

order to match the thickness of the sod. This would allow for an easier installation and a level finished surface. To do this, we used a Koro Field TopMaker 1200 with the new Terraplane Rotor, which is similar to a wood planer: it has cutting blades that leave a clean, even surface. This is one of the first two machines in the US to have this rotor. The machine arrived from Holland a week before the project. It's actually the same machine used to level the clay courts at Wimbledon.

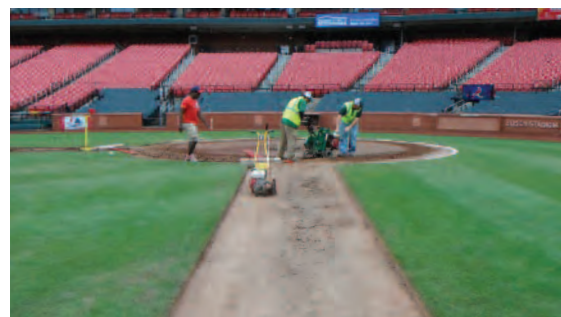
We mounted a laser receiver on the machine so we could monitor the depth of the cut and make sure we removed the exact amount of clay. The clay was hauled out of the stadium using a fleet of workmen. We removed less material in the middle of the infield skin, creating a slight crown in order to help any excess water that hit move toward the edges of the field and into the rootzone. The base lines were then cut and removed using a sod cutter set at 1.25 inches.

All of this work was being done under the watchful eye of Chelsea Football Club

head groundsman Jason Griffin, who was quite impressed with the method we were using to remove the clay and prepare the field.

"This isn't new to us," he said of playing soccer in baseball stadiums. "But the process that they're using out here is a new way of doing it. It's very good. It is going to be nice and flat, which is what both teams want."

The pitcher's mound, which had been in place since the field was built in 2006, was being removed at the same time as the infield. It took the power of an excavator to get the tightly packed clay broken up so the mound could be hauled out. Like the base lines, the mound area was taken down 1.25 inches below grade as well. The mound clay was kept in one pile, and the infield clay was kept in another. Both piles were watered to try and keep the clays hydrated. We did not want them to get too dry, as this would make it hard to get them compacted and firm when we reapplied them to the field.



▲ **Top: JASON GRIFFIN**, Chelsea's head groundskeeper, and Steve Bush confirming dimensions on an iPad. Photo by Taka Yanagimoto. **Bottom: BASELINE** with clay removed. Photo by Steve Bush.

## WE'VE GOT YOU COVERED

EITHER WAY, YOU'LL WIN WITH TURFCO® SPORTSFIELD TOPDRESSERS



**WIDESPIN™ CR-7**

- ▶ Broadcast up to 40 feet for maximum productivity
- ▶ Patented WideSpin™ technology gives you the perfect spread with the least adjustments from light to heavy
- ▶ Spinner angle adjusts up and down for maximum versatility



**METE-R-MATIC™ XL**

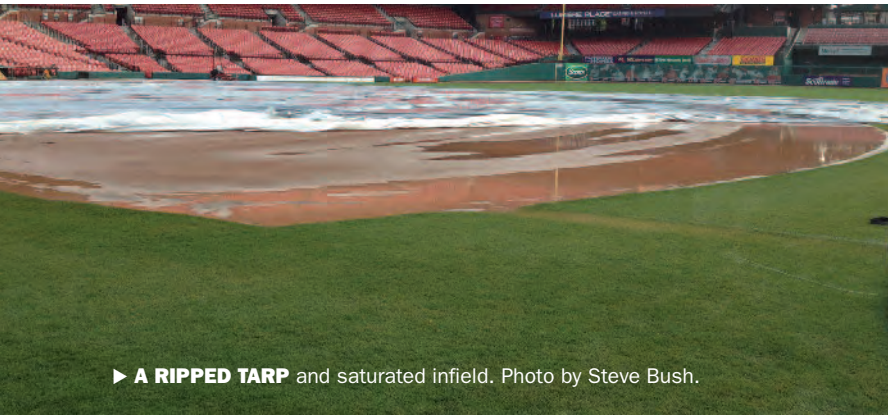
- ▶ Just hook up and go—ground-drive system means no hydraulics or speed calibration
- ▶ 60" drop spreader with extra large hopper capacity for less reloading
- ▶ Patented Chevron® belt ensures uniform application of all types of materials, regardless of moisture content



WWW.TURFCO.COM

**Demo TURFCO on your field — call 800-679-8201 today.**

TURFCO MANUFACTURING, INC. | 1655 101st Ave. NE | Minneapolis, MN 55449-4420 | TOLL FREE 800-679-8201



▶ **A RIPPED TARP** and saturated infield. Photo by Steve Bush.



▶ **BILLY FINDLEY**, left, and Steve Bush, right, painting turf.



▶ **PUTTING ICE** in the rolls of sod. Photo by Steve Bush.



▶ **INSTALLING SOD** and tightening the seams. Photo by Steve Bush.

When the sod arrived, we did everything we could to keep the rolls cool and in the shade, so we took advantage of Busch Stadium's gigantic ice machines. We filled Gators with ice and hauled it outside to the staging area. We then used a special scoop we built to pack ice into each of the tubes in the sod. This lowered the temperature in the middle of the rolls of sod, where they usually are prone to overheat and burn out.

By the end of the first day, we had all of the clay removed and had installed sod at home plate, the baselines and the pitcher's mound. The 1.25-inch thick sod lined up perfectly with the existing grass. The 6 mil plastic was installed under all of the sod, and the seams were sealed with tape. We had to make sure the clay beneath the sod did not get wet, as this might make the areas unstable, and make it difficult to reassemble the field after the game.

With heavy rain predicted, we covered the entire infield with tarp at the end of the day.

Everything was going smoothly, and we were on schedule.

### WHEN IT RAINS...

That night, severe thunderstorms tore through the St. Louis area. I was awake in the middle of the night, listening to the thunder and watching as it poured outside. I was glued to the weather radar on my iPad while the storm dumped 1.5 inches of rain on the field.

At that point, I wasn't terribly concerned, since we had covered the field with the infield tarp.

But when we showed up Tuesday morning, the situation was a little damper than my outlook. The strong winds that accompanied the storm had ripped the field tarp, and the first base side of the skin was full of water.

Without wasting a minute, the Cardinals' grounds crew started doing everything they could to get rid of the water and wet clay. They used pumps, squeegees, rakes, brooms, shovels and conditioner. Some of the clay had to be completely removed, as it was totally saturated, and we did not have time to wait for it to dry. Simultaneously, our crew began working on the portions of the skin that were still dry enough to work with. A pass with a laser box blade was made on everything to confirm the grade and smooth out any minor imperfections. The plastic was then laid down and taped, and sod was installed.

By afternoon, the first base side had dried enough that it could be graded and sodded as well. To ensure tight, unnoticeable seams, the thick-cut sod was pushed into place using our Sod Slider. The Slider is a hydraulic, tractor-mounted device that pushes or pulls sod into position. We developed the Slider in 2011 when we were installing more than six acres of sod at Halas Hall for the Bears. Tight seams are critical, especially in soccer, as a bad seam can have a dramatic impact on the ball roll. The sod was rolled with a 2-ton vibratory roller, and we were pleased with the smooth, even surface we had achieved.

Once the infield was completed, the entire field was mowed and turf paint applied to help blend the old sod with the new. They were nearly identical in color, but some of the new sod was stressed and had yellowed very slightly. Normally, it would grow out of it, but we only had one day to work with. All of the newly installed sod was hand-watered, so as not to get too much water on top of the plastic. Once the paint dried, the infield was covered with the tarp for the night.

First thing Wednesday morning, we sodded the corners on the warning track. We left this for very last to avoid cutting off access to the field. Once the corners were installed, the field literally extended from wall-to-wall at Busch Stadium.

The warning track material was removed and tapered away from the field. Plastic was put down, mostly to keep the sand from contaminating the warning track material. It was starting to get really hectic as they were setting up for the practice game; the band was

moving in with their equipment for the post-practice concert, and there were people everywhere. The field was mowed to establish the pattern and the signature arch.

Shortly after noon, the field still needed to be stripped. It was a group effort to get this done. Findley and his crew, our crew and Griffin (from Chelsea) set up the string lines around the perimeter of the field. Using several tape measures and triangulation, we established the goal boxes, penalty boxes and the other markings. After some minor paint machine problems the field was finally painted and the goals were installed. Once a little more field paint was applied to the sod on the warning track, the pitch was ready.

More than 10,000 fans attended the practice game that night. Despite all of the cutting and turning during the practice, the sod stayed in place and played remarkably well. The practice was as much (if not more of) a test of the field's endurance as the main game would be, as the drills concentrated the activity in the areas we had sodded. But the field withstood it all, and the night ended with the turf unscathed.

And the next day, soccer left its mark on Busch Stadium.

The final score was Manchester City - 3, Chelsea - 4, in front of a record-setting crowd. And on top of that, the teams, coaches and players were all pleased with how the field looked and played.

## BACK TO BASEBALL

Friday morning, we started the whole process in reverse as we began literally "throwing out" the first pitch. The beautiful, thick-cut sod was quickly removed, hauled out of the stadium, loaded on semis, and hauled off-site to be composted. The plastic had done a nice job of keeping the clay dry under the sod, as well as keeping it clean.

Next, the challenge was to rebuild the baseball infield so that it was firm and had smooth transitions. Once the sod was removed, the entire infield clay was lightly tilled with a Rotodairon to help the clay bond, rather than form a shear plane. As the infield material was brought in, moisture was added, it was rolled and laser graded. One thing we learned was that we should have added more moisture to the clay when taking it out.

Next, the base lines and home plate circle were filled in and leveled off. A form was set for the mound plateau, and the old clay was brought up in lifts and compacted around it. The mound was finished off with new clay on the plateau in the landing area. By the middle of the day Saturday, the field was put back together, and the warning track was cleaned up and ready for baseball.

It was an intense week, but an unmatched experience. Working with world class groundskeepers (Billy Findley and Jason Griffin) was an incredible honor, and building the first world-class soccer pitch at Busch Stadium is a project I will always remember with great pride. It was hard work, and had its challenges. But someday, I'll be telling my grandchildren I got to do the first pitch at Busch Stadium, and that is priceless. ■

*Steve Bush, CSFM, CFB (Certified Field Builder) is an agronomist and president of Bush Sports Turf.*



▲ **Top: REMOVING** the thick cut sod. Photo by Steve Bush. **Above Left: LASER GRADING** and leveling the baselines. Photo by Steve Bush. **Above Right: A soccer pitch** in a baseball cathedral, Busch Stadium in St. Louis. Photo by Steve Bush.

## The Best Dressed Sports Fields Start Out In Our Hands.



Major League Baseball. National Football League. Major college programs. High School teams. America's leading sports fields use America's best field marking paints and custom stencils. When great teams choose to decorate their fields, they turn to World Class.

**WORLD CLASS**  
athleticsurfaces

We Make The Games Look Better • [www.worldclasspaints.com](http://www.worldclasspaints.com) • 1-800-748-9649

# SPORTS AND SCIENCE

## – Sixth-Graders, Marbles and Potato Chips



**O**N AN AFTERNOON last April, 45 sixth-graders who are keen on athletics but maybe not so much keen on science arrived on the Auburn University campus as participants in the first-ever “Sports and Science” program, produced by the Auburn University Athletics Department and the academic departments of Agronomy and Soils and Kinesiology. This after-school outreach event was designed to introduce youngsters to the possibilities of careers in which they could combine their love of sports with science. From all indications, it achieved its purpose.

Sports and Science was held on a day when Auburn Athletics’ indoor football practice facility was available and when a number of Auburn student-athletes would be around to help with the event

as part of National Student-Athlete Day, one in which high school and college student-athletes nationwide are celebrated for achieving excellence in the classroom, on the field and in their schools and communities. For the 2-hour event, faculty and graduate students in the agronomy and soils department’s turfgrass program and in kinesiology and members of Athletics’ Sports Medicine staff developed three educational activities designed to show youngsters some of the possible scientific careers related to sports.

- Kinesiology faculty used their state-of-the-art imaging systems to let students analyze and track their athletic motion, using that as a starting point to talk about careers in injury rehabilitation, sports medicine and exercise science.

- Auburn Athletics’ Sports Medicine staff showed youngsters how to wrap pre-

tend injuries and how to wrap to prevent sports injuries and in the process introduced participants to careers in nutrition, physical therapy and athletic training.

- Our turfgrass team, stationed on the outdoor practice field, packed several activities into each 20-minute lesson. We talked about field construction; used potato chips and marbles to illustrate the concepts of soil compaction; helped students take horizontal slices of soil and turf from the field to see the layering of sand and root development in the field; and showed them how to use

---

Every participant received a special Sports and Science T-Shirt that sported the Sports and Science logo and the Auburn Athletics Department’s sponsorship.

---

turfgrass measurement devices such as Clegg Hammers and torque meters. Students then got a special treat as a member of Auburn’s athletic field maintenance staff, an Auburn agronomy alumnus, fired up the core aerator and made a pass across the practice field. Students then found the aerator holes and inserted dowel rods into them to measure the depth of the aeration.

The activities began at 4 pm as parents dropped students off at the Athletic Complex. Auburn Director of Athletics Jay Jacobs and a couple of Auburn student-athletes welcomed the group, and then the students were separated into three groups of 15. From 4:15 to 5:15, the groups rotated among the three different 20-minute activities. Student-athletes spent the next 15 minutes running relays with the youngsters, and at 5:30 pm, organizers served the kids pizza and handed out goodie bags.

Every participant received a special Sports and Science T-Shirt that sported the Sports and Science logo and the Auburn Athletics Department's sponsorship.

The day was a success. The students were interested and active, and they asked a ton of great questions. Since the participating sixth-graders were all selected from our local middle school, we got excellent feedback in the days after the event, and many teachers at the school said their students talked about the fun they had and how they learned about new careers in sports science.

### THE HOW-TOS

So how do you put together an event like this at your school?

- Get everyone on board. This event never would have been a success without the combined and creative efforts of faculty, the staff of the Auburn Athletics Department and a great number of both student-athletes and graduate students in the respective disciplines.

- Have small numbers and lots of things to do. Sixth-graders do not want a lecture; they want to run and pound big things into small things. When we told them to compact the potato chips (our field soil), those potato chips were *compacted*. We recommend one college student to every two to three sixth-graders. This keeps it personal, fun and the students engaged.

Use your students. Our student-athletes helped us move the groups from place to place, and they organized and ran all the games at the end of the education sessions. The graduate students helped to teach each education session, and they made sure each student was actively involved and not wandering around.

- If in doubt, *run*. Any time things got slow, we just told the students to run to the other side of the field and then come back. The chance to run on a pristine, immaculate and green athletic field (or the indoor practice facility) is such an event for a kid. It's just really fun!

- Pizza and a T-shirt seal the deal—especially when that T-shirt is clearly special, was made specifically for this event and advertises that the student attended an event at a major university athletic facility.

### THE NITTY GRITTY

Based on our experience, following are some important details to consider when planning such an event:

- Have the legal experts craft the safety forms that parents must sign for liability issues.
- Work with your schools to get the right kids. We focused on students who were interested in athletics but perhaps didn't show that 'science spark' in the classroom. Teachers helped to identify the right kids, and three teachers came along for the afternoon.

- Get everything organized, and have a detailed timeline. Use a boat safety horn to signal when it is time to change groups. Always keep things moving along.

- Make sure the parents have all the correct information, including drop-off and pickup locations and times. Be sure, too, that parents leave emergency contact information



Thanks to the generosity of the Auburn Athletics Department, the entire event cost \$2,200. This included pizza, water bottles and sports drinks and T-shirts for all. ■

*For more information contact Elizabeth Guertal, guertea@auburn.edu. Dr. Guertal is a professor in the College of Agriculture at Auburn University.*

# Turf Maintenance Revolution



**Campey  
imants**  
Perfecting Play



• New Universe® & Terraplane® rotors available for Koro FTM



• Total clean out of warm season grasses with the new Universe® Rotor



**Recycling Dresser**



**Shockwave**



**Rotoknife**



**Line Marker**



Email us at: [info@campeyturfcare.com](mailto:info@campeyturfcare.com)  
or [info@imants.com](mailto:info@imants.com)

Visit our websites [www.campeyturfcare.com](http://www.campeyturfcare.com)  
or [www.imants.com](http://www.imants.com) or [www.campeyimants.com](http://www.campeyimants.com)



# Concept to active practice: frazze mowing bermudagrass makes debut

**Challenge:** Thatch/organic build-up on bermudagrass athletic fields.

**Issues challenge is causing:** Reduced durability, including plants growing vertical up through the thatch instead of laterally so it is not as strong and healthy as needed; and thatch breaking down into organic material is full of fines, creating surface compaction and slickness.

- Isolated dry spots due to inconsistent rooting
- Increased water requirement for ryegrass overseeding (seed is growing in thatch instead of in the soil)
- Decreasing ryegrass overseeding durability (seed is growing in thatch instead of soil)

**Concept solution:** Frazze mow to clean out thatch completely. Thatch management on bermudagrass is an on-going challenge

for sports field managers. Advancements in breeding to create more aggressive bermudagrass varieties create a solution for high traffic fields. But conversely, vigorous growth compounds the challenge of maintaining thatch and organic material build up.

Verticutting, core aeration, and topdressing are the accepted maintenance practices with which sports field managers address thatch and organic material build up on all grass fields (cool or warm season). According to data from the International Sports Turf Research Center, a verticutting machine with 3mm blades on 1" centers removes 11.81% of the surface area. Core aeration with 5/8" hollow tines on 2"x 2" spacing removes 7.67%. Thus ultimately verticutting and core aeration can not keep with maintaining the current thatch levels, let alone reduce the amount of thatch and

organic build up taking place on top of a bermudagrass athletic field.

## INTRODUCTION TO FRAZZE MOWING

In 1996, Ko Rodenburg decided that the practices of verticutting, core aeration, and topdressing for thatch and organic management on his Kentucky bluegrass and rye fields needed another option. As

---

With overseeding and feeding the fields, the grass could regenerate quickly, nearly thatch and organic free.



▲ **Left:** Fraze mowing process **Middle:** Rhizomes exposed after rye, thatch, and organic removal **Right Top:** First mowing, 2 weeks after fraze mowing **Right Bottom:** Field 6 weeks after fraze mowing

the parks superintendent for Rotterdam, Netherlands, Rodenburg created a machine that could remove 100% of the thatch and organic build up that accumulated each season. At the same time, the machine removed the *poa annua* plants and seed accumulation while leaving the crown of the Kentucky bluegrass and rye grass for regeneration. With overseeding and feeding the fields, the grass could regenerate quickly, nearly thatch and organic free. Rodenburg's fields immediately became stronger and more durable as the re-growth of the stand was much harder than the original sword of grass. Additionally, the compaction potential at the surface was reduced because the fines from the organic build up were cleaned out and the disease pressure was nearly eliminated with the thatch removal of the thatch. Thus in 1997, fraze mowing with the KORO Field Topmaker was born.

The adaptation of fraze mowing to bermudagrass is more an introduction of the entire concept to the United States. A

practice common on fields across Europe to improve field durability and reduce *poa annua*, fraze mowing fits naturally into bermudagrass thatch and organic management. That adaptation became even more natural this year with the introduction of the Universe rotor for the KORO Field Topmaker. The Universe, designed by Imants (makers of KORO) and Campey Turf Care (of Manchester, UK), is for fraze mowing Desso sand-based natural grass fields. The 3/8" blades, aligned on four spirals, allow for Desso fields to be fraze mowed without damaging or pulling out the synthetic fibers in the sand. The small teeth do the same for bermudagrass plants, cleaning off the stolons, thatch, organic build up, and leaving the rhizomes of the bermuda exposed in order to regenerate quickly.

Allen Reid and Miles Studhalter at FC Dallas Park became the first Americans to commit to fraze mowing entire fields (frazed when referencing bermudagrass) to clean out ryegrass overseeding, thatch, and or-

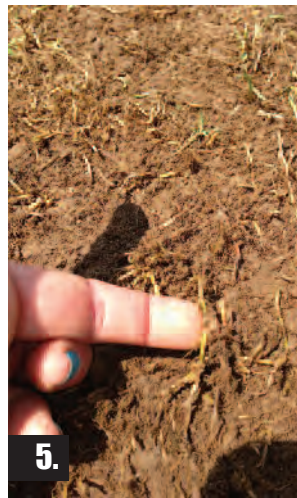
ganic build up on three fields. In mid-March, Simon Gumbril from Campey Turf Care was on hand in Dallas to oversee the process. Also, Joe Pemberton, head groundsman at Manchester United's Carrington Training Ground stopped in to FC Dallas Park to observe while in the USA on a vacation.

The 419 bermudagrass was still 95% dormant in March, but a few of the rhizomes were showing some green in the fields as they were cleaned off. See photo 1-6 for the results.

The highlight field, the FC Dallas training field, was out of play for 8 weeks, though the field was ready for play in 7 weeks. The unseasonably cold spring in the Dallas area hampered the re-growth by slowing the 419 bermuda's exit from dormancy, extending the re-generation period by approximately 2 weeks. But still, the process succeeded. According to Reid, "The first day Coach walked back on the pitch he said, 'the field feels strong.' Now after 2 months of daily training, the field has been



- 1. THATCH/ORGANIC** build-up, June 2012
- 2. THATCH/ORGANIC** build-up, July 2013 (reduced by 1 inch)
- 3. FRAZE MOWING** Patriot bermudagrass
- 4. GREEN RHIZOMES** prepared to re-generate from Celebration bermuda
- 5. GREEN RHIZOMES** exposed from fraze mowing
- 6. THATCH BUILD-UP** removed from Celebration bermudagrass
- 7. EXPOSED RHIZOMES** following clean out via fraze mowing



lightly verticut one time to stay ahead of the thatch, and is showing little to no wear.”

Fraze mowing next used when Maryland SoccerPlex Grounds staff cleaned off three fields of Patriot bermudagrass in early June. Because the fields were sprigged only 18 months ago, the processes was intended to transition out the ryegrass and promote a quicker transition to full bermudagrass instead of cleaning out years of thatch and organic build up. The Patriot bermudagrass was 30% out of dormancy when cleaned off, but within 10 days all of the exposed rhizomes were green and responding. A lack of warm weather was again an obstacle for the SoccerPlex fields, but not to the extent of Dallas. See photos 7-9 for results.

The three SoccerPlex fields that were cleaned off were 100% bermudagrass immediately. The non-fraze mowed bermudagrass fields still were only 80% bermuda (rye being the other 25%) on July 1. Additionally, the removal of only a thin layer of organic build up on top of the native soil fields now allows water to be absorbed into the soil faster. Following heavy rains, the fraze mowed fields now soaking in rain much faster than before, allow the fields to be used more.

Also in June, a golf course fairway of Celebration bermudagrass in North Carolina was fraze mowed to demonstrate the process on active, fully growing bermudagrass. The Celebration had begun to build up a thick thatch layer that needed cleaned out (see photos 10-12).

Fraze mowing is a new process to the United States turfgrass market. Yet many intuitive sports turf managers have always



► **FIELD 12** following fraze mowing compared to 5 weeks later

used similar techniques such as scalping, shallow sod cutting, and even burning off to remove thatch build-ups. Now those are brought into one practice. The process is a vastly different approach to thatch management. It is a practice is not for the faint of heart and can leave a sports turf manager questioning whether they should have done it or not for the 1st week. But ultimately, the strong grass will prevail.

Albert Einstein said it best: “If you always do what you have always done, you will always get what you have always got.” Can fraze mowing bermudagrass become an accepted practice in a regular maintenance program to advance the durability of fields for them to sustain more traffic? That is now up to the industry to decide. For more on fraze mowing bermudagrass, see Jerad Minnick’s blog, <http://GrowingGreenGrass.Net>. ■

*Jerad Minnick is sports turf manager of the Maryland SoccerPlex at the Maryland Soccer Foundation, Boyds, MD. Allen Reed is stadium groundsman for FC Dallas.*



# SportsTurf

Subscribe today to choose the version that  
**FITS YOUR LIFESTYLE**



- Available one week prior to the print version
- **BONUS:** Expanded content
- Page for page replica of the print version
- Read content instantly – no downloading required
- Hot links to advertisers websites
- Save a Tree – every page you read online is one that didn't go through the paper mill.

Digital issue not for you?

**You can subscribe to either version**  
– simply click on the link below  
to claim your **FREE 1-year subscription**



• iPad • Mobile • Print  
[www.sportsturfonline.com/subscribe](http://www.sportsturfonline.com/subscribe)

# Dealing with grubs: latest recommendations

**Editor's note:** We asked two noted academicians, Dr. David Shetlar, professor of entomology at Ohio State, and Dr. Benjamin McGraw, associate professor, golf & plant sciences at the State University of New York-Delhi, to update us on treating grub problems:

**SportsTurf:** How will turf managers first recognize they have a grub problem?

**Dr. Shetlar:** Most professional managers will notice that the turf under their care is not performing well or is showing signs of drought stress at times when soil moistures are okay. However, inexperienced managers miss grub populations until the birds or digging animals “show” where the grubs are! Unfortunately, by this time, the grubs are often third instars and pretty difficult to control with inexpensive products. At this time, one may have to use Dylox or Arena and ensure that immediate irrigation follows the application.

**Dr. McGraw:** Probably more often than not, most turf managers recognize they have a problem once they have some serious damage signs. Vertebrates like skunks poking around, raccoons rolling back the turf or birds pecking at the turf are all good signs of grub activity. This is more likely to be late in the fall and when grubs are fairly large and capable of causing some damage on their own (i.e., feeding on the roots of the plant).

Astute turf managers would probably cue into a general wilted-or yellowing appearance to the turf in earlier in the fall, and follow this observation up with some sort of soil probing (taking a golf course cup cutter to a section of turf and looking for the actual culprits is in my opinion a easy way to confirm grub presence). Given the workload of sports turf managers, especially those that have many schedule games and activities on fields in late summer to early fall, proactively sampling large areas with a cup cutter is probably not feasible. Restrict-

ing sampling to where grubs have been a problem in the past and in high-valued areas is a more realistic approach.

**ST:** What steps do you recommend to eradicate the problem?

**Dr. McGraw:** Preventive insecticides are still the number one go to method of control. When neonicotinoids like imidacloprid (Merit) came on the market it revolutionized how we treat for grubs. Before, turf managers had to applied harsher chemicals curatively or after the infestation had been realized. With products like imidacloprid and newer classes like the anthranilic diamides (Acelepryn), applying preventively before egg hatch leads to greater levels of control, since you are delivering a toxin to a much smaller insect (1st instar larva vs. a 3rd instar). That being said, eradication is not really possible even with chemical controls. Adult beetles are capable of travelling great distances to find your adequately watered soils to lay their eggs in. Even with great control in Year 1, some adult beetles will wander in Year 2 from neighboring sites.

**Dr. Shetlar:** Late season grub issues fall into what I call “rescue treatments.” This is an extreme form of curative treatment because the large grubs can be 30 to 40 times the body weight of the grub that hatched out of the egg! Another issue is that the grubs often stop feeding once they have achieved their maximum size for the season.

I often talk to Dan Potter in Kentucky in September and he points out that his Japanese beetle and masked chafer grubs have turned a yellow white color which in-

I think that, especially on sports fields, we can minimize the effects of white grub damage substantially by developing a healthy turf stand

— Dr. McGraw

