

MICHAEL PRACT and RICO GAZAL, Department of Land Resources, Glenville State College, Glenville, WV, 26351. Determining Water Use among Oak Species through Sap Flow Measurements.

The objective of this study is to quantify how much water is utilized by oak trees in an oak-hickory forest in Glenville, WV from the onset of leaf budding to peak growing season. Water use directly correlates with transpiration among plants, which is the water lost through stomata as a consequence of photosynthesis. Stomatal activity is also affected by environmental and atmospheric variables. A CR-1000 data logger equipped with Thermal Dissipation Probes (TDP) will be used to collect sap flow data every 30 minutes. The TDP will be placed in holes drilled through the cambium and into the xylem layer of each tree. An electrical charge of 3.02 volts is sent from the data logger to the topmost probe causing it to heat up, and the second probe measures the temperature difference every 30 minutes.

The site selected for this project is a relatively dry site with west facing slope, 30-37% average slope and approximately 300 m in elevation. Three species of oaks that differ in their level of tolerance to water conditions will be used in the study, namely black oak, chestnut oak, and white oak. An Onset HOBO Weather Station will also be used to record local atmospheric variables such as precipitation, barometric pressure, wind speed/direction, temperature, humidity, photosynthetically active radiation (PAR), and soil moisture. The relationship of tree water use and atmospheric variables will be determined using correlation analysis.