By Stacie Zinn

Using salt
to kill weeds on paspalum

IT'S A WARM SPRING DAY in Central Florida. A group of young men suited up for football practice are sprawled out on the bright green turf of the football field. But they're not resting after their workout. They're picking something up off the turf and putting it in their mouths. What is it? It's the rock salt the maintenance crew has spread onto the field to kill weeds and the kids are eating it.

Chuck Pula, Parks & Recreation Director for the City of Winter Springs, FL, always laughs when he tells this story. Just goes to show how weird teenagers can be, eating anything they find on the ground. But even weirder, that the rock salt was there in the first place. Or is it?

Pula is among a growing number of parks and rec directors and sports field managers, along with their golf course colleagues, who have grassed their fields and facilities with Seashore Paspalum grass, which is highly salt tolerant, rather than using herbicides to kill weeds. Many professionals are now using salt to zap broadleaf weeds, crabgrass and goosegrass, and even to knock back, (but not kill), common bermuda.

Seashore Paspalum, (*Paspalum vaginatum*), originated on sand dunes, hence its tolerance to high salt levels. A warm-season turfgrass, it generally can be used anywhere one might consider using bermudagrass. It requires as little as half the water of a bermudagrass, and may be irrigated with a wide range of water quality, from potable to effluent, even seawater under proper management. Certain cultivars, especially Aloha Seashore Paspalum, developed by the University of Florida, exhibit speedy grow-in rates making it very appealing for sports turf managers looking for a grass that will heal quickly from sports-related wear.

Several parks under Pula's direction feature fields of each of the three varieties mentioned. He said his team has used a granular salt, applied with a spreader, to control weeds.

University-developed paspalum

Here are several cultivars used on sports fields, commonly available as sod or sprigs:

Aloha is a joint release from the University of Florida and the University of Hawaii. It is a semi-dwarf, marketed by Environmental Turf and its network of licensed growers. In university tests, Aloha was shown to have a faster grow-in rate than other varieties tested, and also shows some resistance to the sod webworm and green bug aphid.

SeaDwarf is the only dwarf cultivar of Seashore Paspalum and features a finer texture than other paspalum varieties. It can be mowed below 1/10 of an inch.

Sealsle-1, a semi-dwarf variety, was developed by the University of Georgia; their tests show good wear tolerance.

During the cooler months, Pula said he has overseeded his fields with ryegrass to retain winter color. He said surprisingly the salt was a valuable tool to aid in the spring transition out of overseeding.

"It was incredible how fast it took the rye out of it," Pula said.

In Charlotte County, on Florida's southwest coast, Mike Reber is sports field foreman on more than a dozen football, soccer, baseball and softball fields grassed with Aloha, SeaDwarf or SeaIsle-1 Seashore Paspalum.

Reber said rather than applying the salt dry as they do in Winter Springs, he makes a slurry of water and salt and applies it to his paspalum through a 25-gallon sprayer that he attaches to the back of one of his Gator vehicles. Though Reber has tried the salt in nearly every form, from granulated to rock salt to table salt, he said he finds the finer the grains of salt the better. His recipe of one cup of salt per gallon of water, he said, works well on broadleaf weeds and crabgrass, though it is important to keep the mix agitated so that the salt doesn't settle to the bottom of the sprayer.

Both bought the salt they used for their facilities at the local hardware store.

Though it's difficult to get actual figures on how many sports turf managers are using salt to kill weeds on Seashore Paspalum sports fields, on the east coast of Florida, Erik Thor, technical sales representative for The Kilpatrick Company/Howard Fertilizer says he's seen a marked increase in the number of his golf course superintendent customers who now buy salt to kill weeds on their courses. Five years ago, he sold about one ton of Morton's Fine Solar Salt to his customers with Seashore Paspalum grassed golf courses. In 2008, he sold about 25 times that amount.

Morton's Fine Solar Salt comes in 50-pound bags, wrapped 56 bags to a palette. Thor said if applied through a spreader, 200 pounds of salt will treat about an acre, at a cost of about $420 to $430 per ton.

To treat crabgrass and goosegrass, Thor recommends creating a salt solution in a 5-gallon bucket, mixing until the amount of salt reaches the point where it will no longer dissolve. Pour the contents of the bucket into a sprayer and make three applications of the salt mix, 5 days apart.

Though salt is not the only solution for treating weeds on paspalum, Thor said he feels there is a place for it, "especially if you're going environmentally friendly." ■

Stacie Zinn is president of Environmental Turf, Avon Park, FL, www.environmentalturf.com.

Infield skin maintenance:

Use your resources wisely

Editor's note: During a panel discussion on infield dirt care at last month's STMA Conference, Gary Vanden Berg, CSFM, director of grounds for the Milwaukee Brewers, said a few years ago Atlanta Braves manager Bobby Cox reminded him, "80% of baseball is played on the dirt." Maintaining your infield skin is as important as any task you do because its effect on playing the game safely and fairly is enormous.

What is an infield mix?

All soils consist of sand, silt and clay. The infield mix is the combination of these components plus any conditioners or additives. To understand how your mix works you need to understand the components.

One hundred percent sand is loose, free flowing and drains well. On its own and dry, sand will produce an unstable and unpredictable surface. However, with the right amount of water it will be firm and playable but forgiving, allowing for sliding and clean ball hops. Consider a beach where the water meets land. This area would make a very playable surface.

Silt and clay have opposite issues compared to sand; Too much of these and you have poor drainage. Also, when clay and silt get too dry they become rock hard, often cracking, and create dangerous hops and possibly injury. These issues can be greatly compounded when clay and silt get compacted due to heavy traffic. If kept at the right moisture level, and properly groomed, clay and silt are very stable and wear resistant making them ideal for high impact areas.

All three components are necessary to attain a safe and playable field that is easy to maintain. WATER MANAGEMENT IS CRITICAL TO PROVIDING A SAFE AND PLAYABLE FIELD NO MATTER THE SOIL MIX. Knowing the makeup or composition of your infield mix will

Doug Gallant of the Cincinnati Reds, courtesy of Profile Products

help determine a baseline from which maintenance practices can be developed. A sand, silt, clay analysis can be performed on your field in two ways:

Submit a sample of your infield mix (1 pint baggie) to your local distributor, soil testing lab or your local Ag Extension service. Ask them to perform a sand, silt, clay or particle size analysis. There are reasonable costs associated with this option.

Or, fill a straight sided jar half full of your infield mix. Fill with water and shake vigorously until the soil is suspended in the water. Set aside and let it stand until the mix has fully settled. This will take from 1 hour to overnight. The sand will settle out first and will be at the bottom, the silt next and the clay last and at the top layer. Measure each layer and divide it by the depth of the total mix in the jar. This will give you the percentage of each component.

Proper soil sampling technique: Remove the top ½ inch of infield mix. Take several samples from around the infield at a depth of ½ inch and 3 inches. Mix these samples in a container to get a well-mixed sample. Use this mixed sample to do your jar test or send out for testing. If certain areas of your field stand out as significantly different, sample and test these areas individually.

How much do I need?

Most mixes consist of a minimum of about 60% sand to a maximum of 70% sand and the balance silt and clay. In locales where the particle size of the sand is fine, sometimes called "sugar sand," a higher percentage of sand is utilized in the mix. With most infield mixes, the calcined clay recommendation is 1 ton (40 bags) of product per 1,000 square feet of skinned area incorporated with a Rototiller, into the top 4 inches of the infield mix. This equates to 10 tons for a high school, college or professional field with 90 foot baselines and grass infield.

The variable in mixes besides sand particle size is the amount of clay. Some products combat the negative effects of

clay by preventing compaction and maintaining appropriate moisture levels. Therefore, as the percentage of clay increases in a mix so does the amount of material required. For higher clay content mixes (60%+) we recommend 1.5 tons (60 bags) per 1,000 square feet incorporated into the top 4 inches of the infield mix or 15 tons for a high school, college or professional field with grass around the mound. If the infield is completely skinned, double the amount is recommended.

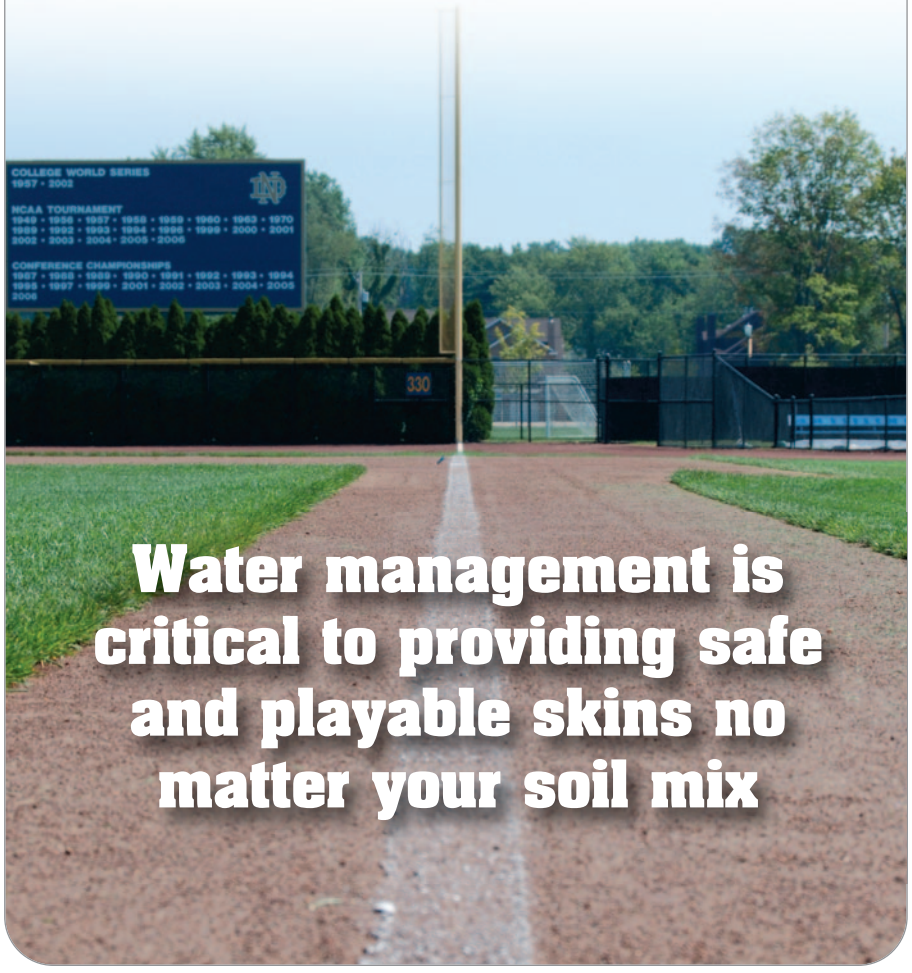
Incorporating 1 to 1½ tons per 1,000 square feet into the top 4 inches of the skinned area is identified as "full rate" or "complete renovation."

Thanks to Profile Products for this information. Turface is their best known product. www.profileproducts.com

The basics of infield care

To create an ideal infield skinned area, you must have a good knowledge of the following:

• Infield mixes vary from region to region. The published ASTM standards include an ideal range of what a good infield mix should be and place infield soils into certain criteria as closely as possible. Before building or renovating an infield area, you must conduct a textural analysis to determine the amount of Sand/Silt/Clay in both existing and potentially new materials, along with particle sizing, to make sure that they will bond together and create an ideal infield. You will determine if the infield mix is appropriate for your specific field. Dark red color has long been the standard for ball fields, but do not allow color only to be



Water management is critical to providing safe and playable skins no matter your soil mix

Silt necessary ingredient for infield skin

By Grant McKnight

The ideal ratios of sand, silt and clay in your mix can put you on the path to fewer rainouts, lower maintenance costs and a better playing field. There are many infield mix suppliers across the nation and most sell mixes containing a two-to-one ratio of sand to clay. Among the higher profile infield mixes, the inclusion of silt is found at levels below the clay content.

When Natural Sand Company entered the ball field market with DuraEdge infield mix, I was told a number of times that the ideal mix contains no silt. With my background in construction materials and mining, I found this concept to be very peculiar. All soil is composed of sand, silt and clay. Without silt, there is nothing to bind the larger sand particles to the smaller clay particles. A mix with 3-5 percent more clay than silt virtually eliminates "chunk-outs," increases the amount of moisture the dirt can absorb and provides firm footing in what is normally unplayable conditions.

In light of the fact that many infield mixes contain little or no silt, we created FieldSaver to amend fields lacking the correct ratio of sand, clay and silt. Through this program, "chunking-out" is no longer an issue for our clients.

Natural Sand Company recently used this program with Mike Boekholder of the Philadelphia Phillies and Bill Deacon of the New York Mets to help them increase their fields' playability. In both cases, the infields were "chunking-out" consistently during games no matter how much water was applied to the surface. We added FieldSaver in an effort to balance the silt and clay ratio in each infield. The results of correcting the infield mix composition were outstanding. Nowhere was this more apparent than in game five of the 2008 World Series in Philadelphia. After a run was scored and the game was subsequently halted, the conditioners on the surface were removed and Mike was surprised to see a relatively uncompromised clay surface.

Grant McKnight is the owner of Natural Sand Company, www.naturalsand.com. ■

the overriding reason for adding a particular type of infield mix.

• Sand Particle Size is an overlooked element in the success or failure in the infield skin material. A high percentage of coarse sand particles equals weaker stability, while a high percentage of fine sand particles equals hard and slow percolation rate.

• Soil Amendments vary in color, granulation sizes, absorption qualities and texture. What your current mix consists of, and what your final goal is, should help determine what soil amendment you choose. There are many products from soil conditioners like calcined or vitrified clays to percolation products (crushed aggregates), it really comes down to your personal preference and your needs for the infield.

• Nail drags/scarifiers are vital tools for your infield. They allow you to keep that ¼ to ½-inch of fluff on top, but yet also maintain a firm surface. Using a nail drag is recommended as often or more than a finishing drag to eliminate any divots, ball marks, cleat marks or the chicken scratch from the infield.

• Water Management is the most important part of a groundskeeper's job. As Trevor Vance for the Kansas City Royals says, "We are not groundskeepers, we are moisture managers." Groundskeepers deal every day with how much water to put in our clay, when to add water, when to not add water, is it going to rain, is it hot and dry, etc. If you can control the amount of water on your field, it will make the job to a better infield easier. If a poll were taken of all groundskeepers, the number one thing that we check daily is the weather. Determining what the weather will be for the day determines how much water to add to your infield or not to add. Watering before the contest is good, but not ideal. Water needs to be added the day before to ensure that it is throughout the entire infield mix profile and will be consistent for the contest. Infields play the best after the removal of a tarp because that is when the moisture content is consistent and the weight of the water on top of the tarp has created a firm infield.

• Dragging Patterns can determine a good or bad infield. You want to avoid creating lips around the edges of your infield that can cause bad hops or unsafe conditions for the players. These can be eliminated by brushing your edges, using a stiff drag around the edges, washing the edges occasionally when needed or if necessary removing them by cutting them out with a sod cutter.

In dragging your infields, you need to follow some basic practices: vary patterns daily; smooth drag the opposite way you nailed dragged. If you naildrag in circles, smooth drag in a long pattern. Do not drag faster than you can walk. Stay at least 1 foot away from edges.

Minute Maid Park, Houston, courtesy of Dan Bergstrom

• Leveling Fields is important. This should be done after adding infield mix to your field or as a process of yearly maintenance. This will keep your fields level and remove any birdbaths that have been created over time.

• Using a ½ Ton to 4 Ton Roller is possibly the best kept secret in maintaining a really good infield skin. Periodic rolling will pack the infield soil making the infield mix firm and consistent.

Thanks to Bill Marbet and Glenn Lucas of Southern Athletic Fields for this information. MuleMix field conditioner is among many infield products they offer, www.mulemix.com.

How much moisture can your dirt handle?

Tarp or no tarp? How much water should be applied to the skin? How long will it take for the field to reach consistent levels? The infield skin can provide unlimited frustration for turf managers. By identifying the composition of the infield mix, you can predict how the amount of surface moisture and the clay content of the playing surface will interact. When you know your infield mix ratio, you can answer the question, "How much moisture can your infield skin handle?"

Infield mixes can be made from native soils, designed mixes, or crushed aggregates, or a blend of them all. These materials all originate from nature and require a large proportion of very fine particles to provide enough cohesiveness to knit together to form a firm playing surface. Although necessary, these same fine particles can reduce drainage and act as binders when they dry out creating excessive hardness.

Turf managers wanting to achieve a consistent playing surface capable of taking in large amounts of water while remaining playable should do three things: test the composition of your current infield mix, add an amendment to balance your silt and clay content and then record your results in games played throughout season.

"A groundskeeper's main mission is to manage water effectively. Water is your best friend and your worst enemy," says Clayton Hubbs of Stabilizer Solutions (www.stabilizersolutions.com). "The right amount of water keeps your turf lush, maintains the perfect playing consistency of your skin, and keeps your mound firm, yet malleable. Too much water or too many rain delays and you might be out of a job."

If Mother Nature is the culprit you can count on a postponed practice, game or even tournament, but is postponement necessary? Hubbs' product, Stabilizer, is a 100% natural soil enhanced with polymer. That polymer essentially replaces water and can protect the soil from the elements by repelling water and never freezing, allowing northern managers to get practices started earlier in the year.

Hubbs says managing water can help balance your budget, not only by reducing irrigation costs but also time and labor costs. Grant Trenbeath, head groundskeeper for the Arizona Diamondbacks, calculated that his warning track featuring Hilltopper has saved him 500 man hours each year, says Hubbs. EP Minerals, makers of Play Ball! Conditioner (www.epminerals.com) recommend applying your conditioner and nail drag an inch or two deep for fast playability, or work it 4 to 6 inches deep in new construction or renovation. Incorporating deeper treats 10 times more soil than surface treatments and provides an opportunity to address soil interfaces or layers that are causing poor drainage. When filling low areas, the company recommends mixing your conditioner into the infield mix before placing. If the filling is sizeable, consider regrading and refreshing the entire infield soil by applying the proper amount of conditioner by incorporation.

With regard to infield conditioners, the book "Sports Fields" by Jim Puhalla, Dr. Jeff Krans and Dr. Mike Goatley, says, "One real benefit of calcined diatomaceous earth products is that they allow the maintenance staff to rake (infield) soil out of the grass, which is just about impossible with other conditioners." And "[infield

conditioners] also help control dust control during the summer, because they hold water in the soil longer. This is especially true of the diatomaceous earth products; in most of the country, it should be possible to wet the soil thoroughly in the morning and play on it all day without having to stop and re-water." The authors say diatomaceous earth conditioners can also be used in smaller volumes than calcined clay.

Tips for limited budgets

With a little creativity, quality products, and volunteer support, a small budget can go a long way. Raechal Volkening, a consultant who spent 7 years with the Milwaukee Brewers before starting her own business, shares her experiences with budget-challenged organizations.

Before Raechal's tenure with the Brewers, one of her jobs was head groundskeeper for the Butte Copper Kings. During her season there, she was faced with very little funding for supplies or labor. In order to achieve success, she was forced to come up with some creative solutions."Thankfully, the previous groundskeeper had some Pro's Choice on hand that the crew could work with. I was able to get by with the existing supplies. "Beyond that, I found four staff members through the welfare department that were eager to learn and got the community involved for additional labor. I borrowed equipment from other local organizations wherever possible. But the biggest lesson I learned was not to think of myself as an island. There is a lot of support available when you reach out."

• Create a sense of pride and ownership by getting the community (athletes, parents, booster club members, etc.) involved.

• Have players work on their specific areas (pitchers on mound, infielders on lips, etc) for greater connection and sense of ownership.

• Take advantage of work-study programs.

• Share or borrow equipment, especially items you only need a few times a year.

• If your program has more than one field, pick one to showcase. Make it the example of what all your fields could be.

• The value in amendment products is cumulative. If you can only afford to use a limited amount of product now, build up over the season or subsequent seasons. ■

This advice supplied by Oil Dri, makers of Pro's Choice products, www.proschoice1.com.

Mark Razum, Colorado Rockies, courtesy of Pro's Choice

Spotlight on Mark

Mark Razum recently finished his 13th season as the head groundskeeper for the Colorado Rockies and has been a groundskeeping professional for 30 years. He began his distinguished career as a member of the Cleveland Indians grounds crew, working under the direction of Marshall and Harold Bossard. He later moved to the Oakland Athletics, first tending to spring training fields and working his way up to head groundskeeper.

Mark has been recognized with numerous awards throughout his three decades in the business. Chief among them is the 1998 Turf/Grass Professional of the Year, an award presented by the Rocky Mountain Turf/Grass Association. This award was a direct result of his efforts during the '98 All Star Game, where Mark and his team created an elaborate star design cut into the grass of the field. During his tenure with Oakland players voted his field the best in the American League for three straight seasons (1992-1994).

Mark is passionate about his fields and is constantly looking for ways to improve them. That being said, he knows that players need a consistent playing surface. He balances the need for improvement and consistency by experimenting with products on little league or community fields before implementing on Coors Field.

Each March Razum prepares his field, starting with leveling the infield dirt and adding soil conditioners to give him a solid base he can maintain through the season. He says Colorado's volatile weather presents a big challenge and he relies on such products to help get the field back to playable condition as quickly as possible, as well as when the climate becomes dry in the summer and the dirt needs moisture.

Razum says uniform conditioner particle size keeps his field consistent. "Our players are counting on us to deliver a consistent playing surface every time they step onto the field. We make it our goal for the field to play the same on opening day through the playoffs. The grounds crew's contribution is to worry about the field, so the players can concentrate on the game," he says. "Last season, when the team set two major league records for the lowest number of errors and highest team fielding percent, I know the crew directly contributed by providing our team with a consistent playing surface they were familiar with and could trust."

Razum says young turf managers should keep learning as much as they can from people in the business. "I started when I was 17 on a crew in Cleveland and absorbed all the knowledge I could from those around me," he says. "Remember that your fields are your calling card. People will see your fields and comment on them. Scouts look at fields and make recommendations on what they see.

"As far as products go—experiment with the options available. If you have access to high school or little league fields, see what works on those before implementing for larger stadiums. Get opinions from players and coaches. That said, be sure to be consistent; players need to know they can trust that the field will play the same every game," says Razum. ■

Spotlight illustration courtesy of istockphoto.com.

New groomer machine

The PR72 Pro Groomer from Infield-Drag.com is a multi-function machine that that will save you labor when it counts the most. It restores, maintains and keeps infields level, and well-groomed. Levels by cutting off high spots and filling in low areas. Breaks up hard, compacted surfaces. Saves labor, reduces water puddling, and controls weeds. No need for hydraulics or 3 pt. hitch. Pull with a variety of machines. No tools needed to adjust. Available with manual or electric lift.

Heying Company, infield-drag.com

Building a mound

• Determine mound center by running a string line from the back point of home plate through the center of 2nd base. Measure 59 feet from the back point of home plate along this line; this point is the center of the mound. Draw an 18-foot circle using this point as the center.

• Determine placement of the rubber using the same string line measure 60 feet, 6 inches from the back point of home plate and sink a stake; this is the front of the rubber.

• Determine the height of the mound by using a transit level and take a reading off home plate. The top of the rubber must be 10 inches above the plate. Sink a stake on the sides of the mound and mark the 10-inch elevation. Use a string as a guide when setting the rubber.

• Establish the base of the table area first, 4 inches high. Be sure this area is thoroughly compacted as it supports the rubber. This can be done with infield mix to save money.

• Set the rubber and begin constructing the table and the slope. Use a 3 to 4-inch depth of mound clay for the table and a 4 to 6-inch depth on the slope.

• Build in layers, 1 inch at a time, packing material tightly and adding moisture as needed. If using bricks, set the top of the bricks ¼ to ½-inch below the final grade. Top with bag mound clay. Check the alignment of the rubber often to guard against movement.

• Fill in back and sides in the same manner, gradually sloping to the edge of the circle. Topdress with infield conditioner.

• Water thoroughly and cover the mound with a tarp to retain moisture.

This information courtesy of Diamond Pro, www.diamondpro.com

Houston's Minute Maid Park first to roll out Platinum TE paspalum

SINCE MINUTE MAID PARK OPENED IN 2000, the Houston Astros have always sought creative ways to improve their game day product and facility. This innovative thinking has continued this offseason, as Minute Maid Park will now feature a new playing surface, recently installed by Astros groundskeepers.

On November 23 last year, Astros groundskeepers, led by the Director of Major League Field Operations Dan Bergstrom, began to roll out 2.3 acres worth of new sod in an effort to improve Minute Maid Park. The new sod, named Platinum TE Paspalum, is the first of its kind to be installed in any sports facility in the world.

"The Astros grounds crew has embraced the challenge of keeping a beautiful stand of turf under the roof of Minute Maid Park," said Bergstrom. "We expect to keep our playing surface in top-notch condition for our players, and we are excited to have the latest technology and turfgrass genetics with our new [turf]."

Platinum TE Paspalum is a turf that works well for Minute Maid Park's conditions due to its lower sunlight requirements. Compared to the sod used in previous seasons, the Platinum TE Paspalum should have a greener color, an improved wear tolerance and an increased tolerance to the shade at Minute Maid Park.

Platinum TE Paspalum is bred by Turf Ecosystems, LLC, which aims to develop new turfgrass cultivars and maintenance products that are better suited to both performance expectations and environmental limitations. ■