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FEATURES

DEPARTMENTS

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

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Turf manager/app developer

File 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."

Mike D'Ascanio

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 water-testing 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! ■

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Freedom to make choices

As 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.

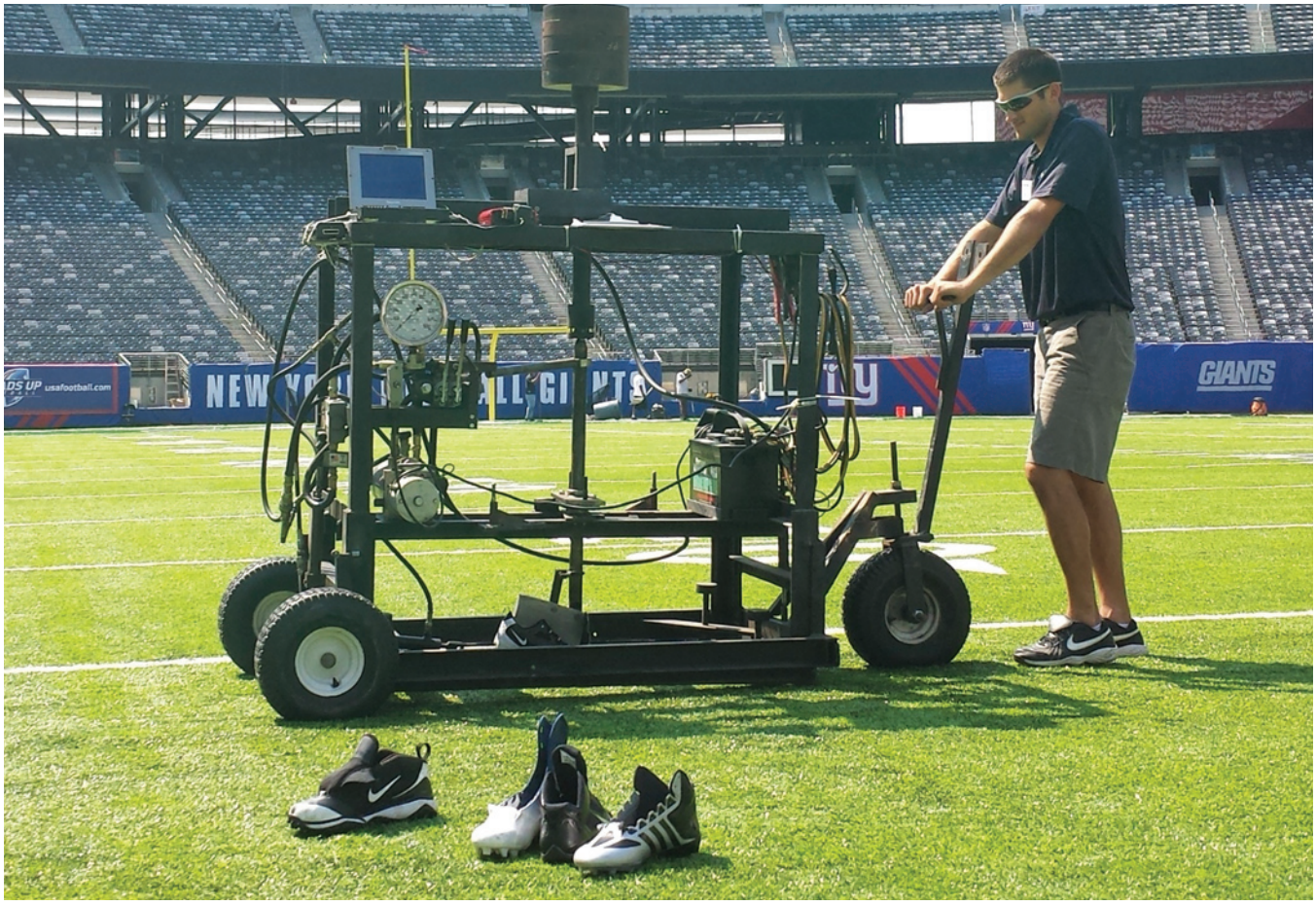
Some of us made the choice to be in this profession. Others had it thrust upon them. It is up to those of us who chose the profession to make the choice of helping newcomers. We have the freedom to be welcoming, reassuring, and approachable, and share our knowledge. We have standards to uphold, and we 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. ■



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.

As another football season looms on the horizon, coaches are finalizing game plans they hope will bring them season-long success on the field. Sports turf managers are no different but instead of wins, success means providing playing field conditions that maximize both playability and safety.

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.)

▲ **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 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, 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 in-season 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 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