

# Warm Season Grasses –

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## NTEP Unveils Improved Data Reporting Procedure

NTEP is committed to improving its data collection, analysis, and reporting. To that end, NTEP spent ten years researching new statistical methods and is now implementing a new reporting procedure, the 'Location Performance Index' or 'LPI', on its newest trials. The LPI is based on 'AMMI,' a more complete, accurate statistical analysis program for predicting cultivar performance across many locations.

The LPI is only used on turfgrass quality data but in reading the turfgrass quality tables, you will notice that locations may not be grouped by any apparent geographical orientation. For instance, in the 2012 data from our 2011 Kentucky bluegrass trial, 'LPI Group 1' included Amherst, MA, West Lafayette, IN, Urbana, IL, St. Paul, MN, Manhattan, KS, and Pullman, WA. It seems that these locations have nothing in common, geographically or climatically. However, what they do have in common is a very important similar 'interaction pattern,' i.e. the varieties performed in a similar manner, relative to each other, at each of these locations in that year. For that reason and most appropriately, the LPI groups them together for analysis. And that 'interaction pattern' can, and very often will vary from year to year. Therefore, investigate the LPI Group data containing locations that are closest to you, or your market.

The LPI is used on new trials as they are initiated. Go to [www.ntep.org](http://www.ntep.org) to read more about the LPI and the reasons for utilizing this new procedure.

## Focus On Specific Traits

NTEP is designing its trial programs such that more data on specific traits are collected. For instance, standard trial locations, conducted at university sites using prescribed management schemes, collect traditional data, such as turfgrass quality, color, density, any diseases present, etc. NTEP also sponsors ancillary trial locations that collect data on specific traits, such as shade tolerance, traffic tolerance and sod strength. These ancillary trials must often be conducted in unique locations (i.e. under shade trees) or using specialized equipment (i.e. a traffic simulator). Because ancillary trials are applying unique stress to the entries, the data from these locations are often summarized and reported in separate tables.

NTEP plans on conducting more of these ancillary trials in the future and is in fact, co-sponsoring with USGA, an entire trial just to evaluate cool-season and warm-season grasses for drought resistance and water use. The cool-season water use trial was established in fall 2016, with ten locations conducting drought evaluations through 2019 or 2020. The warm-season version of this trial was established in summer 2018, so look for data from warm-season grasses in future reports. In addition, NTEP sponsored a low input trial for

cool-season grasses and mixtures in fall 2015, while also establishing a warm-season low input trial in summer 2018. It is our hope that this type of data will provide much needed information to consumers on these important traits.

## Update On Cultivars

The following is an overview of the latest information on commercially available and experimental cultivars.

## WARM-SEASON

In 2019, this was in white type in a green background, please use something similar for 2020.

In spring/summer 2013, new trials of bermudagrass and zoysiagrass were established, with 35 entries in each trial. In addition, a unique new trial was established in conjunction with the United States Golf Association (USGA). The trial evaluated bermudagrass (15 entries), zoysiagrass (11 entries) and seashore paspalum (2 entries) at eleven locations under putting green conditions. New versions of each of these three trials were established in summer 2019, however the first data will not be published until spring 2021.

Therefore, the final summary of data from each of the 2013 warm-season trials is the most current data NTEP currently has available. Even though each trial features a different set of data, a common theme of all these trials is data on initial establishment from 2013. However, due to the unusually harsh winter that many locations experienced in 2013/2014, several entries were never able to establish at some locations. Data on winter injury was collected and the cooperators were consulted on the condition of their trials. Since 2013-14 was the worst winter in more than thirty years, the decision was made by NTEP to replant several or all entries at the worst winter injury sites. NTEP has never replanted so many entries and locations in our history, but we felt it was necessary to give all entries an equal opportunity to establish and perform. Consequently, no more replanting took place for these three trials. The information on the entries replanted at each location is noted on the data tables.

## Bermudagrass

The 2013 bermuda NTEP trial contains eighteen (18) seeded entries and seventeen (17) vegetative entries. Many of these entries are experimental cultivars or new commercial cultivars. NTEP evaluates warm-season grasses by comparing seeded and vegetative entries, also by separately comparing seeded vs. seeded and vegetative vs. vegetative.

The final year of this trial was 2017. Therefore, we have several years of data that show the potential of new experimental entries. A final summary of data from 2013-2017 is available on the NTEP website, and this is the data we will reference to discuss bermudagrass cultivar improvements.

The first year of any new trial is highly influenced by

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# Bermudagrass Cultivar Improvements

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establishment rate. This is especially true for the warm-season grasses as many entries are vegetatively propagated types. Typically, seeded entries establish quicker than vegetative types, and this is what we saw with this trial. In some cases, however, we did see significant improvement in establishment rate of new experimental entries. For example, at the Jay, FL, location in August, vegetative entries Iron Cutter and OKC-1163 had greater establishment ratings than the standard cultivar Tifway. In addition, the seeded entry OKS-2009-3 had significantly higher ground cover than Yukon, one of our seeded standards. At Raleigh, NC, JSC-2-21-V also had significantly higher establishment ratings than Tifway (91.7 percent vs. 46.7 percent) and MBG 002, a seeded entry, had much higher ground cover in September ratings than Yukon (96.3 percent vs. 15.7 percent). In some cases, experimental entries established much faster than our seeded standard Riviera (i.e. at College Station, TX) and in other locations Riviera ratings were comparable to the top entries (i.e. at Raleigh, NC).

Turfgrass quality data analyzed from the seventeen locations over the five years of this trial showed several new cultivars and experimental entries making their way into the top statistical group. TifTuf and Tahoma 31 finished at the top for turfgrass quality (TQ = 6.8), followed by experimental entries Iron Cutter, 11-T-510, JSC-2-21-1-V, and OKC-1163, all vegetative entries. Latitude 36, one of the top performers in the last trial, also finished in the top turfgrass quality statistical group. Patriot, a cold-hardy standard that has been tested by NTEP for over twenty years, also performed very well at several locations. Tops in seeded entries include Riviera and Monaco (TQ = 6.3). Tifway, arguably the most widely utilized turfgrass bermudagrass in history, also performed well overall, finishing just outside the top turfgrass quality group (TQ = 6.3), which could mean that the importance of Tifway in the marketplace may continue for many years.

Ancillary trial testing was conducted at several locations over the testing period. Traffic tolerance was conducted at two locations, Knoxville, TN, and Lexington, KY. At Knoxville, very few statistical differences were noted in three years of tests. At Lexington, KY, differences were noted among entries, with Patriot, Tahoma 31, and Tifway topping the traffic ratings. Entries that performed well in at least three out of four years in Lexington include Tifway, TifTuf, OKC 1302, Latitude 36, Monaco, and Iron Cutter.

Other ancillary trials include drought tolerance, nematode evaluations, spring dead spot (*Ophiosphaerella* spp.) tolerance and divot recovery. No statistical differences emerged in the Fayetteville, AR, divot recovery evaluations. Spring dead spot ratings collected at Columbia, MO, showed statistical differences even though winter injury removed some entries from testing. Of the entries that survived, OKC 1163, OKC 1302, BAR C291, Astro, MBG-002, OKS-2009-3, OKS-



This NTEP Warm-Season Water Use Trial at Riverside, California shows TifTuf bermuda after 140 days of 30 percent ET replacement.

2011-4, and Yukon showed the highest spring dead spot tolerance ratings.

Three years of drought tolerance evaluations were conducted at College Station, TX, by restricting irrigation during periods of high heat and summer drought, then re-watering to gauge recovery. Performance differences in drought tolerance and recovery were noted each year with TifTuf, 11-T-510, Iron Cutter, and Tahoma 31 finishing as the top performing entries, with turfgrass quality ratings of 7.6, 6.8, 6.7 and 6.7, respectively. Sixteen entries finished in the top turfgrass quality statistical group at College Station where overall scores were as low as 4.2.

Nematode tolerance was extensively evaluated at Gainesville, FL. Ten species of nematode were identified from the trial site, but most individual counts did not result in statistical significance. However, some statistical differences in helico (*Helicotylenchus* sp.), lance (*Hoplolaimus galeatus*) and ring (*Mesocriconema* sp.) nematode counts were noted in some years. Also, within the last two years of the study, some statistical differences were noted in ground cover ratings and within sampled plant root lengths. Therefore, there seems to be a potential to select for improved nematode tolerance in turfgrasses.

Resulting from the tough winters of 2013 and 2014, winter injury was noted at a few locations. Tahoma 31 and Patriot vegetative entries, as well as seeded entry Yukon fared the best with the least percentage winter kill. And diseases, including dollar spot and leaf spot were noted at a few locations. PST-R6CT had the highest dollar spot rating (mean rating = 8.0) in data collected at three locations, while 11-T-251 showed the least leaf spot at two locations (mean rating = 8.2)

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