Turfgrass Breeding and Genetics Research Program

By Dr. Eric Watkins
Turfgrass Breeding and Genetics
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My goal is to expand the University of Minnesota turfgrass breeding program to include most of the major cool-season turfgrass species. Our climate provides a unique opportunity to develop turfgrass varieties that are tolerant of severe winters and the diseases associated with our environment.

Tall fescue is considered to be the most drought tolerant cool-season turfgrass. Turf-type tall fescue is currently a popular turfgrass in many parts of the United States; however, it is not commonly used in many areas in the northern United States due to its poor winter-hardiness. Research at the University of Wisconsin has suggested that the species has the potential to succeed in colder environments, especially when seeded in the spring. The University of Minnesota turfgrass breeding program will aim to develop turf-type tall fescue cultivars that can be seeded in the fall and thrive in our climate. In the coming months, we will be using controlled-freezing methods in order to quickly assess the cold tolerance of currently-available tall fescue germplasm. A successful controlled freezing test would help to accelerate the tall fescue breeding program.

The fine fescues (strong and slender creeping red fescue, hard fescue, sheeps fescue, Chewings fescue, blue fescue) can be effectively used in many low and medium-maintenance situations. Some of these species are already important components of many turf areas in the state. We will continue to evaluate these species and plan on beginning a fine fescue germplasm improvement program in the near future. The breeding program will also investigate the potential of native grass species for use as turf. The initial phase of this project will involve the collection of germplasm from native stands. Native grass species should be adapted to our climate and may be able to fill specific needs for the turfgrass industry of the state. In the next couple of years, we will evaluate velvet bentgrass and colonial bentgrass for use on golf greens and fairways. These species perform quite well in certain parts of the country; if currently available cultivars show promise in our trials, we will initiate breeding programs in one or both of these species.

I am also working with Dr. Nancy Ehlke (Department of Agronomy and Plant Genetics) on perennial ryegrass and Kentucky bluegrass germplasm improvement programs. A number of Kentucky bluegrass lines that we are working on with Rutgers University have performed very well in preliminary trials. This collaboration should result in varieties that not only perform well as turfgrass, but can be grown for seed production by grass seed producers in northern Minnesota.

Although developing new turfgrass varieties can be a slow process, the potential rewards are worth the effort. We will work to ensure that, in the coming years, Minnesota's turfgrass managers are provided with new grass varieties that thrive in our climate.

Biography: Dr. Eric Watkins
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I was raised near Sunburg, Minnesota, and graduated from Kerkhoven-Murdock-Sunburg high school in 1994. In the fall of that year, I enrolled at the University of Minnesota in the Department of Agronomy and Plant Genetics. While at the University, I worked for Dr. Nancy Ehlke's turfgrass and forage breeding program. This experience led to me to pursue graduate study in turfgrass breeding and genetics. In July 1998, after completing my undergraduate degree, I began my graduate study at Rutgers University in New Brunswick, New Jersey. I worked under Dr. William Meyer in the Rutgers turfgrass breeding program. While at Rutgers I was involved in many aspects of turfgrass breeding and genetics. I was heavily involved in turf-type tall fescue breeding, especially the development of germplasm with resistance to brown patch disease. My Ph.D. thesis focused on tufted hairgrass, a species native to many parts of the Northern Hemisphere, which shows promise as a low-maintenance cool-season turfgrass. I completed my graduate degree at Rutgers in January, and have been at the University of Minnesota since the beginning of February.