



Penneagle Creeping Bentgrass

by DR. J. M. DUICH

USGA, GREEN SECTION funding of a bentgrass breeding program at Pennsylvania State University, University Park, Pennsylvania, has substantially aided the development of a new seeded variety — Penneagle Creeping Bentgrass. In addition, Green Section personnel were involved in its golf course testing and have been selecting promising material for fairway bent improvements in progress.

Penneagle, tested as PSU-PBCB, was developed in its present form with the main objectives being a broad genetic base without gross segregation, putting green quality, vigor to compete favorably with annual bluegrass, *Poa annua*, but curtailed compared to Pennncross, favorable disease resistance, and good commercial seed yields.

The program was initiated in 1958 using a pool of 156 vegetative bent

lines on which turf performance was available for up to 15 years. From this group, 21 lines were selected and vegetatively planted for seed production and crossing data in an 18-replication top-cross nursery. Following initial seed harvest, 16 of the original 21 were planted for turf testing. Replicated trials were maintained at 3/16- and 1/2-inch cutting heights, and two nitrogen levels to screen for turf quality and excessive vigor types.

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Penneagle mowed at 1/8 inch. Stimpmeter speed 9 feet, 6 inches.



**TABLE 1
Origin of Four Parental Clones of Penneagle Bentgrass**

Parent	Origin
No. 1	3rd generation selection from 1938 Washington bent.
No. 2	3rd generation selection from 1930 Seaside bent.
No. 3	3rd generation selection from 1932 Cocos bent.
No. 4	2nd generation selection from 1933 Washington bent.

**TABLE 2
1965 Bentgrass Variety Trial. Average Annual Turf Quality and Disease Data for Seeded and Vegetative Bents, 1966-77. University Park, Pa.**

Seeded	Turf Quality	% Poa	Dollarspot Per Sq. Ft.	Snowmold	Red Leafspot	Brownpatch
Penneagle	8.9*	1.0	4.2	2.0**	1.1**	1.1**
Seaside	5.2	18.8	7.8	2.7	3.6	4.3
Penncross	8.6	1.2	20.2	2.1	2.2	1.5
PSU-F	8.6	1.0	6.5	0.9	3.5	1.5
PSU-J	8.3	4.0	11.0	1.9	1.3	2.1
Vegetative						
Arlington	5.8	15.4	4.5	3.2	3.7	2.2
PSU-101	6.0	16.0	7.5	3.8	4.2	3.3
PSU-102	7.1	7.4	4.5	5.7	1.7	1.5
PSU-103	6.3	13.2	6.2	4.8	1.6	3.0
PSU-104	7.8	7.4	30.2	3.6	3.2	4.3
PSU-105	6.5	19.0	4.7	1.7	3.4	1.5
PSU-106	8.3	16.0	4.0	1.3	1.9	1.1
Pennpar	7.5	20.0	4.7	1.7	3.7	1.0
PSU-107	8.6	6.2	2.5	1.9	1.0	1.3
Congressional	5.8	30.2	8.2	0.7	4.2	3.0
Cohansey	6.9	19.4	49.5	2.3	4.9	4.0
PSU-108	7.5	3.0	2.5	1.6	0.8	1.0
Nimisilla	7.5	5.8	5.8	5.1	2.7	3.3

*Scale: 0 to 10, 10 = best

**0 to 10, 10 = most

Penneagle under southern testing on greens on Augusta National Par-3 course.

Based on three-year screening, seven lines showed promise compared to Penncross and Seaside, the commercial checks.

Combinations of the seven lines were grown in Oregon and at Penn State. Component and polycross seed lines were further tested at University Park, and in cooperation with golf course superintendents in Pennsylvania, Ohio, Illinois and North Carolina. Based on performance, a four-

parent polycross combination (Table 1), PBCB, was planted in the 1965 Bent Evaluation Test. One parent was later changed based on further Oregon anthesis (pollination) data.

Long-term test performance data are shown in Table 2 comparing five seeded and 13 vegetative entries. Penneagle consistently produced the top turf quality, resisted *Poa annua* invasion, and provided a high level of resistance to common turf pathogens, including several races of leafspot and dollarspot. Other University Park tests have confirmed the improved performance of Penneagle for withstanding *Poa* invasion, earlier spring greenup and superior low nitrogen performance.

Since 1974, over 2,200 pounds of seed have been distributed to nearly 100 golf courses and stations in the United States, Canada, England, Mexico and South Africa. In addition to two 18-hole courses and four nine-hole additions, golf courses have used seed for nursery trials, practice greens, tees and reseeding of greens, tees and fairways. No negative performance reports were received, other than failures to establish successfully. Use of new greens in approximately six weeks was reported by several co-operators.

Based on experimental and practical use information, PSU-PBCB was formally released as Penneagle bentgrass on August 8, 1978, by the Pennsylvania Agricultural Experiment Station. Penneagle is a registered variety under the U.S. Plant Variety Protection Act and available commercially as certified seed only.

The development of this variety is another example of Better Golf Through Research, as supported through research grants of the USGA in continued cooperation with land grant experiment stations of various state universities.

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(Top) Varietal difference to Poa annua invasion in four-year stand. Penneagle vs. Emerald.

(Center) Varietal response to low nitrogen, three pounds annually. Left, Seaside; center, Penneagle; right, Penncross.

(Right) Fairway tests. Left, Seaside; center, Penncross; right, Penneagle.

