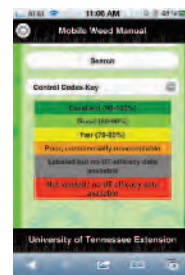


Figure 4 - Color-coding of herbicides corresponds to expected levels of control



Figure 5 - List of herbicides populated from a Mobile Weed Manual search.

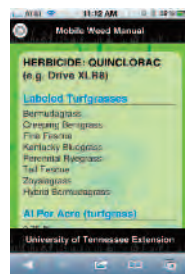


Figure 6 - Additional information on a particular herbicide

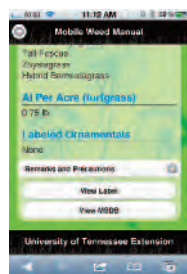


Figure 7 - Links to herbicide label and MSDS information

HOW TO ACCESS MOBILE WEED MANUAL

Simply visit www.mobileweedmanual.com using the internet browser on any mobile device. It is recommended that individuals bookmark the site and create a shortcut to it on their home screen (Figure 8).

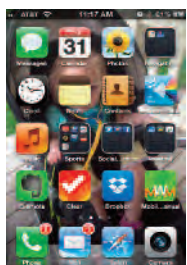


Figure 8 - Mobile Weed Manual shortcut on the bottom right-hand side of the home screen on an iPhone.

button on the Mobile Weed Manual main page (Figure 9).

The University of Tennessee Turf & Ornamental Weed Science Team hopes that Mobile Weed Manual becomes a valuable tool for all green industry professionals managing weeds. The site will be updated continually to expand the database of turf, ornamental, and weed species information, as well as to include information on new herbicides entering the marketplace.

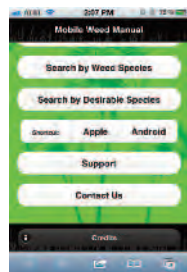


Figure 9 - Support link for users interested in donating funding to support continued development of Mobile Weed Manual.

Since debuting online in May 2013, the site has been used by individuals managing turf and ornamentals in all 50 United States and 44 countries worldwide. Our hope is that Mobile Weed Manual use expands even further in the future.

Please send any questions, concerns, or comments on Mobile Weed Manual to info@mobileweedmanual.com. Also be sure to stay in touch with the University of Tennessee Turf & Ornamental Weed Science Team at <http://tennesseeturfgrass.weeds.org> ■

Tools&Equipment

FUTURE TURF MANAGERS EVENT PREPARES STUDENTS FOR SUCCESSFUL FUTURE

Last month Jacobsen hosted more than 20 college seniors from top turfgrass programs around the world as part of its annual Future Turf Managers event.

The annual event gives students a unique opportunity to experience professional turfgrass management at the highest level. During the 3-day event, students visit with top sports field managers and golf course superintendents, hear leading-edge presentations from top universities and get an insider's look at Jacobsen's turf maintenance equipment.

Attendees must be recommended by directors or professors at turfgrass programs. Students were selected from more than 20 colleges and universities, including Penn State University, Texas A&M University, Mississippi State University, Iowa State University and North Dakota State University. The group also included an international student from Myerscough College in Lancashire, England.

Jacobsen University hosted several educational sessions, which included a presentation from Abby McNeal, CSFM, Director of Turf Management at Wake Forest University. McNeal gave the group an overview of the Sports Turf Managers Association and shared some advice about ongoing training and player expectations.

"I've always been told not to be afraid to take the ground balls," said McNeal. "Take basic courses to keep your skills sharp like fertilizer calculation or machine calibration. It's amazing how much you forget over the years."

"Joe DiMaggio once said that every game there could be a kid who's seeing him for the first or last time and he owed it to them to give his best," McNeal told the group. "It's the same with our profession: every game you prepare for is the most important of the season, whether its Pop Warner football or an NFL playoff game."

The group also heard from Dr. Jim Brosnan of the University of Tennessee, who gave a presentation on herbicide resistance. Research has shown that herbicide resistance is being perpetuated by turf managers who use the same modes of action, year after year.

"Some of the guys I talk to out there are using the same herbicides in the same way for years," Brosnan told the group. "And they wonder why their grass is resistant to herbicide. The key is rotating your modes of action to avoid resistance."

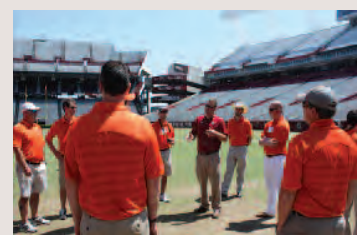
One of the highlights of the week included a visit to the University of South Carolina (USC), home of the back-to-back College World Series champions in NCAA Division I men's baseball. USC Sports Turf Manager Clark Cox gave students an exclusive look behind-the-scenes at the school's state-of-the-art sports complex. Cox also shared his experiences and challenges of managing turfgrass in the transition zone.

Reflecting on the event, students said their experiences will better prepare them for their job search and future careers.

"This event made me more confident about finding a job and better prepared for the work that lies ahead," said Robert Glenn, graduating senior at Mississippi State University. "Plus, the fact that I have contacts at two upper echelon sports facilities extends my networking reach even further."

It was also encouraging is how positive the recent graduates are about job opportunities.

"I'm not really worried about getting a job," said Derek Christensen, graduating senior at North Dakota State University. "The last 3 years, all the turfgrass graduates from our school found jobs right away. I think this week has put me in a great mindset to begin my job search." ■



▲ **Top: ABBY MCNEAL**, CSFM, Director of Turf Management at Wake Forest University, gives the group an overview of the STMA and shares some advice about ongoing training and player expectations.

Bottom: CLARK COX, CSFM, University of South Carolina Sports Turf Manager, shares his experiences and challenges of managing turfgrass in the transition zone.