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T ANY ONE TIME, the National Turfgrass Evaluation Program (NTEP) is evaluating more than 600 cultivars and experimental selection in nationwide tests. Data collected and summarized from these trials can be found on our website, www.ntep.org. Our data is also published on a CD, in exactly the same format as the NTEP website, which can be purchased.

NTEP collects data on overall turfgrass quality, appearance characteristics like color and texture, disease and cold tolerance and many other traits. In recent years, however, NTEP has focused more on testing specific performance traits, such as traffic tolerance and saline irrigation performance. This article provides insight on NTEP testing and an update on improved cultivars of the most commonly used species for athletic fields.

2010 CULTIVAR UPDATE

The following is an overview of the latest traffic tolerance and other pertinent information on commercially available and experimental cultivars of the four main species used on athletic fields - Kentucky bluegrass, perennial ryegrass, tall fescue and bermudagrass.

KENTUCKY BLUEGRASS

This year we have data from the fifth and final year of the 2005 Kentucky Bluegrass Test. Since bluegrasses may take several years to develop significant levels of thatch and disease, the fourth and particularly the fifth year of a bluegrass trial can yield interesting results. We have witnessed this phenomenon with 2010 data, as disease, drought and heat have taken their toll on these grasses. Therefore, 2010 data is very useful for understanding how these grasses withstand these stresses. We advise that you investigate closely this fifth year of data, which is available on the NTEP web site, as well as the 5-year final summary report, which will be available later this year.

For those field managers that irrigate with salty water, salinity tolerance evaluations are now in the fifth year at the Las Cruces, NM site. The site irrigates
the 2005 NTEP Kentucky bluegrass trial with saline water (Sodium Adsorption Ratio (SAR) = 2.06 in 2010). In previous years, this moderately low saline level did not produce large cultivar separation. In 2010 however, much great entry separation was noted with ‘Hampton’ leading the way. Other entries in the top statistical group include, ‘Gladstone’, ‘Barrister’ and ‘Emblem’, and five other entries.

Traffic tolerance was evaluated at three locations in 2010, using different types of traffic simulators. The North Brunswick, NJ location (Rutgers University) applied traffic in May 2010, nine months after the last traffic ‘season’, using the “Slapper,” which causes leaf abrasions but not soil compaction. The entries that rated 6.0 or higher (scale is 1-9; 9=best) after the May simulation include ‘Greenteam’, ‘BAR VV 0709’, ‘Bariris’, ‘BAR VV 9630’, ‘Sombrero’, ‘Emblem’ and ‘Julia’. Canopy fullness, expressed as a percentage, was evaluated after the initial 36 passes of wear on May 6th. All of the above entries plus ‘CPP 822’ and ‘Barduke’ had the highest canopy fullness ratings (51.7 to 71.7%).

Other simulators have been developed that either offer variations on the Brinkman and Cady, or simulate other traffic such as golf cart wear. The Europeans have long used the Differential Slip (DS2) machine, which is a cleated walk-behind unit. Also being used in Europe is the SISIS unit, as well as a unit developed by the Sports Turf Research Institute in England to simulate damage from tennis players at Wimbledon. The University of Georgia modified a Brouwer T224 ride-on roller by adding cleats to the roller drums. Iowa State and Ohio State have each modified and used a Brouwer roller simulator as well. Scuffing units, which consist of a brush on a frame that is dragged across the plots, are being used in some locations.
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.

\textit{Poa annua} is a weed problem in Kentucky bluegrass, particularly on athletic turf. Cultivars that can withstand \textit{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 \textit{Poa} can invade. In 2010, two trial locations were able to rate percentage \textit{Poa} invasion. In both Amherst, MA and Madison, WI, the range of ratings was quite large, from 0.3 – 33.3% \textit{Poa} (LSD=15.9) at Amherst and from 2.3 – 81.7% \textit{Poa} (LSD=23.8) in Madison. ‘CPP 822’ and ‘Washington II’ had the least \textit{Poa annua} in Amherst and ‘Harmonie’ had the smallest percentage of \textit{Poa} in Madison.

\textbf{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, using the “Slapper” on the tall fescue trial at North Brunswick, NJ. Wear and compaction were applied in July, with simulating the scuffling 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.

\textbf{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.