

EXECUTIVE SUMMARY

On-Site Testing of Bentgrass and Bermudagrass Cultivars for Putting Greens

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Many new bentgrass and bermudagrass cultivars have been commercialized in the last few years, however, there is a lack of research data on their performance under intensively managed putting green conditions. This project evaluates these grasses on golf course putting or chipping greens built to USGA specifications. This research differs from evaluations conducted at university research stations because the greens are used by golfers for practice putting and/or chipping. The evaluation trials are 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 are located on golf courses near a land grant university with a turfgrass research program or in a major metropolitan area which is readily accessible to a university turfgrass scientist. Sixteen evaluation trial sites have been established. Bentgrass trials were all seeded in fall 1997, with one exception. Bermudagrass trials were planted using vegetatively propagated material in June 1998.

The first progress reports containing 1998 data and management information on this project were compiled and distributed in May 1999. The two reports can be found on the NTEP web site at <http://www.ntep.org/onsite/ost.htm>. The on-site advisory committee decided to report data from each location separately and not summarized over all locations, as in standard NTEP reports. Detailed management information was also reported for each site including establishment (date and any problems), mowing (height, frequency, mower type, rollers and groomers used), cultivation (dates and type of aerification, verticutting and topdressing), pesticide and fertilizer regime used (dates, rates and products used) and factors of play (opening and closing date for play, types of spikes allowed, uses of green).

The bentgrass entry "Penn A-4" was the most consistent top-performer having the highest mean quality rating at ten sites in 1998. Performance of the cultivar "Century" was surprising with quality ratings in the top statistical group at twelve sites. This performance was better than in the last NTEP Bentgrass Test (1994-97 data). Previous top-performing entries such as "Cato", "Providence" and "L-93", often did not land in the top statistical group. Monthly stimpmeter readings show little or no statistical differences among the cultivars.

Since bermudagrass plots were not planted until June 1998, data collected mostly reflected establishment rate. The standard entry "Tifgreen" was the poorest performer at five of the eight locations, while the other six entries were inconsistent in their performance. The site at St. Charles, MO suffered severe winter kill on the bermudagrasses therefore, that aspect of the test green may need to be abandoned.

YEAR-END REPORT - USGA RESEARCH

November 8, 1999

I. Title

On-site Testing of Bentgrass and Bermudagrass Cultivars for Putting Greens

II. Investigator/Cooperator

Mr. Kevin Morris, Executive Director, National Turfgrass Evaluation Program
Dr. Jeffrey Nus, Director of Research, GCSAA
Dr. Michael Kenna, Director of Research, USGA Green Section

III. Purpose

To evaluate commercially available cultivars of bentgrass and bermudagrass for their usefulness on USGA specification putting and/or chipping greens.

IV. Location of Project

Sixteen golf courses across the United States (see Table 1.) Eight of the courses have bentgrass only, five have both bentgrass and bermudagrass and three courses have bermudagrass only.

V. Introduction

Many new bentgrass and bermudagrass cultivars have been commercialized in the last few years, however, there is a lack of research data on their performance under intensively managed putting green conditions. Therefore, this research evaluates these grasses on golf course putting or chipping greens built to USGA specifications. This research differs from evaluations conducted at university research stations because the greens are used by golfers for practice putting and/or chipping.

Information from this project is valuable to the golfing industry because it will determine the adaptation of grasses for golf course use. The 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 of bentgrass or bermudagrass for a particular regional climate or management level.

VI. Methods

The evaluation trials are 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 are located on golf courses near a land grant university with a turfgrass research program or in a major metropolitan area which is readily accessible to a university turfgrass scientist. Sixteen evaluation trial sites have been established. Trials are positioned strategically in

significant areas for bentgrass and bermudagrass performance (Table 1). NTEP functions as the coordinating agent for this five-year cultivar trial. All bentgrass test locations except the Snoqualmie Ridge site, were seeded in fall 1997. Due to unforeseen circumstances, the Snoqualmie Ridge site was not selected until Spring 1998 and seeded in June 1998. Bermudagrass trials were planted in June 1998. Trials are conducted under the leadership of a university turfgrass research scientist (i.e., research cooperator, see Table 1), who has a faculty appointment. This person has signed a research agreement and is responsible for establishment of the trial, coordination of the maintenance regime, collection and submission of the data to NTEP.

Trials are located on newly constructed USGA specification greens where golfers practice putting or chipping. Plot size is 5' x 10', replicated three times. Host clubs provide daily maintenance of each green. However, an advisory committee consisting of representatives from GCSAA, USGA, NTEP, universities and the turfgrass seed industry provides recommended establishment and maintenance procedures. The superintendents chosen have excellent skills and a strong record of supporting GCSAA and the USGA. Each superintendent also has a good relationship with the university scientist, who has ultimate responsibility for the trial.

NTEP administers the program and its funding, sets the advisory committee and gathers their input and recommendations for the trial. NTEP organized and distributed the seed which constitutes the entries for each trial location. Also, NTEP provides maintenance and data collection protocols to each site, collects, analyzes and disseminates the performance data in annual and final reports, and conducts an annual site visit of each trial site.

The research cooperator is responsible for data collection. Data collected includes monthly turfgrass quality ratings, genetic color, stimpmeter readings and ratings of any any disease, insect or other stress that may occur. The research cooperator is responsible for submission of data to NTEP by February 1 of each year. Annual funding is based on receipt of a complete set of data by the February 1 deadline.

VII. Results and Discussion

The first progress reports containing 1998 data and management information on this project were compiled and distributed in May 1999. The two reports can be found on the NTEP web site at <http://www.ntep.org/onsite/ost.htm>. Following is a summary of the results thus far.

Bentgrass

The on-site advisory committee decided to report data from each location separately and not summarized over all thirteen locations, as in standard NTEP reports. Detailed management information was also reported for each site including establishment (date and any problems), mowing (height, frequency, mower type, rollers and groomers used), cultivation (dates and type of aerification, verticutting and topdressing), pesticide and fertilizer regime used (dates, rates and products used) and factors of play (opening and closing date for play, types of spikes allowed, uses of green).

Data on establishment, leaf texture, genetic color and greenup were reported by most locations. Uniformity, density and diseases were reported at a few locations. Stimpmeter readings were collected monthly at most locations. Turfgrass quality ratings were collected during each month of the growing season at each site.

Traditionally, quality ratings in the first year after seeding are influenced by establishment rate. That trend did not seem as evident in this trial as slower establishing cultivars, such as "Penn A-1", ranked in the top one-third of all entries (for mean turfgrass quality) at eleven out of thirteen sites. The entry "Penn A-4" was the most consistent top-performer having the highest mean quality rating at ten sites in 1998. Performance of the cultivar "Century" was surprising with quality ratings in the top statistical group at twelve sites. This performance was better than in the last NTEP Bentgrass Test (1994-97 data). Previous top-performing entries such as "Cato", "Providence" and "L-93", often did not land in the top statistical group. This may, of course, change as the grasses age and the different management levels at each site influence the performance.

Monthly stimpmeter readings show little or no statistical differences among the cultivars. For this reason, the on-site advisory committee changed the requirements for stimpmeter data collection to three times per year; when greens are prepared for maximum, average and minimum speed.

Bermudagrass

Information on management was collected as described above for bentgrass and again data was presented for individual sites, not summarized over all locations. Since plots were not planted until June 1998, data collected mostly reflected establishment rate. However, differences were noted at several locations in genetic color and leaf texture. The data offered very few trends, probably due to the small number of monthly quality ratings available for collection. The standard entry "Tifgreen" was the poorest performer at five of the eight locations, while the other six entries were inconsistent in their performance. Data collected in 1999 will undoubtedly be more complete and offer a better picture of variety performance. The site at St. Charles, MO suffered severe winter kill on the bermudagrasses therefore, that aspect of the test green may need to be abandoned.

VIII. Research Schedule/Anticipated Results

Data is being collected in 1999 to be reported in spring 2000. Hopefully, maintenance regimes will separate the entries more than occurred in 1998. We will continue to monitor the performance of these trials via correspondence with cooperators and superintendents and through site visitations.