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The Madison, WI location used a pull-behind cart of water-filled drums with golf cart tires to impose traffic stress. This led to excellent cultivars differences, led by 'SW AG 514', 'Harmonie', 'Sombrero', 'Greenteam' and 'Dynamo'.

Compaction was applied to the Rutgers trial on May 6, and percent ground cover was rated 8, 22 and 49 days after the compaction and wear treatments. 'Greenteam' had the highest canopy fullness ratings eight days after traffic, with 'BAR VV 0709' having the highest canopy fullness ratings 22 and 49 days after treatment.

Traffic tolerance was also evaluated at East Lansing, MI in 2010. Michigan saw much damage from the traffic, applied in fall 2009 and again in late summer 2010, using the Brinkman simulator, which compacts the soil as well as causing plant shearing. Cultivar separation as shown in overall turf quality ratings was not that large, with just over one-half of the entries performing statistically equivalent to the top entry, 'BAR VV 0709'. However, as in the Rutgers trial, 'BAR VV 0709' exhibited outstanding traffic tolerance by finishing with the highest percent ground cover in five of seven rating dates. Entries also showing high percent cover ratings on one or more dates include 'Skye', 'Washington' and 'Washington II'.

The Madison, WI location used a pull-behind cart of water-filled drums with golf cart tires to impose traffic stress. This led to excellent cultivars differences, led by 'SW AG 514', 'Harmonie', 'Sombrero', 'Greenteam' and 'Dynamo'. Interestingly, most of the traffic tolerant grasses were also the best performers where no traffic was applied.

Poa annua is a weed problem in Kentucky bluegrass, particularly on athletic turf. Cultivars that can withstand *Poa annua* are valued by sports turf managers, golf course superintendents and lawn care operators in northern states. After 5 years, plots are often damaged or thinned such that *Poa* can invade. In 2010, two trial locations were able to rate percentage *Poa* invasion. In both Amherst, MA and Madison, WI, the range of ratings was quite large, from 0.3 – 33.3% *Poa* (LSD=15.9) at Amherst and from 2.3 – 81.7% *Poa* (LSD=23.8) in Madison. 'CPP 822' and 'Washington II' had the least *Poa annua* in Amherst and 'Harmonie' had the smallest percentage of *Poa* in Madison.

TALL FESCUE

This is the fourth year of data collected on the current NTEP tall fescue trial. This is a large trial with 113 entries established in 2006. Year one data typically reflects establishment rate, year two data usually reflects broader cultivar performance, while years three and four often allows us to determine if trends seen in year two are still viable.

Tolerance to stresses, such as traffic, shade, drought and saline irrigation, are being evaluated by NTEP in this tall fescue trial. Intensive traffic is applied, suing the "Slapper" on the tall fescue trial at North Brunswick, NJ. Wear and compaction were applied in July, with

Continued from page 10

simulating the scuffing damage that occurs on a golf course putting green.

A new machine, recently developed by Rutgers University and nicknamed the "Slapper," modifies a Toro Sweepster unit by replacing the wire brush with rubber "fingers," or paddles from a potato harvester. The Slapper bruises and damages leaf tissue (simulating wear only), therefore a roller must be used along with the Slapper to provide compaction stress. Each of these units, and others that have been developed, play a different role in simulating and evaluating traffic tolerance.

>> THE "SLAPPER" developed by Rutgers.

Testing procedures

NTEP trials are established at university locations and evaluated for 4-5 years. Species such as Kentucky bluegrass, perennial ryegrass and bermudagrass have been tested by NTEP for more than 25 years. Each new trial includes recently developed cultivars, experimental entries that may become commercialized, and well-known standard cultivars. With each trial, NTEP and an industry advisory committee develops testing protocols and important characteristics to be evaluated. Trials are established at locations that are important use areas for that species, or where a disease, insect or other problem is prevalent, such that NTEP can adequately evaluate the test entries for that problem. Also, NTEP establishes tests where particular stresses can be evaluated, i.e. a location that can impose simulated traffic, saline irrigation or consistent drought stress.

Evaluation procedures are developed for each of the traits, in some cases these procedures are very detailed. For instance, when testing traffic tolerance, we must consider the species being tested, its typical use patterns, the region of the country, the traffic simulation equipment available and other factors. Only then can NTEP decide how and when to impose simulated traffic and the best data collection procedures and timing for that trial. ■


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TOP TALL FESCUES FOR SELECTED TRAITS, 2010 NTEP TRIAL DATA

Traffic Tolerance “N. Brunswick, NJ”	Saline Irrigation “Las Cruces, NM”	Brown Patch Tolerance Three location average
Bullseye	AST 1001	3rd Millennium SRP
Cannavaro	AST 7003	Bullseye
Catalyst	AST 9001	Cannavaro
Cochise IV	AST 9002	Catalyst
Essential	BAR FA 6363	Cochise IV
Faith	Falcon IV	Hemi
Falcon V	Gazelle II	JT-36
Firecracker LS	Justice	Mustang 4
Hemi	Pedigree	PSG-85QR
LS 1200	RNP	RK 4
Rhambler SRP	Sidewinder	Sidewinder
RK 4	Spyder LS	Talladega
RK 5	STR 86PQR	Titanium LS
Shenandoah Elite	Tulsa Time	Turbo
Shenandoah III	Xtremegreen	Wolfpack II

“NOTE: Tall fescues are listed aphabetically and are either the top 15 entries for that year/location, or all of the entries“ in the top statistical grouping. Numbered entries are often still experimental and not yet commercially available.

“N. Brunswick, NJ - Wear was applied July 20th. The rankings are based on turf quality collected 83 days after wear.”

“Las Cruces, NM - the saline irrigation water used had a Sodium Adsorption Ratio (SAR) of 5.41.”

“Brown patch was rated at W. Lafayette, IN, Adelphia, NJ and Virginia Beach, VA.”

turf quality and percent canopy fullness rated multiple times. When considering the final turf quality rating, many of the top performing entries from last year finished in the top statistical group in 2010, 83 days after traffic was applied. ‘LS 1200’ finished with the highest quality score at the 83 day mark with sixteen other entries in the top statistical group. Entries such as ‘Traverse’, ‘Bullseye’, ‘Faith’, ‘RK 5’, and ‘Cannavaro’ were again in the top turf quality statistical group 83 days after traffic, however, only ‘LS 1200’ and ‘Falcon V’ completely recovered their canopy fullness by 83 days after traffic to pre-traffic fullness levels.

Data from 2010, unlike the past 2 years, exhibited larger performance differences in tall fescue entries for salinity tolerance at the Las Cruces, NM location. In particular, where potable vs. saline irrigation (SAR=5.41) were compared, there was 1) more cultivar separation when using saline irrigation, and 2) cultivar performance varied under the two irrigation regimes. For instance, of the top twelve entries for turf quality under saline irrigation, only three (‘LS 1010’, ‘Gazelle II’ and ‘Xtremegreen’) were in the top twelve when using potable water. The top entry in the saline irrigation trial, ‘Justice’, ranked significantly lower under potable irrigation, although it was not statistically significant. And one entry, ‘Sidewinder’ had the second lowest turf quality score under potable irrigation but finished in the top dozen entries under saline irrigation.

As tall fescue use increases in the northern tier states, so do problems such as *Poa*. Our trial in Puyallup, WA has evaluated *Poa annua* invasion for the last several years, and has documented the increasing percentage of *Poa*. In 2009, poa invasion, evaluated in September, varied in entries from a low of 15% for ‘3rd Millenium SRP’ to 73.3% for ‘Ky-31’. In 2010, the Puyallup site rated *Poa* four times and the percentage overall increased from last year. ‘3rd Millenium SRP’ again performed well, with some of the lowest overall *Poa* invasion scores (46.7 – 60.0%). ‘Essential’, ‘Shenandoah Elite’ and ‘LS 1200’ each had the lowest percentage of *Poa* on one rating date, while ‘Catalyst’, ‘SR 8650’ and ‘Hemi’ tied ‘Shenandoah Elite’ and ‘Essential’ for low percentage (43.3) on one date. The percentage of *Poa* in northern tier trials is most likely a reflection of density differences, damage from cool weather diseases, and possibly winter injury. A reduction in growth during cooler temperatures may also play a part in *Poa annua* invasion.

PERENNIAL RYEGRASS

Perennial ryegrasses are a mainstay in many athletic field situations, because of positive attributes such as fast germination, better establishment under low and high temperatures and traffic tolerance. Our latest perennial ryegrass trial was planted in

Continued on page 34

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By Marcus Dean, CSFM

Building a better pitch at the University of Kentucky

THE FALL OF 2009 in Lexington was the straw that broke the camel's back. The University of Kentucky decided that something had to be done to create a safer, better draining field for our two soccer programs. By no means was it our wettest fall, though Lexington received 16.23 inches of rain during the soccer season (August 1-November 15), which is almost 5 inches above average rain fall for that time. The wettest soccer season was 2006 when we received 21.82 inches of rain, 10.43 inches above our average for that time of year.

Our existing game soccer field was built in 1996 as a modified native soil field. The soil was very inconsistent, some nice growing medium in spots and some native clay in others. You could really spot the inconsistency in the soil, especially when you aerified and pulled cores. The field was crowned with a 1% slope from mid field to each sideline, plus we had internal drain lines. Most of the drain lines were capped off by the native soil as soon as they were installed in 1996.

After the 2006 season, we started to implement a deep tine aerification into our maintenance schedule. We did this hoping to shatter our hard pan that existed about 4 inches below the surface. Deep tining definitely benefited us some, how much I can't really put a figure on. I think it benefited the root system more than promoting drainage. We had a stronger, deeper rooted grass that would wear better but did not improve drainage that dramatically.

The rain fall for the soccer season in Lexington has been feast or famine the past 6 years. Three years we were in drought conditions for the year, two years we were over flowing with rain fall, and only once (yes once) did we come anywhere close to the average rain fall for the soccer season. It should be noted that for the soccer season of 2010 we received 2.8 inches of rain, 8.6 below average. It would only be fitting that once the money was approved for the project the problem went away.

So, we started to discuss all of our options and came up with a plan. We had to build a sand-based soccer field with internal drainage to handle the wettest possible scenarios. The last few field improvement projects at UK had been sand-capped systems and been handled as a "design/build" with the sports field contractors. These new field upgrades have performed very well for us, greatly increasing our drainage and reducing the construction cost compared to a USGA spec sand-based field.

In planning for this renovation we looked back at our most recent field upgrades and highlighted items that we liked and made note of what we didn't like. We knew we had only one shot to get this field right, we didn't have any mulligans. We asked our head coaches for their opinions (better drainage was the only thing they cared about) to get them involved and to make sure they would be happy with the final product. Our next step was to research some new ideas and trends in sports field construction in an attempt to combine our old ideas with the latest and greatest in the athletic field construction business.

The only reason for renovation was to improve drainage. We spent the most time trying to focus all of our attention on improving this. We knew that if we built a field that didn't drain and meet the coaches expectations, our efforts would be a failure. We took our best draining field and copied that design. We chose to specify a drainage system using 4-inch perforated pipe on 20-foot centers in a herring bone pattern. The sand selected for the project will be supplied by Nugent Sand, a Kentucky company and supplier of the sand used for the practice football fields in 2005. While the available sand is slightly coarser than the sand used for the 2005 project, it not only meets, but also exceeds the infiltration rate we established as a requirement in the RFP.

When we started to layout our irrigation design, we turned to all of our employees for their thoughts. No one knows what needs to be improved like the internal employees. We took every possible suggestion (zone layout, quick couplers, valve placement and depth, valve boxes, etc.) and made that a specification in our Request For Purchase (RFP). Water shortage is not (currently) a problem in Lexington but we knew we needed a system that could maximize our output with as little as possible input. We wanted to be the leader in environmental stewardship and water management for the Bluegrass area.

After much conversation with fellow turf managers and a few irrigation companies, we settled on a Baseline 3200 smart controller system. Baseline offered us the most bang for our buck; easiest to use, ability to expand and include our existing controllers, flow monitoring, history backup , easy secure accessibility, and most importantly reduction in water usage.

The grass selection was a little bit more complicated. We have been growing Tifway 419 bermudagrass in Lexington successfully for the past 6 years. When researching new grasses, we were looking for a grass that wore like 419, greened up early in April, could withstand summer traffic, and be an aggressive grower. There are some newer varieties out there, seeded and vegetative, that promise a lot for the transition zone. To make this decision easier again we consulted with fellow sports turf managers and sod farms. The new varieties got a lot of praise, lots of positives but some negatives too. Knowing we only had one shot to make this right we chose to stick with the Tifway 419 bermuda, the "if it is not broke, don't fix it" mentality.

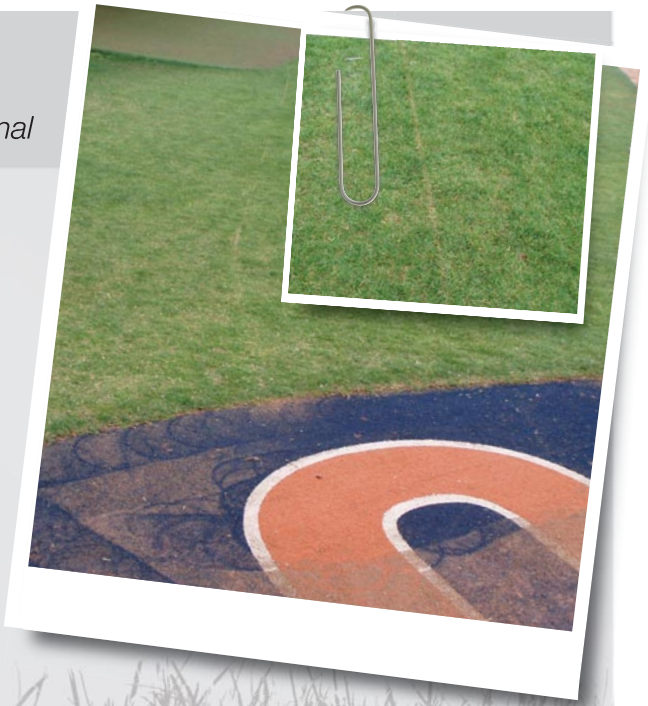
We chose to specify sod instead of sprigs; we will have an instant field. All we have to do is get the roots established and manage the sod layer. We have previously sprigged 419 here and it took about 10 weeks for it to grow

JOHN MASCARO'S PHOTO QUIZ

John Mascaro is President of Turf-Tec International

Can you identify this sports turf problem?

Problem: Brown line on turf
Turfgrass area: College softball stadium field
Location: Tyler, TX
Grass Variety: Tifway 419 overseeded with perennial rye



Answer to John Mascaro's Photo Quiz on Page 33

Background illustration courtesy of istockphoto.com in. We didn't think we would have 10 weeks to get it established from sprigs, we went with the safest avenue and the grass that would provide us the best playing surface.

Getting all of our thoughts on paper was easy; the hard part was putting it in politically correct format for the University to put the RFP together. It took a couple of drafts before I had everything covered and in the correct language. Working for a public university has a lot of paperwork and hoops to jump through to make sure everything is legal. In October of 2010, we felt the RFP was completed and ready to go out for bid. A requirement of the RFP was that the design/build team includes a sports field designer, agronomist and soil scientist, a Kentucky licensed engineer, an irrigation designer and a sports field contractor with prior soccer field experience. After many meetings, interviews, and revisions we awarded Vescio SportsFields the project. Their design/build team consisted of: Dr. AJ Powell, Chuck Dixon, Bucky Trotter, LandTec and GRW Engineering as well as the Sports Fields staff.

SportsFields used a local excavation contractor to remove the existing surface about 10 inches deep to establish a sub grade. The subcontractor used dozers, excavators, pans, and a road grader to remove all the existing material. Once the sub grade was established, the irrigation work began by trenching in the lines. We were ready to "proof roll" the sub grade to get certification from the geotechnical engineer and ran into some isolated unstable areas on the field (about 9,000 sq. ft. or less than 10% of the entire project).

By the way, we had multiple geotechnical borings pulled from the field in the summer of 2010. Sometimes, no matter how much prevention and prior planning goes into a project, you can't predict all the problems you will run into. Once the stabilization problem was remediated, SportsFields could begin laser grading of the sub base and installation of the drainage system. We currently are finishing the drainage stage and are bringing in sand {July 15, 2011]. If everything goes well, the project will be complete as the article comes hot off of the press.

In fitting fashion, once construction began, we experienced the wettest spring on record in Lexington (we have received 93% of our yearly rainfall in the first 6.25 months of the year). We have all seen evidence of this with the record flooding in the Midwest. This has affected the construction timeline and made securing enough sand difficult. Our sand source, Nugent Sand, has experienced record flooding in their dredging pits. Our sod supplier, Pike Creek Turf, is on the opposite end of the spectrum; experiencing a lack of rainfall.

The entire project process from creating the RFP and interviewing and selecting a design/build contractor through construction has been an interesting one. With careful planning and by performing our due diligence I believe that we have been able to deal with the hiccups of excessively inclement weather and unknown existing conditions and will end up with a game soccer field that will serve us well for years to come. ■

Marcus Dean, CSFM is the assistant sports turf manager for the University of Kentucky.

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>> Left: **HEAVILY TRAFFICKED AREAS** like where children wait for school buses should be a top priority for fire ant control. For more info on fire ant control in schools, visit www.fire-ants101.com.

>> Inset: **"WORKED" SOIL,** aggressive behavior and hundreds of reddish ants is a sure sign.

Fighting FIRE ANTS in sports turf

Editor's note: *This article was written by Stacey Himes of Clayton | Himes PR, Ambler, PA.*

FIRE ANTS may be coming to a field near you.

Traditionally thought of as a southern pest, fire ants are slowly moving up both coasts, reaching as far as Oregon and Maryland. If you start to find mounds of "worked soil" on your turf, add fire ants to the list of what keeps you up at night.

Fire ant stings can cause severe allergic reactions, some even life threatening, in about 1% of the population. Fire ants are aggressive and at times deceptive; what looks like a small mound can extend as much as ten feet underground. Each mound can contain up to 100,000 ants that will boil up to the surface when disturbed.

For Craig Dennie, pest control supervisor at the Dallas Independent School District, fire ants on athletic fields are a constant challenge. However, through careful monitoring and inspection, he and his 5-person team have managed to significantly reduce fire ant populations, while also reducing pesticide costs (overall by 45%).

Dennie's proactive fire ant strategy is part of his department's overall commitment to integrated pest management (IPM) principles. It's been a mindset change for the district, which was used to the days when technicians "would spray on a whim." Now, techniques like trapping, exclusions and setting thresholds are ensuring pesticide applications are made only when necessary.

Here, Dennie shares how he controls fire ants on athletic fields and beyond:

Identify. In manicured sports turf, fire ants can be easier to spot than in regular turf. Fire ant mounds look like worked soil, and can be a few inches to a few feet across. Unlike native ant species there is no opening at the top; fire ants enter and exit through underground tunnels.

Fire ants prefer to build nests around goal posts, near bleachers, along dugouts, in sidewalk cracks, and near HVAC equipment. Even if a playing field is clean, check those areas as well.

The ants themselves are about a quarter to a half-inch long, red to reddish brown, and not uniform in size. Another key trait is their aggressive nature. Unlike native ants, fire ants will run quickly up vertical objects like poles, rakes and legs.

Inspect. For Dennie, who has 253 campuses to cover, daily inspections aren't possible. He or his technicians try to inspect each field at least every 2-3 weeks during playing seasons. They walk a sufficient amount of the field themselves but also encourage staff and teachers to report any new ant activity.

Fire ants are more active in the summer, when temperatures are between 72 and 96 degrees. In very hot temperatures, they tend to stay underground near water sources. After rains, they emerge to forage for food—and that's when you'll find mounds being built.

"If it's been hot and dry for a while and then we see at least a quarter inch of rain, we will have mounds pop up, almost overnight," says Dennie. "And down here, we're not talking just one mound, we might see fifty."

Establish thresholds. Thresholds are the cornerstone of IPM, but they can be difficult to implement, especially when dealing with fire ants. Pressure from teachers and parents can be a factor, too.

"With fire ants there is a health threat so thresholds may be lower than with other pests like beetles," says Dennie. "The important thing is to establish guidelines in advance with your team, and then try to adhere to these guidelines from day to day."

>> **CRAIG DENNIE**, pest control supervisor and IPM coordinator for the Dallas Independent School District, and technician Kevin Rogers treat a fire ant mound at the district's Environmental Center.