

Breeding and Evaluation of Kentucky Bluegrasses, Tall Fescues, Fine Fescues, Perennial Ryegrasses and Bentgrasses for Turf

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Start Date: 1982
Project Duration: Continuous
Total Funding: \$10,000 per year



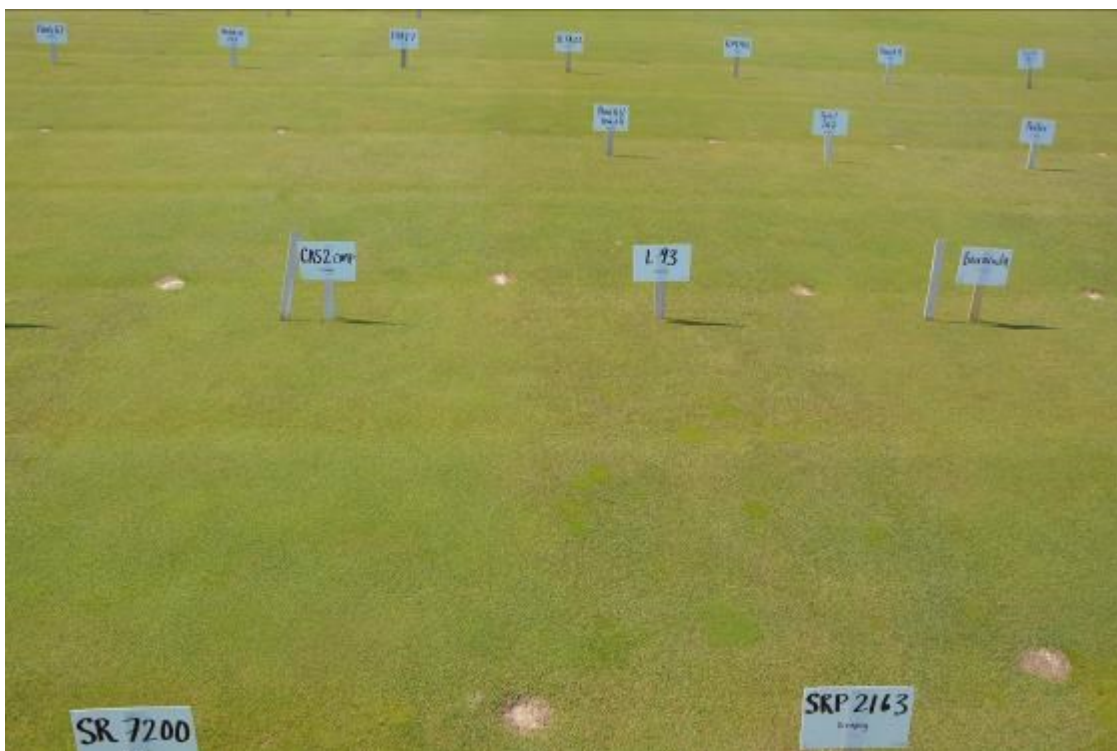
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Objectives:

1. *Collect and evaluate useful turfgrass germplasm and associated endophytes.*
2. *Continue population improvement programs to develop improved cool-season cultivars and breeding synthetics.*
3. *Develop and utilize advanced technology to make current breeding programs more effective and efficient.*

As of October 30, 2014, over 2,200 promising turfgrasses and associated endophytes were collected in Poland, Bosnia, Serbia, Crete, Norway, Finland, Latvia and Norway. These are having seed produced in the Netherlands and will be evaluated in New Jersey. Over 9,949 new turf evaluation plots, 86,640 spaced-plant nurseries and 30,095 mowed single-clone selections were established in 2014.

Over 210,000 seedlings from intra and inter-specific crosses of Kentucky bluegrass were screened for promising hybrids under winter greenhouse conditions and the superior plants were put into spaced-plant nurseries in the spring. Over 6,700 tall fescues, 9,600 Chewings fescues, 8,650 hard fescues, 13,500 perennial ryegrasses and 10,000 bentgrasses were also screened during the winter in greenhouses and superior plants were put in spaced-plant nurseries. Over 140 new inter- and intra-specific Kentucky bluegrasses were harvested in 2014.



Velvet, colonial and creeping bentgrass putting green trial at Rutgers University.

The following crossing blocks were moved in the spring of 2014: 7 hard fescues (371 plants), 4 Chewings fescues (194 plants), 18 perennial ryegrasses (843 plants), 4 strong creeping red fescues (159 plants), 18 tall fescues (590 plants), 9 creeping bentgrasses (159 plants) and 3 colonial bentgrasses (70 plants).

To enhance our breeding for resistance to gray leaf spot, a July 07, 2014 planting of 1600 perennial



Photo of the colonial bentgrass plots at Rutgers University.

ryegrasses were seeded. Excellent *Pythium* blight control was attained and a good gray leaf spot epidemic occurred. This data will be used to select future varieties of perennial ryegrass. Over 12,500 perennial ryegrasses were planted in the spring of 2014 as spaced-plants. They were allowed to develop seed heads in the late spring and selections were made for stem and crown rust resistance and heat tolerance.

The breeding program continues to make progress breeding for disease resistance and improved turf performance. New Promising varieties named and released in 2014 were Reenvair, Vision, Fusion and Manhattan 6 perennial ryegrasses; Reflection, Rambler II, Slate, Leonardo, Rockwell and Michelangelo tall fescues; Gibraltar Gold creeping fescue; Waterworks, Zinger and Dauntless Kentucky bluegrass; and Cobra 2 creeping bentgrass.

Summary

- Continued progress was made in obtaining new sources of turfgrass germplasm. These sources are being used to enhance the Rutgers breeding program.
- Modified population backcrossing and continued cycles of phenotypic and genotypic selection combined with increasing sources of genetic diversity in turfgrass germplasm. This has resulted in the continued development and release of top performing varieties in the NTEP.
- Four perennial ryegrasses, 6 new tall fescues, 3 Kentucky bluegrasses and 1 fine fescue ,and 1 creeping bentgrass were released in 2014.
- Published or have in press 3 referred journal articles in 2014.