

# Prairie Junegrass: A Native Grass for Turf

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Recently, increased attention has been focused on the environmental effects of turfgrass areas such as home lawns and golf courses. In Minnesota, the most well-known of these efforts is the ban on phosphorus fertilizers for turf areas. In the coming years, an important issue for golf course superintendents and other turf managers will be the availability of turfgrass varieties that can perform well in low-input situations.

Grass species that are native to North America should be better able to cope with our environment and could lead to overall reductions in inputs such as fertilizers, pesticides and water. Prairie Junegrass, which is native to the Great Plains of the United States, has shown the potential to be successfully used as a turfgrass in lower-input environments (Mintenko et al., 2002). Based on data that has been collected during the past year, this species appears to perform well in Minnesota under low-input conditions (no

irrigation, limited nitrogen application and no fungicide or insecticide applications) (data available at [www.turf.umn.edu](http://www.turf.umn.edu)).

Prairie junegrass has several attributes that would make it a useful low-input turfgrass in Minnesota including tolerance of droughty and alkaline soils, tolerance of sandy areas, survival of low and high temperature extremes and reduced growth rate (Dixon, 2000). The goal of our breeding program is to develop a Prairie Junegrass variety that exhibits these traits in a low-input turfgrass situation. A successful variety could be used for golf course roughs, parks, and home lawns.

In July of 2005, we collected Prairie Junegrass seed from several locations in

western Nebraska and northeastern Colorado. These collections were established in a breeding nursery last fall and we are currently developing breeding populations using this material. Seed from these populations will be used to evaluate this germplasm for use as a low-input turfgrass beginning this fall.

Dixon, J.M. 2000. *Koeleria macrantha* (Ledeb.) Schultes (*K. alpigena* Domin, *K. cristata* (L.) Pers. pro parte, *K. gracilis* Pers., *K. albescens* auct. non DC.). *J. Ecol.* 88:709-726.

Mintenko, A.S., S.R. Smith, and D.J. Cattani. 2002. *Turfgrass evaluation of native grasses for the northern Great Plains region.* *Crop Sci.* 42:2018-2024.

## Technology to Improve Water Use Efficiency

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As many of you know, water is becoming a large issue all around the country. In Minnesota, recently passed water use rate fees are cause for concern with turfgrass managers. Anticipating further water restrictions, it is only a matter of time before the amount and quality of water is limited. Therefore, anything that can improve water use efficiency will become valuable to the turfgrass manager.

This summer I will begin my graduate school research, which will look at technology to help with this issue. This technology has been used for many agronomic crops with great success. The technology involves shining infrared light on the turf canopy and using reflectance meters to measure the light reflected off the canopy. The data is downloaded to a computer program where it can be analyzed. One unique feature of the computer program is its ability to create a map of a golf course and highlight the stressed areas.

My research objective is to determine if this technology can predict drought stress in creeping bentgrass under two different fairway conditions. Treatments imposed will consist of two nitrogen rates and irrigating to replace four different ET rates. To determine if this technology can predict drought stress, I will compare light reflectance readings from the sensors to a visual rating. This visual rating will analyze the condition of the turf and need for water related to what a turfgrass manager would normally view. A 50' by 52' rain shelter is currently being constructed at the TROE center and will be functional by Field Day on July 27, 2006.

It is my anticipation that this technology will be able to sense drought stress before I will be able to visually see it. If this occurs, this technology will be of great use to turfgrass managers because it will provide the ability to use a wilt-based irrigation strategy more effectively and with confidence.

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