



It's All About Water and Increasing Your Bottom Line

Tuesday, July 28, 2015, Conference, 8:30 a.m. – 5:00 p.m.

Wednesday, July 29, 2015 – Optional Tour

Amway Grand Plaza Hotel

Grand Rapids, MI

The Department of Horticulture at Michigan State University
and the Michigan Nursery and Landscape Association are pleased to announce
a conference for growers interested in improving their water management knowledge.

Sponsored by MSU AgBioResearch and MSU Extension



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HORTICULTURE
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Extension





TUESDAY, JULY 28, 2015 CONFERENCE

Learn from national experts in water quality and management issues related to the Green Industries at this 1-day conference. Speakers will cover topics ranging from irrigation management to how better water management can increase your bottom line and motivate consumer purchasing.

Presenters and topics:

1. Tom Fernandez, Michigan State University- Introduction
2. Amy Fulcher, University of Tennessee- Irrigation strategies to improve plant production and conserve water
3. Marc van Iersel, University of Georgia- Current state of automated irrigation systems- how they work, where/how to buy or develop, example(s) of system(s) in use
4. Jim Owen, Virginia Tech- Getting the most out of your fertilizer: How placement and irrigation management affect fertilizer availability
5. Sarah White, Clemson University- Recycling irrigation water: From the pump to the pond and back again
6. Rosa Raudales, University of Connecticut- Waterborne pathogens: Problems and management
7. Paul Fisher, University of Florida- Designing an effective water treatment system: Case studies of grower operations
8. John Majsztrik, Clemson University (work presented from time at University of Maryland)- Economics of improved irrigation management
9. Bridget Behe, Michigan State University- How growers can capitalize on consumer perceptions of improved water management

WEDNESDAY, JULY 29, 2015 OPTIONAL TOUR

- Optional Tour is available of nurseries and greenhouses focusing on water management strategies and other technology. The tour departs from and returns to the Amway Grand Plaza Hotel.
- The registration fee for the conference is \$90 and includes lunch.
- The optional tour fee is an additional \$50 per person and will include lunch.
- Overnight accommodations are available at the Amway Grand Plaza Hotel for our group at the rate of \$129 plus taxes and fees. Contact the Amway Grand Plaza directly at either toll-free 800-253-3590/local 616-776-6450 and mention the MNLA, MSU Water Conference to get our group rate. There are limited rooms at this rate so register early.





REGISTRATION FORM

Firm Name _____

Contact Person _____

Address _____

Phone _____ Fax _____

Email _____

COST: Conference \$90 ____ Optional Tour \$50 ____ Total: \$_____

Attendee #1 _____

Attendee #2 _____

Attendee #3 _____

PAYMENT INFO:

☐ VISA ☐ MC ☐ Discover ☐ AmEx Exp. Date: _____ CVC _____

Signature _____

Please make checks payable to: Michigan Nursery & Landscape Association

Registration Form and payment can either be emailed, faxed, or mailed to:

Email: amyf@mnla.org

Fax: (517) 381-0638

Mail: 2149 Commons Parkway, Okemos, MI 48864

QUESTIONS?

Contact either Dr. Tom Fernandez at: fernan15@msu.edu or (517) 355-5191, ext. 1336 or
Amy Frankmann at either amyf@mnla.org or (517) 381-0437





CONFERENCE PRESENTER AND TOPIC DETAILS:



Irrigation Strategies to Improve Plant Production and Conserve Water **Dr. Amy Fulcher, University of Tennessee**

Timer-based irrigation is a standard practice in nurseries. However, timer-based irrigation does not account for daily fluctuations in weather conditions that drive plant water use and evaporation. Growers have many options to enhance the efficiency of irrigation, reduce leaching of fertilizer, herbicides and other inputs, and improve plant growth. This presentation will provide an overview of strategies and simple techniques that can be easily implemented at nurseries as well as more advanced irrigation scheduling concepts.

Amy is an Assistant Professor of Sustainable Ornamental Plant Production and Landscape Management in the University of Tennessee Department of Plant Sciences. Amy works with County Extension Agents and the nursery crops industry to optimize production practices in order to enhance the quality and profitability of Tennessee nursery products. She is the lead developer for IPMPro, the first app for the U.S. Green Industry and IPMLite, its counterpart for home gardeners. She is also co-editor of IPM of Select Deciduous Trees in Southeastern U.S. Nursery Production, the first iBook on IPM for the U.S. nursery industry. Amy and colleagues recently developed the Tennessee Master Nursery Producer Program, a comprehensive non-credit education program for nursery crop producers. Amy's research focus includes sustainable nursery crop irrigation, including investigating the effects of oxygenating irrigation water, integrated pest management, and use of plant growth regulators to enhance quality and reduce production cycle duration during woody plant production. She recently worked collaboratively with several land grant universities to investigate alternative containers and with the USDA-ARS, Oregon State University and Ohio State University to test laser-guided intelligent spray systems, in an effort to increase sustainable production practices. Prior to coming to Tennessee, Amy worked in nursery crops extension and research in Kentucky for 8 years.



Controlling Irrigation Using Soil Moisture Sensors: How and Why **Dr. Marc van Iersel, University of Georgia**

Soil moisture sensors can be used to monitor the water content of the soil or substrate. This information can be used to determine when irrigation is needed and how much irrigation water needs to be applied. By integrating soil moisture sensors into automated control systems, irrigation can be based on actual crop water requirements: crops get watered only when needed and with the amount of water required. Doing so not only greatly reduces water use, but also has many indirect benefits, including reduced disease pressure, less leaching of fertilizer, improved crop quality, and, ultimately, increased profits. Growers have a variety of options if they want to implement sensor-controlled irrigation systems, ranging from the use of low-cost homemade controllers to large wireless sensor networks. Using examples from trials in commercial greenhouses and nurseries, this presentation will provide an overview of how sensor-controlled irrigation works, what the benefits are, and how it can be implemented.

Marc was born in the Netherlands and exposed to horticulture at a young age, playing in his grandfather's flower shop and greenhouses. He studied horticulture in the Netherlands, where he received his MS degree in 1989. He came to the U.S. in 1990 and received his PhD from the University of Arkansas in 1994. He was hired by the Horticulture Department of the University of Georgia in 1995, where he now is a professor and coordinates the graduate program. His research focuses on improving fertilization and irrigation of greenhouse and nursery crops. The last 10 years, he has worked on the use of soil moisture sensors to automate greenhouse and nursery irrigation in a cost-effective and environmentally friendly way. He has published over 100 scientific papers and has given invited lectures about his research around the world.





Getting the Most Out of Your Fertilizer: How Placement and Irrigation Management Affect Fertilizer Availability

Dr. Jim Owen, Virginia Tech Hampton Roads Agricultural Research and Extension Center

Jim will present current findings of how solute (water and fertilizer) moves through the substrate profile, how water interacts with controlled release fertilizer prills applied using different techniques (top-dress, incorporation and dibble), and the subsequent efficiency of nutrients under varying water application efficiencies. Learn about what to consider to keep your resources from going down the drain when choosing a substrate, applying controlled release fertilizers, and scheduling irrigation.

Jim's research and extension programs focus on enhanced management of resources in commercial nursery crop production to increase profitability while mitigating environmental impact. His primary objectives are to increase water and nutrient-use efficiency, manage agrichemical on-site effluent and off-site non-point source runoff, and investigate improved production systems that can reduce costs or open new markets. Jim is an Assistant Professor of Horticulture at Virginia Tech Hampton Roads Agricultural Research and Extension Center in Virginia Beach, VA. Prior to working with the Virginia nursery industry, Jim was a faculty member at Oregon State University, stationed in the Willamette Valley.



Recycling Irrigation Water: There and Back Again . . . From the Pump to the Pond
Dr. Sarah A. White, Clemson University

Managing production runoff is a challenge. Many growers are (considering) recycling water, but are worried that the presence of pathogen, nutrient, and pesticide contaminants may weaken plant growth. Growers are presented with a variety of options for managing runoff, but information about efficacy of treatments is sometimes difficult to find. A team of researchers from 9 universities from across the country are evaluating production practices to reduce contaminant loads in runoff as well as new treatment technologies to help manage (remediate) contaminants from runoff. Some tried and true technologies are available now that can help growers feel secure about protecting plant health as you recycle (or consider recycling) water. Both existing and emerging

treatment technologies, their relative efficacy, and examples of use at production facilities will be provided.

Sarah, an Associate Professor and Nursery Extension Specialist at Clemson University, earned a B.S. in Horticulture at Clemson University in 2000, an M.S. in Horticultural Science at Virginia Tech in 2003, and a Ph.D. in Environmental Toxicology from Clemson University in 2007. Her current research focus involves managing water quality for both economic and environmental benefits; primarily examining remediation of chemical and biological contaminants from irrigation runoff using plant-based best management practices.



Waterborne Pathogens: Problems and Management
Dr. Rosa Raudales, University of Connecticut

Plant pathogens in irrigation water can result in crop loss and therefore be a costly problem to growers. In this presentation, we will talk about waterborne pathogens that can be present in irrigation water sources and distribution systems. Diverse water treatments, such as chlorine, chlorine dioxide, copper ionization and ozone, are used in irrigation for control of plant pathogens and algae. We will provide information on the effective dose for treatment based on published efficacy data. In addition, we will discuss how chemical, physical and biological water quality parameters affect incidence of plant pathogens and the efficacy of the different water treatments. Finally, we will provide a comparison of the cost of water treatments and filtration systems obtained from commercial greenhouse operations. At the end of this presentation, attendees will be able to identify potential water treatments that can fit their operations.

Rosa is an Assistant Professor and Greenhouse Extension Specialist at the University of Connecticut. Rosa has a B.S. in Agricultural Sciences and Production Systems from Zamorano Agricultural University (Honduras), an M.S. in Plant Pathology from The Ohio State University and a Ph.D. in Horticulture from University of Florida. Rosa conducts research investigating management of biofilm in irrigation lines, control of plant pathogens in water for container-grown crops and hydroponics, and remediation of plant growth regulators from recirculated water. In the past, Rosa carried out research on control of soil and water-borne pathogens with biocontrol agents and water treatments, and also worked directly with growers to identify selection criteria of water treatments. For more information contact Rosa at: rosa.raudales@uconn.edu, Follow on Twitter @RaudalesLab, Website: www.greenhouse.uconn.edu



Designing an Effective Water Treatment System: Case Studies of Grower Operations
Dr. Paul Fisher, University of Florida

Solving water quality issues is more than just purchasing a piece of equipment. It pays to define your water problem, prioritize crops needing high quality water, map out flows, decide on filter, chemical and biological options, and monitor to check that the system is working. Learn from real life case studies of how other growers are dealing with water quality problems.

Paul is a Professor and Extension Specialist in Floriculture at the University of Florida. He manages two university/industry collaborative groups. The Floriculture Research Alliance undertakes applied research for greenhouse producers. The Water Education Alliance for Horticulture provides outreach to help growers deal with water quality issues and successfully recycle irrigation water.



Economics of Improved Irrigation Management
Dr. John Majsztrik, Clemson University, formerly University of Maryland

Irrigation is a crucial part of any successful ornamental operation, particularly for container and greenhouse production. Irrigation length, frequency, and timing all vary based on factors such as temperature, wind, crop (growth stage, cultivar), container size, etc. Every grower has developed a way of irrigating that seems to work well for them. What is the cost of making the wrong decision about when and how much to irrigate? We will explore the financial implications of the use of sensor networks to help growers make better irrigation decisions. We will look at the ways that sensor networks have helped growers reduce production time, increase quality, and reduce plant losses.

John was born in New Jersey and his first exposure to the green industry was working for his brother, who started his own landscaping company when John was 10. He worked with his brother for about 10 years, until the business moved to Georgia, but has continued to enjoy working with plants, although in a different capacity. John received his B.S. in Biology from The College of New Jersey in 2001, and received an M.S. from the University of Georgia in Forest Biotechnology in 2004. He earned his Ph.D. in Plant Science from the University of Maryland in 2011. John's research has focused on better understanding grower practices and their environmental impact, modeling nutrient and water dynamics in ornamental operations, and helping growers understand the economic impact of their practices. He is currently working as a Research Assistant Professor at Clemson University on a project aimed at developing techniques and technologies for recycling and remediating water at ornamental operations.



How Growers Can Capitalize on Consumer Perceptions of Improved Water Management
Dr. Bridget Behe, Michigan State University

Consumer perceptions are important to understand for a wide variety of reasons. Their perceptions about the importance of plants, water, and the water needs of plants are key touchpoints to document before developing or adapting a marketing strategy around water use. Research results will be presented to improve our understanding of consumer perceptions of water use and plants.

Bridget is a Professor of Horticulture Business Marketing & Management at Michigan State University. She teaches courses on marketing and management for horticulture majors. Bridget has conducted > 100 consumer and market research projects on horticultural products, both edible and ornamental. She has written > 500 publications in the trade press and peer-reviewed journals. She joined Michigan State's faculty in August 1997, after serving on the faculty at Auburn University (Alabama) for 8 years. Bridget earned degrees from Penn State University and The Ohio State University. She was co-chair of the AmericanHort (formerly OFA) Garden Center Committee for several years and now serves on their Marketing Committee. In 2013, Bridget was awarded the National Service Award by the Michigan Floral Association and, in 2012, was named the Outstanding Established Teacher in the College of Agriculture. She can be contacted at behe@msu.edu.