

Fungicide Class	Active ingredient	Common trade names ²
Strobilurin (QoI)	Azoxystrobin Pyraclostrobin Trifloxystrobin	Heritage Insignia, Insignia SC Compass
DMI	Metconazole Myclobutanil Propiconazole Tebuconazole Triadimefon Triticonazole	Tourney Eagle Banner MAXX, Propiconazole Pro, Spectator, Savvi Torque Bayleton Trinity, Triton FLO

²List of trade names was taken from the University of Kentucky's Chemical Control of Turfgrass Diseases 2013 and is not an endorsement of any particular product.



Figure 2



Figure 3

◀ **Table 1: LIST OF COMMON TURFGRASS FUNGICIDES** in the strobilurin (sometimes called QoI) and demethylation inhibitor (DMI) classes.

▼ **Left Figure 2: RUST** is an easy disease to identify (look for the orange pustules), but can be a hard disease to control when money is tight.

▼ **Right Figure 3: A NON-CHEMICAL** rust solution is to make sure the home team only wears orange uniforms.

slow-growing or stressed turf during July, August, and September though it can appear earlier than that in southern locales. Turf growing on heavily compacted soil, which can be common on heavily trafficked fields, is especially at risk for developing rust. The same goes for fields that are under-fertilized or poorly irrigated. If rust appears on your field, immediately fertilize with a water-soluble nitrogen source and water in to encourage turf growth. For long term prevention of rust, be sure to regularly aerify high-traffic locations of the field to prevent soil compaction. If you continually struggle with rust

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year after year, numerous fungicides from the strobilurin or DMI class of fungicides can easily provide 21-28 days of rust control.

3 NECROTIC RING SPOT

As a root-infecting fungus, this (*Ophiosphaerella korrae*) is one of the more frustrating diseases an sports turf manager can face because once symptoms appear it's too late to treat for the fungus. Adding to the frustration, fungicide applications are notoriously ineffective for this disease because the timing of application is critical and the fungicide also must be watered into the rootzone to the point of infection...and it's darned hard to water a fungicide through 2 inches of grass and a half inch of thatch. The necrotic ring spot fungus is only active on turf roots when soil temperatures are roughly between 55 and 65°F, which is usually mid to late spring. But the circular frog-eye patches characteristic of the disease (Figure 4) often don't appear until early summer, after the fungus has gone into dormancy.



▲ **Figure 4: NECROTIC RING SPOT** can be devastating on recently-sodded turf, something quite common on athletic fields.

At this point, all you can do is manage or 'baby' the turf and its weakened root system the best you can through more frequent irrigation and fertilization. If you repeatedly observe this disease on your field, implement any healthy rooting practices you can think of to increase the number of healthy roots and help the plant ward off symptoms. In addition, use acidifying fertilizers or other acidifying amendments because the disease is more severe when soil pH is above 7.2. Since excessive thatch layers can harbor the fungus, work to minimize the thatch layer to one half inch of thickness or less. As a last resort, some granular fungicides may be able to provide suppression if applied at the proper soil temperature and watered in.

2 BROWN PATCH

If you manage a field with a significant amount of tall fescue, you likely know all about brown patch (*Rhizoctonia solani*). This foliar fungus requires prolonged periods of hot, humid weather to cause disease and can ravage tall fescue plants if left



▲ **Figure 5: IF YOU SEE** white mycelium following hot, humid weather in the summer don't automatically assume it's Pythium blight...it may be brown patch.

unchecked. Symptoms appear as diffuse patches of slightly brown or even purple-colored turf, and in active infections white mycelium can be present in the turf canopy (Figure 5). Fungicide applications are an effective means for controlling brown patch, especially Prostar or those from the strobilurin class. However, limiting nitrogen fertilization and irrigation during hot periods can significantly suppress the disease in the absence of fungicides. However, if you manage tall fescue or experience prolonged periods of hot and wet summer weather, fungicides may be required for effective brown patch control.

1 SUMMER PATCH

This root-infecting disease (*Magnaporthe poae*) is similar to, and often confused with, necrotic ring spot but has a few key differences. Like necrotic ring spot, summer patch is a root-infecting fungus that primarily impacts Kentucky bluegrass (though ryegrass and fine fescues can also be impacted). Like necrotic ring spot,



▲ **Figure 6: OFTEN** similar in appearance to necrotic ring spot, summer patch can be destructive even on high-end athletic fields because of the inability to detect its presence until the damage has been done.

symptoms appear as roughly circular patches of tan turf that can sometimes partially fill in with weeds or grass to create 'frog-eye' patches (Figure 6). The key difference, however, lies in the active temperature range of each disease. Whereas necrotic ring spot only infects when soil temperatures are between approximately 55 and 65°F, the summer patch fungus BEGINS to infect roots once soil temperatures reach approximately 60°F.

As the soil temperatures rise through summer the fungus infects more and more turfgrass roots until sometime in mid-summer when the remaining functioning roots cannot support the plant and it wilts and dies. A fungicide application once symptoms have appeared will stop the current infection from spreading (assuming you get the fungicide down into the roots). However, because the infection decimated so much of the root system, the symptoms are likely to persist and the plants weakened for the rest of the summer. Methods for reducing summer patch infection include healthy rooting practices (summer patch is worse where thatch is excessive and in poorly draining or compacted soils) and reducing the soil pH to under 6.5 through acidifying fertilization or other means. Where summer patch is a consistent problem, fungicides from the strobilurin or DMI class can be used and should be applied in the late spring when soil temperatures are approaching 60°F. Care should be taken to water the fungicides into the top inch of the soil where the fungus is active.

The aforementioned diseases are not the only diseases you will find on your athletic field, and even determining which disease is present on your turf (or if it's a disease at all!) can be very taxing. If you're unsure, I recommend submitting a sample to a diagnostic lab that specializes in turfgrass diagnostics to confirm the presence of a disease PRIOR to applying a fungicide. It's better to spend \$100 on proper diagnostics than waste \$500 on a misapplied fungicide. Many universities around the country, including the Turfgrass Diagnostic Lab at Wisconsin (www.tdl.wisc.edu), have excellent turf diagnostic facilities and can provide needed support to properly diagnose your problem. For the most effective chemical control options check with your local sales representative, extension agent, or look up the University of Kentucky's "Chemical Control of Turfgrass Diseases 2013" online. ■

Paul Koch, PhD, is an associate researcher, turfgrass pathology, at the University of Wisconsin-Madison.

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State of Seed Supply REPORT

Editor's note: We asked principals from seed companies across the country to answer two questions: What is the state of the supply of your grass seed crop used for sports fields heading into the overseeding and heavy-use football seasons? And, what is the state of supply for sports turf looking like for Spring 2014 growing season? Here are the responses we received:

AARON KUENZI,
VP-Marketing Manager
Mountain View Seeds

As we analyze the "State of the Seed Supply" for 2013 and spring 2014 we can be assured of one thing, change. One change will be pricing due to limited supplies.

Supplies of most species of cool-season grass will be tight due to less inventory, lower seed production acres and solid demand. Our seed inventory carryover from the previous year is near a record low. Seed production acres are low as well. Our growers are making economic and agronomic choices to grow other crops. Economically these other crops produce either a higher net return or a quicker return. Growers are also choosing to rotate between crops such as clover, wheat and grass for the agronomic benefits. Looking forward we don't see a lot of change from the production side.

For 2013 we again should see tight supplies and firm prices, as the general consensus is we do not have enough production of seed. As of today the seed harvest is less than average and our crop will be short. We expect to see firm pricing for fall of 2013 and into spring of 2014. In our opinion perennial ryegrass, fine fescues and Kentucky bluegrass will be affected the most. So this year be prepared to order early especially if you need a specific variety and/or quality of seed.

JOHN RECTOR,
turf products manager
Barenbrug USA

New Crop 2013 seed supplies are looking good for sports turf grasses from Barenbrug USA. Though competition for seed production acres remains strong, we anticipate a good supply of seed for our distribution partners that service the sports turf industry.

RPR, Regenerating Perennial Ryegrass, named a 2011 Innovative Product by the STMA, has shown increased use each year since its first release. Now christened with a new botanical name, *Lolium perenne subsp. stoloniferum*, RPR's reputation for durability and traffic recovery has grown significantly in the sports turf industry. Now representing three varieties, RPR continues to perform well in the traditional ryegrass climates and in unlikely areas such as the turf transition zone. Developed from 'Virginia' traffic survivors, RPR's durability in difficult summer conditions is both remarkable and unusual for perennial ryegrass. Supply for RPR looks very good.

The newest member of our 'Sports Turf' family is our Turf Blue HGT Kentucky bluegrass blend. To date, the performance of this blend of bluegrasses has been nothing short of amazing. On one particular Maryland Soccer complex, newly seeded Turf Blue HGT was successfully played on 35 days after seeding and the field is still playing like a champ this summer. '35 days and play' is unheard of for any species, let alone a bluegrass. Its key component, Barvette HGT, performed exceptionally well in the recently completed NTEP KB trial (2005 thru 2010). In the brutal transition zone, Barvette HGT finished in the top statistical grouping or #1 for 16 different evaluated turfgrass traits. At this time new crop supply looks very good and we're optimistic for excellent quality.

Barenbrug also provides the world's only true rhizomatous tall fescues, Turf Saver RTF. With establishment, RTF develops a strong system of true rhizomes and a deep, extensive root system. Turf Saver RTF supplies also look very good.

Bermudagrass supplies also look good with prices leveling off. Our Barbados Brand, featuring SWI-1044, is an outstanding product for those fields needing an elite feel to

Yukon bermudagrass has excellent high quality seed. -Leah A. Brilman, PhD, director of research and technical services, Seed Research of Oregon

them. Also with excellent NTEP performance, 2002-2006, SWI-1044 exhibits many top performing traits for sports turf uses.

Another Barenbrug exclusive is our proprietary coating technology called Yellow Jacket. Yellow Jacket provides strong absorbant technology combined with Dormancy Breaker and Apron XL to provide the best in seedling development and protection. Yellow Jacket technology is available on most Barenbrug products and most custom mixes.

DUANE KLUNDT, **VP of sales Grassland Oregon**

Most cool season turf grasses are in a balanced, to less than favorable state. This coupled with the Pacific Northwest weird weather patterns this past year (super dry fall, very wet early winter, very dry late winter, hotter than normal spring, and cool early summer, and now dry) may cause some quality issues. The result maybe some heartburn for those looking for high quality seed at a good price, it may just not be

there. Perennial Ryegrass is in very tight supply and coupled with a record high grower price for the fall of 2013 and the pressure for good quality, we would recommend buying your seed as early as you can to ensure the best price and best quality you can. Kentucky bluegrass is also in a similar situation, with production being about as low as it has been in decades, and the elite Kentucky bluegrass varieties being in short supplies due to the residual scars of the past downturn in economy, again I would buy your needs early. Turf Type Tall Fescue is still in a fairly tight situation but it should be way more balanced thus maintaining a stable price throughout the year, but quality may still be an issue with some varieties being extremely short. Seed inventories are about as short as they have been in quite some time so this is not a year to procrastinate.

Quality will be a problem come spring, if the seed crop continues to come in as it is supplies could be very tight in early 2014. As

stated in the fall section I would buy or book my seed as early as possible with your distributor, that way they can arrange to get the supplies the sports turf managers need. We need to remember cool season turf grass is harvested in July/August and it will not happen again until next year. It cannot simply be manufactured, so it will require the turf manager to make sure some planning is done. Do your homework now for next spring to assure you get what you need, both in quality and in the quantity.

JOHN T. LAMLE, **VP of research and production** **Johnston Seed Company**

Johnston Seed Company is the exclusive producer and marketer of Riviera Bermuda-grass seed. We had an excellent supply of seed for the sportsturf market in 2013 and will have an excellent supply to meet those needs in 2014. We do not produce any cool-season grasses for the overseeding market, so I can not contribute to that request. ■



A CELEBRATION OF SPORTS

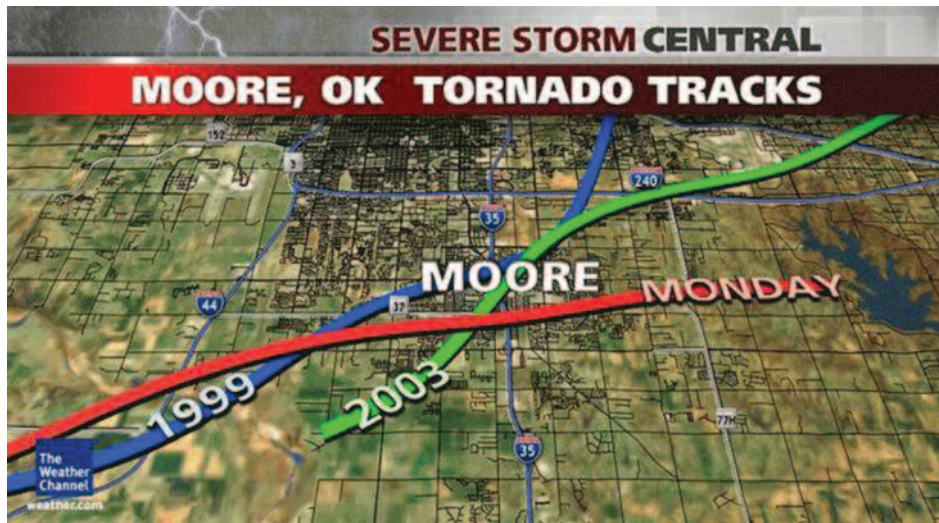
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Important things in life: “Moore” than grass

HOW OFTEN IN LIFE DO WE TAKE THINGS FOR GRANTED? How often are we so caught up in our jobs and responsibilities that we just stop for once what we are doing and be thankful for what do have? Our families and relatives, our house, our cars, our jobs...when we are faithful and take that precious moment before we head to our professions for the day and be thankful and gracious, giving hugs and kisses to our loved ones. On May 20 and 21, 2013 all things changed in central Oklahoma.

We in Oklahoma live in what is commonly known as Tornado Alley, in the late

spring where the cold air coming over the Rocky Mountains clashes with warm moist air out of the Gulf of Mexico. During a stretch of time in May this year, tornadoes were popping up daily. We commonly are the guinea pig for weather as the nation can see where the storms are building and coming from. In a 14-year span, Moore, OK has received two EF5 and one EF3 tornadoes in almost the same path. (see http://s.imwx.com/common/articles/images/201305/mooretrack-52113_650x366.jpg).

Various other towns in Oklahoma such as Little Axe, Shawnee, El Reno and Yukon

◀ **TWO EXAMPLES** of damage from the tornado.

have received their fair share of tornadoes. As a matter in fact, one week after the tornado in Moore, the widest tornado ever recorded, 2.6 miles wide, hit near El Reno, OK.

In Oklahoma, the forecasters and meteorologists are right on top of the weather when the atmosphere is unstable. It is a Mecca for storm chasers as they come in droves when things are in alignment. In Norman, the National Weather Service houses its National Storm Center and is very informative to the general public. On May 20, tornadoes skirted the heavily populated areas in central Oklahoma, but did not hit some of the rural areas. However, the metro area of Oklahoma City was forewarned that the same scenario was going to happen the next day, May 21, but supposed to be worse and to be prepared. Everyone was told about the time things were going to fire up on Monday. People at the beginning of the day were planning when they were going to take off work and pick kids up before schools were let out.

•2:40 pm CDT: A tornado warning was issued that included Moore

•2:52 pm: Radar indicates rotation may be reaching the ground near Moore

•2:56 pm: First reports of a tornado in progress

•3:01 pm: Tornado Emergency issued for Moore

•3:36 pm: Tornado “ropes out” and dissipates

•3:43 pm: First images of destruction surface

•6:07 pm: Damaged areas in comparisons immediately drawn to Joplin, MO tornado of 2011

•7:16 pm: Death toll announced at 37 by Associated Press, via Twitter

The tornado was on the ground for some 40 minutes. Eventually it was determined that 24 people perished during the tornado, including seven children. Some of the children were ones that were still at the schools of Plaza Towers Elementary and Briarwood Elementary, which were completely leveled. I personally was on the scene in Moore at about 8:30pm. I went

with a neighbor to help his son repair his damaged house, as more rain was expected.

Others were not so fortunate with their houses. I have never seen so much destruction immediately following an EF 5 tornado. Homes completely gone, down to the slab of concrete that it was built on, water coming out of pipes, telephone poles snapped and electric power lines laying on the ground and the heavy smell of natural gas, cars overturned and mangled, and debris spew all over the place wondering where it came from. There were members of our athletic staff at OU that completely lost their homes. People that I know whose families' lost everything. My wife and I housed a father and his son, displaced by the tornado, for a week at our house. So much loss. Initial estimates indicated that it will cost upwards of \$2 billion. It will take years to rebuild, just like in 1999; some say that it was worse.

One aspect of Oklahomans, they come together, as they have done so many other times in the past. People helping people; strangers pitched in and helped clean up Moore and the surrounding areas. Support from so many others across the nation. Native Oklahoman and country music singer Blake Shelton put on a benefit concert at the Chesapeake Arena in OKC that raised an estimated \$6 million. Triage and relief set up at the churches surrounding the damaged area. Meals, clothing, shelter all provided by people in the surrounding communities.

Country music star Toby Keith, a native of Moore who resides in Norman, decided to have a concert billed as the Oklahoma Twister Relief Concert. The site was Owen Field on the campus of the University of Oklahoma on July 6. To add to the docket, Garth Brooks, Trisha Yearwood, Ronnie Dunn, Willie Nelson, John Anderson, Mel Tillis, Sammy Hagar, a video performance by Carrie Underwood and a few other artists were scheduled. The concert sold out in less than an hour with a ticket price of \$25. The concert is speculated to be the largest concert ever in the state of Oklahoma, with an attendance of 65,000+. All

proceeds from the concert went to the United Way to go to those impacted by the tornadoes. So many aspects of putting the concert on were donated: field protection system, trucking, stage, rigging, lighting, equipment. All put together in a matter of 3 ½ weeks. Not an ideal time to be putting on a concert in July, when many of these things are spoken for the summer and other tours.

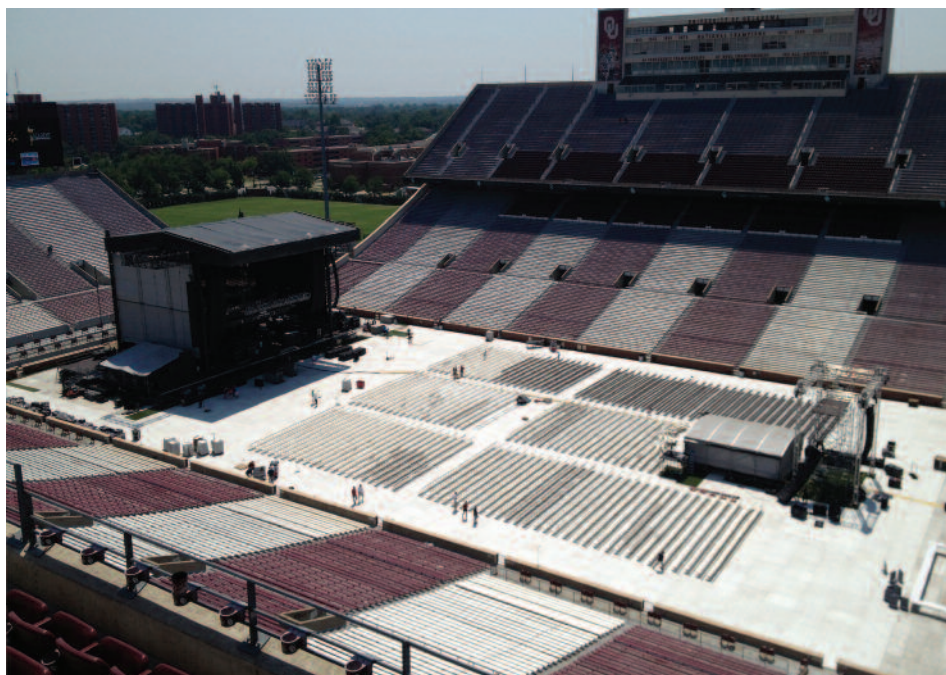
CHALLENGE AHEAD

This is where the turf manager's hat comes off; all the things of "No... not a concert in July during the heat of the summer!" instead are "how are we able to help people in need, people that have nothing?" This was an improvised concert but put together by some of the best in the business. All resources had to be pooled together quickly. Our challenge as turf managers at OU was to save as much as the field as we could understanding we were in a non-revenue, donating situation with this event. Our administration in OU Athletics assured us that any replacement needs would be fulfilled.

Once we received confirmation that we would be hosting a concert, the first phone calls I placed were to Michael Beane, CEO of Terraplas, and Kyle Waters, VP of Operations at the StubHub Center in Carson,

CA. Both have ties to Oklahoma, as Mike had a daughter here at OU in 1999 and Kyle is a native Oklahoman. Both immediately jumped on board in support. Mike supplied the Terratrak drivable roadway and Kyle provided the Terraflor. Load-in of the Terratrak started late Monday evening July 1 with the stage steel set-up starting on July 2. Three days of stage building, a production day and then the all-day concert. Terratrak around the stage was down 6 days, the Terraflor for the seating area was down just over 48 hours. During the 6 days while it was down, the Terratrak surrounding the stage received heavy use of forklifts, a 40-ton crane and two 5 ton flat-bed trucks. We were able to omit a Terratrak roadway in front of the stage during a majority of the stage build. This was key as we were able to keep the heavy weighted traffic off of the main area of the playing surface and off to the sideline areas.

Some stadium events you have months of preparation for, we had a couple of weeks. We felt we went into the Terratrak build with about the right amount of moisture in the sand base as well as supplementing the TifSport bermudagrass with ample amounts of potassium, magnesium and elements to strengthen the grass's cellular walls. We were also very lean on nitrogen and the field was rolled and firmed up with



▶ **SETTING UP** for the concert.



▲ **Top Left: USING THE GREENONE KORO MACHINE** to take out some sod after the concert. **Top Right: PUTTING IN THE FRESH SOD.**
Bottom: GOOD VIEW after sod was placed.

a 3 ton roller. The first week of July we actually caught a break in the weather as a cold front came through central Oklahoma bringing daytime highs in the low to mid 80's. Normally temperatures are in the mid to upper 90's. Soil temperatures under the Terratrak (81 F) were just a couple of degrees warmer than where grass was not covered (77 F). Most all Terratrak and Terraflor builds and removals were done in the overnight hours to help the install crews as well making the moves less stressful on the grass. By Production Day and Concert Day, ambient temperatures crept back up into the low to

mid 90's. We received the field back to us later in the evening Sunday, July 7.

We started our post-concert maintenance plan as soon as the last piece of Terratrak was removed. We did this in the wake of the cooler overnight hours. The field was raked to stand the grass back up where Terratrak has been laying around the stage and roadway out to the front of house mix tower. We let the field rest and sit the remainder of the night. On Monday, the entire field was verticut and swept to help the rootzone to breathe even more and to remove

any bruised or matted leaf tissue. An application of ammonium sulfate was made and water was turned back on. On Tuesday, the field was deep-tined aerified and cores removed. Then flushing cycles of irrigation water began to help remove contaminants. On Wednesday, weaker areas were overseeded with Riveria bermudagrass seed and the field was topdressed with sand.

The week after the concert brought good bermudagrass growing weather with temperatures in the mid-90s to 100, but that was followed by an unusual cold front that lasted 4 days and brought 6" of rain. Temperatures dove back into the mid-70s during this time and really putting a damper on recovery and coordinating with contractors to replace any damaged areas. The fourth week of July we were able to resod areas of heavy traffic on the roadway behind the stage as well as some weaker areas on the field. We contracted with GreenONE Industries, Inc to use the Koro Imants Field Topmaker to take out 1 1/2" of sod. We also purchased the replacement thick cut Tifway 419 sod from Tri-TexTurfgrass. In all, much less was replaced than was anticipated before the concert. Much of the rest of the areas under stage and on the field were able to make a full recovery.

In this particular situation and devastating event, it's more than just the grass. We do work so hard to get the grass to where we want it to optimally perform. We are passionate about our jobs and doing what is best for our fields. But grass can be replaced. It always helps to keep things in perspective. Be sure that we take time to appreciate the ones we really live for. You can't replace someone that



▲ **PICTURE OF FIELD** one month after concert ready for scrimmage.

you lost. We do take ownership in the fields that we manage, but in the words of a good friend of mine... "it's not your field." On this particular night, it was for those that had lost a loved one, a home, a business. This is a healing process that will take much longer... ■

Jeff Salmond, CSFM, is director of athletic field management at the University of Oklahoma, and a Board member of the Sports Turf Managers Association.

STMA in action

STMA introduces new Membership Incentives, Referral Rewards

STMA IS NOW OFFERING 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

New members—those individuals who have not been an STMA national member since 2000—are now 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.

Those members who joined in 2013, especially those individuals who signed up during the association's recent prorated dues

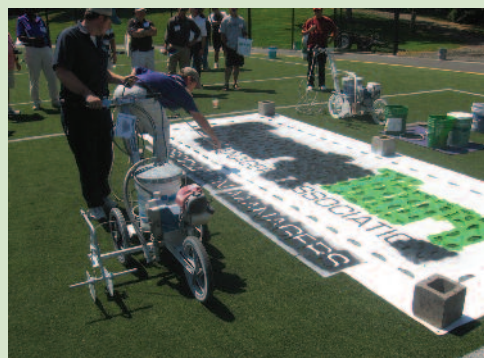
promotion, are eligible for the free conference registration promotion if they renew for 2014.

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. ■





Drainage systems 101

“**R**ainout” might just be an honorary four-letter word in your vocabulary if you’re a field manager. Consider the problems they cause:

- Games that need to be rescheduled
- Schedules that need to be reshuffled and of course:
- Complaints you have to hear (as though you personally ordered up the rain)

Unless your field is in a desert area, there’s a good chance that you’re going to have to deal with rainouts at various times throughout the year. The key to getting the schedule back on track (and the complaints minimized) is a good drainage system. In fact, good drainage is probably the most important factor in long-term performance of a field, and in making the field valuable to the owner.

Work with a design professional to help you come up with a plan for an efficient system for your field. The designer will take into consideration the specific use or uses of the field, the local climate, the availability and cost of materials, the quality and characteristics of local stone, the financial resources and commitment of the owner, time constraints for field construction, the annual amount and intensity of rainfall, local codes and regulations regarding stormwater management. The professional will be able to specify pipe diameters or the sizes of flat drains, location and distance of laterals, collection systems and storm sewer tie-ins for the drainage system.

Something that has been mentioned previously: drainage systems (in this case, the systems under the playing area) should be designed only for water that falls on the field because of precipitation, or because of irrigation. In other words, a field should not be receiving water that runs down off bleachers, drips from dugout roofs or runs off the track.

Surface drainage controls water from precipitation and water from those other areas, including water that drains off following the irrigation of planted areas adjacent to a field. There are three types of surface drainage systems: open systems, closed systems and combination systems.

There are three types of surface drainage systems: open systems, closed systems and combination systems.