

About

Title: **Automating and Innovating Tree Monitoring Techniques for the Nursery, Arborist, and Forester**

Time: 9:45 - 10:45 a.m.

Room: B115-116

Abstract: This stacked panel of experts will plunge into the current and potential application of exciting new technologies showing promise in automating and innovating the management of nursery stock, and other environments including arboretums and forest stands. New technologies explored during this seminar include drone-based observation and sampling, canopy robotics, and a variety of radio-frequency identification (RFID) applications. Panelists will address the need for RFID amidst compressed profit margins and labor challenges, and will reveal the power of strategic software and RFID integrations.

Handouts: <http://arbrettech.com/events/>

Schedule

Time	Speaker	Topic/Title
9:45 a.m. PST	Facilitator	Panel introduction
9:50 a.m. PST	Jill Calabro, Ph.D.	"The Need and Interest for RFID in Industry"
9:55 a.m. PST	Tom Fernandez, Ph.D.	"RFID for nursery, greenhouse and retail inventory management. Research conducted at J.F. Schmidt, Henry Mast Greenhouses, Countryside Greenhouse (retail garden center), and the MSU research nursery."
10:00 a.m. PST	Matt Vollmer, MBA Benjamin Meyers, BS	"Reducing the stresses of margin compression and labor challenges via strategic software and RFID integrations."
10:05 a.m. PST	Chuck Cannon, Ph.D.	"Drone-based observation and sampling of trees and forest canopies, development of canopy robotics and the fundamentals of a tree observatory."
10:10 a.m. PST	Paul Doruska, Ph.D.	"RFID technology for forest measurements, aiding financial valuation of trees from a wood products perspective."
10:10 a.m. PST	Facilitator	Questions and answers

Biographies

Chuck Cannon, Ph.D.

Director, Center for Tree Science | The Morton Arboretum | ccannon@mortonarb.org

At the Morton Arboretum, we are pursuing a program to document 'whole tree' biology through the simultaneous collection of data from numerous types of sensors, devices, and samples and to synthesize these multiple streams over months, seasons, and years to gain a more comprehensive understanding of the integrated response of trees to different management practices and environmental changes. One major component of that effort is built upon the unique perspective that drones provide to the tree canopy. Using normal photographic and multispectral imagery, we construct 3D models of individual trees quickly and rapidly to provide detailed structural observation and analysis of tree phenology, health, and architecture. We are implementing an ongoing monitoring program to capture the branch level physiological changes in response to environmental factors and climate. Finally, we are currently developing a drone-based sampling device to collect twigs from the tree canopy quickly and easily.

Chuck Cannon is the Director of the Center for Tree Science at the Morton Arboretum. He leads a team of six principal investigators and a large staff of scientists and technicians who study many aspects of arboriculture, ecology, evolution, and conservation of trees. The research is focused on developing solutions to the many challenges that trees face, from natural forests to the built environment, while never abandoning the rigor and principles of fundamental science. Dr. Cannon has published over 70 articles in peer-reviewed journals on a wide range of topics, from the systematics of tropical stone oaks to ecoregional conservation strategies in Indonesia and has been active in tree science research for over thirty years.

Benjamin Meyers

Director & Partner | Arbre Technologies | ben@arbrectech.com

Technical expert and engineer with 10+ years of experience as a developer, architect, consultant, board member, and founder. Ben holds a bachelor degree in Biomedical Engineering from Marquette University. His technical specialties include C#, C, C++, Java, Python, SPlus, Matlab, VHDL, Verilog, Shell Scripting, TCP/IP connections, Subversion, Web design/creation, Database design and management (SQL, MySQL, PostgreSQL), Software, Android and iOS Mobile Applications.

Matthieu Vollmer, MBA

Director & Partner | Arbre Technologies | matt@arbrectech.com

Matthieu is a business and marketing strategist with 10+ years of experience as a director, consultant, president, and board member. While his experience is primarily in strategic marketing development, he holds two Bachelor of Science degrees, one in Communication and the other in Business Administration. He completed a Master of Business Administration (MBA) degree.

Paul Doruska, Ph.D.

Professor of Forest Measurements | University of Wisconsin-Stevens Point | paul.doruska@uwsp.edu

Paul Doruska is a professor of forest measurements. He has previously served as the Associate Dean for Academic Affairs within the College of Natural Resources. He teaches undergraduate and graduate courses in forest measurements, forest biometry, forest management and finance, forest products, natural resources communication and experimental design, in addition to teaching portions of the Introduction to Fisheries, Forestry, and Wildlife and People, Resources and the Biosphere classes in the core curriculum & co-teaching the pulpcut/chainsaw safety course. Paul is involved with international programs and study abroad as he is involved with the CNR European Environmental Seminar course has been involved the Natural Resources, Culture, and Archeology of the Maya World Winterim course and Paul takes pride in serving as the co-faculty advisor to the UW-Stevens Point student chapter of the Society of American Foresters and its woodland sports team.

Paul maintains an active interest in research and professional service. His past research work has focused on stand density index based management, weight scaling of timber, and developing equations to allow foresters to inventory timber by weight. Paul has mentored 18 students on projects in conjunction with the annual CNR Undergraduate Research Symposium. With respect to professional service, Paul remains active in the Society of American Foresters. He currently is the chair of the National Committee on Accreditation and in the past has served as the North/Northeastern Regional Science Representative to the Forest Science & Technology Board, the Science and Technology Chair for the Wisconsin State Society of American Foresters, and as an associate editor for the Journal of Forestry.

Tom Fernandez, Ph.D.

Professor of Horticulture | Michigan State University | fernan15@msu.edu

My research and extension program focus areas are on water quality and management, container substrate properties and nutrition, biodegradable plastics, and analyzing production costs. I am particularly interested in new technology for horticulture, both for research and industry use. Along with water quality research, I am investigating the use of RFID to facilitate precision agriculture practices for container production.

I teach Nursery Management (HRT 310) and Landscape Plant Identification (HRT 211) as well as advise undergraduate and graduate students.

I have delivered over 200 presentations for scientific and industry audiences within Michigan, nationally and internationally and have over 160 scientific, extension and trade journal publications. I work primarily with the ornamental nursery industry but have worked with the greenhouse, fruit, vegetable, and Christmas tree industries related to water quality and irrigation management.

My interest in horticulture arose from working in our family ornamental greenhouse/nursery business. I worked for 8 years in the business participating in all aspects from greenhouse construction to plant production.

Jill Calabro, Ph.D.

Research & Science Programs Director | AmericanHort & HRI | jillc@americanhort.org

Jill Calabro manages all things science-y for AmericanHort and the Horticultural Research Institute (HRI), including HRI's annual grants program. She also promotes HRI-supported research results and dabbles in regulatory advocacy to help ensure success of the green industry. In her personal time, Jill chases after her five-year-old son and proudly knows the names of all the Thomas the Tank Engine friends.