

# Bentgrasses for Golf Course Greens

## “Final Comparative Evaluation Report”

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Creeping bentgrass (*Agrostis Palustris* Huds.), a native of Eurasia, is the primary grass used on golf, as well as bowling, croquet and lawn tennis courts in the northern half of the United States. In California, with the exception of the southernmost and desert areas, it is the only grass used for fine putting greens at golf courses. In the past 10 years, many new and improved bentgrasses have entered the market. Increased national demand by golf course superintendents for information related to comparative performance in varying climates and under intensively managed putting conditions, led in 1997 to a joint research project on 13 golf courses across the United States. A set of evaluation trials were sponsored by: the United States Golf Association (USGA), the Golf Course Superintendents Association of America (GCSAA) and the National Turfgrass Evaluation Program (NTEP). Trial sites were all located on golf courses near Land Grant Universities with turfgrass research programs, or in major metropolitan areas readily accessible to a University turfgrass scientist. At each site eighteen (18) creeping bentgrass cultivars were planted on a new putting green, built according to the USGA specifications. This project differed from evaluations traditionally conducted at University Research Stations because each green is maintained in the same manner as other greens at its golf course and is used by golfers for practice putting and/or chipping.

The site chosen for the Northern California evaluation was at the Crystal Springs Golf Course (CSGC) in Burlingame on the San Mateo peninsula. In addition to CoursCo Inc., the CSGC operating group, the Golf Course Superintendents Association of Northern California, the Northern California Turf and Landscape Council and the University of California Cooperative Extension joined as the co-sponsors of this local project.

The 18 creeping bentgrasses were seeded in September 1997 on a newly built practice green at CSGC. The USGA green, and its surround, were designed and donated to the project by the Robert Trent Jones Jr. Group of Palo Alto, California. All varieties, supplied by NTEP, were planted at the rate of 1.1lb/1000 ft<sup>2</sup> in a randomized complete block design, on 10 ft x 5 ft plots with 3 replications. Seeds were planted carefully by hand to prevent contamination of adjacent plots, and then were lightly raked in. A complete fertilizer, providing 2 lbs phosphorus, 2 lbs potassium and 1 lb nitrogen per 1000 ft<sup>2</sup> was also applied at this time.

The area of the green outside the research plots was seeded with “Cobra” creeping bentgrass, and then irrigation was turned on. The green was maintained for 6 months until the grasses were well established, and in spring 1998 it was opened to use by golfers. Since then the green has been open all year for putting. The use of soft-spike shoes has been encouraged. The maintenance regime for the green since it’s opening in 1998 is as follows:

**Mowing:** Three times weekly at 5/32 inch, with a walk-behind mower. No rollers or groomers were used.

**Cultivation/Topdressing:** Spiking and ¼” Hollow-Tine aeration was done several times during the year. No verticutting was practiced, but the green was occasionally topdressed with sand.

**Fertilization:** Both inorganic and organic fertilizers (Milogamite) provided an average of 6 pounds of nitrogen per 1000 ft<sup>2</sup>/year.

**Pesticide use:** Fungicides were occasionally used as curative applications. Broadleaf herbicides was also occasionally used. No insecticides or other pesticides were ever applied.

Data collection began in January 1998. Each plot was rated monthly for overall quality on a scale of 1-9 (9=best). Color was rated on a scale of 1-9 (9=darkest green) once a year in October, when environmental stress on lowest and the full genetic color of any cultivars should be expressed. Two to three times per year, stimpmeter readings were recorded for each plot using a stimpmeter modified for use on small research plots (*This stimpmeter has its ball release notch located 15 inches, rather than 30 inches, from the beveled end.*)

The accompanying Table summarizes the combined data collected for 4 years, 1998-2001. As the final, combined multi-year data, the information provided in this table could be consulted to select the most appropriate bentgrass cultivars.

In reviewing the Table, please note values for LSD (*Least Significant Difference*). This term is used to determine statistically significant differences among cultivars for each evaluated parameter. To determine statistical differences among cultivars, subtract one cultivar’s mean rating from another cultivar’s mean rating. Statistically significant differences occur when the resulting value is larger than the corresponding LSD value. If the difference between the mean values for two cultivars within the same column is not greater than the corresponding LSD, then the two cultivars are statistically the same for that specific quality component.

For example, considering the LSD value of 0.4 given for mean turf quality ratings, there is no significant difference among the 8 top performing cultivars (“L-93” down to “SR1119”), since their mean differences are all smaller than 0.4.

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### Turfgrass Quality And Other Ratings Of Bentgrass Cultivators At Burlingame, CA (Crystal Springs GC) 1998-2001 Data

*Turfgrass quality and other ratings 1-9, 9=BEST*

*Turfgrass time-meter readings measures in inches.*

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*\*\*\* If the difference between the mean for two cultivars within the same column is not greater than the corresponding LSD, then the two cultivars are statistically the same for the specific quality component.*

CULTIVAR	QUALITY	COLOR	LEAF TEXTURE	%POA 2001	STIMP METER MAY	STIMP METER OCT.
L-93	7.6	7.8	7.8	3.5	92.3	105.3
PENN A-4	7.5	6.9	7.8	3.5	100.9	112.8
PENN G-6	7.4	7.2	7.8	3.8	95.8	113.4
PENN A-1	7.3	6.8	7.6	3.8	94.7	112.7
GRAND PRIX	7.2	6.9	7.9	3.3	96.2	114.0
IMPERIAL	7.2	7.2	7.8	5.8	89.3	110.1
PENN G-1	7.2	7.2	7.5	4.4	91.7	108.8
SR 1119	7.2	7.2	7.7	5.8	90.2	114.0
BACKSPIN	7.1	6.9	8.0	4.7	93.7	109.2
CRENSHAW	7.0	7.1	7.5	3.8	95.1	116.3
CENTURY	6.9	6.6	8.0	3.8	94.4	110.5
SR 1020	6.9	6.7	7.5	6.2	95.8	111.3
VIPER	6.9	6.7	7.4	4.8	92.7	114.2
PROVIDENCE	6.8	7.2	7.5	5.0	96.7	114.6
PUTTER	6.7	6.5	7.3	5.8	94.2	113.3
TRUELINE	6.7	6.8	7.8	6.7	95.9	114.3
CATO	6.5	6.8	7.5	7.3	96.9	113.3
PENNCROSS	6.0	5.8	6.3	5.8	101.9	116.2
LSD VALUE**	0.4	1.4	0.6	11.2	33.5	27.0