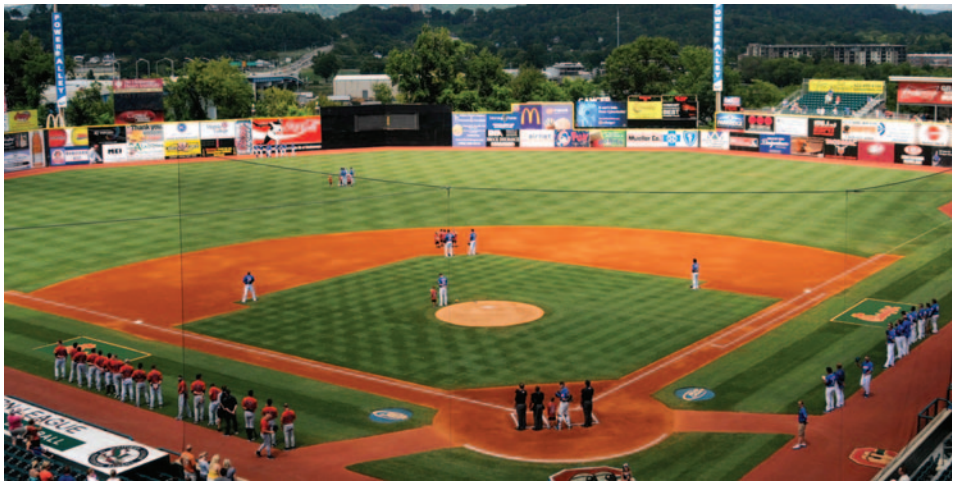
Our fairy ring symptoms are the result of the inability of water to penetrate through the hydrophobic tendencies of the thatch layer, ultimately resulting in a plant thirsty for water. Secondly, we dodged having to babysit any dry spots resulting from our deficient irrigation system.

These are only the observations over the course of the 2012 growing season when compared to the previous season. Are these results an anomaly or were they because of a tweak in our cultural and fertility management? I would be naïve to think that these results can be only be attributed to the addition of the worm castings tea, but I do believe when coupled with good management practices, positive results will follow.

WHERE TO GO FROM HERE

The idea of turfgrass benefiting from vermicompost is a relatively new concept. Much additional education and research is needed about the functionality of the addition of these microorganisms from the worm castings to the soil; however, our results over the past season indicate that there is a place for castings tea in environmentally friendly turfgrass management practices. Whether it be reducing synthetic fertilizer, pesticides, groundwater contamination, water use, etc., it is becoming difficult to escape ever-growing environmental concerns and restrictions. Because of this, any product or concept that can assist in limiting negative environmental impacts while working in conjunction with our daily management practices should be explored. ■



>> **BEFORE A GAME** on August 14, 2012.

Joey Fitzgerald is the head groundskeeper for the Chattanooga Lookouts.

SportsTurf

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JOHN MASCARO'S PHOTO QUIZ

Answers from page 17

Like many colleges in the county, Florida State's main campus in Tallahassee has run out of room and in the never-ending challenge to find space, these lighted intramural fields are not only used for football as well as soccer, rugby and just about every other sport known to man; they are also used for stadium overflow parking during FSU home football games. The trash barrels were also placed on these fields to serve as temporary traffic lane markers and also allow people to put trash in them after pregame tailgating. The resulting thin and stressed turf can only be expected after subjecting turf to the hours of play they are subjected to in addition to the abuse they take from the vehicle traffic and tailgating festivities. This photo exemplifies the challenges that many Sports Turf Managers face when posed with the challenges of providing a quality playing surface while also being faced with multiple uses and abuses that are imposed on our fields by outside forces. Only activities like aerification, extra fertilization and sometimes a little prayer allow us to grow turf in these situations.

Thank you to Bobby Broome, Facilities Superintendent, and Richard Hunt, Maintenance Supervisor for Campus Recreation, Florida State University in Tallahassee for allowing me to take these photographs. ■

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.

More educational opportunities & networking highlight 24th Annual STMA Conference & Exhibition

APPROXIMATELY 1,600 PEOPLE participated in the Sports Turf Managers Association's 24th Annual Conference and Exhibition last month in sunny Daytona Beach, FL. The crowd included sports turf managers, academics, and other industry professionals from across the globe.

STMA's new format for Daytona Beach included STMA Academy and the addition of a number of new educational tracks, as well as changing times for several events; this reporter found nothing but positive reviews of the new format in informal chats with attendees and exhibitors.

STMA President Dr. Mike Goatley made a point to congratulate Martin Kaufman, CSFM, Conference Chairman, for his diligence and tireless effort in organizing the Conference. And congratulations from this corner to the STMA Headquarters staff for another smoothly running show, set in a perfect venue and surrounding area. Way to go, CEO Kim Heck, Kristen Althouse, Leah Craig, Nora Dunnaway, and Shant Thomas.

Simon Gumbrill, sales director of Campey Turf Care Systems, travelled from Great Britain to exhibit and said he was pleased with the attention his product line received during the revamped trade show hours. Mike Davis, president of Greens-Groomer, said his product line, designed mainly to maintain synthetic turf surfaces, was also drawing a lot of attention, and John Walther, vice president, Barenbrug USA, credited his company's increased sales in the US on their presence at the past few STMA Conferences.

This correspondent attended as many education sessions as time allowed and this year the best I witnessed was "Athletic Field Use and Maintenance Planning" by Rebecca Auchter, the manager of grounds maintenance for Cranberry (PA) Township. Her professional and organized approach to dealing with issues that face most sports turf managers focused on creating and managing expectations of those whose agendas are often contrary to what is best for fields. I recommend checking STMA.org for more information from her presentation.

FOUNDERS' AWARD WINNERS

Friday night's Awards Banquet was topped off with presentation of the industry's most prestigious awards—STMA's Founders' Awards. Honored were:

Dick Ericson Award - **Amy Fouty, CSFM**, Michigan State

2013 STMA Board of Directors

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President Mike Goatley, PhD, Turfgrass Specialist, Virginia Tech

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Director – At Large (appointed) Mike Tarantino, Director, Maintenance & Operations, Poway (CA) Unified SD

Director - At Large (elected) Tim Van Loo, CSFM, Manager of Athletic Turf & Grounds, Iowa State University

University Intercollegiate Athletics; George Toma "Golden Rake" Award - **Michael Boettcher**, Milwaukee Brewers; Dr. William H. Daniel Award - **Elizabeth Guertal, PhD**, Auburn University; and Harry C. Gill Memorial Award – **Richard Moffitt**, Moffitt & Associates, LLC.

PRESIDENT'S AWARD FOR LEADERSHIP

STMA President Dr. Mike Goatley said, "This year we have two very deserving recipients of this award. The basis of good leadership is honorable character and selfless service, and these two award winners have gone far above typical service to STMA. Both have served their local chapters; both have been presenters at our national conferences; both have volunteered on many STMA committees; both have served on your national STMA board of directors; both helped to guide STMA through its early years; and both reached a milestone in 2012. It is with great pleasure that I present the STMA Presidents Award for Leadership to newly retired members **David Rulli** and **Steve Wightman**.

GRANT & SCHOLARSHIP WINNERS

Nik Wooldridge of Colorado State University was a double winner this year. Wooldridge, who interned at Fenway Park in Boston, earned the 2012 Gary Vanden Berg Internship Grant as well as a James R. Watson Scholarship, presented by The Toro Company, for 4-year institutions. The James R. Watson Scholarship program was established in 1998 in honor of Dr. James R. Watson, a long-time agronomist at Toro.

Two graduate winners, both from University of Tennessee at Knoxville, also won scholarships; **Kyley Dickson** won the James R. Watson Scholarship, and **Eric Reasor** won the other graduate scholarship.

Gabriel Mitchell from San Diego State University and member of the Southern California Chapter of STMA won the The Terry Mellor Continuing Education Grant, sponsored by Turface Athletics. This grant funds an STMA affiliated chapter member's attendance to the Conference and honors the importance of continuing education that Terry strongly supported his entire life.

SAFE's top scholarship in a 2-year program is named after Fred Grau, the first turfgrass extension specialist in the US. The 2013 Fred Grau winner was**Casey Gural** from Guilford Technical Community College, Jamestown, NC. SAFE scholarship winners from a 4-year institutions were: **Tylor Meppelink**, Michigan State University; **Jacob Leadbetter**, Penn State University; **Kevin Hansen**, Iowa State University; and **Andrew Wilhelm**, Purdue University.

STMA ACADEMY

A major change in this year's Conference was the introduction of the STMA Academy, as well the addition of a number of new educational tracks. "Members through the years have asked for a higher level of opportunities to learn beyond the normal 1-hour sessions we offer," said Education Subcommittee Chairman Jeff Fowler, an extension director and turfgrass specialist for Penn State. "So we developed the Academy, which allows students and instructors to get more in-depth on a particular topic. And we plan to build on that education in future conferences. The feedback I've received has been very positive."

SAFE FOUNDATION

The Foundation for Safer Athletic Fields (SAFE), STMA's charitable foundation with a mission "To enrich communities through championing safe, sustainable sports and recreation fields for all athletes" raised more than $35,000 during the Conference. Events included the 13th Annual Golf Tournament, played at the LPGA International's Legends Course, a Casino Night held in conjunction with the Welcome Reception, a Live Auction before Friday night's Awards Banquet, and Silent Auctions on the trade show floor Thursday and Friday. Raffle tickets also were on sale throughout the Conference for prizes.

Live Auction items included Graco FieldLazer S90, custom stencils from Pioneer Athletics, a GreensGroomer, a Toro 30" mower and a Toro blower, Jacobsen logo'd bar stools, being a groundskeeper for a day with the Seattle Mariners, and a full-page ad in this magazine.

Golf hole sponsors included Carolina Green; Diamond Pro/TXI; Luck Stone Company; JSM Services; DryJect, Inc.; and Turfco.

Continued on page 42

Employing conditioners a must for infields without water access

What advice can you offer to turf managers who have no access, or very limited access, to water but are tasked with keeping infield skins playable?

MANAGING MOISTURE MOST IMPORTANT

For anyone maintaining infield skins with little or no access to water, managing what moisture is available from Mother Nature is the big key, says Turface Athletics brand manager Jeff Langner. At the parks and rec level and for many K-12 schools, basic soil science knowledge is where every turf manager needs to start. "Knowing how much sand, silt and clay is in your infield enables you to better understand how moisture will affect it," he says. "An infield with high sand content will drain well, but may be too loose if you can't keep water on it. A field with high clay content can get slimy when it rains, and then becomes hard and cracked when it dries out later in the summer months. Managing moisture correctly throughout the season is the way to keep the field safe and playable."

Langner adds that using calcined clay conditioners is a must for skins that don't receive regular irrigation. "Conditioners are a moisture management tool for infield skins; they manage excess water by increasing absorption levels, and their ability to hold water and release it over time provides the sought-after balance," he says. "Turface is an ideal conditioner that has high porosity and adds water-holding capacity."

He recommends that calcined clay be incorporated into the top 4 inches of your infield mix, if resources allow, but at the very least should be used as a topdressing to provide a buffer between players' cleats and the infield clay. Using calcined clay is especially important in the mid to late summer months, Langner says, when infields really begin to dry out. "If you can't add moisture daily the clay will get hard. Turface will relieve compaction, and when Mother Nature does provide moisture, the conditioner will work like a sponge, holding onto the water and then releasing it over time, prolonging the time before the skin starts to crack."

Langner says not all conditioners are created equally and that water-holding capacity should be more important than appearance when making buying decisions. "Moisture management is why you use these products," he says. "If you cut conditioners out of your budget you're doing a disservice to your infield skin and might not save money anyway, since your labor other costs will go up trying to get the field playable."

STRIVE FOR CONSISTENCY

As we all know, water is the key to making any field safe or playable. When fields are being constructed, one of the first things discussed is will the field be irrigated or not? If it is being irrigated, location of quick couplers is very important to allow for optimal watering of the skinned infield. If the field is not irrigated (typically found on older, existing fields), then the job for the turf manager just became harder and he/she has to be more creative in ways to create a safe/playable skinned infield.

Some things to keep in mind for the fields that are in the no access/limited access to water are the products that are purchased for the infield skinned. With the right products, the situation presented above can minimized with these selections.

We recommend the following:

• Proper Infield Mix. You want to find an

infield mix that has a higher sand content, lower silt percentage to help reduce the amount of dust, and have an SCR (silt:clay ratio) ideally of ~.5:1. You will need to get your infield mix tested to see what the percentages are in the blend. Conditioners can be added to help retain water that is either applied on a limited basis by the turf manager or from rain that falls on the field. This will be a temporary fix and a short-lived solution to making the field playable.

• The turf manager should become creative in ways to water the field. We have heard of fire departments adding water to the field the night before a tournament.

• If water is available, try to do deep heavy watering to saturate the infield mix. As the field dries, the water will move to the top of the skinned infield and help keep it playable. If you have ever had a field too wet (muddy) for a game, then you know the limits that your field can take when it comes to watering.

• Water on a routine basis to help keep the field consistent. A well maintained field plays its best when it is consistent day in and day out. With any field, that is what the turf manager should strive for and give the players the best opportunity to be successful in the game.-Glenn Lucas and Bill Marbet, Southern Athletic Fields

USING CONDITIONERS A MUST

Managing infield skins with limited water is where the importance of a product like Pro's Choice comes into play. Because Pro's Choice conditioners are made from calcined montmorillionite clays they have the ability to absorb moisture, release it and absorb again. When properly installed throughout the top 3 inches of your infield mix, these conditioners will absorb the water from rain, hold it in the granules, and release it back into the surface as the base clays dry out. Pro's Choice conditioners help keep moisture in your profile when you don't have the benefit of a hose.-Dave Cygan, Pro's Choice/Oil Dri.

TOPDRESS WITH CONDITIONER AT THE MINIMUM

Moisture management is key to the success of an infield. When a sports turf manager is unable to add water to a field, it becomes critical that they conserve the water that does reach the infield. This can be accomplished by adjusting infield mix composition, adding an infield topdressing, tarping, and adjusting dragging techniques.

Choosing an infield mix with a higher percentage of silt and clay and a lower percentage of sand allows the infield to store water longer. Fields with higher silt and clay content move water more slowly through the profile. Those same field surfaces will become extremely hard when dry. Fields with higher sand content lose their store of water faster and can become too loose when dry.

Adding an infield topdressing can help shield the infield mix from losing moisture through evaporation. Effective topdressings include calcined clays, vitrified clays, or crushed aggregates. Likewise, placing a tarp over the infield traps and conserves that much-needed moisture.

Finally, field managers can adjust their maintenance practices. Avoid deep tine dragging which brings more infield mix to the surface. This dries and loosens the field. When dragging is necessary, disturb as little of the infield surface as possible by mat dragging or light nail dragging.-Dena DiVincenzo, Waupaca Sand & Solutions

CONSERVING WATER EVEN IF YOU HAVE IT

In the southwest the numbers 1,075 and 1,145 have great significance. Contained behind the Hoover Dam are the waters of Lake Mead that supplements the water supply for Arizona, California and Nevada. When the waters are above 1,145 feet, it constitutes a surplus. When the waters are below 1,075 feet it is considered a shortage and triggers agricultural water reduction for the states involved. The average water level in Lake Mead is lower than it has been in more than 40 years.

While we won't get into a discussion about the intricacy of Arizona-California-Nevada water rights, the low levels at Lake Mead, devastating drought nationwide, and 2012 being the warmest year on record for the US, all serve as reminders for us field managers in the southwest, to conserve water.

Research in soil and moisture interaction have uncovered that at a 4-12% moisture content, groundskeepers of baseball and softball fields can take advantage of natural moisture binding of the soil by surface tension forces of attraction. This simply means that the ideal moisture content for play on any infield is a "damp soil consistency." For managers of baseball and softball fields, to prevent soil particles from destabilizing, increase field use and ultimately minimize injury potential, the main concern should be achieving the ideal moisture content of 4-12%. But how can this be accomplished with little access to water?

While having the correct particle size on your infield to begin with is important, you know just as well as I do that water (or lack of) changes the stability of any field, regardless of particle size. In engineering terms, the load bearing and shear strength of the infield will increase and decrease with varying amounts of moisture. We have focused our research on the interaction of water and soil particles for the past 30 years. During this time span, we started to view damp soil consistency as more of a range or window, rather than a specific destination. In the Southwest, this window can be very short. During monsoon season (July through September), a groundskeeper may have to maintain an infield on a dry, 100+ degree day, and in an instant a monsoon storm could drop 2 inches of rain. The window has been shortened on both sides—too dry (below 4%) and now too wet (over 12%).

Imagine trying to maintain this window on a 14 field, professional spring training complex. Observing this struggle led us to develop Stabilizer, which blends into the pore space between soil particles. It absorbs 15x its weight in water and forms a cohesive gel, expanding the damp soil consistency window longer.

There is just one thing Stabilizer needs to help lengthen the damp soil consistency window: at least some water. What if you don't have access to water at all? Polymer technology now provides the soil particles with the same amount of cohesion that damp soil tends to have, eliminating the need for water and any water related downtime. With Hilltopper products, we can actually guarantee more playing time during weather extremes. You will notice there is no need to water between a dry doubleheader and on the flipside no downtime after a storm. Since water sheds off the surface laterally, it cannot penetrate the soil, and therefore will not freeze in the winter.

Remember, keeping an infield between 4-12% moisture content should be one of the highest priorities on an infield skin to maintain playability and reduce injury potential. Finding ways to expand your damp soil consistency window now will pay off tremendously in the future.-Clayton Hubbs, Stabilizer Solutions, Inc.

DIFFERENT CONDITIONERS FOR DIFFERENT SITUATIONS

When considering how to manage skins with limited access to water, there is a difference between the multi-play type sport complexes that host multiple games every day and single play facilities such as a school's baseball or softball field that has limited play. The answer is somewhat similar to each problem but the selection of infield mix will differ.

For high-use sport complexes that have multiple fields and limited staff it simply is not possible to water the skins thoroughly between back to back to back games. They would rather have firm fields that do not tear apart after a day of heavy play knowing that tomorrow will be the same. Clients may complain that the skins are hard and dry but a hard skin that stays in place is safer than an infield skin that is loose and breaking up more.

Furthermore, maintenance is reduced when wear areas such as short stop and first base are minor compared to large loose areas that will require a lot of water to compact. Gail Materials supplies all of the Big League Dream facilities in southern California and we provide a mix that has a combined silt plus clay content around 40-45%. We also follow best known science as it pertains to infield mix production with the material all passing the 2mm sieve and the silt to clay ratio always between .5:1.

For single play facilities that have limited play, an infield mix with lower combined silt plus clay content in the range of 25-30% is suggested. Of course all best science also applies with a .5:1 silt to clay ratio etc. The sandier mix will allow faster water penetration and thus easier to maintain however failure to stay on top of the maintenance can result in a looser more unstable surface.

When you have a limited access to water you have to make the water work for you and a great tool to make the water work more efficient is to use a wetting agent. Wetting agents make the water "wetter" by reducing the surface tension of the water, which then allows the water to penetrate deeper in the skin profile. Not all wetting agents are the same nor do they have the same chemistry and they can come in granular and liquid form.

Any reputable chemical or fertilizer representative should be able to assist in the proper selection of a wetting agent. I would suggest using a "straight block co-polymer" which is long term product and is effective for +/- 90 days. The Moltan Company, producers of Red Diamond calcined clay, have developed a new patent pending product where calcined clay is impregnated with a patented wetting agent that was specifically formulated for the sports field industry. Moltan's new product was introduced and displayed to professional sports turf managers for the first time at the national STMA in Daytona Beach. It's a brilliant idea and preliminary field testing has yielded positive results. It's killing two birds with one stone.

Calcined clay is already widely accepted as a standard tool when it comes to infield skin care. Adding a wetting agent to it will just enhance the efficiently and add to the

value. I foresee this product being of particular value in arid regions where infield soils can become sodic as a result of frequent shallow watering and often with poor quality water. Sodic soils particularly ones with high silt and clay can have poor water infiltration. Providing calcined clay that is impregnated with a wetting agent can only help in these situations, and produce faster infiltration of applied water or rainfall enhancing the infield skin for safer play.

The most important point is to pick the right infield mix based on your needs. Calcined clay and or vitrified clay are still one of the best tools in a groundskeeper's arsenal. Use them! When renovating infield skins always make sure you till in any new mix that may be added to void soil layering. Also try making your water more effective by using wetting agents.-David Dzwilewski, Gail Materials ■

Keeping your infield playable

By Grant C. McKnight

Editor's note: Grant McKnight is CEO/President of Natural Sand Company, Slippery Rock, PA.

The question on the table is, "What advice can you offer to turf managers who have no access, or very limited access to water, but are tasked with keeping infield skins playable?"

With the record breaking heat throughout most of the United States during the summer of 2012, this general question from turf managers was a recurring one. "How do I keep my infield from getting so hard?"

Any discussion I had concerning this issue always revolved around first educating the turf manager as to why this was happening not only with the a DuraEdge surface, but any other high clay content surface during a normal compaction cycle. (I define a high clay content surface as any one over 15% clay content and possessing an SCR [silt to clay ratio] of less than 1.5.) Infield surfaces that fall into this category are inevitably going to firm up with normal use. The infield surface continually compacts with normal foot traffic and tire roll during dragging between games. This mechanical force coupled with the natural evaporation of the moisture from the top one inch of material will create greater and greater surface soil tension until the surface becomes nearly unable to penetrate with normal maintenance practices. The difficult question now becomes how does a manager relieve this condition with limited time in between tournaments or games without destroying the integrity of the grade on the infield surface.

Be flexible

The obvious answer is just to add moisture; however if you don't have irrigation and it has not rained in a month then a mechanical approach must be employed. I refer to this process as "Light Renovation." It is aimed at relieving excess compaction mid-season without tilling and re-grading, all in less than 4 hours total labor per field.

The first step is to understand that in order to perform this process a little moisture in the profile goes a long way; and that just adding water will only show positive results for a short time. If you have limited access to water, plan your schedule accordingly, and perform the Light Renovation after you add sufficient moisture.

For those that have no access to water they must adapt their schedule to working with what Mother Nature gives. When you get a shower, then you need to get out as soon as you can and use to your advantage the valuable moisture that is sitting in the profile currently. Too many times I see managers miss the opportunity to relieve soil compaction by letting a little bit of moisture that could just soften the surface enough to work it harmlessly evaporate because it came at a time that the manager was not normally working the surface. Whether you have access to water or not, be as flexible as possible in using what Mother Nature gives you.

Think sub-surface

Now that you have a little moisture in the profile, take advantage. Throughout last year I used an Infield Rascal equipped with a Profile Blade (ABI, Inc., Osceola, IN) to attack an over-compacted infield. The Profile Blade was adapted from the equine industry, where the tool which looks like a knife blade is pulled through the infield surface profile at a depth of 2-3 inches. This mechanical action, acting somewhat like a tidal wave motion, lifts the soil the thickness of the Profile Blade and shatters the soil tension. This action leaves the infield surface loose without causing a need for re-grading. A significant advantage for the Profile Blade over traditional tilling and grading techniques to relieve over-compaction is the reduced equipment costs. Many small budgets do not have access to tractors with high enough horsepower to till and the subsequent need for re-grading afterward can be far out of budget for a typical manager to even consider in-season. A Profile Blade can be pulled with any traditional vehicles that are readily available at most facilities. The need for outside labor is minimal as this process can easily be performed in-house.

Following the Profile Blade, I switch to a VibraFlex ¼ inch nail drag (also by ABI) to float out the loosened infield mix. Acting like a traditional nail board this unit is designed to break up the small pieces and allow a manager to use a mat drag to put a nice finish on the field. The end result is a surface that will accept water more readily and play softer throughout the cycle until another Light Renovation is required.

Use all the tools available

Once a manager performs a Light Renovation, the next step is understanding the cycle that all infields go through, and maintaining them properly until the next Light Renovation situation inevitably occurs. Now that the surface is de-compacted it will remain that way until weather and normal uses firm the surface again. I recommend limiting the wheeled traffic as much as possible following a Light Renovation, unless you get rain. Take advantage of the softer infield surface when it is drier. It will not firm up until significant amounts of water and traffic are applied. Therefore if you are not expecting rain, your surface will remain fairly consistent the less traffic it gets. Simply light drag in between games and keep the surface consistent.

Once you have a rain or begin to add water voluntarily it is important that you break the surface soil tension that occurs as the clay particles begin to join back together. If you manage this issue in the top ½ inch at least once per week then your surface will play much more consistently throughout the cycle. In order to manage surface soil tension I recommend using a combination of topdressing of your choice and the VibraFlex nail drag with 1/8 inch nails on a 2- inch spacing. The action of the VibraFlex drag will break down the compaction and work the topdressing into the top ½ inch of the mix for a recreational facility and make the sliding surface more consistent without compromising the integrity of the base soil.

Significant compaction only occurs when optimum moisture is achieved inside the profile and a mechanical means is applied to compress the surface. It is an inevitable process, so don't worry about why it happens, make a plan, be flexible, use what Mother Nature gives you, select an appropriate topdressing, and have the right equipment on hand to maintain your surface throughout its multiple season cycles and your high clay content infield skin will perform like a big league manager's daily. ■

Displace, a new calcium soil specialty product

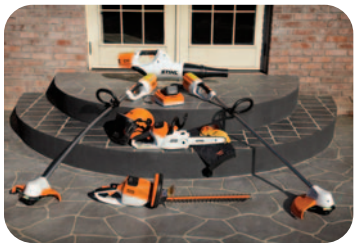
Grigg Brothers Introduces Displace 12% Calcium, a new calcium soil specialty product formulated with a unique wetting agent technology. The specially formulated soil surfactant will enhance product infiltration and facilitate uniform placement of calcium throughout the soil profile for optimal efficacy. Displace contains 12% Calcium that will remain in solution and react directly with the soil to displace sodium ions. "Combining a high quality calcium product with the proprietary wetting agent for a dual purpose product represents the best of both technologies" says Grigg Brothers President Mark Grigg. Displace is backed by independent university testing that shows it can improve turf performance and quality by reducing high bicarbonate accumulation from poor irrigation water. Displace™ is also specially designed to improve hydrophobic soil conditions and localized dry spots.

Grigg Brothers

New tool for cleaning infield skin material

Equi-Tee Shake'n Rake cleans sand and soil by auto-screening unwanted debris. As light and easy to use as a scoop, it has a battery powered motor that does the "shaking" for you, eliminating manual agitation. Easily separates glass, rocks, clay, pet waste and other objects from sand. Uses include beach and resort cleaning, infield skin spoils sifting, municipal playground sanitizing and other uses where clean sand is necessary.

Equi-Tee Mfg



STIHL Battery KombiSystem: Performance and power for less than ten cents an hour

The 36-volt lithium-ion STIHL Battery KombiSystem is packed with user-friendly benefits, offering multiple tools that can all be powered by one interchangeable battery. No mixing fuel, no exhaust emissions, no power cords, just pull the trigger and go.

Customers will also find lower operating costs a plus with this new environmentally responsible option. The lithium-ion battery costs as low as $0.02 per hour to operate as compared to $0.88 or more for gasoline-powered equivalents, providing convenience and cost savings with this multitask line. The 36-volt STIHL Lithium-Ion batteries feature long run times with no gradual drop in power, as well as fast recharges.

STIHL

RedMax backpack blower

This backpack blower and features the Strato-Charged 2-stroke engine with ultra-low emissions and high power. The Max Cooled back pad uses air from the fan housing to cool operators and keep them comfortable during hot days. Super wide straps and contoured back pad are oversized for greater comfort. The EBZ8050 is also equipped with wide-sweep elbow rotation for full operator mobility and maneuverability, even in cold weather and RedMax's Free Flow Air Net, a two-way air cleaner system that reduces air intake blockage providing maximum blowing performance.

RedMax

TurfEx MS4500 electric-powered topdresser

TurfEx introduces its 1.4 cubic-yard capacity MS4500 topdresser. Featuring polyethylene construction and fully electric operation, this trailer-mounted unit has the ability to spread crumb rubber for synthetic turf fields. The MS4500's heavy-duty polyethylene construction eliminates the corrosion and maintenance concerns associated with similar steel built models, while also making the unit up to 40-percent lighter. Furthermore, it features large flotation tires and exerts only 18 psi when fully loaded, allowing safe operation on delicate surfaces. The lightweight construction also lessens fuel consumption for the towing vehicle. Another feature unique to the MS4500 is that it's a completely electric-powered unit – meaning no hydraulics or gas engines. It also equals quieter operation than gas engine or hydraulic powered models, and further reduces weight, maintenance requirements and fuel consumption.

TurfEx

Bobcat's A770 all-wheel steer loader

Bobcat Company has updated its line of all-wheel steer loaders by introducing the Bobcat® A770. The new unit offers both all-wheel steer and skid-steer drive options by simply pressing a switch, and has a vertical lift path and a 3325 lb. rated operating capacity. The A770 replaces the A300 model, and was designed to meet the needs of users who require the low ground disturbance, reduced tire wear and faster travel speed of a small wheel loader, but also the maneuverability and versatility of a skid-steer. The A770 is equipped with a 92-horsepower, liquid-cooled Tier 3 diesel engine and has an operating weight of 9,460 pounds.

Bobcat Company

Cushman introduces 1600XD 4x4 Utility Vehicle

Cushman introduces the 1600XD 4x4 utility vehicle that combines 4WD capability with a 22-hp, 1,007cc 3e-cylinder OHV diesel engine to handle large tasks on tough terrain. Its performance is further enhanced by an automatic, continuously variable transmission (CVT) with low- and high-gear ratios, a user-selectable locking rear differential which can be engaged in both 2WD and 4WD operation, four-wheel independent suspension, and exceptional hauling and towing capacity, with a maximum vehicle load of 1,600 pounds. It also features MacPherson struts on its front wheels and a double A-arm "wishbone" suspension on its rear axle to provide sure traction and a comfortable ride over deep ruts and tough trails.

Cushman