

Update on field safety testing



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MANAGEMENT

IZDS



Toro celebrates 100 years - page 36

July 2014

SPORTSFIELD AND FACILITIES

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### On the cover:

Our annual Football Issue features a pigskin on the terrific gridiron turf at Milton Hershey School, Hershey, PA. Milton Hershey School is a cost-free, private, coeducational home and school for children from families of low income. The school is funded by a trust established by Milton S. Hershey and his wife Catherine. Jason Bowers, CSFM, Joe Barr, and Caleb Nippert are responsible for the winning entry.

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### **From the Sidelines**

Eric Schroder Editorial Director eschroder@specialtyim.com 717-805-4197

### **Turf manager/app developer**

ile this under "You don't see it every day": Mike D'Ascanio is the sports field lead at the University of California, San Diego, and also founder of Groundskeeper Tech LLC. His new software, SprinklerMaps, gives you the ability to chart your irrigation, landscape, utilities, etc., with precision on a live satellite map. As Luke Yoder of the Padres says on Mike's website, "Say goodbye to paper maps. The digital age of irrigation mapping is finally here."

Other tools are also included, such as a sprinkler radius viewer and square footage estimator. SprinklerMaps is practical enough for turf maintenance workers to use on the job via iPad.

In our correspondence, D'Ascanio wrote: "The mobile technology age is in full swing. Developers are continually introducing new tools and apps that can help to make our jobs (as well as our lives) far more efficient. Technology and information is now accessible on a level that humanity has never seen before, and the trend is not going to stop anytime soon. Even in the turf industry, we are seeing the emergence of apps and smart phone tools that are bringing the industry up to date with technology. It can be overwhelming at times to sift through the vast amount of apps and information available to come away with something useful."



Other apps can help any turf manager on the job. One example most of you are probably using already is weather tracking. "Having access to accurate weather forecasts, rainfall accumulations and historical data can prove to be handy. Staying on top of the weather has never been easier with the abundance of weather applications available on smart phones. With so many on the market, finding right one with the features you are looking for may take a little testing, but reading the descriptions and reviews will give you a good idea of what you can expect to get out of each app," D'Ascanio says.

Remember all that useful information from your turf textbooks that you totally forgot about? Well now you have all of that information at your fingertips with apps like, for one example, the Turfgrass Management app developed by the University of Georgia. This app provides a textbook worth of information that can help you to identify weeds, select herbicides and pesticides, determine pounds of nitrogen per 1000 square feet, and much more. Another new one is the Mobile Weed Manual developed by the turf guys at the University of Tennessee, which can help you quickly determine solutions in for weed management. Penn State Extension recently introduced an app called H20Solutions to help users diagnose the causes of observed water quality problems and help guide watertesting decisions.

Most of you have a smart phone in your pocket and your peers in the sports turf industry are making it more useful than ever in your job. Maybe you'll be the next guy to figure out a new app!

Jungehusen

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### President's Message

David J. Pinsonneault, CSFM, CPRP dpinson@lexingtonma.gov



### Freedom to make choices

s July begins our thoughts turn to July 4th and American independence. That independence brought freedom and with it the ability to make choices that affect our daily lives. That freedom brought a challenge for us to be able to make choices that improve upon what we do. Think about the little choices we make each morning that make or break our day: whether to take the highway or the back roads ... to stop at Dunkin Donuts or Starbucks ... to seed or sod ... to irrigate or not, and so on. We are charged with providing safe, playable fields for all, or providing research, or providing tools to help get the job done. Our choices affect how we provide services, how we interact with our coworkers, supervisors and customers, and how we keep positive.

Some of us made the choice to be in this profession. Others had it thrust upon them. It is up to those of us who chose the profession to make the choice of helping newcomers. We have the freedom to be welcoming, reassuring, and approachable, and share our knowledge. We have standards to uphold, and we must choose to operate in an above-the-board ethical manner in all that we do. We share a common goal, and it is by exercising our freedom to communicate that we can improve the industry.

Our academic members need to choose to listen to practitioner concerns, choose to pursue research to improve maintenance practices, and choose the share their knowledge. Our commercial members need to choose to pursue product advances that allow for more efficient and effective ways to get the job done. Our supervisors and decision-makers need to choose to support what we do and provide us the labor, tools and resources to do it. Our users need to choose to follow our field-use guidelines so the fields remain viable and safe for season-long use. Let us also include our seasonal workers and interns. We can choose to view them as valuable members of our team and teach them so they may learn and not view them just as someone to make our jobs easier.

As an STMA member you have the freedom to nominate people for the Board of Directors and the freedom to vote. Think about who can better the organization and by extension the profession. Now is the time to consider board service or urge a peer to do so.

We must be professionals in all that we do. We must earn respect and be willing to give it. We must be leaders and lead by example. We must be adaptive and receptive to new ideas. We must be good stewards. We also must be passionate and realistic.

Our choices, even small ones, will shape the future of the industry. Let's work together to choose a positive future and advance a profession that being involved in makes all of us proud.

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### Field Science I By Tom Serensits and Dr. Andy McNitt



## UPDATE ON FIELD SAFETY TESTING

▲ Penn State's Pennfoot machine measures both rotational and linear (translational) traction. Rotational traction is more related to injury risk while linear is more related to performance. For rotational traction, Pennfoot measures the amount of force required to rotate the shoe in the turf.



The current heightened focus on athlete safety has increased the scrutiny of all potential contributors to athlete injury, including the playing surface. In fact, all NFL fields are now tested and certified before every game using a set of "recommended practices." These recommended practices include tests such as field hardness (Gmax), soil moisture, infill depth, and visual inspections, depending on the surface type.

Much of the increased concern for athlete safety is due to a heightened awareness of the issues surrounding concussions. Research indicates that most concussions are the result of violent athlete to athlete collisions. However, this same research indicates that approximately 10-15% of concussions in American football are caused by the head hitting the surface. Consequently, the hardness of the playing surface can affect injury risk.

By routinely monitoring field hardness levels, management practices can be implemented well before the surface exceeds hardness thresholds. For example, surface hardness of NFL fields is tested with the Clegg Impact Tester. The

We have measured Gmax values well over 250 Gmax (Clegg) on dry, compacted fields. As a reminder, the NFL threshold is 100 Gmax.

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Clegg quantifies surface hardness by measuring how quickly a vertically-dropped weight stops when it hits the surface. In the NFL, all fields, both natural and synthetic, must be below 100 Gmax in all locations when tested with the Clegg. If hardness levels begin to approach 100, steps are taken to lower these values. Practices that lower Gmax of a surface include topdressing crumb rubber onto synthetic turf fields or needle-tine aerification on natural turf fields.

The Clegg model used in the NFL is equipped with a 2.25 kg missile and is calibrated from 0 to 150 G. A standard Clegg is calibrated from 1 to 1000. The 0 to 150 G calibration of the NFL model has better accuracy over the range of Gmax values typical of natural and synthetic athletic fields. (The NFL Clegg model can be purchased from turf-tec.com for approximately \$4,000.)

### **THE F355**

Another device traditionally used to measure surface hardness of synthetic turf fields is the F355. Named after the American Society for Testing and Materials (ASTM) standard that describes its specifications, the F355 quantifies surface hardness using the same principle as the Clegg. However,



▲ Many field managers are now using a Clegg hammer to regularly measure Gmax on their own.



▲ The Center for Sports Surface Research recently measured rotational traction of 30 commercially available shoes on Kentucky bluegrass, bermudagrass, and FieldTurf Revolution. The difference among playing surfaces was minimal compared to the large differences found among shoes.

the drop heights and mass of the weights differ between the devices and the generated Gmax values are not interchangeable. For instance, 100 G as measured with the Clegg is not the same as 100 G measured with the F355. While the NFL uses a limit of 100 G with the Clegg, according to ASTM, a field should not exceed 200 G when measured with the F355.

In the past, the F355 has been used to measure Gmax levels on synthetic turf while the Clegg has traditionally been used on natural turf. However, because both devices use the same principle to measure surface hardness, either can be used, regardless of surface type. A recent ASTM subcommittee round-robin testing event at Penn State confirmed the high correlation between the Clegg and the F355. The round-robin testing included seven testing agencies and 15 surfaces. The full report is available on our website, ssrc.psu.edu.

Regardless of the device used, routine field testing benefits all athletes

who use the field and demonstrates a commitment to field safety. Arguments can be made for either device, however, if fields are not being tested, no advantage is gained. Many field managers are now using the much less expensive Clegg adopted by the NFL, which provides a more affordable option for sports complexes that wish to be proactive and regularly measure Gmax on their own.

No surface hardness discussion is complete without addressing the reasons why fields get harder over time. Field hardness on natural turf fields is largely determined by soil water content and compaction. Dry conditions produce a harder field than wet conditions. A dry field combined with a high level of soil compaction produces an even harder surface. Obviously, lack of turf cover can also contribute to higher Gmax values. We have measured Gmax values well over 250 Gmax (Clegg) on dry, compacted fields. As a reminder, the NFL threshold is 100 Gmax.

Not surprisingly, water management and core cultivation are key practices to reduce surface hardness levels. However, core cultivation during the season is not recommended. As a result, in-season techniques to reduce hardness are a bit more tricky. NFL field managers have been experimenting with in-season needle-tine aeration and deep-tine units set to penetrate only a few inches to slightly raise the surface. These techniques have been fairly successful for short-term reductions in surface hardness without sacrificing playability, but care should be taken. If inseason cultivation becomes too aggressive, the surface playability may suffer due to reduced footing.

### SYNTHETIC TURF

On synthetic turf, contrary to popular belief, compaction is not a major cause of increased surface hardness. Infill particles are usually very uniform in mity limits compaction potential and after an initial

size. This uniformity limits compaction potential and after an initial, post-installation settling-in period, compaction is minimal.

Instead, what we call "walk-off" crumb rubber is frequently the main contributor to elevated surface hardness levels. The crumb-rubber infill is what provides the cushioning. The small amounts of rubber particles being removed from the field in shoes, on equipment, etc. add up over time. As the crumb rubber layer thins, surface hardness increases. This is especially true in high-use areas. (See article on page XX of this issue for maintaining crumb rubber levels.)

Consequently, infill depth should be measured at numerous locations across the field regularly and compared to your turf manufacturer's recommended infill depth range. Infill should be added when levels drop below the recommended range. Often, the entire field will not require additional infill. For instance, if the field is used for lacrosse, perhaps only the goal mouths will require a few buckets of rubber. In

## THE PROVERBIAL "BIG STICK."

these situations, rubber can be hand-applied and worked in with stiffbristled push brooms. Large scale additions of rubber often require repeated light applications of crumb rubber using a topdresser followed by grooming with a drag broom.

Recently, head injuries have received a lot of attention; however, lower extremity injuries can often sideline athletes for longer periods of time. Sometimes the playing field is mentioned as a possible reason for a knee or ankle injury. Often times the type of surface is mentioned as a culprit if the surface is synthetic. If the field is natural turf, the condition of the surface is sometimes blamed.

Another, possibly more important factor, is being recognized as a significant contributor to lower extremity injury. That contributor is the shoe. Remember, the traction between a shoe and the surface is affected by both the shoe and the surface. The aggressive cleat patterns found on many of today's most popular athletic footwear are producing traction levels much higher than we have seen in the past.

A certain level of traction is needed to run, change direction, and perform other maneuvers necessary for sports. However, high levels of what is called "rotational traction" have been indicated in increased knee and ankle injuries. High rotational traction means that the shoe is resistant to rotating within the turf as a player pivots. In essence, the shoe sticks while the leg rotates. If the shoe sticks, ligaments and tendons are put under additional stress, which may lead to increased injury risk.

We recently measured rotational traction of 30 commercially available shoes on Kentucky bluegrass, bermudagrass, and FieldTurf Revolution. The difference among playing surfaces was minimal compared to the large differences found among shoes. Although there is not enough research to set safe and unsafe traction thresholds, our data suggest rotational traction, and therefore injury risk, varies greatly among cleat patterns.

Additionally, cleat pattern appears to play a much greater role than the playing surfaces tested. The database with rotational traction information for each shoe on each of the three surfaces can be found on ssrc.psu.edu. We plan to update this database each year with traction data from newly released cleat patterns. A related study that included multiple shoes on various surfaces has recently been published in the April 2014 edition of *Applied Turfgrass Science*, a peerreviewed scientific journal. The study can be found on the journal's website, www.agronomy.org/publications/ats.

As we all know, injuries are an unfortunate part of sports. However, a proactive approach to field safety can help minimize injury risk. Routine surface hardness testing, adding crumb rubber when infill levels drop, educating trainers and parents about the importance of shoe selection are all things that we can do to provide the safest field possible. Because at the end of the day, the safety of the athletes using our fields is our number one goal.

Tom Serensits is manager of Penn State's Center for Sports Surface Research; Dr. Andy McNitt is professor of soil science – turfgrass, and director of the Sports Surface Research Center, as well as coordinator for Penn State's turfgrass science undergraduate program.



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## Advice on MAINTAINING THE INFILL on your synthetic field

e asked some turf managers and equipment manufacturers for advice on maintaining the infill on synthetic turf fields. Our panel includes: Darian Daily, Sports Field Manager, Cincinnati Bengals; Jon Dewitt, CSFM, Athletic Field Manager, Georgia Tech; Paul Hollis, Executive Vice President, Redexim North America; Tom Lober, Director of New Business Development, Noland Sports Turf; Abby McNeal, CSFM, Director of Turf Management, Wake Forest University; Jason Mueller, Grounds Manager, Kirkwood (MO) School District; Ronn Ponath, President/Owner, Kromer Company; Doug Vescio, CEO/President, Vescio's SportsFields; Will Wolverton, Manager, Wiedenmann North America; and John Wright, Director of Fields, Seattle Seahawks.

### HOW OFTEN DO YOU RECOMMEND ADDING INFILL MATERIAL?

**Daily:** Only when needed. I would suggest getting an infill depth measuring device and monitoring the infill depth throughout the year. In my experience, your infill depth will drop after the first year of installation due to the field "settling in," which is normal. Once you get your infill depth back to the manufacturer's recommended

▼ Verti-Brush at work. Courtesy of Redexim North America.



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depth (each company's recommendations are different), monitor the field and when your average infill depth gets below recommended threshold, call your manufacturer for their recommendation. If it is recommended to install more infill, have a professional infill installer apply the infill. One thing I have learned, you don't need to apply much rubber to bring your numbers back into spec. Installers have methods of getting the infill down into the system for a safe and playable field more quickly.

**Hollis:** The infill material provides a cushioning effect; the more infill, the more cushioning. Playing surface hardness levels, or Gmax ratings, are almost always associated with low infill levels. It is not that the infill material is compacting like the soil does on natural turf fields. Instead, the infill is actually being removed or displaced on fields over time, in a variety of ways. The result is less infill in the field and increased surface do not monitor these areas closely then we can have fiber wear sooner then anticipated.

Lober: The end user should have a system to chart the areas that tend to have infill movement due to high activity. For example the penalty kick line in soccer gets used heavily during practice where several kids will line up and go one after another. Corner kicks, goal mouth areas for soccer and lacrosse, and extra-point kicks for football are also critical areas. The growing application of turf for baseball fields makes sliding into second, third and home the areas that get infill movement more than any other application.

How do you check the infill depth? This is easy and can be done by using a depth meter that can be purchased for as much as \$250 or there are other companies that make depth testers for rubber track surfaces that are around \$20. These tools are reasonably accurate because



testing a rubber track surface requires a fine tolerance.

The infill should be ~1/2"-3/4" below the tips of the blade so a 2-1/2" system should have a minimum of 1-3/4" of infill. Not sure what height system you have? Go along the edge of the field and pull a bundle of blades and measure them. Charting the areas that require regular maintenance is something that should be done often but adding large amounts of infill should generally not be necessary for the first 3-5 years. Spreading bags of rubber and brushing the field to distribute it should be done by professional turf installers but can be done by facility maintenance staff if they are up to handling the task of moving and spreading supersacks of rubber. For example each

pound of rubber equals about 1/2" of infill per square foot. If an 80,000 square foot field is low by an average of 1/4" then it would take approximately 1/2 pound of rubber per square foot or 40,000 pounds, which is 20 supersacks. I generally don't recommend trying to put more then 6-10 sacks of rubber in at any one time unless the field is extremely low and requires more infill. A good practice would be to add 3-4 bags in years 4, 6 & 8.

**Dewitt:** Never have had to; on my old rug the fibers were completely worn away and existing crumb was right on the surface! My new rug doesn't get used a whole lot and it's indoors so I haven't had to add anything since it was installed in summer 2010.

**Vescio:** First and foremost the field should be filled to appropriate levels (according to specifications). The field should be checked in its entirety at least once per year. Typically a Gmax report will indicate the levels of infill. Through the Gmax report or at a minimum a yearly check will help establish the need for additional infill. More attention

hardness. In order to prevent this, infill levels should be measured regularly and compared to the infill depth recommendations provided by the field manufacturer. When infill levels drop below the manufacturer's recommended range, additional rubber should be added.

**Mueller:** Our field is about 4 years old, and we monitor it regularly with an infill depth gauge. We have not had noticed a decrease in our infill depth, and the depth is consistent throughout the field. This is probably due to our regular grooming schedule. Also, our turf is Astroturf 3Di, and has a thatch layer incorporated into the fibers that reduces the movement of the infill.

McNeal: As often as the field needs it per your observation and manufacturer's recommendation. Sports turf managers have to be diligent about monitoring the infill levels as the field is used; higher use fields may require more frequent additions of rubber infill mix. On our baseball field we add material in our higher traffic areas (batters boxes and base areas) almost every other day during our season. If we

will be needed in small yet high traffic areas such as a soccer goal or football place kicking. These areas should be checked before use for tears, wear, and low infill.

**Ponath:** This depends upon several factors. With fields that have not had regular maintenance the infilling is usually done when the field shows a lack of infill and matted and entwined fibers and becomes less safe and playable. This is typically an after the fact approach and also has safety issues. Consequently more infill is needed immediately.

### WHAT IS THE MOST EFFICIENT WAY TO RE-DISTRIBUTE OR EVEN OUT THE INFILL?

**Wolverton:** Grooming the field is the most common and practical way to re-distribute the infill. This should be performed frequently based on the recommendations of the manufacturer. Other methods help such as using a sweeper that brings some of the infill material into the sweeper, separates the infill from the debris, and evenly redistributes the infill back on to the playing surface.

**Wright:** Brush/tine groom multiple directions; add fill using topdresser best suited for quantity to be distributed/time-frame available;



integrate added fill into system using Lay-Mor type front mounted brush.

**Daily:** I have seen a regular topdresser used to distribute the rubber evenly. In most cases a GreensGroomer or Sweep-n-Fill type brooms are used to work the infill in. In extreme cases, I have seen a Lay-Mor power broom being used. I would not recommend the use of a Lay-Mor unless it is use by a professional installer. A Lay-Mor will destroy a field VERY quickly if not used correctly.

**Ponath:** Regular conditioning grooming and finish grooming, which is a two-step process using specific tools designed for synthetic fields will redistribute the infill, decompact the fibers, and remove metal objects in one pass. The finish grooming process helps in reducing the static electricity and helps the infill to position it to support the fibers so that they stand up properly. This improves the appearance and extends the life of the fibers. This also means that less infill will be needed.

**Hollis:** Brush the infill into the turf by lightly agitating the fibers back and forth using a simple stiff drag brush.

**Vescio:** The size of the area to refill will determine the method and the type of equipment. In large areas topdressing with a drop spreader

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or broadcast spreader is the easiest and most commonly used equipment.

In small areas such as a soccer goal or football place kicking, softball and baseball wear areas such as plate and pitching areas, as well as the sliding areas, redistribution of infill can be done by hand or a small push spreader. Careful consideration should be taken in these areas to simply not dump infill but to apply evenly.

Prior to any re-infill I would recommend the following steps:

Cleaning and removing any debris. There is equipment that is available on the market for so called "deep cleaning" that allows removal of the existing debris to a depth of 1/4" or so. At the very least a tag along sweeper should be used to remove foreign particles.

After the "cleaning" and before adding additional infill brooming or sweeping the field with typical field groomer should be done to help the turf fibers stand up. In some cases a "power sweeper" may be necessary to aid in standing the fibers. This should be done by the synthetic turf provider or contractor.

In smaller high traffic areas such as soccer goal or football place kicking, softball and baseball wear areas such as plate and pitching areas,

as well as the sliding areas standing up the fibers can be done with a medium to soft push broom or a hand held gas powered brush. Make sure that the environmental conditions are good for installing the infill. Dry and non-windy days are best.

**Mueller:** We use a John Deere Gator to pull a Redexim Verti-Groom. Between gym classes, band practice, soccer or football practice and games, and nightly rentals our field can see up to 10 hours of play in one day. To reduce compaction and to keep the infill evenly distributed we groom as often as once per week during periods of heavy use.

**Dewitt:** Don't let it get too bad on you in the first place. If you have some really bad pockets from drills or kickers repeatedly using the same area use a power broom to heavily work those spots; otherwise a simple GreensGroomer drag behind brush has been sufficient for us. We drag about once per week and do a heavy cleaning/brooming annually.

**McNeal:** If it is a smaller area then we use a push broom to level out the infill or a metal time leaf rake turned over. If it is a larger area we will use a drag over the area then the groomer and possibly the drag again. The drag is made from left over turf stapled around a wooden frame (for weight).

**Lober:** A push broom is the most common way but the rubber tends to fly up in the air and land back in the same spot so I recommend a two man process of push broom and blower which works very well for small areas. They can also use a small power broom. Other than that the proper use of the drag brush is the best way to make sure the field has a consistent level of infill.

### WHAT STEPS SHOULD BE TAKEN TO PROLONG THE LIFE OF A FIELD, E.G., REDUCING FIBER WEAR, ETC.?

**Daily:** We constantly drag and groom our field to keep the fibers standing up. We monitor our infill depths to insure the proper amount of infill is in the system to help the fibers stay standing up. Lastly we have the Coaches constantly moving around just as we do for our natural grass fields. It's not much, put just enough to spread the wear out.

**Hollis:** Regularly scheduled maintenance consisting of: brushing or grooming the fibers, adding infill when needed, raking the existing infill that has settled to loosen the infill and prevent compaction, as well as, an annual deep cleaning should be considered when trying to extend the life of a synthetic playing field.

**Mueller:** We communicate with our athletic director to rotate use of the field for PE classes and practices. This is especially important for reoccurring drills, or where home plate is thrown down for PE softball. We try to match or grooming schedule to coincide with the amount of play. Our groomer has nylon brushes, and metal tines. We limit the use and the depth of the metal tines to reduce wear on the turf. We sweep our field with a Redexim Verti-Top 3 - 4 times per year. This is scheduled to coincide with periods of heavier debris; fall leaves, spring

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pollen, female sports (hair in turf). This debris could mix with the infill causing drainage and compaction issues.

**McNeal:** We groom it before each event. Monitor weekly and remove any debris (trash, leaves, etc.) off of the field. Yearly I have an outside contractor perform a deeper more through clean, Gmax testing, and independent evaluation. This allows me to see if we have missed something with our field checks. I try to communicate to our coaches the importance of moving drills and activities around to reduce "wear patterns" with some coaches I have success with others not so much. We monitor each field and adjust our program as needed, just like a natural grass field.

**Lober:** A very good way to prolong the life of the field is to properly decompact the field and groom it with a machine that has vacuum filtration capacity. This keeps the field from compacting and reduces

the amount of dirt and debris that will settle to the bottom of the turf and reduce the drain rate. When the field does not drain properly water tends to puddle and then more dirt and debris will travel to the low spots and cause more compaction that compounds the issue. In the first 2 years of a field it is not necessary but after that a regular annual maintenance from an STC approved system should be the recommendation.

I have been doing turf maintenance with the SMG Sportchamp for 6 years now and recommend that in years 3, 4 & 5 a standard



▲ Francis Field, Washington University in St. Louis. Courtesy of Byrne & Jones Sports.

groom should be performed, after that a deep clean groom should be performed once or twice a year from year 6 on. The benefits of this are that the field is cleaned and dirt is removed to allow for proper drainage and reduced compaction. This makes the field safer by reducing the Gmax rating and also helps remove debris from the infill which can then be a better product to reuse when the field is replaced around years 10-12.

The best way to reduce fiber wear is to keep the infill up to the proper height. Having a good understanding of the difference between slit-film and mono-filament is also important. Excessive brushing of slit-film can cause it to become wire fine and abrasive. Excessive brushing of mono-filament can cause blade release and reduce the tuft bind later in the life of the field.

**Wright:** Treat the surface as if it is natural turf by limiting vehicle traffic except when necessary; require vehicles to have turf-type tires; use protective flooring/plywood when non-turf friendly vehicle traffic is necessary; and prohibit food, drink and glassware on unprotected turf.

Use flooring protection system for non-sporting events and events with high volume/concentration of foot traffic. Always use an impervious layer of some sort (visqueen) beneath protection systems when hosting dirt shows, i.e. Supercross, Monster Jam, sod-overs.

**Vescio:** Education; it is critical that the client understands the limitations of the synthetic turf and the intent for which the turf was installed.

Provide the client with guidelines for usage (do's and the don'ts). Rotation of areas; try to avoid practicing repetitive drills or usage in the same areas.

Wearing footwear that is recommended for the synthetic turf.

Inspecting infill levels monthly. Note: High traffic areas should be monitored weekly or after heavy usage and these areas should be replenished more frequently as needed depending on the use.)

While maintenance logs may not help prolong the life of the field, they may help the client if a wear or warranty issue should arise. Furthermore it will provide vital information for the synthetic turf man-

ufacturer and contractor for what future clients can expect. Just like a vehicle warranty use and years don't always equate to longevity.

Site visits by the contractor to the client's site to help with evaluations and use as well as checking maintenance logs.

There is some specialty equipment in the market place available that will remove the existing infill material while producing very little disturbance and fibulation to the existing fibers. The existing infill can then be reintroduced, redistributed back evenly over the field along with additional infill

needed to replenish the field. This may also help relieve compaction and lower Gmax levels.

Maintaining proper infill heights

**Ponath:** Maintaining the life of the field also means that less infill will be needed. If the tools and processes I've mentioned previously are used then the results are safer fields, playable fields and attractive fields. The final benefit is that these best practices also prolong the life of the synthetic turf which provides for a better return on investment. The frequency of this process is determined by the hours of usage on the field. The type of field whether for a specific sport or a professional, amateur, or general purpose will require different frequencies and intensities. Other factors such as sun and shade, weather, indoor and outdoor must be also considered.

**Wolverton:** Routine maintenance which consists of grooming and sweeping. It is important to redistribute the infill and stand your fibers vertically to reduce the breakage of fibers when they are lying down. Another important practice is to maintain proper drainage by cleaning your field periodically to remove dirt and debris.



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### Field Science I By Dara M. Park and Sarah A. White



## **Countera-SALT: successfully managing salinity**

**e have discussed in past issues** of *Sports Turf* understanding salinity measurements and causes of salinity. This final article recaps what salinity and specifically sodium (Na) does to plants and soils, and discusses how to beat back the a-SALT

with general management.

Low levels of salts, including Na, are not dangerous to most turfgrasses. If salt levels accumulate in the rootzone to high enough concentrations, it is difficult for turfgrasses to uptake water. This is because solutes (salts dissolved in water) *like* water, and want to hold on to it. Think of the result as a tug-of-war game, where water is the rope: on one end are the turfgrass roots, on the other end are solutes. The more solutes present, the more muscle at the salt end of the water rope. Furthermore, like many organisms, turfgrasses try to achieve a balance between the salt levels inside and outside their cells. Thus, a turfgrass grown in salt affected soil or irrigated with saline water must exert more energy to extract water from the soil. This results in a type of water/drought stress. Turfgrasses spend more energy trying to simply survive, instead of using the water for routine metabolic processes.

Certain solutes [especially sodium (Na), chloride (Cl), bicarbonates (HCO<sub>3</sub>) and boron (B)] that are passively taken up with water can concentrate within the turfgrass and result in ion toxicity. Ion toxicities are most evident in roots and leaves since they are the main points of entry for water to enter the plant. Certain turfgrasses are more tolerant than others. For example, in general, warm-season grasses such as bermudagrass and seashore paspalum are more tolerant than cool-season grasses like bentgrass. How? Many warm-season grasses have salt glands that secrete salts from leaves (pretty cool, right?).

When Na is the specific salt in either water or soil, plant uptake of Na increases and Na can begin to block uptake of and displace calcium (Ca), magnesium (Mg), ammonium  $(NH_4^+)$  and potassium (K) within plant cells. When salinity (definition in next section) levels in water are very low, supplemental Ca, Mg, and K may be needed for plant nutrition.

### SALTS AND SOILS STRUCTURE

Salinity is when acid-base pairs form from K, Ca, Mg, sulfate  $(SO_4)$ , HCO<sub>3</sub>, Cl and Na. Fine soil particles (silt and clay) and organic matter flocculate (bind together) into aggregates in the presence of Ca and Mg ions from these pairs. Calcium and Mg dominated salinity improves soil porosity, increases soil stability, and creates an optimum environment for root penetration and growth. This trend holds true with high salinity too. Thus, simply because salinity is high does mean a negative change in soil structure.

However, if Na is the dominant ion contributing to the water salinity, it will displace Ca and Mg in soils (those primarily clay based, or with organic matter). Due to its single charge, Na does not "bridge" soil particles together. In fact, it has the quite opposite effect. The large ionic swarm and its appetite for water result in dispersion or spreading of soils. This results in individual soil particles plugging pore spaces and a reduction in total soil porosity. Sodium affected soils compact easily when dry too. The





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### **Field Science**

end result? Poor water infiltration, air movement and root penetration. The reason only fine textured soils and soils with considerable organic matter are affected is because they have many negative binding sites (AKA cation exchange capacity) with which salts can react. For this reason, the structure of sand based rootzones with low cation exchange capacity will minimally be affected by Na.

If irrigating with a water source with very low salinity (pure water), ions that are present on the cation exchange site will leave the soil colloid and dissolve into soil solution. When this happens, there are fewer bridges keeping soil colloids aggregated. The end result of pure water application to soils is dispersion of aggregates and loss of pore spaces, very similar to changes in soil structure resulting from high concentration of Na. Soils compact easily and the loss of pore space results in poor water infiltration, air movement, and root penetration. In this scenario too, soil texture and the amount of organic matter present are important factors determining the extent of damage that can occur. The finer the texture and more organic matter present (thus greater CEC), the greater potential for dispersion. Coarse sands with low CECs are less affected.

### MANAGEMENT OPTIONS

Both proactive and reactive management strategies can help you navigate any salt tempest. Monitoring both the salinity of your water source (EC) and the total dissolved salts (Ca, Mg, Cl, Na) within your soil are necessary to determine how to effectively manage a salinity issue, or prevent one from starting. If after you begin monitoring your water and soil, you determine that soil EC levels remain too high, whether due to water source, storm event, or excessive fertilization, there are a few steps you can take to manage the problem and reduce the risk of turfgrass damage. It is important to keep in mind that native soils will many times be different in texture and CEC than constructed rootzones, so make sure to sample all areas separately.

**Grow salt tolerant grasses**. If the irrigation water supply is salty and investing in alternative treatment/dilution methods is not viable, consider growing only salt tolerant species.

Apply a leaching requirement or reclamation requirement. In a nutshell, increase your irrigation volume to make sure that water (and salts with it) is always draining past the rootzone. A leaching requirement is used when there is not a problem, but you are concerned that you may start to have one (due to changing water quality, drought, etc.). A reclamation requirement is used when there is already a build up of salt within the soil. There are many ways to calculate these requirements, contact the authors if you need to determine one.

Monitor soluble salt levels in the soil. By monitoring soluble salt levels consistently you can adjust irrigation volumes to help compensate for higher salt levels, or decrease irrigation rates when salts have been flushed from the soil. Monitoring soluble salt levels also will determine if there is Na problem. Increasing Ca and Mg in soils or saline water can reduce Na-induced particle dispersion, and some of the more noticeable detrimental plant effects. (See May 2012 issue about how to monitor; you can find article, "Is your turf under A-salt?" at www.sportsturfonline.com.)

Adjust fertilizer source and/or reduce fertilization rates. If irrigation water contains excess soluble salts, send a water sample to a soil-testing lab for an irrigation water analysis. This analysis will help to determine the ions that are readily available from the water source. Using this data, the nutrients supplied by the fertilizer can be reduced to account for those readily available from irrigation water. If adjusting fertilizer nutrient levels is not an option, simply lower the rate at which the turfgrass is fertilized (if possible) to reduce excess salt presence in substrate/soil. Especially for soluble fertilizers, since they directly contribute to higher salt levels, applying a lower rate with more frequency may also assist in ensuring that the soil is not overloaded with salt at any given time.

**Apply an amendment**. This is done ONLY when either (a) the water source is pure, or (b) Na has been identified as the main salt constituent. The most common amendment used is gypsum. It can be applied in a granular form or injected in line into the irrigation water. Gypsum replaces Na with Ca. Other Ca sources work as well. If adequate Ca is available in the soil, applying acid to reduce the soil pH and release the Ca may be effective. Look for a future article focusing on amendments. Contact the authors if you need assistance on determining options.

**Blend "salty" with clean water**. Whatever the source of high EC in water, if there is another source (whether municipal, pond, well, etc.) that can be used to dilute the "salty" water, use it to decrease the salt levels and reduce plant stress attributed to high substrate EC. For most turfgrasses, the target is to reduce to  $\leq 2$  dS m-1. Contact the authors for additional help.

**Change to a different water source entirely**. If EC readings of current water are so high that it is not feasible to continue using a particular source, find an alternative source.

**Install a reverse osmosis system**. If no alternative or mixing source of water is available and growing turfgrasses at this particular location is critical, a reverse osmosis system may be the most viable method for producing quality water that can be used for irrigation purposes. These systems have improved greatly in the last few years; however, they tend to be expensive and the wastewater, a salt-rich brine, must be disposed of. With most reverse osmosis systems, once the water has been cleansed (desalinated), Ca and Mg are added back and or the water is blended with rain fed/storm water so the water is not too pure.

The salinity reduction strategies above can help reduce and/or alleviate salt stress, but keep in mind that each strategy is only as effective as the monitoring data from which you make your management decisions.

Dara M. Park, Ph.D. is an assistant professor, turfgrass, soil & water quality at Clemson University. Dr. White is the nursery extension specialist at Clemson.



## The importance of 2-year turfgrass programs

*Editor's note:* We asked some of the people in charge of 2-year turfgrass programs at colleges and universities across the country to update us on those programs. Here are the responses:

- What have been some significant changes in your program over the past 5 years?
- What are the biggest challenges facing 2-year programs in the next 5 years?
- How does your internship program operate?
- How can the sports turf industry best support 2-year turfgrass programs?

### MT. SAN ANTONIO COLLEGE, Walnut, CA

From Brian Scott, Professor of Horticulture & Agricultural Sciences Department Chair:



A Brian Scott, Mt. San Antonio College

We offer a 2-year degree in Park and Sports Turf Management, which is a comprehensive program for both industries. Along with Park Management, Turf Management and Sports Turf Management classes, students also are required to take other courses including IPM, Landscape Design, Plant ID, Soil Science, Landscape Equipment Operations, Irrigation Design and Installation, Arboriculture and Landscape Construction, as well as work experience classes. The core course requirement is 46-49 semester units (we are on 16-week semesters).

We also offer a Certificate in Sports

Turf Management which consists of 18 semester units (6 courses). These are Turf and Sports Turf, IPM, Soils, Irrigation Design and Installation and Irrigation Management.

I would say the most significant change has been overhauling our certificate system. Most of our certificates in the past have been 24-30 units (8-10 courses). Our Advisory Committee (made up of industry professionals) recommended that we make our certificates fewer units and more specialized. As a result, we went from offering 9 certificates to 12 certificates, all of which are 18 units (6 courses). They are all very specialized now.

Specifically in the Turf Program we are starting to see more students who are recently out of high school becoming interested in Sports Turf Management as a career. Up until about 5 years ago the majority of the turf students were already working in the industry and trying to increase their knowledge base in order to promote to more prominent positions.

One of the biggest challenges in California is the Student Success Initiative. There has been a recent mandate to look at student success primarily on completion of certificates and degrees, which is reasonable. The issue for us is that many students tend to 'job out' one or two classes short and never come back to finish, but they have been very successful at meeting their educational goals. We also have students who finish certificates but do not apply for them for unknown reasons. We have been working diligently to do educational plans and orientations to make sure students complete and apply for the degrees and certificates they have earned.

The other challenge is always the budget, just like anywhere else. We are asked to keep students on the cutting edge of technology and information, which can be expensive. Updating tools and equipment on a regular basis is costly, and there is no ongoing budget line to replace aging tools and equipment. Therefore we have to be aggressive in pursuing outside sources such as industry partners, grants and donations.

One final challenge is how long it takes to get a new course added, or existing courses, certificates and degrees modified. Even if all goes well, it can take 2 years to get changes approved. That is an internal issue that will probably never go away.

[Our internship program] is where we can make big improvements. Currently we have no specific internships set up. Students sign up for work experience and then they work here on our sports turf lab or at our nursery. Recently several have gone to UCLA to work with Chris Romo at Jackie Robinson Stadium, but that is quite a ways from campus. I would like to develop more opportunities close to campus, or even on campus.

We get great support from our local STMA chapter who help students find part-time work and donate to the Turf Team. It would be great to have companies who could possibly loan us equipment for demonstration purposes for a semester or year at a time. This would keep our costs minimal and keep the most updated equipment available. Offering scholarships for students is another great way to support the program. Be available and flexible to start internship programs in order to give students hands on opportunities.

### **MICHIGAN STATE, East Lansing, MI**

From Dr. John N. Rogers, III, Professor of Turfgrass Management, Department of Crop and Soil Sciences:

The 2-year Sports and Commercial Turf program at MSU is an 18-month, 54-credit program that is on campus only. Students attend classes for the first fall semester (15 weeks), then a short 10-week spring semester. From April through August they conduct an internship. The second year is the same as the first, with students graduating in late March.

## John Mascaro's Photo Quiz

John Mascaro is President of Turf-Tec International

Can you identify this sports turf problem?

Problem: Tent on athletic field Turfgrass area: College stadium Location: Corvallis, Oregon Grass Variety: Infill artificial turf

### **Answer to John Mascaro's Photo Quiz on Page 33**





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Classes are oriented to a career in turfgrass management, covering all aspects of turf (13 classes with turfgrass in the title). All ancillary subjects have direct preparation for the career as well, such as computers, Spanish, botany, and soils.

There have been no real program changes in past 5 years; most changes were in place before that. However, this year we began to allow students to take the online course offered at MSU taught by David Gilstrap (CSS 202 World of Turf), to better prepare them for school and introduce them to the subject. This may help stoke a passion but it is too early to tell results.

The challenge is having enough students to fill demand. This is still a very hands-on vocation that you cannot know if you like until you get experience. The beauty of this vocation is that you can get entry level jobs to begin to explore the business. It is here and only here where you will gain heart and passion for the job. School is interesting and fun at this point, as the students are quite successful. The issue is finding the people at the beginning and employing them so they catch the passion

Re internships, our students work closely

with advisors to determine their needs and then we find the right spot for them. We stay involved the whole way. We visit the student during the internship and this gives us valuable information to pass on to the next classes as well as forges relationships with employers.

The industry can best support 2-year turfgrass programs by employing young people to give them the heart; 15-20 hours per week, as this is often all the time they can and will give. Contact athletic directors and coaches and let them know you are willing to hire and mentor. This will go a long way.

### HORRY GEORGETOWN TECHNICAL COLLEGE, Conway, SC

From Ashley Wilkinson, Professor, Golf & Sports Turf, and Golf Course Management:

HGTC has had a 2-year associate degree program in turfgrass since 1972. Our initial goal was to offer an education for the expanding golf course market here in Myrtle Beach and the



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Ashley Wilkinson, Horry Georgetown Technical College

Carolinas. The Golf Course Management program quickly found favor with employers which led to students, like me, coming from around the United States and other countries. Today, our alumni can be found around the country and world.

We have placed a strong emphasis over the past 10 years in

the expanding market of sports turf. HGTC created a new major, Sports Turf Management, to ensure that our students who desire a career in sports turf will receive the knowledge and experience needed to quickly be successful in this rapidly expanding market. Our graduates have found excellent opportunities in numerous major league sports facilities, which only excites the next class of incoming students. Our graduates can also work on dual turf degrees while at HGTC. We can modify the curriculum to help students pursue both degrees in golf and sports turf with minimal disruption to the goal of finishing in 2 years.

Perhaps the greatest strength of HGTC is the amount of on the job training that can be found in the area. We have excellent relationships with both golf and sports turf facilities along the Grand Strand. This is something that brought me here as a student and what so many of our graduates say has given them an edge in the work place. To be sports turf specific, we have classes at the Myrtle Beach Pelicans facility, a Texas Rangers affiliate. The Sports Turf Manager and adjunct faculty member, Corey Russell, shares both introductory and advanced field management strategies with HGTC students. Being part of the real deal helps HGTC students in ways that classroom lectures can't mimic.

Our biggest change at HGTC has been the opening of a new state of the art building for turf study that allows us to expand both scientific and collaborative learning outcomes. We have also invested in new turf specific technology to expand the students understanding of how advances in technology will improve management strategies. Things like geothermal cameras, advanced salinity and moisture monitoring devices, and GIS technology are just some of

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the new gadgets that students will be exposed to in an effort to put them at the front of the line come hiring time.

Our biggest challenge, simply put, is awareness. As a high school graduate I had no idea I could find a 2-year program that could teach me so much in a specific field. I took classes at a university not knowing where to turn. Luckily, I found a summer job in parks and recreation that exposed me to turfgrass and later HGTC. There are so many excellent 2-year programs but we need to get the word out to the high school students that a career in what they love can be found without amassing tens of thousands of dollars in debt. And we can create better success for students interested in 4-year institutions due to the level of intense study at the 2-year level. I found that my Bachelor's degree was a cakewalk after 2 years of intense study in turfgrass and horticulture at HGTC. That's probably why I was so honored to get back here after a career in turf management. I knew I could change students' lives whether they wanted to go straight to work or if they wanted to get ready for more education.

Our internship is an integral part of our education. We expect, and help, students work while in school. Our students must work while in school for at least one semester. This helps us study the student's strengths and weaknesses and allows us to build on what they need. We also have a summer internship where students work for industry leaders around the country and world. We try to help the student work in an area that may interest them upon graduation or for mentors who will continue the student's education. I personally monitor all internships. The internship program requires numerous reports involving soils studies, management strategies, chemical awareness, and irrigation methodology just to name a few. By the time our students are finished with their internships they have a new appreciation of the business of turf management and the time management that is required to reach the pinnacle of the profession.

The best support comes from the local associations. It's all about mentoring. We are blessed in South Carolina to have a very involved and dedicated group of sports turf professionals. Our sports turf professionals and industry leaders are welcoming to the many times I call upon them for a tour, lecture, or facility visit. Whenever I attend a meeting I always feel the energy the association has. If I can get students involved with the association then I know they will continue to grow professionally and personally. What I can teach may not always resonate as well as what I can show. A strong local STMA chapter can show the students the excitement, camaraderie, and fun that can be had in sports turf. For that, I am thankful to our STMA association partners.

### PENN STATE, University Park, PA

From John Kaminski, Associate Professor, Turfgrass Management, and Director, Golf Course Turfgrass Management Program:

The Penn State 2-Year Turfgrass Program involves four 8-week terms and a 6-month internship. In class, students learn the basics of agronomy and turfgrass management, but we also focus a great deal on the business and communication side of the industry. We don't feel we can teach a student everything there is to manage turf, but we strive to give them the tools to become successful turfgrass managers. Our goal is not to teach students how to grow grass; it is to teach them how to become successful managers and leaders.

Re changes: Aside from hiring me, there haven't been any significant changes in the pro-

They also, however, take classes in math, communication, human resource management, business and even etiquette.

gram. Penn State has been a leader in producing successful turfgrass managers since the late 1950's. While we are always trying to stay ahead of industry trends, we also don't think that it's necessary to reinvent our successful program.

The biggest challenge facing all turfgrass programs is the declining numbers. Some schools with few students or limited faculty will likely be gone in the next 5 years. However, I think that this presents an opportunity for 2-year programs. As the cost of a 4-year degree increases well into six figures, 2-year programs have the ability to attract more students. When the salary



differences between managers with 4 year or 2 year degrees are marginal, it just makes sense for people to consider that as a factor in their decision of choosing a turfgrass program.

Penn State's 2-year program has four 8-week terms on the University Park campus. Students take a series of classes ranging from Botany, Soils, Turfgrass, Entomology, Pathology, Weed Science and others typical of an agronomic program. They also, however, take classes in math, communication, human resource management, business and even etiquette. A major part of the program is also the 6-month advanced internship. Students prepare during classes in the semester and then spend March through September learning the ins and outs of managing a sports facility or golf course.

In addition to the traditional classroom and internship experiences, students complete a lot of hands on projects related to construction, irrigation and others relevant areas. They are also exposed to numerous networking opportunities with industry professionals through conferences, turf bowl competitions and field trips.

How can the sports turf industry best support 2-year turfgrass programs? Good question. I think that one of things that the sports turf industry can do is to provide scholarships to assist students pay for the increasingly high cost of higher education. These scholarships not only provide financial assistance, but they also allow the students to build their professional resumes. Another critical area is the development of solid internship programs that look to train and mentor young people interested in turf as a career. Too often we see facilities that use interns as general summer labor. While we appreciate the need for this, the role of a supervisor should more in line with that of an educator and mentor. If supervisors keep this in mind they are usually able to attract the best students each year and help form the foundation for a student's success in his or her career.



▲ Troy McQullien, Kirkwood Community College

working with their hands. Following graduation most students find employment with-in the turf management industry or transfer onto a 4-year degree option.

Some of the most significant changes to the program have been adopting the Irrigation Associations educational resources for our Turf and



From Troy McQuillen, Golf Course and Athletic Turfgrass Management Assistant Professor:



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Landscape Irrigation Class. This class also carries a dual credit, where it can be transferred onto a University.

The second biggest change has been articulation agreements between the 2-year turf management programs and the state universities. These 2+2 agreements allow students to create a seamless transition after the hands-on 2-year experience into their bachelor's degree. Third, more hands-on lab spaces have been developed for the students involved in the program. Our Athletic Field Maintenance class works on the college's baseball and softball fields, along with maintaining the newer Intramural Field.

Some of the biggest challenges facing 2-year programs will be overall student numbers. When I started 8 years ago we had a turf student population of 60 and now our program is just over 45 full-time and part-time students. The delivery of education has changed. Students want more education delivered in online formats or hybrid coursework (class that are part face-to-face and part online). This online transition is difficult for hands-on programs, but we have been making unique curriculum changes to encourage more students into the turf management program.

Students are required to perform an internship between their first and second years. Internships start in early April and run through the summer until August. About 50% of the students will pursue out-of-state internship of all kinds and the other 50% in state or local. Students are required to complete daily logs, skills worksheets, and employer evaluations. When the students return to class they will give short presentations about their internship experiences to their peers.

The sports turf industry has already been an outstanding supporter of the 2-year turf programs, especially with the conferences, turf bowls, and education resources for all students. I would encourage the sports turf community to reach out to younger generations about the possibilities in this career field.

### MINERAL AREA COLLEGE, Park Hills, MO

From Chad Follis, Horticulture Instructor:

Our program is typical of most community college (cc) programs. Heavier on plant and soils courses and lighter on general studies courses. We have 65 credit hours required for degree completion, with three specific courses.

[5 years ago] the program existed on paper but had no support; fundamentally it didn't exist. Getting this part of the hort program off that mat was part of why I was hired. We are making progress but [not yet] to the level I want in another 5 years.

Perception. We need to make it more clear that cc's are a viable hiring alternative and that our students are potentially more emerged in plant growth since two-thirds of their courses are in the world of plant growth and less in general studies. We also have a more diverse



▲ Chad Follis, Mineral Area College

Support. We are not doing research like a land grant so our students may have less exposure to cutting edge research since we don't have research centers, etc. So support comes in the form of in-class speakers and field trips. Help us put demo turf plots on campus; many cc programs manage their campus sports fields and need basic supplies (tools, fertilizer, etc). Think of your local FFA program, that is what your local cc

student population than most universities from a pure socio-economic perspective.

We require two internships, one in the summer the other during one of the four semesters. Students are responsible for finding their own internships with help as needed. We do a couple spot check follow ups during the internship and students have 30-hour reports. We try to get students into multiple locations so they can see various perspectives.

cepts. We need the same types of support. Make sure to invite the cc's to the summer and winter field days. Since most cc students are from lower socioeconomic backgrounds maybe the registration fees could be adjusted. In Missouri the Gateway Chapter of STMA and the state turf council have registration for \$30 for students. This allows me to take all our students to winter conference instead of just a few.



## AIR-SUPPORTED STRUCTURES AND SYNTHETIC TURF FIELDS

Editor's note: Ian McCormick is business development manager, The Farley Group.



▲ Two full field seasonal domes (Downsview Park, Toronto, ON). All photos by Ian McCormick, The Farley Group synthetic turf field is an ideal playing surface for a wide variety of sports and activities—when it's not covered with a foot of snow. Fortunately, there's a building system that can allow for a synthetic turf field to be used during all seasons. Air-supported structures are lower cost alternatives to traditional buildings, particularly for facilities that require large, open, clear span interior space. But the most unique feature of these structures is their ability to be taken down and put back up seasonally. Many domes have been installed to cover sports facilities for the winter months and are taken down to allow for outdoor activity in the summer months. Of course, a dome can also be constructed for use as a permanent, year round facility.

With the exponential growth in participants in soccer and other field sports and the evolution of the synthetic turf industry, the past decade has seen a significant increase in the number of installations of synthetic turf fields with no signs of slowing down anytime soon. Unfortunately many of these fields are in areas that are affected by the cold and snow that winter weather brings, rendering them unplayable for several months every year. So, what's the solution for a field that can't be used during the winter months? Well, you can "bubble" it.

When air structures were first introduced to North America in the early seventies by industry pioneer Ralph Farley, covering a single tennis court for the winter season was an ambitious endeavor. The technology had already been established in Sweden, and Farley saw an opportunity to make use of these "bubbles" in areas in Canada and the United States where long, cold winters made it impossible for outdoor surfaces such as tennis courts to be played on after the warm season was over. So he teamed up with a tennis club in Toronto and imported one of these fabric structures from Sweden, specifically patterned and manufactured to cover one tennis court. The fabric membrane was attached to an anchoring system around the perimeter, an electric inflation fan pressurized the interior of the bubble, and that winter people played tennis on the same court that they enjoyed their favorite pastime on in the summer months. The dome was deflated the next spring,

rolled up and stored away, and the court was played on in the summer as usual.

The next project was even more ambitious, covering three outdoor tennis courts instead of just one. Since then, Ralph and his associates have been involved in hundreds of air-supported structure projects throughout North America and around the world. And today, a three-court tennis dome would be considered a relatively small project compared to the very large field house domes that can cover as much as 100,000 square feet of interior space.

### THE TECHNOLOGY

An air-supported structure, also known as a dome or a bubble, is a truly unique building system. The entire structure is supported by maintaining a slightly higher air pressure within the fabric membrane than the atmospheric pressure outside. This is achieved by an inflation fan constantly introducing fresh air to the interior of the structure.

The inflation unit that maintains the internal pressure of the dome is also a furnace, keeping the interior of the structure at a comfortable temperature. To ensure that dome remains inflated at all times, a standby inflation system is always ready to take over the inflation requirements, even during a power failure.

The interior lighting system is either comprised of fixtures installed on stands around the perimeter or hung from the fabric membrane, or a combination of both. The industry standard for sports lighting is 1,000 watt metal halide fixtures. These fixtures require a ballast to drive them, which can be placed around the perimeter of the interior, at the base of the light stand poles if applicable, or can be housed in a remote cabinet or other storage building outside of the dome. Several other technologies are being introduced as sports lighting solutions, which hopefully will eventually lead to energy savings without sacrificing light levels required for competitive sports.

The fabric membrane is manufactured using architectural grade vinyl coated polyester fabric, and the pattern is specific to every project to create the shape of the structure. This outer material is backed by a 15 to 20 year prorated warranty, and can



A Main heat and inflation unit and standby inflation fan (Greenville, PA).

be expected to last anywhere from 18 to 25 years before needing to be replaced. A liner fabric is added to the interior of the membrane to improve thermal and acoustic qualities. Insulation material is placed between the outer structural fabric and the inner liner fabric to maximize energy efficiency, bringing the equivalent insulation value from R2 to R10. On medium to large-sized domes, structural cables are installed over top of the fabric membrane to help stabilize it.



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Interior view of fabric connections for mechanical equipment and vehicle airlock (King City, ON).



The shape of the dome's membrane adheres to certain design parameters, taking into consideration the wind loads and other climatic data of the site, and creating a curvature that promotes snow shedding off the sides and ends of the structure. If an air structure's height to width ratio is too low the top of the structure becomes too flat, allowing snow to accumulate and putting too much weight on the fabric membrane. To achieve the proper curvature, a dome's height at the peak typically needs to be 30% of the width of the structure, i.e., a dome that is 200 feet wide would be a minimum of 60 feet high at the curvature's apex.

Because this fabric membrane is supported by pressurizing the interior air space, a significant uplift load needs to be offset, which is accomplished by anchoring the membrane to a concrete grade beam around the perimeter of the dome. Soil friction and the weight of the concrete resist the uplift pressure that's created by inflating the dome. An aluminum channel is cast into the top of the grade beam, creating a profile that accepts the fabric membrane—that has a rope edge manufactured into it at the anchor point—and pressure treated lumber fits into the channel around the entire perimeter of the structure, locking the fabric membrane into the grade beam (Figure 1).

In order to maintain the internal air pressure, specially designed airlocks are installed to allow for easy access into the dome, including revolving doors, pedestrian airlocks for barrier free access, and vehicle airlocks for maintenance and lift equipment. Emergency exit doors are located around the perimeter of the structure in compliance with occupancy codes, and are only to be used during an emergency situation as they will allow the internal air pressure of the dome to escape.

### **CONSTRUCTION REQUIREMENTS**

While overall project costs are indeed significantly less than a traditional building, site infrastructure costs, such as excavation and site preparation, parking lot requirements, storm water management, and the supply and distribution of electrical and natural gas utilities are required for an air structure just as they would be for any other type of building. Professional services required for site planning, such as architectural and engineering drawings and stamps, as well as the applications and approvals required with your local building department also need to be considered when planning your dome project.

One difference with the site infrastructure required for an air-supported structure is the installation of a concrete grade beam to hold the dome down, rather than a traditional foundation that supports the weight of the building on top of it. The design and engineering of the grade beam depends on the size of the dome and the wind loads of the site's location, as well as the soil conditions of the site. Once these factors are

determined, the air structure manufacturer will design the anchoring system accordingly, including requirements for equipment pads for mechanical units and entrance and exit components, and will provide a set of construction drawings stamped by a qualified structural engineer.

With new projects, the concrete grade beam and other infrastructure required for the dome, including electrical and natural gas service and distribution are planned and constructed in conjunction with the rest of the site development. Whether or not the dome will be seasonal or year round will need to be considered during the planning stages of the project. There are some subtle changes to the design of the dome and its anchoring system between seasonal and permanent structures. Outside of the scope of the air structure and its related construction, however, is the requirement for field drain-

### **John Mascaro's Photo Quiz**

### Answers from page 25

John Mascaro is President of Turf-Tec International

The reason why this tent is on this college stadium turf is not for an event as you may have guessed; it is actually for logo painting. In this part of the country, rain is a natural way of life so sports turf managers and specialized athletic field maintenance companies have to come up with innovative ways to paint logos, even in inclement weather. At Oregon State University, this new infill field was installed with no center logo as the college was about to change the team logo and they did not have the final design when the field was delivered. The solution was to paint the center logo with temporary paint for a season until the final design was

approved and could be ordered and inlaid into the carpet. In order to facilitate the paint drying process during the rain, they placed a portable tent over the area and used several large volume diesel fuel/electric indirect fired heaters to dry the paint. Careful monitoring of humidity was also key to allow the paint to dry quickly. Once the area was dry enough, they pick up the tent, move to a new location, and continue the painting process.

Photo submitted by Mike Hebrard, owner of Athletic Field Design in Oregon. Al Kirk is Sports Turf Manager at the Oregon State University in Corvallis.



If you would like to submit a photograph for John Mascaro's Photo Quiz please send it to John Mascaro, 1471 Capital Circle NW, Ste # 13, Tallahassee, FL 32303 call (850) 580-4026 or email to john@turf-tec.com. If your photograph is selected, you will receive full credit. All photos submitted will become property of SportsTurf magazine and the Sports Turf Managers Association.





Fabric membrane being locked into anchoring system (Greenville, PA).



▲ **Dome spread out** and connected to the grade beam, beginning inflation (Greenville, PA).

age. Simply put, if the dome is going to be seasonal, field drainage will be required because the field will be open to the elements for part of the year; if the dome is going to stay up year round the field won't require this drainage infrastructure. When the dome and field are being constructed together in new developments, the final installation of the synthetic turf is typically completed after the air structure has been installed. The installation process with for the dome typically involves driving around the interior with heavy lift equipment, potentially damaging the brand new field. Of course, plywood can be laid down for the lift equipment to drive on if the field is installed first, or in the case of installing a dome on an existing field. For existing fields, where the grade beam is installed around the outside of the field, the turf typically needs to be disturbed around the perimeter of the field to install the grade beam. Once the grade beam is completed, the turf is repaired and shored up to the edge of the new concrete, which is flush to grade for seasonal domes, leaving little evidence of it being installed, or it can be raised for permanently installed domes to create a curb on the outside that can be useful for a guideline when clearing snow in the winter time. The grade beam can also be installed across an existing turf field if the plan is to have a seasonal dome cover a portion of the field. Turf fill-in pieces can then be created to cover up the grade beam and allow for regular use when the dome is taken down for the summer.

### INSTALLATION

Once the grade beam construction and all other site work is complete, the air-supported structure and its related components are ready to be installed. Depending on the size of the dome, the fabric membrane will be manufactured in as few as two to three or as many as eight to ten sections, which are folded and rolled up into bundles for shipping and ease of handling on site. These sections are unfolded, spread into place and connected to one another using aluminum joint plates.

The fabric membrane is then connected to the grade beam around the perimeter and locked into the anchoring channel. If applicable, the structural cables are laid in place and connected to their anchors in the grade beam. The furnace and inflation equipment are connected to the duct work for the dome, which is either a fabric connection through the side of the dome or underground ducts from the equipment pad to floor grates inside the dome. Flip the switch to the inflation equipment and 1 to 2 hours later the dome is fully inflated.

The rest of the installation process includes placing and connecting all of the entrance and exit components to their fabric curtains on the dome, and installing the insulation material, interior lighting system, and divider netting or curtains. All in all, the initial installation process usually takes anywhere from 1 to 3 weeks, depending on the size and complexity of the air structure package.

Seasonal domes that are taken down in the spring and reinstalled in the fall basically go through the reverse of the process outlined above every spring and then repeat the process every fall. Of course, the seasonal ups and downs are more efficient than the initial installation, taking about a third of the time. The furnace and inflation equipment typically stays in place while the dome sections and the other attached components are stored away for the summer months. The cost associated with these seasonal take downs and reinstallations can add up for large full-field structures, given the man power and rental equipment required to accomplish the task.

### **OPERATING AND MAINTENANCE**

Operating costs for an air-supported structure include electrical costs for the inflation equipment and the interior lighting system, and heat fuel costs for the furnace. Although air structures have a lower capital cost than traditional buildings and have the unique ability to be removed and reinstalled seasonally, they do require a slightly higher operating budget for utilities than other buildings that can be better insulated and don't require an electric fan for inflation. That being said, significant improvements have been made in the way of insulating the fabric membrane of an air structure with further innovations to this technology on the horizon.

A very important maintenance consideration is snow clearance around the perimeter of the dome. Because an air-supported structure is designed to shed the snow off the fabric membrane, the snow accumulates around the perimeter once it does. It's extremely important that the snow gets cleared away from the fabric membrane so it doesn't jeopardize the structural integrity of the dome.

Other maintenance required includes regular checks on the backup inflation equipment to ensure a seamless transition in the event of a power failure, as well as regular maintenance for all mechanical equipment associated with the air structure.



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## **CELEBRATING 100 YEARS:** Lessons in Building a *Company That Lasts*

### ough times never last, but tough companies do.

That's evident from the challenges Toro faced from the start. In Toro's first 30 years, the company's leaders navigated through the Great Depression and two world wars by staying true to the company's core ethics and values—and those principles have driven the company's longevity and success ever since. Here are some of the surprisingly simple strategies that have worked for Toro over its first 100 years:

### Intense focus on solving customer problems, first and foremost.

Hard-sell tactics have never been part of Toro's culture; it has always been about finding out what the customer needs, meeting those needs and providing exemplary service. In fact, Toro got its start in the golf industry by listening and solving problems. Our first two prototypes (a fairway roller in 1918 and a fairway mower in 1919) came out of requests from golf clubs in Minneapolis. The staff at each club collaborated with Toro on a number of early products, offering input and helping to test equipment.

### Taking care of the customer after the sale.

Toro co-founder and first president John Samuel Clapper thought that any manufacturer of a complicated piece of machinery should care more about that product*after* the sale than before. For the last century, Toro has done that in three key ways:

### • Standing behind the product.

Toro assigned its first manufacturer service representative in the golf business in 1926. Mungo "Scotty" Reid McLaren was charged with traveling the country to visit every golf course that had purchased Toro equipment at least once a year. At each stop, he inspected the equipment with the crew, helped them fix any problems and provided much appreciated training.

That tradition of customer service continues today. In the words of a superintendent at a Country Club in Scotland, PA, "I can tell anyone considering purchasing Toro equipment, you won't go wrong. When I had a problem with my fairway unit, Toro took the high road, stood behind its product, and made me a loyal customer."

• Standing behind our distributor partners.

Scotty McLaren not only supported our customers, he also visited all of our distributors and trained them. To this day, we stand behind all of our distributors with ongoing training, exceptional parts fill rates, sales and technical support, warranty coverage and many other tools to help them provide the level of service our customers have come to know and trust.

As another loyal Toro customer in Boone, NC stated, "It's truly a blessing to have dependable equipment in combination with exemplary service."

John Clapper, Toro's first president, holds 16 patents for Toro innovations.

■ In January 1929, just 10 months prior to the stock market collapse, Toro offered its first common stock to the public at \$1.40 per share.

■ During the war in 1942, the company made plans for additional manufacturing space and new products to prepare for the anticipated post-war boom of suburbia and demand for homeowner products.

■ In 1951, Toro opened a new manufacturing plant in Windom, MN, to serve as a primary consumer products production facility.

Agronomist James R. Watson, Ph.D., (1920-2013) joined Toro in 1952. Dr. Watson led a team of 25 scientists at Toro's R&D facility, conducting cutting-edge agronomic studies that significantly advanced turf care knowledge and helped revolutionize the industry. Dr. Watson became a living legend in the turf industry. ■ In 1966, Toro helped prepare the field for Super Bowl I, forming a partnership that continues to this day.

Toro traded stocks on the New York Stock Exchange for the first time in 1978.

Building on the legacy of Dr. James Watson, Toro's Center for Advanced Turf Technology (CATT) was formed in 1998.







• Staying close to what's important to the customer.

Toro's third president, Ken Goit, once said, "The success of this company is no secret. It has been due to two simple things: building a good product and treating customers honestly and fairly." This fundamental approach has allowed Toro to reach our 100th year, and it's also how the company hopes to approach the future.

Every new product, feature and improvement we develop is driven by the need to make life easier and more productive for the people we serve. That attitude is reflected in comments from another superintendent at a country club in Warren, PA, as posted on the Toro Leaderboard: "It is obvious that Toro has listened to customer wishes and needs, and delivered us into a new era of precision mowing with 'all the fixins'!"

### Providing exemplary expertise in sales and service and unparalleled local support.

Another loyal customer at a golf club in Mendham, NJ states that, "The expert sales staff at my Toro distributor gives me product support whenever I need it. That's why I love my Toro!"

The importance of local support permeates the fabric of The Toro Company and can be traced back to Clapper's foresight and belief that Toro should have a network to provide the local, expert service golf courses needed. The Toro Company set up their first distributor in 1922 and had 17 distributors by the end of 1925, providing a big competitive advantage as it relates to serving golf courses around the country. Our distributor network, to this day, continues to play a vital role in our business, delivering local support our customers depend on. Some of these distributorships are in their fourth generation with Toro.

Taking care of your employees.

Toro's focus on taking care of customers extends to their long history of taking care of employees. As Ken Melrose, Toro's eighth president, said, "We believe the single most important factor that influences our success as a company is the Toro employee."

Several of Toro's presidents were known for walking the plant to talk with workers regularly. They knew their employees' names and their families. An interesting example of how Toro stood out in support of their employees is that during the Great Depression, while many companies simply let go of employees, The Toro Company opted to cut back hours instead of jobs to keep people earning paychecks. Even in those early years, company leaders knew and acted upon the belief that people were our greatest asset.

#### Thanks to our customers for putting their trust in Toro!

Any company that lasts for a century must inevitably endure challenges, turning points and difficult economic times and learn from those experiences. The Toro Company has been able to overcome these trials and tribulations to achieve lasting success by focusing on, and not losing sight of, our core people and performance values and the true needs of our customers.

As we celebrate our centennial, we're not only looking back but also forward at new ways to take care of our customers honestly, fairly and ethically in the years to come. That means both our valued channel partners as well as end-user customers. For us, it's not just *what*we do, but *how* we do it that counts.

At the end of the day, it is our foundational values that extend from Toro through our Distributor Partners that have helped our company weather the test of time. And of course, it is only proper that we conclude by expressing our sincere thanks to all of our enduser customers for putting their trust in Toro.

### TIMELINE

**1919:** Toro revolutionized the turf maintenance industry by mounting five mowers to the front of a farm tractor.

**1922:** Toro changed the way the industry serves customers with the first national golf distributor network.

**1928:** Toro developed the first electric-powered walk greensmower.

**1940:** The 76" Professional revolutionized mowing with cutting units on each side, often referred to as "wings," that adjusted to undulations in the turf and could be raised and lowered when transporting.

■ **1948:** Toro designed safer rotary mowers for homeowners after market studies discovered that many homeowners were afraid to use them.

■ **1952:** Toro invested in turf maintenance and agronomic research with the addition of James "Doc" Watson, and opening the world's first research and development center specializing in turfgrass science.

■ **1959:** Toro made bagging possible for the first time with wind tunnel technology that harnessed the airflow beneath the rotary mower.

**1964:** Toro pioneered the use of plastics in golf irrigation with the first valve-in-head sprinkler.

**1968:** First electric key start residential mower.

**1972:** Toro incorporated the use of hydraulics with reel and rotary mowers.

**1990:** Recycler mowers made bagging a thing of the past with mulching capabilities.

**1999:** Personal Pace system was developed – a self-propelled system that adjusts to the operator's desired speed.

**2010:** Toro eFlex was the first greensmower to run on Lithium-Ion battery technology.

**2013:** Reelmaster 3550-D was developed; the lightest fairway mower on the market

**2014 and beyond:** Toro promises more innovations to come in the next century with a continued passion for helping customers enrich the beauty, productivity and sustainability of the land.



### Facility & Operations



## 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?

### **TODD TRIBBLE,** Athletic Field Superintendent **Oklahoma State**

I think using high quality paint, that is mixed correctly, has to be the most important step in having successful logos and lines. We use a national brand and dilute our white to a 50/50 ratio of water to concentrate which allows us to achieve 10 gallons of paint per 5 gallons purchased. I have found on our orange that it needs to be mixed with a bit more concentrate than a 50/50 or our logos come out a bit muted. We stir our paint using a cordless drill along with a paint paddle (~10\$) available at most home improvement stores.

Strings and meticulous operators can really make your paint stand out for the right reasons. We string out every line we paint regardless of its visibility; this helps us ensure that our dimensions are not changing. I make sure our strings are pulled tight before a line is painted which helps prevent strings from "walking" or bowing on us. We generally have the same operators paint the soccer field and football fields as they know where any undulations are and can account for those areas as the painter is being pushed during the painting process. We always have a water source being either a 5-gallon bucket of water or a hose and coupler nearby in case of a spill, wind drift, or a poorly painted area.

As far as painting actual logos I feel like you are going to need two coats for the initial painting before fans see it. We will paint the first coat on a Thursday if we play on Friday at soccer and the second coat on game day. I have always felt like an initial coat of white as a base helps our orange appear brighter vs. using back to back coats of orange. If we play at home the following week we can usually get away with one paint application instead of two as a base coat is already down. When the team goes out of town we always paint the outline of the logo in white (using strings since our logo has straight edges) just to keep our edges crisp and dimensions where they were intended to be.

Lastly, we always make sure we are looking at the weather forecast 48 hours in advance if we know there is painting that needs to be done. Stillwater tends to be a very windy place so if we know our game is Friday and the wind will be blowing 20-30 mph we will avoid those types of days and paint the day before. We have the same outlook obviously with rain that may be in the area. We have used plywood to block the wind on days we have to paint foul lines and coaches boxes at baseball.

I think if you plan beforehand and have a routine in place before you set up your painters most problems can be avoided. The final process in field preparation is lining and logos and will most often be what your fans, coaches, and administrators notice before anything else. Paint applications are really the finishing touches on your field so we try and nail this portion of the set-up each and every time.

### **KEVIN MALONE, CSFM** The LandTek Group

I've only done a small amount of line painting and logos. But I can say that these would be most important to me:

Using a quality sprayer

Keeping the spraying clean after EVERY use

Using high quality paint

Operator experience-practice makes perfect

### **KEVIN YEISER,**

Director of Grounds & Athletic Facilities Lebanon Valley College (PA)

Using quality paint

Use good application equipment. Line painters aren't always the best to use for logo work.

■ Staff that pay attention to detail and take pride in what they're doing. Those two things always show in the end result, especially with logos. No logo is better than a poorly painted one.

We haven't had too many disasters but I talked to a colleague at another college where an entire 5-gallon pail of paint was spilled on a synthetic field. It occurred during the hot quick drying days of late summer. Even after cleaning numerous times a shadow could be seen for quite a while.

### JEFF HAAG, Sports Turf Specialist John Carroll University (OH)

Make sure the painter you use has been thoroughly cleaned,

spray tips, filters, and hoses prior to each use, and after the painter has been used. I go by the same method in rinsing out the machine as we are required by pesticide containers; I triple rinse my machine with water.

When painting logos, start from the inside and work your way out.

One cost effective way to save money on small logos that are no larger than 48 inches by 40 inches is to use cardboard. I save our cardboard that is shipped with our pallets of salt we use in the winter on our campus sidewalks. All you need is a ruler to measure the logo and a utility knife. I use them to make my logos on the softball outfield. The best part is that it costs you nothing, just your time. They could possibly be used for football fields as well if you use small logos near the 20 yard lines or in other areas of the field.

Fortunately, I have never had a major bad experience. When I was at Bowling Green State University we used to paint the numbers white and border them with orange by using a 2-inch roller and roll the paint around the numbers. Sometimes we used students to help us do this, and one time they knocked over the bucket of paint. Because of that I would suggest to always have a bucket of clear water and rags on hand to help dilute and clean up any spills.



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## Synthetic Turf driving innovation in field marking technology

*Editor's note:* This article was written by Jim Brady, director of marketing with Eco Chemical Inc., and Jeff Fisher, business division manager for the TempLine Coatings and Equipment Division of Eco Chemical.

he increased use of artificial turf for athletic surfaces has created both challenges and opportunities for virtually everyone involved in our industry. Turf manufacturers are naturally vying with their competitors, striving to continuously improve their products and services. Manufacturers of field care products must keep up with the latest in turf manufacturing and installation technology and keep their "ear to the ground" for new product and service



opportunities. Finally, athletic field managers and their staff are being tasked with learning and keeping up to date on the technology required to maintain top performance from the turf while optimizing their investment. For everyone involved, keeping abreast of change is essential.

According to the Synthetic Turf Council, the number of synthetic turf sports field installations grew an estimated 18% in 2013 and is on track to grow another 16% this year. Anecdotally, all of our distributors report seeing more and more synthetic fields being installed, either to replace or add to natural grass field facilities by municipalities and schools in their markets. Besides the continued improvements in turf manufacturing and installation technology, leading to improved performance and durability, another clear driver behind this trend in certain parts of the country is the persistence of drought conditions, where synthetic turf is the clear winner in terms of being less taxing on water supply.

Another driving factor is the incremental revenue opportunity presented by a multivenue use plan for the field, particularly with colleges and professional installations. Synthetic turf lends itself to this strategy since it can be easily and quickly converted from one sport or event to the next and can stand up to the heavy traffic generated by non-sports events occurring on the surface of the field.

A successful multi-use program depends on a versatile field marking system that facilitates changing from one sport to another. If you stop and think about it, the essential criteria for a superior synthetic turf paint are inherently contradictory. The paint is expected to go on easy, not alter the play characteristics of the field, stand up to weather and play wear, and yet, come off easily. Some of the earliest synthetic turf marking paints on the market were simply modified versions of successful natural grass paints, with one formula fitting all seasons, climates and play expectations. These early products were formulated to thickly coat the synthetic turf strands in order to achieve effective adhesion to a plastic surface. They significantly altered the play surface and proved difficult to remove, resulting in a high risk of turf damage and extra wear in the removal process. Also, once removed from the turf strands, these products could leave stubborn residue on the field that degraded the appearance of the turf and interfered with play quality.

The trend toward increased multi-event use has driven the further evolution of paint products. The practice of simply buying and applying a paint without regard for preconditioning and eventual removal has been displaced by a more systematic approach to field painting and removal. As a manufacturer of field conditioners, paints, removers and turf cleaning equipment, these market trends have been very favorable for us. We entered the market with the benefit of hindsight and proceeded to build our products, equipment and service model as an integrated system. We began by working with the Seattle Seahawks to gain a thorough understanding of the problems they were facing with field painting and removal. Early on in the process, we identified two essential product features: our paint had to coat without altering the play characteristics of the turf, and it should re-liquefy when it is removed. We also identified the need to offer different paint and remover formulas to accommodate different field change plans and seasonal factors.

Rapid evolution in the market is pointing toward the need for more of a system-focused rather than product-focused approach. Rather than just shopping for paint in a pail, turf care professionals will be looking for a comprehensive start-to-finish solution for field painting and paint removal, adjustable to varying field conditions and intended duration of use. Our paint lines currently include three different grades to suit different permanence requirements and still work well with our removers and removal equipment. At the top of our equipment line, our Mantis Hydroextractor was the first of its kind in the market, specifically designed and engineered to work with our paints and removers to extract paint removal waste from the turf. Thorough extraction is rapidly becoming the standard for paint removal in order to minimize removal residue remaining in the turf, or to be flushed through the turf to potentially interfere with field drainage.

As the market continues to grow in size and field use intensity, we anticipate that the systems required to satisfy this market will also continue to grow in complexity. Future systems will involve increasingly sophisticated products and equipment, combined with technical know-how, placing growing demands on those who provide coatings, removers, conditioners, equipment and the essential technical expertise.

Virtually every synthetic turf product comes from the factory with certain residual chemicals that tend to interfere with field paint adhesion, at least for the first several application and removal cycles. Everyone who has experienced the challenge of applying field paints to newly installed synthetic turf will understand and appreciate the value of a product that is formulated to pre-condition new turf surfaces to make them more paint friendly.

Our metallic paints were produced in response to several client requests and bring a whole new dimension to the art of logo painting.

Our TempLine Turf Green responds to the growing demand for a natural grass product to keep grass green in hot dry climates and to extend the green appearance of grass in dormant periods. This product responds to growing market interest resulting from recent persistent drought conditions across the country.

Further into the future, we see the opportunity for a number of products, including the next generation of our Mantis extractor, and a permanent field painting system for synthetic



turf. On the natural grass side of our business we will be adding colors to our line, a low cost paint mixing station and possibly a growth inhibitor paint option.

Given this increasingly complex combination of materials and equipment, an essential value will be our willingness and ability to share product information and use guidance-to counsel new and existing customers in dealing with a special need or circumstance. It also demands that we be able to share this knowledge in a broad reaching, real time fashion. This becomes even more essential as the number of synthetic field users continues to grow. In response to this challenge, we are gathering and organizing a vast body of knowledge we have accumulated over the early years, then translating and packaging it to make it more readily available to our clients. Our multi-channel communication plan includes the use of more informative product information materials, website content and tools, training materials and the expansion of our service outlets through the addition of qualified distributors and dealers across the country.

One thing everyone can likely agree on is the inevitability of change. The increased use of artificial turf for athletic surfaces represents a sea change that will continue to challenge everyone in our market, including manufacturers and their customers. The opportunities for those of us in the field-marking segment are substantial, but will require new ways of thinking about how the market is best served. Regardless of one's position at the table, the need for information will be at the heart of a successful adaptation to change along with the ability to react with the right products and services.

### **Tools & Equipment**

For more information on these and other products, please visit www.greenmediaonline.com/productportal.













### Beacon Athletics' Streamliner dryline marker

The Streamliner is simply the best dryline marker in the business. With its variable flow control, Field Testing has proven the Streamliner is the best for the quality of the chalk line while using less chalk than its competition. A heavy-duty steel frame, pneumatic tires, rugged molded plastic hopper, flexible brush agitator, accurate string-line guides, and a one-button retractable handle for easy storage set the Streamliner apart. Available in 2-, 3-, and 4-wheel models with optional Double-Play aerosol paint attachment. **Beacon Athletics** 

### Game Time field marking powder

Louisville Slugger Game Time White Stripe Field Marking Powder is a bright white premium marking powder that is safe and easy to use on any field of play. It complies with the NCAA rules for athletic marking powders and can be used on baseball, softball, football, soccer or any athletic field. Benefits include: Easy to apply; economical; used on any athletic field; harmless to skin, clothes and turf. Recommended for baseball, softball, parks & recreation, youth leagues, football or soccer. Available in 56 bags per palette, 16 pallets per truck load, 896 bags total (50 lb. bags).

**Game Time Sports Systems** 

### Tru Mark steel string winder for cordless operations

The heavy duty string winder with reel knob allows for cordless drill connection and quick line retrieval. The steel powder coated unit with ball bearings and 10 inch spool holds 1,500' plus feet of braided twine. The spike handle allows for easy off loading of twine when staking. Line retrieval is as easy as pulling stakes, connecting a cordless drill to the 3/8 inch HDSW post, putting the spike handle in the ground, and pulling the trigger while guiding the line onto the reel. The Tru Mark heavy duty string winder is built for the toughest of conditions and operations.

Tru Mark Athletic Field Marker

### Titan PowrLiner Series: dependable line striping

Serious turf managers and athletic organizations rely on Titan line stripers for dependable, precision performance. Built for hard work and long life, Titan's PowrLiner Series offers gear driven and hydraulic sprayers with outputs ranging from .33 to 2.50 GPM, and are capable of striping 106 to 800 linear feet/minute, up to 60% greater than competitive line stripers. For football fields, the PowrLiner 2850 is an intermediate striper designed to handle the rigors of everyday use, but weighs only 160 pounds. For full-time field duty, the PowrLiner 4950 will complete medium- to large-scale turf striping projects quickly and reliably. Add a Titan LazyLiner ride-on driver to further increase speed and productivity. Backed by the best and longest warranties in the industry. **Titan** 

### NewRider 1700 HPA by Newstripe, Inc.

The NewRider 1700 is the economical ride-on high pressure airless striping machine for marking athletic fields. The NewRider 1700 is designed to quickly spray straighter, brighter looking lines and the 25 gallon paint tank will stripe numerous fields without having to be refilled. Additionally, the fully adjustable spray pump saves money by spraying 'just the turf' and 'not the dirt' with any paint. The on-board purge tank eliminates clogging of spray tips and makes clean-up a snap. This model features a hydrostatic drive and a 10.5 hp OHC engine with electric start, and removable gun with 25' hose for stencils.

Newstripe, Inc.

### **Ultramax Red hose**

Underhill International introduces the UltraMax Red, a custom-engineered, heavy-duty hose for parks and sports fields. Featuring Goodyear technology, the UltraMax Red is constructed from EPDM rubber and reinforced with spiral synthetic yarn construction. The Underhill hose is ideal for high working pressures and has burst strength up to 800 psi. UltraMax Red can be used for watering down turf and for equipment clean-ups and site wash-downs. It is kink, tangle and abrasion-resistant, and has machined brass couplings. Available in 25′, 50′, 75′ and 100′ lengths and 5/8″, ¾″ and 1″ sizes. Custom lengths and sizes are also available. UltraMax™ **Underhill** 

### **Membership Application**



### Experts on the Field, Partners in the Game.

Note: This form is valid only for first time STMA National members through September. Membership benefits continue through Dec. 31.

Fax to: (785) 843-2977

Or mail with payment to: Sports Turf Managers Association P.O. Box 414029 Kansas City, MO 64141

### **New Members\***

As a new members, you receive a FREE conference registration, value \$375, to be used within 3 years! Just indicate your status on the conference registration form.

Did someone refer you to STMA? We would like to thank them, and reward them with an STMA \$100 voucher.

Person who referred you:

Facility name:

\*Not been an STMA national member since 2000. New student and affiliate memberships do not qualify for the free conference registration. However, all members are eligible to receive the \$100 voucher for referring a new qualifying member. In order to receive the FREE conference registration, you must be a current member in the year that you use the registration.

Name		Title		
Employer/ Facility				
🖵 Business	🖵 Home			
Address				
City		State	Zip	
Home phone	Work	Ce		
Fax	Email			
Signature				
Direct Supervisor Name				

### **Membership Category:**

Sports Turf Manager	\$55
Sports Turf Manager Associate* (Additional member(s) from the same facility)	\$55
Please select the primary facility type where you are employed: O Professional Sports O Higher Education O Schools K-12 O Parks and Recreation	
Cademic Academic	\$55
Student (verification of enrollment)	\$25
Commercial	\$148
Commercial Associate* (Additional member(s) from the same commercial company)	\$75
Affiliate (Person who is indirectly or on a part-time basis, involved in the maintenance/management of sports fields)	\$50
Retired	\$50
Chapter Dues (contact headquarters for amount) Chapter name)	\$
Contribution To SAFE Foundation (research, education and scholarship):	\$
Total Amount Enclosed:	\$
Payment Method:	
Check Money Order Purchase Order #	

□ Check □ Money Order □ Purchase Order #:	
Credit Card: 🗅 Mastercard 📮 Visa 📮 American Expr	ess 🖵 Discover
Name on Card	
Card #:	Exp. Date:
Signature:	

\*There must already be a national sports turf member from your facility or commercial member from your company before you may sign up in the Associate category.

### **Field of the Year**

## **MILTON HERSHEY SCHOOL (PA)** Middle Division Football Field



Category of Submission: Schools/Parks Football

**Sports Turf Manager:** Jason Bowers, CSFM, and Joe Barr

Editor's note: Jason Bowers is now with Virginia Tech University. Some of the information below refers to him.

**Title:** Athletic Field Technician

**Education:** Associate's degree in turf and landscaping

**Experience:** With my associates in Landscape and Turf Management from Virginia Teach, I was the Sports Turf Manager at Tech from 2004-2009. I received my CSFM in 2007



and won the STMA College Football Field of the Year award in 2008. In 2010, I became the Sports Turf Manager at the new Philadelphia Union Major League Soccer stadium in Philadelphia, PA. Then in 2011, I started work at the Milton Hershey School in Hershey, PA at the Catherine Hall middle division athletic facilities.

Joe Barr assisted with the outdoor athletic fields for 7 years at the Milton Hershey School before I became the Athletic Field Technician and his supervisor. It was my intention to groom Joe to eventually take over as the head Athletic Field Technician for the MHS Catherine Hall facilities. I mentored Joe and



taught him how to calibrate spraying equipment and fertilizing equipment and tried to help him understand new and easier layout plans and paint designs.

**Full-time staff:** Jason Bowers, CSFM, Joe Barr, and Caleb Nippert

- **Original construction:** 2008
- **Rootzone:** Native soil

**Turfgrass variety:** Turf-type tall fescue, Kentucky bluegrass, and some perennial ryegrass

Overseed: Kentucky bluegrass and perennial ryegrass mix (90% to 10%, respectively)
 Drainage: Herringbone pattern

#### **About Milton Hershey School**

Milton Hershey School is a cost-free, private, coeducational home and school for children from families of low income. The school is funded by a trust established by Milton S. Hershey and his wife Catherine. Milton Hershey School offers a positive, structured home life year-round and an excellent pre-kindergarten through 12th-grade education. Our vision focuses on building character and providing children with the skills necessary to be successful in all aspects of life.

#### WHY STMA SHOULD CONSIDER YOUR FIELD A WINNER?

The Milton Hershey School (MHS) was founded in 1909 as a school and home for orphaned boys. Today the MHS provides a cost-free, private, coeducational school and home for children from low income families and those with social need.

Catherine Hall is the middle division of the school, grades 5 through 8. In 2005 the Catherine Hall football field was constructed, outfitted with irrigation, a herring bone drainage system, and seeded with a tall fescue and Kentucky bluegrass mix.

In 2012, I became the Athletic Field Technician, overseeing the Catherine Hall facilities. Having previously worked with collegiate and professional sports teams, my expectations for field quality were high. At Catherine Hall, there are only two full-time employees charged with the care of all outdoor athletic facilities, myself and my assistant, Joe Barr.

My initial assessment of the football field found the soil to be compacted and the center of the field worn away. We seeded and topdressed with compost between the hashes and used an AerWay aerator machine twice a week to relieve compaction. We reduced aerating to once a week after the season started, but the turf maintained its density.

Initially, we were using an older model paint machine that was slow and used a lot of paint. I met with the athletic director and explained how a newer, self-propelled paint machine would cut our time in half and drastically reduce our paint use. We decided to purchase a self-propelled machine that arrived only 1 week before football tryouts.

Joe explained that, before my arrival and using the old paint machine, they would only paint the lines, field numbers and hash marks down the center of the field. We decided it was time to do more and widened the sidelines and goal lines to 8 inches, added yard marks, and painted the coaches boxes solid white. We used a leftover bucket of brown paint to line both sides of the 20 yard lines to represent the red zone. The coaches marveled at the field's appearance and appreciated having a full stand of grass in the center of the field. Spectators commented that the field looked like that of a professional team and the greatest compliment came from the players saying how proud they were of their field.



### **Field of the Year**

After a very successful and rewarding football season, Joe's interest in athletic field's management grew. Over the winter months, Joe was out on medical leave and I would send him sports turf-based questions to quiz him on spreader and sprayer calibration, fertilizer selection and calculations, etc. I found mentoring Joe to be extremely rewarding and his passion for learning reenergizing to me.

In April of 2013, my wife and I moved to Maryland, leaving my position open for Joe to apply. In order to become an Athletic Field Technician, he had to pass an employment test administered by the MHS. Joe passed the test with a perfect score and to hear the joy in his voice when he called to tell me was one of the greatest feelings I ever had as a sports turf manager.

**SportsTurf:** What channels of communication do you use to reach coaches, administrators, and users of your facility? Any tips for communicating well?

**Joe Barr:** In 2012 Jason Bowers, CSFM and our AD Dr. Sheila Deitrich decided it was time to include the athletics grounds crew in all necessary meetings. There is nothing better than a hand shake, face to face conversation. My assistant, Caleb Nippert, and I continue this today. We meet with the athletics managers every Monday. Every Wednesday the varsity athletic field tech, Mike Orban, and I meet with our supervisor, Phil Shirk, the manager of grounds and landscape. Every Friday Phil and I meet with Dr. Deitrich. Before every season we hold a meeting with the entire athletic staff.

One tip I would offer: Just be honest with all. Honesty goes a long way during a long season.

### **ST:** What are your specific responsibilities? What is your favorite task? Least favorite?

**Barr:** I perform all duties required to prepare, maintain and repair all athletics fields and neighboring intramural fields. Duties include fertilizer, pesticides, herbicides, irrigation and field lay out for football, baseball, softball, soccer, field hockey, cross country, and track and field.

My favorite is baseball, I love it. I could work on a baseball field from dawn to dusk. I have no least favorite. Milton Hershey School treats us very well. I enjoy coming to work every single day.

**ST:** How did you get your start in turf management? What was your first job?

**Barr:** After high school I played in a fast pitch softball league. I was one of very few volunteers to do field maintenance. From 1999 to 2011, I volunteered and led a field crew on many projects for the Annville Youth League and the Palmyra Baseball League. I really got the turf bug in 2003 when we completely rebuilt an unused baseball field. We completed it with backstop, dugouts, fencing, bullpens, and infield. We had NO large equipment help. All this was done with a lawn tractor and hand tools (I am not joking). We did it again at another location in 2008. That's when I decided this was what I really wanted to do and starting attending turf clinics at Lebanon Valley College and Penn State.

My first actual sports turf job was 6 years in the making. With a very limited turf background but an obvious passion for this type of work, MHS and Mr. Shirk took a chance on me. I worked grounds maintenance and assisted on athletics. Mike Orban was the one that had the task of introducing me into the real turf world. I am a hands-on type person, not great in a classroom. Show me how and I will not forget. Mike had the patience to take the time to show me how. After I earned his trust, he would allow me lead many projects. I appreciate him very much for that. In 2012 Jason Bowers, CSFM was hired as Athletic Field Tech. I then became his assistant. Jason knew how bad I wanted to become an athletic field tech, he also knew I was not a classroom guy but I had to become one to pass my test. Well, he took me to school. We studied and he drilled me with questions every spare moment we had. He made me calibrate everything, every time. He would have questions on my desk waiting for me. When I was off for my shoulder surgery, Jason would e mail me from his home with questions. Jason then had me develop our 2013 turf program. In April 2013 I not only passed my MHS athletic field tech test, I aced it. I cannot thank him enough for what he did for me.

**ST:** What practices do you use to keep your infield skin in peak condition?

**Barr:** So glad you asked this question. Caleb Nippert and I completely repaired our baseball infield last fall. There is no substitute for hard work and attention to detail. A little damp moisture in the morning (not muddy or sticky) is ideal. Next a nail drag is perfect to work up about a 3/8" cushion. Then use a drag mat to get that perfect finish. After games and practices, pay attention to the area around the bases. Leading off the base and sliding will make holes. This needs to be pulled back and possibly rolled firm. Also pay attention to the lip around the infield. Good dragging technique and raking will go a long way in preserving this area. Pitching mound and batter's boxes need repaired and tamped after every use.

**ST:** What changes if any are you considering or implementing for the winning field in 2014?

**Barr:** Mike, the varsity field tech, his assistant Rich Guttendorf, Caleb, and I are always willing to learn better and safer practices for our student athletes. We attend conferences, clinics and openly discuss practices with others in the industry. Time management is something we are battling the most. We have two techs with two assistants for Varsity and Jr. High. We have multiple fields for nearly every PIAA sport. Our facility is used by many outside organizations as well as daily physical education classes. Timing is everything for us.

**ST:** How do you see the Sports Turf Manager's job changing in the future?

**Barr:** Continued education and the growth in sports medicine will become a big part of our position. More fields are being built. There are more athletes at younger ages with all the travel leagues and after school programs. We need to concentrate on maintaining safe, playable fields. One of the very best sources for any sports turf manager is the STMA yearly conference. Last year was my first time. I was blown away at all the knowledge that was openly shared in the seminars, in the halls, in the restaurants. Everyone is willing to share everything to help each other learn more. From someone that never attended a full time college, I cannot express how important that is to me. This is a conference that should not be missed. Team owners, athletic directors, and supervisors at any level should consider sending their turf crews. Knowledge is power. ■

STMA would like to thank Carolina Green, Ewing, Hunter Industries and World Class Athletic Surfaces for their continued support of the Field of the Year Awards Program.

### STMA in Action News from the Sports Turf Managers Association

For more on the latest news, please visit www.sportsturf.com and www.stma.org.

## STMA 2015 Board of Directors nominations are open

he STMA Nominating Committee invites voting members to submit their interest in serving on the 2015 STMA Board of Directors.

All volunteers must be voting members of STMA. The Director positions that are open include:

• **Professional** - Must be a Sports Turf Manager or Sports Turf Manager Associate who manages sports fields used by professional athletes.

• K-12 - Must be a Sports Turf Manager or Sports Turf Manager Associate who manages sports fields for institutions that provide education to students in grades K-12.

• **Commercial** - Must be a consultant, architect, designer, contractor, management company, distributor, manufacturer, in sales, etc. The company must be engaged in a commercial enterprise providing services and/or products to the sports turf profession.

**At-Large** (elected) - Voting member from any category of membership.

• The STMA Board of Directors sets policy and strategic direction for the programs and services of the association and is accountable to the membership. Board members meet four times per year for a day-and-half meeting, chair one or more committees, and have responsibilities during the Annual Conference and Exhibition. The board meetings are held in January, March, July and October and are typically located at a future or potential conference location. STMA covers the costs for its board members to participate in these meetings.

For more information on the roles and responsibilities of a board member, contact

STMAinfo@STMA.org or by phone, 800-323-3875 to request a copy of STMA's Board of Directors Handbook.

To have your name considered to be placed on the ballot by the Nominating Committee, go to STMA.org, fill out a Board Volunteer Interest form and submit it by August 29. Per the Bylaws, the Nominating Committee is chaired by the Immediate Past President, who is James Michael Goatley, Jr. PhD. A member from each category of membership up for election must be represented on the Nominating Committee. The committee will begin its work to refine the slate in September and October. The slate will be provided to the membership through an electronic ballot in late November. New Board Members will take office during the STMA Annual Meeting on January 15, 2015.

## STMA's Environmental Facility Certification program begins Phase I of its pilot

he STMA Environmental Committee is piloting the first iteration of an environmental assessment tool. Six sports turf managers volunteered to implement it and provide feedback on its relevancy, utility and applicability. The information from these volunteers will help the committee adjust the self-assessment tool so that it can test it with a broader group in Phase 2. Phase 1 should be

Unlike STMA's Certified Sports Field Manager (CSFM) certification, this certification will be awarded to a facility, not to an individual. completed by the end of this month; Phase 2 by November. A full roll-out of the program is planned at the 2015 STMA Annual Conference in January in Denver.

The electronic assessment tool includes sections on General Facility & Resource Information, Stormwater Management, Fertilization, Pesticide Management and Integrated Pest Management, Recycling, Composting, Mowing, Energy Conservation, Shop Buildings and Storage Areas, Irrigation, and Educational Outreach.

Unlike STMA's Certified Sports Field Manager (CSFM) certification, this certification will be awarded to a facility, not to an individual.

Members of the 2014 Environmental Committee include Chairman Tim Van Loo, CSFM; Ryan Bjorn; Amy Brackin; Richard Calarco, CSFM; Jim Catella; Steve Dugas, CSFM; Blair Elliot; Beth Guertal, PhD; Kevin Mercer, CSFM; Justin Moss, PhD; Dean Pearson; Joel Rieker; Gwen Stahnke, PhD; Mike Trigg, CSFM; Gary Tubesing; Vickie Wallace; Rich Watson; and Barret Werner.

This environmental focus has been underway since 2010 when a Task Group was appointed by President Chris Calcaterra, M.Ed., CSFM, CPRP under the leadership of Jody Gill, CSFM. It was installed as a standing committee in 2011 by President Troy Smith, CSFM, and led by Chairman Kevin Trotta. For the next 2 years, Mike Tarantino, CSFM, chaired the committee as it began developing this concept, and creating environmental tools and resources for members. ■

## STMA continues New Membership Incentive promotion, referral rewards

**S TMA is continuing** its successful New Membership Incentive program, citing the extremely favorable reception it has received. The program offers a number of incentives to new members and a referral bonus program, both designed to help the association build on its continued growth.

### **New Member Benefits**

Through the program, new members—those individuals who have not been an STMA national member since 2000—are eligible to receive a free conference registration (valued at \$375, to be used within 3 years) when they purchase an STMA membership. This new member offer is valid for the association's sports turf manager and commercial categories, including individuals at the associate level (sports turf manager and commercial associates). Unfortunately, new affiliate and student members are not eligible for the free conference registration benefit.

To see if you qualify for the free conference promotion, please visit www.STMA. org or call the STMA office at 800.323.3875.

### STMA referral rewards

All STMA members are eligible for the association's new referral rewards program. Any current member who refers a new qualifying individual that signs up for a membership will receive a \$100 voucher that can be used on a variety of items, including STMA merchandise, conference registration fees or membership dues. There is no limit to the number of new recruits a member can refer; he/she will receive the \$100 voucher incentive for each new person they refer who signs up. Stay tuned for more details at

www.STMA.org!

## Making Memories in the Mile High City with former Denver Broncos All-Pro linebacker and 2015 Conference keynote speaker Karl Mecklenburg



elebrate STMA's 26th conference and exhibition in Denver with all the exceptional sessions, seminars, and workshops you've come to expect from the industry's premier sports field association. Nestled in the foothills of the Rocky Mountains, Denver is one of America's most unique travel destinations with a myriad of unique neighborhoods that feature a cuisine, attraction, or interest for every taste. Join your peers January 13-16, 2015 in this exciting city for the ultimate learning event of the year.

Not to be missed will be the conference's keynote speaker, former Denver Broncos All-Pro Linebacker Karl Mecklenburg. According to his biography:

Former Denver Broncos Captain and All-Pro Linebacker Karl Mecklenburg rose from being a college walk-on and a 12th round draft pick to a pro career that included six Pro Bowl and three Super Bowl appearances. Considered the NFL's most versatile player, Karl played all seven defensive front positions. Bronco coaches wanted him at the point of attack and would move him throughout the game. There were many games where Mecklenburg played all seven positions in the course of a single game.

In 2001, Karl was inducted into the Denver Broncos Ring of Fame and the Colorado Sports Hall of Fame. Karl has been a semi finalist for the Pro Football Hall of Fame each of the past 3 years.

Karl is a member of the National Speakers Association. He enjoys speaking to a variety of groups, and his story is both humorous and inspirational. The lessons life in the NFL taught him about teamwork, courage, dedication, desire, honesty and forgiveness, and goal setting are his "Six Keys to Success."

# Marketplace

## **DOC'S DUGOUT IS BACK!**

This new monthly feature will honor the people, places and equipment that helped to create the foundation for our association and advance the sports turf management profession. The "Doc" in Doc's Dugout refers to the late Dr. Kent Kurtz, who spearheaded the initial effort to preserve the history of STMA.



Joe Torre, former player, manager and broadcaster with the California Angels speaking at STMA's 1987 Conference during the Awards banquet. The conference was held at the Hyatt Regency in Phoenix, AZ. During his speech about the impact that a turf manager/groundskeeper has on the game he commented, "The Sports Turf Managers Association is going to be the driving force behind the improvement and maintenance of the field surfaces throughout the country. STMA's purpose in educating its members is to be commended." With Torre, L to R, are: Mark Hodnick (STMA Past President 1988); Bill Wrobel; and Steve Wightman (STMA Past President 1985-1987).

### STMA Affiliated Chapters Contact Information

Sports Turf Managers Association of Arizona: www.azstma.org

Colorado Sports Turf Managers Association: www.cstma.org

Florida #1 Chapter (South): 305-235-5101 (Bruce Bates) or Tom Curran CTomSell@aol.com

Florida #2 Chapter (North): 850-580-4026, John Mascaro, john@turf-tec.com

Florida #3 Chapter (Central): 407-518-2347, Scott Grace, scott@sundome.org

Gateway Chapter Sports Turf Managers Association: www.gatewaystma.org.

Georgia Sports Turf Managers Association: www.gstma.org.

Greater L.A. Basin Chapter of the Sports Turf Managers Association: www.stmalabasin.com.

Illinois Chapter STMA: www.ILSTMA.org.

Intermountain Chapter of the Sports Turf Managers Association: http://imstma.blogspot.com/

Indiana - Contact Clayton Dame, Claytondame@hotmail.com or Brian Bornino, bornino@purdue.edu or Contact Joey Stevenson, jstevenson@indyindians.com **Iowa Sports Turf Managers Association:** www.iowaturfgrass.org.

Kentucky Sports Turf Managers Association: www.kystma.org.

Keystone Athletic Field Managers Org. (KAFMO/STMA): www.kafmo.org.

Michigan Sports Turf Managers Association (MiSTMA): www.mistma.org.

Minnesota Park and Sports Turf Managers Association: www.mpstma.org

MO-KAN Sports Turf Managers Association: www.mokanstma.com.

New England STMA (NESTMA): www.nestma.org.

Sports Field Managers Association of New Jersey: www.sfmanj.org.

Sports Turf Managers of New York: www.stmony.org.

North Carolina Chapter of STMA: www.ncsportsturf.org. Northern California STMA: www.norcalstma.org.

Ohio Sports Turf Managers Association (OSTMA): www.ostma.org.

**Oklahoma Chapter STIMA:** 405-744-5729; Contact: Dr. Justin Moss okstma@gmail.com

## MarkSmart<sup>™</sup> Athletics 800-969-5920

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Oregon STMA Chapter:

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**Q&A with Dr. Grady Miller** 

**Professor, North Carolina State University** 

**Questions?** Send them to Grady Miller at North Carolina State University, Box 7620, Raleigh, NC 27695-7620, or email grady\_miller@ncsu.edu Or, send your question to David Minner at Iowa State University, 106 Horticulture Hall, Ames, IA 50011 or email dminner@iastate.edu.

## Too late, winter hit

It is June and some of our fields are still not 100 percent out of dormancy. It seems we have winter damage everywhere. What now? — North Carolina

or the January 2014 issue l answered a question about preventing winter damage. Despite everyone's best practices, we still had winter damage across the transition zone and parts of the southeast. Based on all the calls, pictures, and visits it is apparent that all the warm-season grass species grown in the transition zone were affected with some level of winter damage. For example, bermudagrass athletic fields had much less damage than centipedegrass lawns.

If there is some good news, it seems like the newer bermudagrass cultivars Latitude 36 and Northbridge came through Carolina's winter without problem. TifGrand, which never really touted itself as cold tolerant, was damaged in some locations and not others. Of course these new grasses are not planted so widespread that we can proclaim too much based on this year's experience. of hundred yards away we had mature finetextured zoysiagrasses that had appreciable damage.

So, before I get accused of being overly partial or critical to certain grasses, let me say what I often say to people trying to pick grasses—do not pick a grass based solely on one trait. So, while I noted that TifGrand and Princess 77 were not as cold tolerant as Latitude 36 and Riviera that does not make TifGrand and Princess 77 bad grasses and Latitude 36 and Riviera ideal grasses. Each has other attributes that should be considered before they are selected for a new planting.

Back a few years ago when we were experiencing record drought, homeowners would ask me what grass they could plant that is the most tolerant of drought. I would reply "bahiagrass." Before I could qualify my comment, some would interject that bahiagrass is coarse, lacks density, and has all those pesky seedheads. I would say, yes, but you only asked about drought tolerance.

Tifway is still the most commonly planted hybrid bermudagrass in the state, so naturally I saw more winter damage on Tifway than

>> This also minimizes the opportunity to **contaminate a field** with a different grass.

As for popular seed cultivars, I saw Riviera and Yukon seeded bermudagrass survive undamaged on some northern fields whereas Princess 77 plantings had some green-up issues. And looking at our National Turfgrass Evaluation Program tests, the current seeded and vegetative bermudagrasses being tested greened up much later than normal but came back from our winter in Raleigh, NC without problem. Just a couple anything else. Turf managers have asked if they should go back and re-plant Tifway. Each situation is a bit different, so it is tough to generalize. But my response has generally been that it is their decision, but my advice is that unless they need a total re-plant, I would not hesitate to renovate with Tifway.

What do I mean by a renovation? Well, winter damage is often sporadic so the field or turf area may only need time to regrow into the damaged area or may only require sodding of the largest damaged area. The smaller damaged areas may just need extra time and fertilizer to adequately regrow. So, if the manager is only needing a limited amount of new turfgrass, I would suggest a manager to not to contaminate the field by introducing a new grass.

I have seen a few instances that the greatest winter damage was in the highest wear/ compaction areas (e.g. between the hash marks on a football field and the sidelines). If a field manager wants to renovate those specific areas and introduce a new grass then that would be their decision. I could more likely convince myself to do that on the sidelines than within the field but some may elect to go with something new in the high wear areas.

Currently there is a sod availability issue in North Carolina. There is so little Tifway available that some people may have to take whatever then a can get or have sod shipped in from afar. Sod prices are sure to climb rather quickly this year due to supply and demand, so hopefully if one needed sod it was secured early.

With low supply of Tifway and other bermudagrasses, more people may need to take plugs from their own fields to renovate weak or dead areas within the same field or other fields on their property. This works great if you have time and labor to dig and plant all the needed plugs. This also minimizes the opportunity to contaminate a field with a different grass.

If someone is going to re-grass the entire field, then I would suggest they do their research to find out what grasses are available to them. There really are some nice new grasses that they may want to investigate further. May you all have a good summer for growing grass.



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