Relationship of Growth Cessation with the Formation of Diferulate Cross-links and p-Coumaroylated Lignin in Tall Fescue Leaf Blades. (C02-grabber090353-Oral)

Authors:

- J.H.Grabber - *U.S. Dairy Forage Research Center, USDA-*
- J.W.MacAdam - *Utah State University*

Abstract:

Ferulate deposition, 5-5-coupled diferulate cross-linking, and lignification of primary walls has been correlated with reduced extensibility and growth of coleoptiles. We examined relationships among ferulate, diferulate, and p-coumarate accretion with changes in the segmental elongation rate (SER) of leaf blades from slow and rapid elongating genotypes of tall fescue (Festuca arundinacea Schreb) grown in a controlled environment chamber. SER was not influenced by ferulate deposition but SER decelerated as 8-5-, 8-O-4-, 8-8-, and 5-5-coupled diferulic acids accumulated in cell walls. SER rapidly slowed and stopped with the deposition of p-coumarate, which is associated with lignification in grass cell walls. Accretion of ferulate, diferulates and p-coumarate continued after growth ended, into the later stages of secondary wall formation. The concentration of 8-coupled diferulates dwarfed that of the commonly measured 5-5-coupled isomer, suggesting that the latter dimer is a poor indicator of diferulate cross-linking in cell walls. Further work is required to clearly demonstrate the role of diferulate cross-linking and lignification in halting leaf growth in grasses.

Corresponding Author Information:

John Grabber
USDA-ARS
1925 Linden Drive West
Madison, WI 53706

phone: 608 264 5820
e-mail: jgrabber@facstaff.wisc.edu

Presentation Information:

Presentation Date: Thursday, November 14, 2002
Presentation Time: 8:15 am

Keywords:

growth cessation, tall fescue, diferulate, lignin