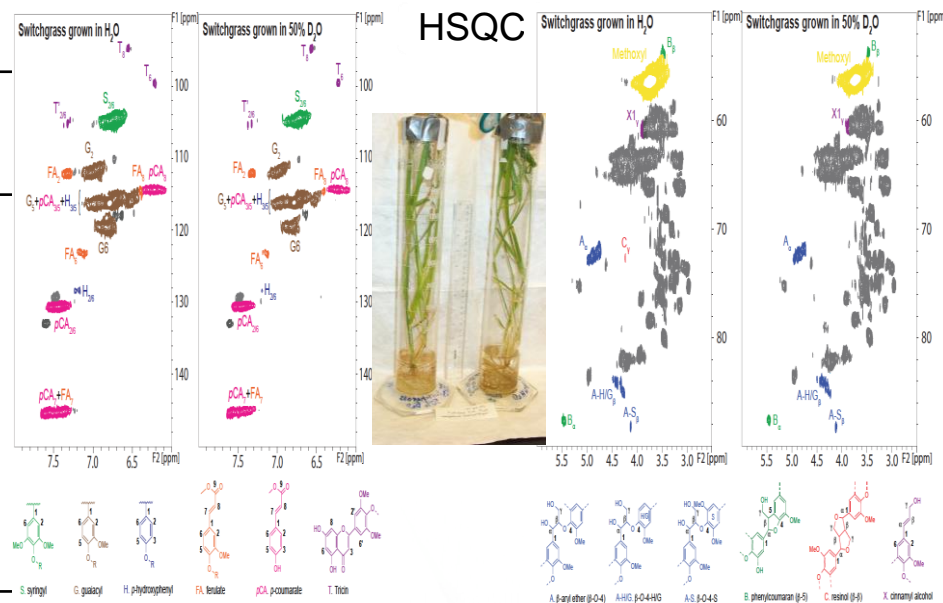


The effect of in-vivo deuteration on structure of switchgrass lignin

For the first time, in-vivo deuterated lignin isolated from switchgrass without addition of deuterium-labelled lignin precursors was characterized in details by various analytical techniques.

Objective	<ul style="list-style-type: none"> Determine if in-vivo hydroponic deuteration changes the physicochemical characteristics of lignin in plant cell wall
New science	<ul style="list-style-type: none"> FTIR confirmed the non-exchangeable deuterium substitution in lignin, and deuterated lignin had all the characteristic bands of typical native milled wood lignin GPC results demonstrated that deuterated lignin had slightly higher molecular weight, presumably due to an isotope effect ³¹P and HSQC results revealed that lignin in deuterated switchgrass preserved its native chemical characteristics
Significance	<ul style="list-style-type: none"> The conserved characteristics of lignin after in-vivo deuteration show its great potential applications for structural and dynamic studies of lignocellulose by techniques such as neutron scattering

Xianzhi Meng, Barbara R. Evans, Chang Geun Yoo, Yunqiao Pu, Brian H. Davison, Arthur J. Ragauskas. The effect of in-vivo deuteration on structure of switchgrass lignin. 2017, ACS Sustainable Chemistry & Engineering, In Press.



H_2O **Switchgrass** D_2O

Switchgrass was grown hydroponically from tiller cuttings in 50% D_2O , and lignin isolated from the deuterated switchgrass preserved its native physicochemical characteristics