

National Turfgrass Evaluation Program (NTEP) Testing of Cultivars and Experimental Selections

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National Turfgrass Evaluation Program

Objectives:

1. To evaluate commercially available cultivars and experimental selections of various species for their usefulness on golf courses.

Start Date: 2004

Project Duration: three years

Total Funding: \$60,000

One of the missions of the National Turfgrass Evaluation Program (NTEP) is to improve the science of turfgrass evaluations. Our goal is to produce the best quality data that is most usable to the industry. To that end, the USGA Research Committee has provided funding for five statistical projects investigating our current statistical procedures compared to new techniques.

To follow up on one of the most promising statistical projects, NTEP is continuing the investigation of the AMMI procedure, conducted by Dr. Scott Ebdon, University of Massachusetts and Dr. Hugh Gauch, Cornell University, to analyze turfgrass data. In using the AMMI technique on the 1990 NTEP Kentucky Bluegrass Test and 1990 National Perennial Ryegrass Test data, Dr. Ebdon and Dr. Gauch found

that accuracy was increased two and five times, respectively, over our current statistical analysis procedure, ANOVA.

To further test this procedure, we have established new trials, comparing the top entries selected using the AMMI procedure with the top entries selected by the ANOVA procedure. These trials, called field validations, use entries from the most recently completed 1995 NTEP Kentucky Bluegrass Test, are planted at nine locations and will be evaluated for three years.

Another aspect of improving the science of evaluations is investigating the use of instrumentation to automate turfgrass field data collection. In other words, we are studying equipment to measure percent living cover, genetic color, leaf texture, disease, etc. that may eliminate or reduce these subjective human evaluations. These studies, initiated in spring 2004, are being conducted by Dr. Michael Richardson and Dr. Douglas Karcher at the University of Arkansas and Dr. Thomas Fermanian at the University of Illinois.

Both locations are using various technologies to replace or



Using specially designed equipment to record turfgrass quality parameters could eliminate the variation inherent among human evaluations.

complement human ratings, increase accuracy and improve efficiency in data collection. These technologies are being utilized on both warm- and cool-season grasses species under different management regimes. Comparisons are made to data collected by other instrumentation currently available for use on turfgrass or other crops and human evaluators.

Summary Points

- A new statistical analysis procedure, AMMI, has been found to significantly increase statistical accuracy on Kentucky bluegrass and perennial ryegrass trials.
- A field validation study was established in fall 2003 at nine locations. Its purpose is to test whether AMMI predicts performance of Kentucky bluegrass better than the standard statistical procedure ANOVA.
- New technologies are being investigated that may increase the accuracy and efficiency of turfgrass field data collection.
- Studies at the University of Arkansas and University of Illinois were initiated in spring 2004 to test various instrumentation for their use in turfgrass data collection.



At the University of Illinois, Dr. Tom Fermanian is studying equipment to measure percent living cover, genetic color, leaf texture and other parameters in an effort to eliminate subjective human evaluations.