

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.