

## Weed Management in Tall Fescue

Researchers at the University of Maryland, College Park, conducted a study to determine how weeds and tall fescue (*Festuca arundinacea*) quality are influenced by mowing, nitrogen and herbicides. Smooth crabgrass (*Digitaria ischaemum*) and white clover (*Trifolium repens*) infestations were compared in plots of Rebel II tall fescue. Plots received one of three herbicide treatments (dithiopyr, pendimethalin, fenoxaprop) or no herbicide treatment. Three mowing heights were compared (1 1/4", 2", 3 1/2") as well as high and low nitrogen inputs.

Smooth crabgrass encroachment was the primary factor affecting overall turf quality and final cover ratings of Rebel II tall fescue. In the absence of herbicide use, smooth crabgrass reduced turf cover when mowed at either 1 1/4" or 2". Plots mowed at 3 1/2" resisted smooth crabgrass invasion and maintained 100% tall fescue cover, even in nonherbicide-treated plots.

Researchers concluded that high mowing (3 1/2") was of greater significance than nitrogen level or low herbicide rate use in maintaining tall fescue cover with a minimum of smooth crabgrass. Where low mowing is required, however, data show that herbicide use is justified where smooth crabgrass is a chronic problem. Conversely, data showed that white clover was more invasive in high cut turf. White clover ratings were lowest in dithiopyr and fenoxaprop-treated plots.

(From: P.H. Dernoeden, M.J. Carroll, and J.M. Krouse. 1993. *Weed Management and Tall Fescue Quality as Influenced by Mowing, Nitrogen, and Herbicides*. *Crop Science* 33:1055-1061.)

## Screening Perennial Ryegrass Cultivars for Heat Tolerance

The accurate evaluation of thermal tolerance among turfgrasses is important. Heat-tolerant cultivars are more competitive during high temperature stress and therefore are more desirable. Evidence suggests that heat shock proteins (HSP) may be involved in differences in thermal tolerance among perennial ryegrass (*Lolium perenne* L.) cultivars, and researchers at Ohio

State University conducted laboratory assays to study the feasibility of developing a rapid and reliable characterization of thermal tolerance in perennial ryegrass.

Thermal-tolerant and thermal-sensitive cultivars were germinated and heat treatments were applied; HSP genes were used to evaluate thermal tolerance. The results indicated that the ability of a heat-tolerant perennial ryegrass cultivar to withstand heat stress is associated with an enhanced ability to express at least one HSP gene sequence. It is suggested that this enhanced expression could be used to develop an accurate laboratory screening procedure for improved thermal tolerance.

(From: J.A. DiMascio, P.M. Sweeney, T.K. Danneberger, and J.C. Kamalay. 1994. *Analysis of Heat Shock Response in Perennial Ryegrass using Maize Heat Shock Protein Clones*. *Crop Science* 34:798-804.)

## Alleviation of Salinity Stress in Kentucky Bluegrass

Water relegated for use in turfgrass irrigation is often high in soluble salts. High levels of salinity can be detrimental to seedling development and plant growth. Experiments conducted at Virginia Polytechnic Institute in Blacksburg, VA looked at the potential of applying selected substances (including seaweed extracts, triazole fungicides, plant growth regulators and chelated iron) to Kentucky bluegrass to alleviate the effects of saline irrigation.

Results showed that application of two seaweed extracts and two triazoles increased bluegrass salt tolerance as evidenced by enhanced shoot and root growth. These treatments also protected green pigmentation and were associated with increased leaf water content. Researchers conclude that selected materials have potential use for Kentucky bluegrass production in saline environments.

(From: D.A. Nabati, R.E. Schmidt, and D.J. Parrish. 1994. *Alleviation of Salinity Stress in Kentucky Bluegrass by Plant Growth Regulators and Iron*. *Crop Science* 34:198-202.)



## Scanning the Journals

*A review of current journal articles*

*High mowing was of greater significance than nitrogen level or herbicide rate in maintaining tall fescue cover.*

*The ability of heat-tolerant perennial ryegrass to withstand heat stress is associated with the ability to express at least one HSP gene sequence.*

*Researchers in Virginia found materials with potential use for Kentucky bluegrass production in saline environments.*

3