

Breeding and Development of Bentgrass

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Goals:

- *Develop stress tolerant bentgrass cultivars with specific emphasis on heat tolerance, root growth characters, turf quality, and resistance to natural disease and insect pests.*
- *Continue genetic studies involving heritability and stability of biological traits associated with stress tolerance.*

Cooperators:

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The bentgrass program has enjoyed a long run of financial support from Bentgrass Research, Inc (Fort Worth, TX) and the United States Golf Association. The program was initiated in 1985 with the primary objective of developing creeping bentgrass varieties that reduce the cultural requirements for maintaining bentgrass under stressful environments.

During the past 13 years we have had the opportunity to collect, evaluate, and hybridize several thousand individual plants. During this process, numerous young scientists evolved with the program making significant contributions along the way. Notably, Dr. Virginia Lehman received her Ph.D. working on the development of *CRENSHAW*, *CATO* and *MARINER* and the 92 series germplasm. Dr. Lehman is presently the Director of Research for Loft Seed Co. Winston-Salem, N.C.

Drs. Richard White and Bridgett Ruemmele aided in the development of stress tolerant germplasm. These plants were then used in the development of the 1992 Series leading to development of *CENTURY* and *IMPERIAL*, which were released in 1996, and *BACKSPIN* to be released in 1998.

Significant as the varieties are, the individual scientists involved in the program over the years are likewise making substantial contributions to the industry in their own right.

Table 3. 1996 mean turfgrass quality ratings of bentgrass cultivars for each month grown on a putting green at twenty-five locations in the U.S. and Canada.

Name	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct	Nov.	Dec.	Mean
LOFT'S L-93	5.6	6.1	6.2	6.4	6.5	6.8	6.9	7.1	7.0	6.9	5.8	4.7	6.6
PENN A-1	5.3	5.9	6.5	6.5	6.3	6.6	6.9	6.8	6.9	6.9	5.8	5.0	6.5
PENN A-4	5.9	6.6	6.6	6.4	6.1	6.8	6.8	6.9	6.7	6.8	5.3	4.8	6.5
PENN G-2	5.3	5.8	6.3	6.0	6.2	6.5	6.6	6.6	6.6	6.8	5.3	5.0	6.3
CATO	4.8	5.9	6.3	6.2	6.0	6.6	6.9	6.8	6.6	6.5	4.9	4.3	6.3
PROVIDENCE	5.3	5.8	6.1	6.4	6.1	6.5	6.6	6.4	6.5	6.3	5.3	4.5	6.3
PENN G-6	4.7	5.4	6.4	6.2	5.9	6.3	6.6	6.4	6.3	6.5	5.1	4.7	6.2
SOUTHSHORE	4.9	5.8	6.0	6.2	6.1	6.4	6.5	6.2	6.2	6.2	5.0	4.4	6.1
CENTURY	5.2	6.1	6.6	6.0	5.9	6.5	6.2	6.3	6.2	6.2	5.1	4.8	6.1
IMPERIAL	5.0	5.4	6.0	5.8	5.9	6.4	6.2	6.4	6.3	6.3	5.1	4.8	6.1
BAR WS 42102	4.1	5.1	5.5	5.8	5.8	6.3	6.4	6.4	6.1	5.9	4.8	4.2	6.0
BACKSPIN	4.6	5.7	5.9	5.7	5.7	6.3	6.3	6.4	6.1	5.9	5.1	4.5	5.9
PENNLINKS	4.8	5.2	5.6	5.7	5.8	6.1	6.1	6.0	6.3	6.1	4.9	4.4	5.9
DG-P	5.1	5.5	5.8	5.9	5.6	6.1	6.2	5.9	6.2	6.0	5.1	5.1	5.9
SR 1020	4.9	5.7	6.4	5.7	5.7	5.9	6.1	6.1	6.1	6.1	5.2	4.6	5.9
CRENSHAW	4.1	4.5	5.8	5.5	5.5	6.1	6.4	6.3	6.1	6.1	4.9	4.2	5.8
ISI-AP-891500	5.0	5.5	5.8	5.7	5.6	6.0	5.9	5.9	6.0	5.9	5.4	4.7	5.8
REGENT	4.7	5.3	5.4	5.4	5.6	6.0	6.0	5.9	6.0	5.9	5.1	4.6	5.8
PRO/CUP	4.4	4.9	5.4	5.8	5.7	6.0	6.1	5.8	5.9	5.8	4.7	4.3	5.7
TRUELINE	4.2	5.0	5.3	5.6	5.6	6.0	6.1	5.8	6.0	5.8	4.8	4.0	5.7
MSUEB	5.0	5.2	4.9	5.6	5.5	5.8	6.1	5.8	6.1	5.8	4.6	4.5	5.7
LOPEZ	4.4	4.8	5.5	5.6	5.5	6.0	6.0	6.0	5.9	5.9	4.4	4.2	5.7
MARINER	5.0	4.8	5.2	5.2	5.2	5.6	5.7	5.7	5.7	5.5	4.7	4.4	5.4
PENNCROSS	4.5	5.0	5.0	5.3	5.3	5.6	5.8	5.5	5.7	5.5	4.7	4.3	5.4
18 TH GREEN	3.8	4.7	5.5	5.1	5.3	5.7	5.9	5.7	5.4	5.1	3.9	3.8	5.3
SEASIDE	4.3	4.0	4.6	4.2	4.2	4.6	4.6	4.6	5.0	4.5	4.4	4.2	4.6
BAR AS-492	3.9	4.1	4.0	4.1	4.2	4.4	4.5	4.8	5.0	4.4	4.4	3.8	4.4
TENDENZ	3.8	3.9	4.4	4.4	4.3	4.5	4.4	4.5	4.5	4.2	4.1	3.8	4.3
LSD _{0.05}	1.0	0.9	0.9	0.6	0.5	0.4	0.4	0.5	0.5	0.5	0.9	1.1	0.4

¹Turfgrass quality ratings on a 1 to 9 scale where 9 = ideal turf. To determine statistical differences among entries, subtract on entry's mean from another entry's mean. Statistical differences occur when this value is larger than the corresponding LSD_{0.05} value