

BREEDING AND DEVELOPMENT OF BENTGRASSES

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The bentgrass breeding program is entering its sixth year of funding by the USGA/GCSAA - Bentgrass Research, Inc. Considerable progress has been made these past four-plus years with three synthetic populations being advanced to breeder/foundation fields in Oregon in January, 1989. New crossing blocks and hybridization nurseries were established in Oregon in 1988-89 and will be used for extensive single and polycross matings beginning in 1990.

Foundation fields of the three synthetics suffered severe winter damage in February 1989 resulting in poor seed production this year. Regardless, sufficient seed of Syn1-88 was produced on an older planting and was entered in the NTEP Bentgrass Test for Modified Soils and has been planted at 16 locations in the United States. The NTEP Bentgrass Trial with a total of 20 entries was planted on 10 October at TAES-Dallas on a modified green.

Syn3-88 and Syn4-88 failed to produce sufficient seed to enter at all the NTEP trial sites. However, we have contracted with five key locations across the United States to include both of these in the NTEP trials for comparative evaluation. Additional transplants of all three synthetics were replanted into the foundation fields in Oregon in October, 1989.

Quality evaluations of Syn1-88, Syn3-88, and Syn4-88, tested at Augusta, GA and Dallas, Texas indicate significant differences in performance of the first products of the program. The synthetics are distinct from each other and from the commercially available varieties. Quality ratings by the USGA research group evaluations on 18 July indicate that the three varieties from the program were in the top performance grouping for that date. Phenotypic stability ranking of quality ratings by TAES researchers also indicates progress in the breeding of bentgrasses from this program for use in the Southern United States.

The flexible tube procedure for screening root characters of bentgrass germplasm was completed during 1989. Based on parent-progeny regression analysis, heritability of root extension is 0.76, with significant correlations between root extension and root number, and root number and root area. Heritability estimates for tiller number and tiller dry weights was estimated at 0.31 and 0.32 respectively.

Field observations completed in August 1989, of bentgrass genotypes indicated a significant correlation between root extension and drought resistance.

Assessment of genotype performance continues in the greenhouse, field, and laboratory, with continued screening of germplasm. Superior plants are continually being identified and recycled in the breeding program. Invaluable cooperation continues from Pickseed West, with Mr. Kent Wiley and Dr. Jerry Pepin.