Breeding and Evaluation of Kentucky Bluegrass, Tall Fescue, Fine Fescue, Perennial Ryegrass, and Bentgrass for Turf

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Goals:

- Collect and evaluate interesting turfgrass germplasm.
- Collect and evaluate endophytes associated with cool-season turfgrass species.
- Continue the breeding and development of new cool-season turfgrasses.

Promising turfgrass germplasm and associated endophytes were collected from old turfs in New Jersey, Colorado, France and Spain. New sources of endophytes were found in *Poa* species native to Colorado and the mountains between France and Spain.

Severe turf loss was observed on all endophyte-free fine fescues in the 1989 National Fine Fescue Tests at both Adelphia and North Brunswick, NJ. Damage on endophyte-free fine fescues initially appeared as a summer patch disease with many root systems colonized by ectotrophic fungi. High populations of chinch bugs subsequently increased turf damage and slowed recovery. Studies are in progress to determine whether some endophytes in fine fescue might be associated with enhanced summer patch disease resistance.

Acremonium endophyte-enhanced resistance to dollar spot disease was again observed in field trials of fine fescue. Both mycelial growth and damage by the dollar spot fungus was greatly reduced on fine fescues containing an endophyte.

A few experimental selections of Kentucky bluegrass are performing well in low-maintenance turf trials receiving limited fertilizer, no irrigation, and no fungicides or insecticides. Most of the entries showing the best recovery from severe summer stress have been classified as mid-Atlantic ecotypes. They have deep extensive rhizomes, an ability to develop a deep root system during hot weather, medium broad leaves, and a growth habit intermediate between the tall narrow-leaved midwest common types and the lower-growing turf types. They are much more vigorous in spaced-

plant nurseries than most turf-types. They generally show improved resistance to billbugs and better tolerance to some other insect pests.

The BVMG (i.e., BARON, VICTA, MERIT, GNOME) types of Kentucky bluegrass are showing increasing damage from stripe smut and other turfgrass maladies. The widespread use of these similar and probably closely related bluegrasses appears to promote an increasing abundance of pathogens adapted to these host genotypes.

Seed production was initiated on ELF and APM perennial ryegrasses. Germplasm developed at the New Jersey Agricultural Experiment Station was used in the breeding of these varieties.