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Breeding and Evaluation of Kentucky Bluegrass, Tall Fescue, and Perennial Ryegrass for Golf Turf Use

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We are continuing an extensive program to collect, evaluate, enhance, and preserve turfgrass germplasm and to participate in the development of turfgrass cultivars with improved stress tolerance, increased persistence, greater pest resistance, and reduced maintenance requirements.

1. Additional turfgrass germplasm collections were made in Delaware, Louisiana, Maryland, New Jersey, and Texas.
2. Over 1,000 newly collected plants were screened for useful *Acremonium* endophytes. New sources of endophyte were found in blue fescues, strong creeping red fescues, slender creeping red fescues, and Chewings fescues. However, we have been unsuccessful, to date, in finding a useful *Acremonium* endophyte in Kentucky bluegrass, creeping bentgrass, or Colonial bentgrass.
3. The first certified seed crops were harvested from advent, Envy, Legacy, and SR-4000 perennial ryegrass; Austin, Hubbard 87, and Shenandoah tall fescues; SR-5000 Chewings fescue; and Suffolk Kentucky bluegrass. Germplasm obtained from the New Jersey Agricultural Experiment Station was used in the development of these cultivars.
4. Over 9,000 turf plots were seeded in 1990 along with over seven additional acres of spaced-plant nurseries.
5. Striking resistance to chinch bugs was observed in strong creeping red fescues containing some, but not all, biotypes of *Acremonium typhinum*. Various strains of endophytes are showing significant differences in their ability to enhance host plant performance.
6. Progeny of an *Acremonium* endophyte infected strong creeping red fescue collected from the Rose City Cemetery in Portland, Oregon showed excellent resistance to dollar spot in turf trials in New Jersey. Studies have been initiated to determine if this resistance is genetic or associated with this particular strain of endophyte.
7. Considerable genetic variability in resistance to summer patch has been observed both within and between species and subspecies of fine fescue in field and growth chamber tests. Opportunity exists to develop more resistance cultivars.