

NTEP Statistical Analysis Grants

National Turfgrass Evaluation Program

Kevin Morris

Start Date: 1999

Number of Years: 1

Total Funding: \$23,000

Objectives:

1. *Evaluation of ANOVA diagnostics and the validity of assumptions about turf quality ratings.*
2. *Assessment of spatial variation.*
3. *Evaluation of factors affecting the success or failure of varietal separation.*
4. *Quantification of the value of test locations - varietal separation and uniqueness of ranking.*
5. *Assessment of plot size and experimental design efficiency.*

In an interest to improve the acquisition and analysis of National Turfgrass Evaluation Program variety trial data, the Policy Committee discussed the current trial setup, experimental design, and statistical analysis procedures. Five one-year statistical analysis projects were selected for funding in 1999. NTEP data available for evaluation includes the Bentgrass Putting Green and Fairway Trial, Kentucky Bluegrass Trial, and Perennial Ryegrass Trial. Research proposals were considered for the following five areas.

Evaluation of ANOVA diagnostics and the validity of assumptions about turf quality ratings. Is the current 1-to-9 rating system the best system for accurately assessing quality. The rating scale assumes a quantitative measurement when in reality it is qualitative in nature. Much of the rating scale is not used by some (or many) cooperators, therefore a normal distribution (bell-shaped curve) is not produced. If cooperators used more of the rating scale would better data be produced?

Assessment of spatial variation. How effective are cooperators at establishing uniform sites and collecting uniform data? For instance, disease data is often not very significant statistically. Is this because the disease did not develop uniformly throughout the plot area? What procedures might we use to determine if plots are uniform?

Evaluation of factors affecting the success or failure of varietal separation. Why do some locations achieve more varietal separation than other locations? When using more of the rating scale do we see more varietal separation or less?

Quantification of the value of test locations - varietal separation and uniqueness of ranking. Can the use of cluster analysis and correlation among locations, years and seasons within years be used to group or separate locations? Research in this area could lead to logical geographic groupings of locations and specific regional analysis.

Assessment of plot size and experimental design efficiency. Are there any changes that can be made to the way tests are designed (the efficiency of the randomized complete

block design), proper plot size, number of replications, etc. that can make for better tests and data?

Short summaries of the five funded projects will be discussed in next year's annual summary. I

On-Site Fairway Overseeding Trials

National Turfgrass Evaluation Program

Kevin Morris

Start Date: 1999

Number of Years: 2

Total Funding: \$ 20,674

Objectives:

Evaluate new cultivars on bermudagrass fairways at golf courses in the Southern and Western United States that will provide scientific information of a more applied nature about cultivars for overseeding.

With the initiation of on-site testing of bentgrass and bermudagrass on putting greens, interest is now increasing for the evaluation of other grasses used on golf courses. Grasses are needed that provide exceptional playing surfaces with less pesticides, fertilizer and water. Therefore, grasses that have superior drought, cold, heat, disease and insect resistance need to be identified.

Overseeding bermudagrass fairways is a common practice throughout the southern half of the United States. Millions of pounds of seed are bought and sown each autumn on golf courses in this region. Golf course owners, managers and superintendents seek grasses that establish quickly, exhibit exceptional playability, are aesthetically pleasing and require less input. This project will evaluate new cultivars on bermudagrass fairways at golf courses in the Southern and Western United States. This on-site testing program will provide scientific information of a more applied nature about cultivars for overseeding.

Information from this project will be valuable to the golfing industry because it will determine the adaptation of grasses for golf course use. Information obtained from on-site testing will be of particular value to plant breeders, researchers, extension educators, USGA agronomists, golf course architects, and superintendents who need to select the best adapted cultivars for overseeding in a particular regional climate.

Location and Number of Trial Sites. The evaluation trials will be jointly sponsored by the Golf Course Superintendents Association of America (GCSAA), the United States Golf Association (USGA) Green Section and the National Turfgrass Evaluation Program (NTEP). Trial sites will be located on golf courses near a land grant university with a turfgrass research program or in a major metropolitan area that is readily accessible to a university turfgrass scientist. Ten evaluation trial sites are proposed. Trials will be positioned strategically in the following areas: southern California, Arizona, south Texas