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Plant Biology Colloquium | Kelsey Bryant Dissertation Defense, Feb 26

Ohio University College of Arts & Sciences

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Kelsey Bryant

The Environmental & Plant Biology Colloquium Series presents Kelsey Bryant giving her dissertation defense on "Determining and Comparing Hydraulic Behavior between Trees of Differing Wood Types and Ages in a Temperate, Deciduous Forest" on Friday, Feb. 26, at 11:50 a.m. via Teams.

Bryant is a Ph.D. candidate in Environmental & Plant Biology.

- Join on your computer or mobile app
- **Or call in (audio only)** +1 614-706-6572,,364942378# United States, Columbus Phone Conference ID: 364 942 378#

Abstract: Carbon-mediated hydraulic failure is the current leading hypothesis for tree mortality. However, the physiological mechanisms of this process are complex and vary among species and environment. The way in which a tree responds to drought is defined as its hydraulic behavior, which is described using a framework called the isohydric/anisohydric continuum. Theoretically, diffuse-porous and ring-porous trees should fall at opposite ends of this continuum due to their contrasting xylem anatomy and associated carbon requirements. While previous studies have documented this trend, the relationship between wood type and hydraulic behavior is still unresolved, particularly in temperate forests. The overall goal of my research was to describe hydraulic behavior in ring- and diffuse-porous species in a temperate, deciduous forest. I included both saplings and mature trees to understand the influence of age class on hydraulic behavior. My results indicate a distinct dichotomy between isohydric, diffuse-porous Acer saccharum and anisohydric, ring-porous Carya ovata; however, other species exemplify a spectrum of hydraulic behaviors, falling along a gradient between wood types. This pattern was consistent among age classes, indicating that hydraulic behavior may not be influenced by age within a forest. Overall, this work provides new insights into the physiological mechanisms responsible for carbon-water trade-offs in ring- and diffuse-porous trees in temperate forests.