



## **PERFORMANCE OF CREEPING BENTGRASS CULTIVARS IN ARKANSAS, 1998 REPORT**

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### **IMPACT STATEMENT**

A creeping bentgrass trial was established in Little Rock, to evaluate 19 bentgrass cultivars under typical putting green conditions. During the first year of evaluation, several newer cultivars exhibited superior heat tolerance and stand survival over some of the older cultivars. Preliminary conclusions are that recently released bentgrass cultivars 'Crenshaw', 'Imperial', and 'Century' are well-adapted to Arkansas growing conditions and show promise for golf course establishment or renovation.

### **BACKGROUND**

Creeping bentgrass remains the grass of choice for putting greens in the northern United States and throughout the transition zone. This species is noted for its adaptation to close mowing, high shoot density, and superior putting quality. In recent years, a large group of new bentgrass germplasm has been developed by plant breeders in the U.S. This germplasm has been selected for characteristics such as overall turf quality and performance, heat tolerance, disease resistance, and salinity tolerance. Although these new cultivars began to appear in the market in the mid-1990s, there have been no evaluations of these cultivars in Arkansas. With the continued growth of the golf industry in Arkansas, and the widespread construction and renovation of golf courses in the state, a critical evaluation of these new conditions under Arkansas conditions was needed.

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## RESEARCH DESCRIPTION

A replicated cultivar trial was established on 23 March 1998 at Chenal Country Club, Little Rock. The green on which the test was established had been constructed according to USGA specifications in the fall of 1997 and had remained fallow until the spring of 1998. Each plot was 4 x 8 ft and was individually hand-seeded at a rate of 0.5 lb/1000 ft<sup>2</sup>. An organic fertilizer (Hou-Actinite, 6-3-0) was incorporated with the seed at a rate of 0.75 lb N/1000 ft<sup>2</sup>. The experimental design was a randomized complete block with three replications of each cultivar.

Fertilization and pest control of plots were done according to routine practices used on the remainder of the greens at Chenal Country Club. Briefly, approximately 1 lb of N/1000 ft<sup>2</sup> was applied to the plots monthly during the first three months of the experiment and approximately 0.25 lb of N/1000 ft<sup>2</sup> per month was applied during the summer and early fall. A preventative fungicide program was followed to prevent brown patch and pythium and to control algae growth. The program included alternating applications of Daconil Ultrex (2 oz/1000 ft<sup>2</sup>) and Alliette / Fore (4 oz / 6 oz per 1000 ft<sup>2</sup>) every 14 days. From June through September, Dursban was applied at 0.75 oz/1000 ft<sup>2</sup> every 28 days to prevent cutworms.

Germination and establishment of the plots were assessed visually during the first two months after planting and turf quality was measured monthly. Following the severe heat and drought period of the summer of 1998 and into the fall recovery period, visual determinations of plot cover were made simultaneously with turf quality. Data were subjected to analysis of variance and means were separated using Least Significant Difference ( $P=0.05$ ). For purpose of presentation, performance data were grouped by season and within-season analysis of variance performed.

## FINDINGS

Germination was first observed within seven days after establishment and good cover for all plots was observed by 1 May. Several cultivars exhibited good seedling vigor and stand establishment (Table 1), including 'SR 1020', 'Grand Prix', 'Crenshaw', and 'Cobra'. However, all cultivars produced acceptable stands within eight weeks after planting (data not shown). Overall spring quality was similar for most of the cultivars and no statistical differences were observed between the top 15 cultivars.

Many of the plots began to lose considerable cover during the summer and several cultivars exhibited substantial stand loss by the early fall. The cultivars 'Providence', 'Penn G6', 'Cobra', 'L93', 'Putter', and 'Cato' lost over 30% total stand by 1 September and experienced a substantial drop in overall quality (see fall quality Table 1). Cultivars that maintained good overall quality and cover under the extreme high-temperature summer of 1998 were 'Crenshaw', 'Century', 'Imperial', 'Penn G1', and 'Grand Prix'.

Overall, cultivars developed by the Texas A&M University breeding program, with the exception of 'Cato', performed very well at this location. This may be partially explained by the fact that these cultivars were selected principally for heat tolerance,

and Little Rock experienced temperatures >100 °F on 20 days during the summer of 1998. 'Crenshaw', 'Imperial', and 'Century' appear to be well-suited to the high-temperature conditions of Arkansas. Continuing evaluations of this test should be very valuable in providing cultivar recommendations to the golf industry in Arkansas.

**Table 1. Performance data for bentgrass cultivars during the 1998 growing season at Chenal Country Club, Little Rock.**

Cultivar	Seedling vigor <sup>z</sup>	% Cover				Avg. quality <sup>z</sup>
		August-October	Spring quality <sup>z</sup>	Summer quality <sup>z</sup>	Fall quality <sup>z</sup>	
Crenshaw	6.9	92	6.9	7.1	6.8	6.9
Century	5.8	89	6.1	6.9	7.3	6.7
Imperial	5.7	89	5.9	6.2	6.7	6.2
Penn G1	-	94	4.7	6.9	7.5	6.1
Grand Prix	7.1	89	6.0	6.0	6.5	6.1
Penn G2	6.5	86	6.1	5.7	6.0	6.0
SR 1020	7.2	73	6.2	5.3	5.2	5.7
SR 1119	6.0	72	6.4	5.7	4.7	5.7
Penn A4	6.4	84	5.4	5.6	5.3	5.7
Viper	6.3	68	6.2	5.1	4.8	5.5
Providence	6.4	65	6.6	4.7	4.3	5.4
Penn G6	6.4	65	5.9	5.1	4.5	5.3
Trueline	6.4	72	5.6	5.0	4.5	5.1
Penncross	6.1	75	5.9	4.1	4.8	5.1
Cobra	6.8	64	5.8	4.3	4.7	5.0
Princeville	6.0	73	4.9	5.2	4.7	4.9
L93	5.2	64	5.6	4.0	4.3	4.8
Putter	6.3	58	5.4	3.8	4.0	4.6
Cato	6.3	51	4.9	3.5	3.7	4.1
LSD ( $P < 0.05$ )	0.8	15	1.4	1.1	1.4	0.8
CV (%)	8.4	11.8	15.1	12.3	15.8	8.7

<sup>z</sup> Rating scale of 1-9, with 1 = poor, and 9 = ideal.