

Marc W. van Iersel, Curriculum vitae

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Marc W. van Iersel

Dooley Professor and Graduate Coordinator

Plant Nutrition and Physiology
Department of Horticulture
1307 Miller Plant Sciences Building
The University of Georgia
Athens, GA 30602-7273

Co-founder and Chief Technical Officer
Candidus, Inc.

Smart Lighting Strategies for Greenhouses
111 Riverbend Road
Athens, GA 30602

[ResearchGate Profile](#)

[Google Scholar Profile](#)

Academic record

Ph.D., Department of Agronomy, University of Arkansas, 1994

M.S., Department of Horticulture, Wageningen Agricultural University, The Netherlands, 1989

Academic positions

7/17-current: Vincent J. Dooley Professor of Horticulture (Endowed professorship)

7/06-current: Graduate coordinator, Department of Horticulture, University of Georgia, Athens, GA.

7/06-current: Professor, Plant nutrition and physiology, 65% research / 35% teaching, Department of Horticulture, University of Georgia, Athens, GA.

7/02-6/06: Associate professor, Plant nutrition and physiology, 65% research / 35% teaching, Department of Horticulture, University of Georgia, Athens, GA.

7/00-6/02: Associate professor, Floriculture, 100% research, Department of Horticulture, University of Georgia, Griffin, GA.

7/95-6/00: Assistant professor, Floriculture, 100% research, Department of Horticulture, University of Georgia, Griffin, GA.

2/94-6/95: Post-doctoral research fellow. Department of Crops, Soils, and Biometeorology, Utah State University, Logan, UT.

Recognitions and outstanding achievements

2018 Porter Henegar Memorial Award for Horticultural Research. Awarded by the Southern Nursery Association.

2017 Recognized by the UGA Career Center 'for greatly contributing to the career development of UGA students'.

2017 Named Vincent J. Dooley Professor of Horticulture (endowed professorship)

2017 ASHS Outstanding Cross-Commodity Publication Award for "A Chlorophyll

- Fluorescence-based Biofeedback System to Control Photosynthetic Lighting in Controlled Environment Agriculture” (J. Amer. Soc. Hort. Sci. 141:169–176)
- 2016 Recognized by the UGA Career Center ‘for greatly contributing to the career development of UGA students’.
- 2016 Outstanding graduate educator of the year, American Society for Horticultural Science.
- 2016 Alex Laurie Award (most significant applied floriculture research paper published in an ASHS journal). Awarded by AmericanHort.
- 2015 Recognized by the UGA Career Center ‘for greatly contributing to the career development of UGA students’.
- 2012 Nominated for Katerva award (referred to as the Nobel Prize for sustainability) as part of the SCRI-MINDS research team.
- 2011 Georgia Green Industry Association Friend of the Environment Award
- 2007 Kenneth Post Award, awarded by the ASHS Floriculture working group and the Kenneth Post Foundation for best graduate student paper in an ASHS journal (with Stephanie E. Burnett and Paul A. Thomas).
- 2007 Outstanding professor of the year, UGA Horticulture Club
- 2001 Outstanding educator award, Georgia Flower Grower Association

Teaching accomplishments

Courses taught

- 2003, 2007, 2009. Horticultural Seminar. 1-hour graduate course.
- 2003, 2004, 2005. Soil fertility and plant nutrition, 4-hour undergrad/grad course co-taught with Dr. Cabrera, Crop and Soil Science.
- 2004, 2006. Advanced plant nutrition, 4-hour graduate course.
- 2004-2014, 2017. Garden history of Europe, 3-hour study abroad course co-taught with Dr. Smalley, Horticulture.
- 2001, 2005, 2007, 2009, 2011. Photosynthesis, 1-hour graduate course
2012. Photosynthesis, 4-hour graduate course, co-taught with Dr. Anish Malladi.
- 2006-2014. Environmental physiology, 4-hour undergrad/grad course.
2008. Organic agriculture seminar. 1-hour undergraduate course.
- 2010, 2011, 2013, 2015, 2017. Measurements and Control in Plant and Soil Science, 3-hour graduate course.
- 2015-2018. Advanced Plant Physiology, 4-hour graduate course, co-taught with Dr. Anish Malladi.

Graduate student advising

Programs Directed

- Erin James, 1998, M.S., Horticulture. Ebb-and-flow irrigation and bedding plant production.
- Juang-horng Chong, 1999 - 2001, M.S., Entomology. [The biology of the mealybug *Phenacoccus madeirensis* and its interaction with the host plants](#). Co-advisor with Dr. Ron Oetting, Department of Entomology.
- Krishna Nemali, 2001-2002, M.S., Horticulture. [Interactive effects of light and nutrition on growth and CO₂ exchange rate of begonia \(*Begonia* × *semperflorens*\)](#).
- Stephanie Burnett, 2001-2004, Ph.D., Horticulture. [Effects of polyethylene glycol on the morphology of ornamental seedlings](#). Co-advisor with Dr. Paul Thomas.
- Krishna Nemali, 2003-2005, Ph.D., Horticulture. [Water requirements of greenhouse crops](#).
- Ava Howard, 2003-2008, Ph.D., Plant Biology. [Nighttime water loss in C3 plants](#). Co-advisor with Dr. Lisa Donovan (Plant biology).
- Kate Seader, 2005-2006, Master's degree in Forest Resources (non-thesis). Co-advisor with Ron Hendrick (Forestry and Natural Resources).
- Andrew Ogden, 2006-2009, M.S., Horticulture. [Organic blueberry production in high tunnels](#).
- Jongyun Kim, 2007-2011, Ph.D., Horticulture. [Water relations of bedding plants: water use, drought physiology, and gene expression](#).
- Manuel Astacio, 2009-2011, M.S., Horticulture. [The effects of exogenous abscisic acid on evapotranspiration and root hydraulic conductance of tomato](#).
- Lucas O'Meara, 2010-2012, M.S., Horticulture. [Dynamics of water use in *Hydrangea macrophylla* and *Gardenia jasminoides*](#). Co-advisor with Dr. Matthew Chappell.
- Geoffrey Weaver, 2011-2013, M.S., Horticulture. [Developing holding agents for ornamental bedding plants: The effects of abscisic acid and its synthetic analog 8' acetylene methyl-ester abscisic acid on water use, gas exchange, and chlorophyll of pansies \(*Viola* × *wittrockiana*\)](#).
- Alem Peter, 2010-2014, Ph.D., Horticulture. [Irrigation, fertilization and non-chemical plant growth regulation in greenhouse production](#). Co-advisor with Dr. Paul Thomas.
- Amanda Bayer, 2010-2014, Ph.D., Horticulture. [Improving growth and quality of *Hibiscus acetosella* and *Gardenia jasminoides* with efficient irrigation and fertilization for more sustainable container plant production](#). Co-advisor with Dr. John Ruter.
- Alex Litvin, 2013 – 2015, M.S., Horticulture. [Interaction of drought stress and gibberellin metabolism on stem elongation in tomato](#). Co-advisor with Dr. Anish Malladi.
- Shuyang Zhen, 2013 - 2017, Ph.D., Horticulture. Improving photosynthetic lighting efficiency in controlled environment agriculture: the importance of light acclimation and far-red light.
- David Gianino, 2015 – 2016, M.S., Horticulture. Endoreduplication and its effect on fruit size in tomato as affected by drought stress. Co-advisor with Dr. Anish Malladi.
- Bruno Casamali, 2015 - 201?, Ph.D., Horticulture. Co-advisor with Dr. Dario Chavez.
- Eric Stallknecht, 2016-201?, M.S., Horticulture.
- Geoffrey Weaver, 2016 - 201?, Ph.D., Horticulture.
- Jun Liu, 2017 - 201?, Ph.D., Horticulture.
- Theekshana Jayalath, 2017 - 201?, Ph.D., Horticulture.
- Claudia Elkins, 2017 – 201?, M.S., Horticulture.

Shane Palmer, 2018 – 201?, M.S., Horticulture.

Advisory Committee Service

Yu Fei, 1997, MS, Plant Pathology

John Duval, 1999, PhD, Horticulture

Scott Ludwig, 1999, PhD, Entomology

Amanda Miller, 2000, MS, Horticulture

Disha Dumka, 2002, MS, Crop and Soil
Science

Wendy Wade, 2002, MS, Food Science

Pai-Tsang Chang, 2002, MS, Horticulture

Juang-horng Chong, 2005, PhD, Entomology

Pai-Tsang Chang, 2007, PhD, Horticulture

Amy Burton, 2005, MS, Horticulture

Jason Nedlo, 2007, PhD, Forestry

Sarah Swanner, 2007, M.S., Horticulture

Robert Warren, 2007, PhD, Ecology

Tim Coolong, 2007, PhD, Horticulture

Mary-Anne McGuire, 2009, PhD, Forestry

Tim Wertin, 2010, PhD, Forestry

Cara Gormally, 2010, Ph.D. Plant Biology

Lara Jackson, 2010, MS, Horticulture

Doug Aubrey, 2011, PhD, Forestry

Jingjing Yin, 2012, PhD, Forestry

Samuel Kelleher, 2012, MLA, Landscape
architecture

Michael Martin, 2012, PhD Horticulture

Sungeon Cho, 2012, PhD Horticulture

JoHannah Biang, 2012, MS, Horticulture

Madhumita Dash, 2012, PhD Horticulture

Ethan Milton, 2013, MS, Plant Biology

Cody Luedtke, 2013, MS, Forestry

Erico Mattos, 2013, PhD, Crop and Soil
Science

Elise Wygant, 2014, MS, Plant Biology

Michael Zhao, 2014, MS, Engineering

Alan Bowsher, 2015, PhD, Plant Biology

Miles Ingwers, 2016, PhD, Forestry

Daryl Chastain, 2015, PhD, Crop and Soil
Science

Alex Pilote, 2017, PhD, Plant Biology

Jeb Fields, 2016, PhD, Horticulture, Virginia
Tech

Ashley Rae, PhD, Plant Biology

Will Wheeler, 2015, MS, Horticulture

Doug Alt, 2014, MS, Horticulture

Ryan O'Neill, PhD, Horticulture

Shakuntala Sharma, PhD, Forestry

Torey Burns, PhD, Plant Biology

Aaron Patrick, MS, Engineering

Clint Steketee, PhD, Plant Breeding,
Genetics, and Genomics

Paul Kusuma, PhD, Plants, Soils, and
Climate, Utah State University

Rachel White, MS, Horticulture

Visiting scholars hosted

Misleide Leite, Undergraduate student, Universidade de São Paulo, 2017 (six months)

Alexandre Trevizan, Undergraduate student, Universidade de São Paulo, 2016-17 (six
months)

Pedro Morelli, Undergraduate student, Universidade de São Paulo, 2016-2017 (nine
months)

Jong Goo Kang, Assistant professor, Sunchon National University, Korea, 1998-2000 (2 years)

Jong Goo Kang, Associate professor, Sunchon National University, Korea, 2006-2007 (1 year)

Francesco Montesano, PhD student, University of Bari, Italy, 2005 (1 year)

Giulia Camerata, PhD student, University of Palermo, Italy, 2007 (4 months)

Julian Miralles Crespo, PhD student, University of Cartagena, Spain, 2009 (4 months)

Rhuanito Soranz Ferrarezi, PhD student, UniCamp, Campinas, Brazil, 2010-2011 (1 year)

Mohammad Mehrdad Jowkar, PhD student, Islamic Azad University, Kermanshah, Iran, 2011 (3 months)

Jong Goo Kang, Professor, Sunchon National University, Korea, 2013-2015 (1.5 years)

Rhuanito Soranz Ferrarezi, Post-doctoral research scientist, Brazil, 2013-2014 (1.5 years)

Student awards

Geoffrey Weaver. 2018. 1st place in oral presentation competition for PhD students. 2018 Southern Nursery Association Research Conference, Baltimore, MD.

Shuyang Zhen. 2016. 1st place in oral presentation competition for PhD students. 2016 Southern Nursery Association Research Conference, Athens, GA.

Geoffrey Weaver. 2016. 2nd place in oral presentation competition for PhD students. 2016 Southern Nursery Association Research Conference, Athens, GA.

David Gianino. 2016. 1st place in oral presentation competition for MS students. 2016 Southern Nursery Association Research Conference, Athens, GA.

David Gianino. 2016. 1st place. Controlled Environment working group student presentation competition. ASHS annual conference, Atlanta, GA.

Shuyang Zhen. 2016. 2nd place. Controlled Environment working group student presentation competition. ASHS annual conference, Atlanta, GA.

Shuyang Zhen. 2016. 1st place in graduate student poster competition, 8th International Symposium on Light in Horticulture. East Lansing, MI.

Sierra McDonald. 2016. 4th place, College of Agricultural and Environmental Sciences undergraduate research poster competition.

Shuyang Zhen. 2016. 2nd place. UGA – College of Agricultural and Environmental Sciences Broadus Browne Graduate Student Competition (PhD).

David Gianino. 2015. 3rd place. Controlled Environment working group student presentation competition. ASHS annual conference, New Orleans, LA.

Shuyang Zhen. 2015. GA Harris fellowship, Decagon Devices. Fellowship includes \$5,000 worth of research instrumentation donated by Decagon Devices.

Shuyang Zhen. 2014. 1st place. Controlled Environment working group student presentation competition. ASHS annual conference, Orlando, FL.

Alem Peter, 2014. Honored at Presidential Honors Day, University of Georgia, Athens.

Amanda Bayer. 2013. 1st place. 2013 Southern region – International Plant Propagators

Society meeting, Athens, GA.

- Olyssa Starry. 2013. 1st place, ASHS Controlled Environment Working Group graduate student oral presentation competition. ASHS annual conference, Palm Springs, CA. (Olyssa was a graduate student at The University of Maryland, presenting research done in my lab).
- Amanda Bayer. 2013. 3rd place. ASHS Scholars Ignite competition. ASHS annual conference, Palm Springs, CA.
- Amanda Bayer. 2013. Outstanding Graduate Teaching Award, UGA.
- Lucas O'Meara. 2011. 2nd place in E. Broadus Browne student competition (M.S. division). College of Agricultural and Environmental Sciences, University of Georgia.
- Manuel Astacio. 2011. 1st place in poster competition at the Center for Applied Nursery Research Open House (GGIA Wintergreen, Duluth, GA).
- Rhuanito Soranz Ferrarezi. 2011. 2nd place in poster competition at the Center for Applied Nursery Research Open House (GGIA Wintergreen, Duluth, GA).
- Mandy Bayer. 2011. 1st place in oral presentation competition for PhD students. 2011 Southern Nursery Association Research Conference, Mobile, AL.
- Jongyun Kim. 2011. 3rd place in oral presentation competition for PhD students. 2011 Southern Nursery Association Research Conference, Mobile, AL.
- Jongyun Kim. 2010. 3rd place in oral presentation competition for PhD students. 2010 Southern Nursery Association Research Conference, Mobile, AL.
- Jongyun Kim. 2009. OFA scholar. OFA Short Course Registration, complimentary meals, lodging, and a one-year OFA associate membership.
- Jongyun Kim. 2009. Best graduate student poster, Annual meeting of NCERA-101 'Control Environment Technology and Use'.
- Ava Howard. 2008. New Phytologist poster award at the Ecological Society of America Annual Meeting (best student poster award).
- Ava Howard. 2008. Excellence in Graduate Teaching, University of Georgia.
- M. Kate Lee. 2008. 2nd place in oral presentation competition for undergraduate students. 2008 Southern Nursery Association research conference, Atlanta, GA.
- Jongyun Kim. 2008. 2nd place in oral presentation competition for PhD students. 2008 Southern Nursery Association Research Conference, Atlanta, GA.
- Ava Howard. 2007. Department of Plant Biology Duncan award for teaching and research, University of Georgia.
- Ava Howard. 2005. Best Poster Award, UGA Plant Biology Graduate Student Symposium.
- Ava Howard. 2005. Outstanding Graduate Teaching Award, UGA
- Krishna S. Nemali. 2005. 3rd place in oral presentation competition for PhD students. 2005 Southern Nursery Association Research Conference, Atlanta, GA.
- Krishna S. Nemali. 2005. 1st place in ASHS 2005 poster competition. 2005 Annual meeting of the American Society for Horticultural Science, Las Vegas, NV.

- Krishna S. Nemali. 2004. 2nd place in oral presentation competition for PhD students. 2004 Southern Nursery Association Research Conference, Atlanta, GA.
- Krishna S. Nemali. 2004. 3rd place in ASHS 2004 poster competition. 2004 Annual meeting of the American Society for Horticultural Science, Austin, TX.
- Stephanie Burnett, 2003. 1st place in oral presentation competition for PhD students. 2003 Southern Nursery Association Research Conference, Atlanta, GA.
- Krishna Nemali. 2001. John Carew Memorial Scholarship. Bedding Plant Foundation Inc. (\$3,000 scholarship).

Graduate student grants

- Shuyang Zhen. 2015. Travel grant to attend the 2015 meeting of the American Society for Horticultural Science, ASHS, \$500.
- Alex Litvin. 2015. Travel grant to attend the 2015 meeting of the American Society for Horticultural Science, ASHS, \$500.
- David Gianino. 2015. Travel grant to attend the 2015 meeting of the American Society for Horticultural Science, ASHS, \$500.
- Shuyang Zhen. 2014. Travel grant to attend the 2014 meeting of the American Society for Horticultural Science, ASHS, \$500.
- Alex Litvin. 2014. Travel grant to attend the 2014 meeting of the American Society for Horticultural Science, ASHS, \$500.
- Mandy Bayer. 2014. Travel grant to attend the 2014 meeting of the American Society for Horticultural Science, ASHS, \$500.
- Mandy Bayer. 2013. Travel grant to attend the 2013 meeting of the American Society for Horticultural Science, ASHS, \$500.
- Mandy Bayer. 2013. Travel grant to attend the 2013 meeting of the American Society for Horticultural Science. UGA Graduate School, \$350.
- Geoffrey Weaver. 2013. Travel grant to attend the 2013 meeting of the American Society for Horticultural Science, ASHS, \$500.
- Alem Peter. 2013. Travel grant to attend the 2013 meeting of the American Society for Horticultural Science, ASHS, \$500.
- Alem Peter. 2013. Travel grant to attend the 2013 meeting of the American Society for Horticultural Science, UGA Graduate School, \$300.
- Mandy Bayer. 2012. Travel grant to attend the 2012 meeting of the American Society for Horticultural Science, ASHS, \$500.
- Mandy Bayer. 2012. Travel grant to attend the 2012 meeting of the American Society for Horticultural Science. UGA Graduate School, \$300.
- Geoffrey Weaver. 2012. Travel grant to attend the 2012 meeting of the American Society for Horticultural Science, ASHS, \$500.
- Alem Peter. 2012. Travel grant to attend the 2012 meeting of the American Society for Horticultural Science, ASHS, \$500.

Alem Peter. 2012. Travel grant to attend the 2012 meeting of the American Society for Horticultural Science, UGA Graduate School, \$300.

Mandy Bayer. 2011. Travel grant to attend the 2011 meeting of the American Society for Horticultural Science, ASHS, \$500.

Lucas O'Meara. 2011. Travel grant to attend the 2011 meeting of the American Society for Horticultural Science, ASHS, \$500.

Alem Peter. 2011. Travel grant to attend the 2011 meeting of the American Society for Horticultural Science, ASHS, \$500.

Jongyun Kim. 2009. Automated control of irrigation and fertilization of greenhouse crops, Decagon Devices, \$10,000 in-kind.

Jongyun Kim. 2008. Travel grant to attend the 2008 meeting of the American Society for Horticultural Science, UGA-graduate school, \$250.

Jongyun Kim. 2008. Travel grant to attend the 2008 meeting of the American Society for Horticultural Science, UGA-CAES, \$500.

Andrew Ogden. 2008. Travel grant to attend the 2008 meeting of the American Society for Horticultural Science, UGA-CAES, \$750.

Andrew Ogden. 2007. Travel grant to attend the 2007 meeting of the American Society for Horticultural Science, ASHS, \$500.

Andrew Ogden. 2007. Travel grant to attend the 2007 meeting of NCERA-101 'Controlled environment technologies and use'. NCERA-101, \$200.

Ava Howard. 2006, Sigma Xi Grants-in-Aid of Research. Determining the stomatal contribution to nighttime water loss in two *Populus* species.

Krishna Nemali. 2005 Travel grant to attend 2005 meeting of the American Society for Horticultural Science, Las Vegas, NV. UGA graduate school, \$600.

Ava Howard. 2005. Department of Plant Biology Small Grant, University of Georgia

Krishna Nemali. 2004 Travel grant to attend 2004 meeting of the American Society for Horticultural Science, Austin, TX. UGA graduate school.

Krishna Nemali. 2004 Travel grant to attend 2004 meeting of the American Society for Horticultural Science, Austin, TX. UGA CAES.

Krishna Nemali. 2002. Travel grant to attend the 2002 meeting of the American Society for the Horticultural Science. ASHS, \$200.

Research accomplishments

Book Chapters:

6. Volder, A and M.W. van Iersel. 2018. Root growth, physiology, and potential impact of soilless culture on their functioning. In: M. Raviv and J.H. Lieth (eds). Soilless culture: Theory and Practice. p. xx-xx. Elsevier. (In press)
5. Burnett, S. and M.W. van Iersel. 2018. Watering, irrigation systems and control. In: K.

Williams, S. Mangiafico, and D. Merhaut (eds). Water and nutrient management for greenhouse crops. p. xx-xx. University of California Division of Agriculture and Natural Resources. (In press).

4. van Iersel, M.W. 2017. Optimizing LED lighting in controlled environment agriculture. In: S.D. Gupta (ed.). Light emitting diodes for agriculture. Smart lighting. p. 59-80. Springer Verlag, Singapore. (ISBN 978-981-10-5807-3) DOI: http://dx.doi.org/10.1007/978-981-10-5807-3_4.
3. van Iersel, M. 2017. Light, photosynthesis and plant growth. In: R. Lopez and E. Runkle (eds.) Light management in controlled environments. p. 31-42. Meister Media Worldwide, Willoughby, Ohio (ISBN-13: 978-1544254494).
2. van Iersel, M. 2007. La gestione della fertilizzazione nei sistemi con subirrigazione (Fertilizer management in subirrigation systems). In: P. Santamaria (ed.) I sistemi di allevamento in vaso con subirrigazione a ciclo chiuso. p. 53-65. Aracne editrice, Rome, Italy (ISBN 978-88-548-1190-4)
1. van Iersel, M. 2004. Light, photosynthesis and plant growth. In: E. Runkle and P. Fisher (eds.) Lighting up profits. Understanding greenhouse lighting. p. 18-24. Meister Publishing, Willoughby, Ohio. (ISBN 1-892829-10-X)

Refereed journal articles:

- Zhen, S. and M.W. van Iersel. 2018. Identifying the spectral range of far-red light that enhances photochemistry of lettuce grown under different spectra. *Annals of Botany* (In review).
- Martin, M., G. Weaver, J. Porter, T. Maddox, M.W. van Iersel, and M.R. Chappell. 2018. Carbon allocation, water status and photosynthesis of *Hibiscus acetosella* 'Panama Red' cuttings during adventitious root formation. *Scientia Horticulturae* (In review).
- ¹²⁵Parente, A., F.F. Montesano, M.W. van Iersel, F. Boari, V. Cantore, and G. D'Amato. 2018. Sensor-based irrigation management of soilless basil using a new smart irrigation system: effects of set-point on plant physiological responses and crop performance. *Agricultural Water Management* 203:20-29.
- ¹²⁴Fields, J. J.S. Owen, J.E. Altland, M.W. van Iersel, and B.E. Jackson. 2018. Soilless substrate hydrology can be engineered to influence plant water status for an ornamental containerized crop grown within optimal water potentials. *Journal of the American Society for Horticultural Science* (in press).
- ¹²³Wheeler, W.D., J. Williams-Woodward, P.A. Thomas, M. van Iersel, and M.R. Chappell. 2017. Impact of substrate volumetric water on *Pythium aphanidermatum* infection in *Petunia x hybrida*: A case study on the use of automated irrigation in phytopathology studies. *Plant Health Progress* 18:12-125. <http://dx.doi.org/10.1094/PHP-01-17-0006-RS>
- ¹²²South, K.A, P.A. Thomas, M.W. van Iersel, C. Young, and M.L. Jones. 2017. Ice cube irrigation of potted *Phalaenopsis* orchids does not decrease display life or cause chilling damage to roots. *HortScience* 52:1271–1277. <http://dx.doi.org/10.21273/HORTSCI12212-17>

121. Zhen, S. and M.W. van Iersel. 2017. Photochemical acclimation of three contrasting species to different light levels: Implications for supplemental lighting. *Journal of the American Society for Horticultural Science* 142:346-354. <http://dx.doi.org/10.21273/JASHS04188-17>.
120. Zhen, S. and M.W. van Iersel. 2017. Far-red light is needed for efficient photochemistry and photosynthesis. *Journal of Plant Physiology* 209:115-222. <http://dx.doi.org/10.1016/j.jplph.2016.12.004>
119. van Iersel, M.W. and D. Gianino. 2017. An adaptive control approach for LED lights can reduce the energy costs of supplemental lighting in greenhouses. *HortScience* 52:72-77.
118. Litvin, A., M.W. van Iersel, and A. Malladi. 2016. Drought stress reduces stem elongation and alters gibberellin-related gene expression during vegetative growth of tomatoes. *Journal of the American Society for Horticultural Science* 141:591-597. <http://dx.doi.org/10.21273/JASHS03913-16>
117. Bayer, A., J. Ruter, and M.W. van Iersel. 2016. Elongation of *Hibiscus acetosella* under well-watered and drought-stressed conditions. *HortScience* 51:1384-1388. <http://dx.doi.org/10.21273/HORTSCI11039-16>
116. Kang, J.-G., R.S. Ferrarezi, S.K. Dove, G.M. Weaver, and M.W. van Iersel. 2016. Increased fertilizer levels do not prevent ABA-induced chlorosis in pansy. *HortTechnology* 26:647-650. <http://dx.doi.org/10.21273/HORTTECH03441-16>
115. Chastain, D.R., J.L. Snider, J.S. Choinski, G.D. Collins, C.D. Perry, J. Whitaker, T.L. Grey, R.B. Sorensen, M. van Iersel, and S.A. Byrd. 2016. Leaf ontogeny strongly influences photosynthetic tolerance to drought and high temperature in *Gossypium hirsutum*. *Journal of Plant Physiology* 199:18-28. <http://dx.doi.org/10.1016/j.jplph.2016.05.003>
114. van Iersel, M.W., G. Weaver, M.T. Martin, R.S. Ferrarezi, E. Mattos, and M. Haidekker. 2016. A chlorophyll fluorescence-based biofeedback system to control photosynthetic lighting in controlled environment agriculture. *Journal of the American Society for Horticultural Science* 141:169-176.
113. Ferrarezi, R.S., M.W. van Iersel, and R. Testezlaf. 2016. Plant growth response of subirrigated salvia 'Vista red' to increasing water heights in two substrates. *Horticultura Brasileira* 34: 202-209. <http://dx.doi.org/10.1590/S0102-053620160000200009>
112. Montesano, F.F., M.W. van Iersel, and A. Parente. 2016. Timer versus moisture sensor-based irrigation control of soilless lettuce: Effects on yield, quality and water use efficiency. *Horticultural Science* 43:67-75. <http://dx.doi.org/10.17221/312/2014-HORTSCI>
111. Niu, F., D. Zhang, Z. Li, M. van Iersel, and P. Alem. 2015. Morphological response of eucalypts seedlings to phosphorus supply through hydroponic system. *Scientia Horticulturae* 194:295-303. <https://doi.org/10.1016/j.scienta.2015.08.029>
110. Ferrarezi, R.S., M.W. van Iersel, and R. Testezlaf. 2015. Uso da subirrigação para imposição de estresse hídrico em sistema semi-contínuo para medição de CO₂. (Use of subirrigation for water stress imposition in a semi-continuous CO₂-exchange system). *Advances in Ornamental Horticulture and Landscaping* 21:235-242. (in Portuguese)

109. Ferrarezi, R.S., G.M. Weaver, M.W. van Iersel, and R. Testezlaf. 2015. Subirrigation: Historical overview, challenges, and future prospects. *HortTechnology* 25:262-276.
108. Bayer, A., J. Ruter, and M.W. van Iersel. 2015. Optimizing irrigation and fertilization of *Gardenia jasminoides* for good growth and minimal leaching. *HortScience* 50:994-1001.
107. Alem, P., P. A. Thomas, and M.W. van Iersel. 2015. Controlled water deficit as an alternative to plant growth retardants for regulation of poinsettia stem elongation. *HortScience* 50:565-569.
106. Alem, P., P.A. Thomas, and M.W. van Iersel. 2015. Substrate water content and fertilizer rate affect growth and flowering of potted petunia. *HortScience* 50:582-589.
105. Ferrarezi, R.S. and M.W. van Iersel. 2015. Monitoring and controlling ebb-and-flow subirrigation with soil moisture sensors. *HortScience* 50:447-453.
104. Alem, P., P.A. Thomas, and M.W. van Iersel. 2015. Use of controlled water deficit to regulate poinsettia stem elongation. *HortScience* 50:234-239.
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Convention papers, posters, and seminars presented:

* denotes invited presentation

- 246* van Iersel, M.W. 2018. Better irrigation: why less is more. GGIA Wintergreen Trade Show, Atlanta, GA.
245. Weaver, G.M. and M.W. van Iersel. 2018. Modeling energy-efficient lighting strategies for petunia and impatiens using chlorophyll fluorescence and historical weather data. SNA Research Conference, Baltimore, MD.
- 244* van Iersel, M.W. 2017. Controlling plant growth and development using light spectrum and intensity. University of Georgia Plant Center Retreat, Unicoi, GA.
- 243* van Iersel, M.W. 2017. Light-use efficiency and the effects of light quality on crop production. PHOTox Summit. San Diego, CA.

- ^{242*} van Iersel, M.W. 2017. Shine bright: research and applications of using LEDs and sunlight. AmericanHort Production Technology Conference. Dallas, TX.
- ^{241*} van Iersel, M.W. 2017. Feel That? Irrigation sensors in commercial settings. AmericanHort Production Technology Conference. Dallas, TX.
- ^{240*} Martin, M.T., E. Mattos, and M.W. van Iersel, M.W. 2017. Automated determination and maintenance of optimal light levels for controlled environment agriculture. 2017 Annual Conference of the American Society for Horticultural Science. Waikoloa, HI. <https://ashs.confex.com/ashs/2017/vidgateway.cgi/id/4173?recordingid=4173>
- ^{239*} van Iersel, M.W. 2017. From data to information to knowledge: how to get the most out of your research. 2017 Annual Conference of the American Society for Horticultural Science. Waikoloa, HI. <https://ashs.confex.com/ashs/2017/vidgateway.cgi/id/4830?recordingid=4830>
- ²³⁸ South, K.A., P.A. Thomas, M.W. van Iersel, C. Young and M. Jones, and M.W. van Iersel. 2017. Ice cube irrigation of potted *Phalaenopsis* orchids does not decrease display life. 2017 Annual Conference of the American Society for Horticultural Science. Waikoloa, HI. (poster) https://ashs.confex.com/ashs/2017/mediafile/Handout/Paper26192/Kaylee_South_ASHS_Poster_FINAL.pdf
- ²³⁷ Zhen, S. and M.W. van Iersel, M.W. 2017. Identifying the spectral range of far-red light that enhances photochemistry of lettuce grown under different spectra. 2017 Annual Conference of the American Society for Horticultural Science. Waikoloa, HI. <https://ashs.confex.com/ashs/2017/vidgateway.cgi/id/4660?recordingid=4660>
- ²³⁶ Martin, M., G. Weaver, J. Porter, T. Maddox, M.W. van Iersel and M. Chappell. 2017. Survey of carbon allocation, water status, and photosynthesis of *Hibiscus acetosella* 'Panama Red' cuttings during adventitious root formation. 2017 Annual Conference of the American Society for Horticultural Science. Waikoloa, HI. <https://ashs.confex.com/ashs/2017/vidgateway.cgi/id/4153?recordingid=4153>
- ²³⁵ Weaver, G. and M.W. van Iersel. 2017. Using chlorophyll fluorescence data to model efficient lighting strategies for lettuce. 2017 Annual Conference of the American Society for Horticultural Science. Waikoloa, HI. <https://ashs.confex.com/ashs/2017/vidgateway.cgi/id/4629?recordingid=4629>
- ²³⁴ Stallknecht, E. and M.W. van Iersel, M.W. 2017. Morphological and developmental responses of chrysanthemum to night interruption with different red: far-red ratios. 2017 Annual Conference of the American Society for Horticultural Science. Waikoloa, HI.
- ^{233*} van Iersel, M.W. 2017. Smart approaches to supplemental lighting in greenhouses. LumiGrow. Emeryville, CA.
- ^{232*} van Iersel, M.W. 2017. Benefits of efficient irrigation practices in greenhouses. Indiana Horticulture Congress. Indianapolis, IN.
- ^{231*} van Iersel, M.W. 2017. Developing a greenhouse fertilization program. Indiana Horticulture Congress. Indianapolis, IN.

- ^{230*} van Iersel, M.W. 2017. Optimizing the value of supplemental lighting. Indiana Horticulture Congress. Indianapolis, IN.
- ^{229*} van Iersel, M.W. 2017. Optimizing lighting in controlled environment agriculture: integrating physiology and engineering. Purdue University, Department of Horticulture and Landscape Architecture. Departmental seminar. West Lafayette, Indiana.
- ²²⁸ Bayer, A. and M.W. van Iersel. 2016. Improving irrigation efficiency and controlling plant growth with soil moisture sensors. 2nd International Forum on Global Food Resources: New Models for Research, Education, and Human Resource Development. Sapporo, Japan.
- ²²⁷ Bayer, A., P. Alem, and M.W. van Iersel. 2016. Sensor Based Irrigation for Height Control. Northeast Greenhouse Conference. Boxborough, MA.
- ^{226*} van Iersel, M.W. and M. Mellano. 2016. Irrigation technology: Real-world application. Cultivate' 16 Trade Show. Columbus, OH.
- ²²⁵ Bailey, D.A., M.W. van Iersel, and A. Malladi. 2016. Applying for jobs: Do's and don'ts. Departmental seminar, Department of Horticulture, University of Georgia, Athens, GA.
- ²²⁴ Gianino, D. and M.W. van Iersel. 2016. Adaptive LED lighting can benefit greenhouse production. 61st Southern Nursery Association Research Conference. Athens, GA
- ²²³ Weaver, G. and M.W. van Iersel. 2016. Screening photosynthetic performance of bedding plants using chlorophyll fluorescence. 61st Southern Nursery Association Research Conference. Athens, GA.
- ²²² Zhen, S. and M.W. van Iersel. 2016. Modeling daily water use of bedding plants based on environmental factors and normalized difference vegetation index. 61st Southern Nursery Association Research Conference. Athens, GA.
- ²²¹ van Iersel, M.W., D. Gianino, and S. Dove. 2016. Adaptive LED lights can be used for more energy- and cost-effective supplemental lighting in greenhouses. 61st Southern Nursery Association Research Conference. Athens, GA.
- ²²⁰ Yang, S., T. Smalley, J. Williams-Woodward, and M.W. van Iersel, 2016. Effect of mulching and irrigation on growth and disease incidence of dwarf boxwood. 2016 Annual Conference of the American Society for Horticultural Science. Atlanta, GA.
- ²¹⁹ Wheeler, W., J. Williams-Woodward, M. Chappell, P.A. Thomas, and M.W. van Iersel. 2016. Sensor-based automated irrigation impacts *Pythium aphanidermatum* infection in *Petunia x hybrida* 'Dreams Red'. 2016 Annual Conference of the American Society for Horticultural Science. Atlanta, GA.
- ²¹⁸ Zhen, S. M.W. van Iersel. 2016. Enhancing photosynthesis with far-red light at different intensities of red/blue or warm white LED light. 2016 Annual Conference of the American Society for Horticultural Science. Atlanta, GA.
- ²¹⁷ Ferrarezi, R.S., A. Litvin, M. Martin, S. Zhen, D.A. Gianino, G. Weaver, M.W. van Iersel. 2016. Arduino: Building and programming simple measurement and control systems. 2016 Annual Conference of the American Society for Horticultural Science. Atlanta, GA.

- ²¹⁶ van Iersel, M.W. and S.K. Dove. 2016. Maintaining minimum light levels with LEDs results in more energy-efficient growth stimulation of begonia. 2016 Annual Conference of the American Society for Horticultural Science. Atlanta, GA.
- ²¹⁵ Casamali, B., D.J. Chavez, M.W. van Iersel. 2016. Irrigation and fertilization rates for young peach trees [*Prunus persica* L. (Batsch)]. 2016 Annual Conference of the American Society for Horticultural Science. Atlanta, GA.
- ²¹⁴ Gianino, D.A. and M.W. van Iersel. 2016. Pulse width modulation control of LEDs can maintain targeted light levels. 2016 Annual Conference of the American Society for Horticultural Science. Atlanta, GA.
- ^{213*} van Iersel, M.W. 2016. Arduino: A low-cost option for automating data collection and controlling environmental conditions. 2016 Annual Conference of the American Society for Horticultural Science. Atlanta, GA.
- ²¹² Weaver, G. and M.W. van Iersel. 2016. Continuous chlorophyll fluorescence monitoring of greenhouse-grown lettuce (*Lactuca sativa* L.). 2016 Annual Conference of the American Society for Horticultural Science. Atlanta, GA.
- ²¹¹ Martin, M., M.W. van Iersel, and S.K. Dove. 2016. Recovery of photosynthetic efficiency at night: utilizing quantum yield of photosystem II and maximum chlorophyll fluorescence. 2016 Annual Conference of the American Society for Horticultural Science. Atlanta, GA.
- ²¹⁰ Nemali, K. and M.W. van Iersel. 2016. Photosynthesis response of tomato plants subjected to drought treatments that differed in the rate but not severity or duration of exposure to drought stress. 2016 Annual Conference of the American Society for Horticultural Science. Atlanta, GA.
- ^{209*} van Iersel, M.W. 2016. Resource use efficiency in controlled environment agriculture. 2016 Annual Conference of the American Society for Horticultural Science. Atlanta, GA.
- ²⁰⁸ Dinwiddie, J., M. van Iersel, B. Clegg, M. Nuccio, M. de Carbonnel, Y. Sun, A. Zhou, G. Crabb, J. Nichols, H. Zhou, and N. Bate. 2016. An automated Whole Plant Phenotyping System for high-resolution monitoring of plant response to the environment. Plant Biology 2016. Austin, TX.
- ^{207*} van Iersel, M.W. 2016. The cutting edge of LED technology. Academy of Crop Production. Athens, GA.
- ²⁰⁶ Martin, M.T., E. Mattos, and M. van Iersel. 2016. Maintaining different electron transport rates in lettuce: effects on quantum yield and nonphotochemical quenching. 8th International Symposium on Light in Horticulture. East Lansing, MI.
- ²⁰⁵ Zhen, S. and M. Van Iersel. 2016. Emerson's enhancement effect revisited: Increasing photosynthetic rate and quantum yield of photosystem II with far-red LEDs. 8th International Symposium on Light in Horticulture. East Lansing, MI.
- ²⁰⁴ van Iersel, M.W., E. Mattos, G. Weaver, R.S. Ferrarezi, M.T. Martin, M. Haidekker. 2016. Using chlorophyll fluorescence to control lighting in controlled environment agriculture. 8th International Symposium on Light in Horticulture. East Lansing, MI.

- ^{203*} van Iersel, M.W. 2015. Controlling irrigation: the evolution of an intelligent design. Department of Horticulture. Iowa State University (keynote speaker at departmental research retreat).
- ^{202*} van Iersel, M.W. 2015. Precision control of drought stress: implications for molecular and physiological responses. Pioneer. Ames, Iowa.
- ^{201*} van Iersel, M.W. 2015. Chlorophyll fluorescence as a tool for biofeedback control of photosynthetic lighting. Pioneer. Ames, Iowa.
- ^{200*} van Iersel, M.W. 2015. Chlorophyll fluorescence as a tool for biofeedback control of photosynthetic lighting. Horticulture Section seminar series at Cornell University School of Integrative Plant Science.
- ^{199*} van Iersel, M. 2015. Modern strategies for irrigation management in protected environments. IrriMed 2015. International conference on modern technologies, strategies and tools for sustainable irrigation management and governance in Mediterranean agriculture, Valenzano, Italy.
- ¹⁹⁸ van Iersel, M.W., R.S. Ferrarezi, G. Weaver, and E. Mattos. 2015. A biofeedback system for plant-driven photosynthetic lighting. 2015 Conference of the American Society for Horticultural Science, New Orleans, LA.
- ¹⁹⁷ Weaver, G., M.W. van Iersel, E. Mattos, and R.S. Ferrarezi. 2015. Chlorophyll fluorescence measurements can indicate carbon fixation rates of lettuce. 2015 Conference of the American Society for Horticultural Science, New Orleans, LA.
- ¹⁹⁶ Ferrarezi, R.S., S. Dove, M.W. van Iersel, and R.M.L. Silva. 2015. Low-cost open-source microcontrollers to build automated irrigation and fertigation systems using soil moisture and electrical conductivity sensors. 2015 Conference of the American Society for Horticultural Science, New Orleans, LA.
- ¹⁹⁵ Zhen, S. and M.W. van Iersel. 2015. Using normalized difference vegetation index (NDVI) as a proxy for plant size in water use models to facilitate precision irrigation. 2015 Conference of the American Society for Horticultural Science, New Orleans, LA.
- ¹⁹⁴ Gianino, D., M.W. van Iersel, and A. Malladi. 2015. Water use efficiency of four types of lettuce (*Lactuca sativa*) in response to different drought severities. 2015 Conference of the American Society for Horticultural Science, New Orleans, LA.
- ¹⁹³ Litvin, A., M.W. van Iersel, and A. Malladi. 2015. Drought stress reduces stem elongation and down-regulates gibberellin biosynthesis in tomatoes during vegetative growth. 2015 Conference of the American Society for Horticultural Science, New Orleans, LA.
- ¹⁹² Wheeler, W. M. Chappell, P.A. Thomas, M.W. van Iersel, and J. Williams Woodward. 2015. Root disease incidence and severity in nursery crops with soil moisture sensor-based automated irrigation. 2015 Conference of the American Society for Horticultural Science, New Orleans, LA.
- ¹⁹¹ Alt, D. and M.W. van Iersel, 2015. The effects of partial root-zone drying on water uptake between the drying and wetting zones. 2015 Conference of the American Society for

Horticultural Science, New Orleans, LA.

- ^{190*} van Iersel, M.W. 2015. Kiss: Keep Impact Statements Simple. 2015 Conference of the American Society for Horticultural Science, New Orleans, LA.
- ^{189*} van Iersel, M.W. 2015. Controlling irrigation using soil moisture sensors: How and why. It's all about water and increasing your bottom line. NC1186 Water conference. Grand Rapids, MI.
- ^{188*} van Iersel, M.W. 2015. Moisture sensing and irrigation control. Joint meeting of the Association of Education and Research Greenhouse Curators and NCERA-101 Committee on Controlled Environment Technology and Use. Columbus, OH.
- ^{187*} van Iersel, M.W. and C. Bauer. 2015. Precision irrigation technology. Real-world application. Cultivate tradeshow, Columbus, OH.
- ^{186*} van Iersel, M. 2015. Optimizing growth, quality and profits through precision irrigation. 3rd international symposium on quality management in supply chains of ornamentals. Kermanshah, Iran.
- ^{185*} van Iersel, M.W. 2015. Precision irrigation: how and why? Society of American Florists, Pest and Production Management Conference, Orlando, FL.
- ¹⁸⁴ van Iersel, M.W. 2015. Chlorophyll fluorescence as a tool for biofeedback control of photosynthetic lighting. University of Georgia, Department of Horticulture seminar.
- ^{183*} van Iersel, M.W. 2015. Update on SCRI-MINDS project. GGIA Wintergreen Trade Show, Atlanta, GA.
- ^{182*} van Iersel, M.W. 2014, Water and oxygen availability in soilless substrates. Premier Tech Horticulture, Rivière du Loup, Quebec, Canada.
- ^{181*} Lea-Cox, J., T. Fernandez, and M.W. van Iersel. 2014. Improving operation profitability via wise water use. Part 2. Cultivate 2014 (AmericanHort Tradeshow), Columbus, OH.
- ^{180*} van Iersel, M.W., J. Lea-Cox, and T. Fernandez. 2014. Improving operation profitability via wise water use. Part 1. Cultivate 2014 (AmericanHort Tradeshow), Columbus, OH.
- ¹⁷⁹ Chappell, M. Paul Thomas, J. Lea-Cox, M. van Iersel, L. Crawford, B. Belayneh, J. Majsztrik, W. Bauerle, T. Bauerle, D. King, D. Kohanbash, E. Lichtenberg, and A. Ristvey. 2014. Using online learning modules as a tool for delivering complex information to SCRI stakeholders. 2014 Annual Conference of the American Society for Horticultural Science, Orlando, FL.
- ¹⁷⁸ Burnett, S., S. Dove, R.S. Ferrarezi, J.G. Kang, and M. van Iersel. 2014. Automated fertigation and irrigation control based on measurements of substrate water content and pore water EC. 2014 Annual Conference of the American Society for Horticultural Science, Orlando, FL.
- ¹⁷⁷ Kang J.G., R.S. Ferrarezi, S. Dove, and M. van Iersel. 2014. Increased fertilizer levels do not prevent aba-induced chlorosis in pansy. 2014 Annual Conference of the American Society for Horticultural Science, Orlando, FL.
- ¹⁷⁶ Niu, F., D. Zhang, Z. Li, and M. van Iersel. 2014. Morphological response of eucalyptus seedlings to phosphorus. 2014 Annual Conference of the American Society for Horticultural

Science, Orlando, FL.

- ¹⁷⁵ Litvin, A.G., M. van Iersel, and A. Malladi. 2014. Daily water use of tomato plants as affected by environmental conditions and plant age. 2014 Annual Conference of the American Society for Horticultural Science, Orlando, FL.
- ¹⁷⁴ Alem P.O., M. van Iersel, and P. Thomas. 2014. Modeling water use of bedding plants as a function of light interception. 2014 Annual Conference of the American Society for Horticultural Science, Orlando, FL.
- ¹⁷³ Zhen S., M. van Iersel, and R.S. Ferrarezi. 2014. Chlorophyll fluorescence of three species with different light requirements: a tool to optimize supplemental lighting efficiency? 2014 Annual Conference of the American Society for Horticultural Science, Orlando, FL.
- ¹⁷² van Iersel, M., S. Dove, J.S. Owen Jr. 2014. Hydraulic properties of peat-based substrates: the importance of hydraulic conductance. 2014 Annual Conference of the American Society for Horticultural Science, Orlando, FL.
- ¹⁷¹ Ferrarezi, R.S. P.O. Alem, and M. van Iersel. 2014. Prediction of pore water electrical conductivity using real dielectric and bulk electrical conductivity in soilless substrates. 2014 Annual Conference of the American Society for Horticultural Science, Orlando, FL.
- ¹⁷⁰ Bayer, A., J.M. Ruter, M. van Iersel. 2014. Elongation of *Hibiscus acetosella* 'Panama Red' in well-watered and water-stressed conditions. 2014 Annual Conference of the American Society for Horticultural Science, Orlando, FL.
- ¹⁶⁹ Ferrarezi, R.S., S. Dove, and M. van Iersel. 2014. A low cost, Arduino-based system for monitoring and controlling substrate water content. 2014 Annual Conference of the American Society for Horticultural Science, Orlando, FL.
- ¹⁶⁸ Burnett, S.E. and M. van Iersel. 2014. Effects of low substrate oxygen on plant growth. 2014 Annual Conference of the American Society for Horticultural Science, Orlando, FL.
- ¹⁶⁷ Dinwiddie, J, M. van Iersel, B. Clegg, M. Nuccio, M. de Carbonnel, Y. Sun, A. Zhou, G. Crabb, J. Nichols, H. Zhaou, and N. Bate. 2014. A whole-plant phenotyping approach leveraging Syngenta's advanced crop laboratory at the research triangle park innovation center. 2014 Meeting of NCERA-101, Fairbanks, AK.
- ¹⁶⁶ Dinwiddie, J., M. van Iersel, B. Clegg, M. Nuccio, M. de Carbonnel, Y. Suna, A. Zhoua, G. Crabb, J. Nichols, H. Zhou, and N. Bate. 2014. An automated whole plant phenotyping system for high resolution characterization of plant x environment interactions. Maize genetics conference, Beijing, China.
- ^{165*} van Iersel, M.W., M. Chappell, and P.A. Thomas. 2014. Precision irrigation in greenhouses and nurseries: improving production and increasing profits. Horticulture Growers Short Course. Lower Mainland Horticulture Improvement Association, Pacific Agriculture Show, Abbotsford, BC.
- ^{164*} van Iersel, M.W. and M. Chappell. Implementing sensor networks in nurseries. 2013. OFA Short Course, Columbus, OH.

- ^{163*} van Iersel, M.W. 2013. Integrating soil moisture and other sensors for precision irrigation. OFA Short Course, Columbus, OH.
- ¹⁶² Bayer, A., J. Ruter, and M. van Iersel. 2013. Reduced fertilizer applications and irrigation volume effects on plant growth and leachate volume of *Gardenia jasminoides*. University of Georgia College of Agricultural and Environmental Sciences Interdisciplinary Graduate Student Plant and Soil Science Symposium, Athens, GA.
- ¹⁶¹ Bayer, A., J. Ruter, and M. van Iersel. 2013. Irrigation volume and fertilizer rate influence growth and leaching fraction from container-grown *Gardenia jasminoides*. 2013 International Plant Propagators' Society – Southern Region of North America annual meeting, Athens, GA.
- ^{160*} van Iersel, M.W. 2013. Converting carbohydrates into biomass: the role of respiration and its importance in determining carbon use efficiency. Agronomy Meetings, Tampa, FL.
- ^{159*} van Iersel, M.W. 2013. Wireless sensor networks: Precision irrigation in greenhouses using soil moisture sensors. E-gro webinar (part of a three-talk webinar with Matthew Chappell and Paul Thomas).
- ¹⁵⁸ Rivera, L.D., L. Crawford, M. van Iersel and S. Dove. 2013. Comparing hydraulic properties of soilless substrates with natural soils: a more detailed look at hydraulic properties and their impact on plant water availability. 2013 Annual Conference of the American Society for Horticultural Science, Palm Springs, CA.
- ¹⁵⁷ Bayer, A., and M. van Iersel. 2013. Using different teaching methods to enhance student learning of climate change. 2013 Annual Conference of the American Society for Horticultural Science, Palm Springs, CA.
- ¹⁵⁶ Bayer, A., J.M. Ruter, and M. van Iersel. 2013. Fertilizer rate and irrigation duration affect leachate volume, electrical conductivity, and growth of *Gardenia jasminoides*. 2013 Annual Conference of the American Society for Horticultural Science, Palm Springs, CA.
- ¹⁵⁵ Crawford, L., J.D. Lea-Cox, J. Majsztrik, W. Bauerle, M. van Iersel, T. Martin, and D. Kohanbash. 2013. Behind the curtain: The support component of wireless soil moisture networks. 2013 Annual Conference of the American Society for Horticultural Science, Palm Springs, CA.
- ¹⁵⁴ Thomas, P.T., M. Chappell, J.M. Ruter, E. Lichtenberg, and M.W. van Iersel. 2013. Wireless sensor networks for automated irrigation control in container nurseries: implementation and economic impact. 2013 Annual Conference of the American Society for Horticultural Science, Palm Springs, CA.
- ¹⁵³ Weaver, G. and M.W. van Iersel. 2013. Reducing evapotranspiration of pansies: efficacy and duration of aba and aba-analog spray applications. 2013 Annual Conference of the American Society for Horticultural Science, Palm Springs, CA.
- ¹⁵² Starry, O., J. Kim, S. Dove, M. van Iersel, and J.D. Lea-Cox. 2013. Effects of water availability and temperature on CAM expression and water use efficiency by *Sedum album* and *Sedum*

kamtschaticum. 2013 Annual Conference of the American Society for Horticultural Science, Palm Springs, CA.

- ¹⁵¹ Ferrarezi, R.S., M.D. Ribeiro, M.W. van Iersel, and R. Testezlaf. 2013. Subirrigation controlled by capacitance sensors for citrus rootstock production. 2013 Annual Conference of the American Society for Horticultural Science, Palm Springs, CA.
- ¹⁵⁰ P.O. Alem, P.A. Thomas, and M.W. van Iersel. 2013. Control of poinsettia stem elongation: height limits using deficit irrigation. 2013 Annual Conference of the American Society for Horticultural Science, Palm Springs, CA.
- ¹⁴⁹ Weaver, G. and M.W. van Iersel. 2013. Reducing transpiration of pansies (*Viola x wittrockiana*) with abscisic acid and 8' acetylene methyl-ester abscisic acid. GroSci 2013. The International Symposium on Growing Media and Soilless Cultivation. Leiden, The Netherlands. (poster)
- ¹⁴⁸ van Iersel, M.W. and S. K. Dove. 2013. Temporal and spatial oxygen dynamics in soilless substrate as affected by environmental conditions. GroSci 2013. The International Symposium on Growing Media and Soilless Cultivation. Leiden, The Netherlands.
- ¹⁴⁷ Bayer, A., K. Whitaker, M. Chappell, J. Ruter, and M.W. van Iersel. 2013. Effect of irrigation duration and fertilizer rate on plant growth, substrate EC, and leaching volume. GroSci 2013. The International Symposium on Growing Media and Soilless Cultivation. Leiden, The Netherlands.
- ¹⁴⁶ Alem, P.O, P.A. Thomas, and M.W. van Iersel. 2013. Irrigation volume and fertilizer concentration effects on leaching and growth of petunia. GroSci 2013. The International Symposium on Growing Media and Soilless Cultivation. Leiden, The Netherlands.
- ¹⁴⁵ van Iersel, M. and M. Chappell. 2013. Sensor controlled irrigation: A case study with gardenia. WinterGreen 2013. CANR open house. Duluth, GA.
- ¹⁴⁴ Chappell, M. and M. van Iersel. 2012. Sensor network deployment and implementation in commercial nurseries and greenhouses. 2012 Irrigation Show and Education Conference. Orlando, FL
- ¹⁴³ van Iersel, M.W. 2012. Integrating soil moisture and other sensors for precision irrigation. 2012 Irrigation Show and Education Conference. Orlando, FL
- ¹⁴² Chappell, M., M. van Iersel, J.D. Lea-Cox, G.A. Kantor, J. Kim, A. Bayer and S. Dove. 2012. Irrigation efficiency & uniformity and irrigation sensor network deployment and implementation in commercial nurseries and greenhouses. Tennessee Master Nurserymen Program, Tennessee Department of Agriculture. McMinnville, TN.
- ^{141*} van Iersel, M.W. 2012. The plant propagation industry in the United States. International seminar on "Propagation Technologies and Certification of Nursery Plants". Rancagua, Chile.
- ^{140*} van Iersel, M.W. 2012. Efficient water use during plant propagation. International seminar on "Propagation Technologies and Certification of Nursery Plants". Rancagua, Chile.
- ^{139*} van Iersel, M.W. 2012. Automating irrigation: the evolution of an intelligent design.

Department of Horticulture, University of Georgia. Athens, GA.

- ^{138*} van Iersel, M.W. 2012. Proposal Reviews: What Happens After Submission? 2012 Annual Conference of the American Society for Horticultural Science, Miami, FL.
- ¹³⁷ Martin, M., M. Chappell, and M.W. van Iersel. 2012. The effect of intermittent misting and adventitious root development on leafy stem propagule water, osmotic, and turgor potential values. 2012 Annual Conference of the American Society for Horticultural Science, Miami, FL.
- ¹³⁶ Bayer, A., J.M. Ruter, and M.W. van Iersel. 2012. Maintenance of substrate water content to control growth of *Gardenia jasminoides*. 2012 Annual Conference of the American Society for Horticultural Science, Miami, FL.
- ¹³⁵ Alem, P., P.A. Thomas, and M.W. van Iersel. 2012. Use of Controlled Water Deficit to Control Height of Poinsettias (*Euphorbia pulcherrima* 'Classic Red'). 2012 Annual Conference of the American Society for Horticultural Science, Miami, FL.
- ¹³⁴ van Iersel, M.W. 2012. Using dataloggers for measurement and control of environmental conditions. 2012 Annual Conference of the American Society for Horticultural Science.
- ¹³³ Weaver, G. and M. van Iersel. 2012. ABA and ABA Analog Foliar Sprays Reduce Evapotranspiration in Pansies. 2012 Annual Conference of the American Society for Horticultural Science, Miami, FL.
- ¹³² O'Meara, L., M. Chappell, and M. van Iersel. 2012. Water uptake of *Hydrangea macrophylla* and *Gardenia jasminoides* in response to a gradually drying substrate. 2012 Annual Conference of the American Society for Horticultural Science, Miami, FL.
- ^{131*} van Iersel, M.W. Wireless Sensor Networks for Monitoring and Controlling Irrigation in Greenhouses and Nurseries. X Congreso Latinoamericano y del Caribe de Ingeniería Agrícola - CLIA e XLI Congresso Brasileiro de Engenharia Agrícola - CONBEA Londrina - Paraná, Brazil.
- ¹³⁰ van Iersel, M.W., L. O'Meara, and M. Chappell. 2012. Environmental effects on water use of gardenia and hydrangea. 2012 Center for Applied Nursery Research Open House. Duluth, GA.
- ¹²⁹ Peter, A., P. Thomas and M. van Iersel. 2012. Use of controlled water deficit to control height of poinsettias. 2012 Conference of the Southern region of the American Society for Horticultural Science. Birmingham, AL.
- ¹²⁸ Weaver, G. and M. van Iersel. 2012. A comparison of ABA and ABA-analog sprays for reducing transpiration in pansies. 2012 Conference of the Southern region of the American Society for Horticultural Science. Birmingham, AL.
- ¹²⁷ O'Meara, L., M. Chappell, J. Ruter and M van Iersel. 2012. Water consumption of *Gardenia jasminoides* and *Hydrangea macrophylla* as affected by environmental factors. 2012 Conference of the Southern region of the American Society for Horticultural Science. Birmingham, AL.
- ¹²⁶ Bayer, M., J. Ruter and M. van Iersel. 2012. Growth and water use of two gardenia species

in response to substrate water content-based irrigation. 2012 Conference of the Southern region of the American Society for Horticultural Science. Birmingham, AL.

- ¹²⁵ van Iersel, M., M. Bayer, L. O'Meara, A. Peter, P. Thomas, M. Chappell, J. Ruter, and S. Wells. 2012. Wireless sensor networks for automated irrigation control in greenhouses and nurseries. 2012 Conference of the Southern region of the American Society for Horticultural Science. Birmingham, AL.
- ^{124*} van Iersel, M.W. 2011. Sustainable Greenhouse production in a changing world. Sixth JKUAT scientific, technological and industrialization conference. Jomo Kenyatta University of Agriculture and Technology, Juja, Kenya.
- ¹²³ Chappell, M.R., M.W. van Iersel, J. Ruter, A. Bayer, L. O'Meara, S. Dove, P. Thomas, P. Alem, and R. Ferrarezi. 2011. Monitoring environmental conditions and substrate water content to increase efficiency of irrigation in nurseries. 2011 Irrigation Show and Innovations in Irrigation Education Conference. San Diego, CA.
- ¹²² Soranz Ferrarezi R., M. van Iersel, and R. Tezteslaf. 2011. Soil moisture sensors for monitoring and controlling subirrigation: a case study with hibiscus. 2011 Annual conference of the American Society for Horticultural Science. Waikoloa, HI.
- ¹²¹ Peter A., P.A. Thomas, and M. van Iersel. 2011. Growth of petunia as affected by substrate moisture content and fertilizer rate. 2011 Annual conference of the American Society for Horticultural Science. Waikoloa, HI.
- ¹²⁰ Bayer, A. J.M. Ruter, M. Chappell, and M. van Iersel. 2011. Growth of *Hibiscus acetosella* 'Panama red' in response to sensor controlled irrigation in two outdoor nursery settings. 2011 Annual conference of the American Society for Horticultural Science. Waikoloa, HI.
- ^{119*} van Iersel, M. 2011. Publish or perish: trials, tribulations, and triumphs. 2011 Annual conference of the American Society for Horticultural Science. Waikoloa, HI.
- ¹¹⁸ Kim, J., A. Malladi, and M. van Iersel. 2011. Gene expression and physiological responses of petunia at specific substrate water contents. 2011 Annual conference of the American Society for Horticultural Science. Waikoloa, HI.
- ¹¹⁷ O'Meara, L., M. van Iersel, M. Chappell. 2011. Water consumption of *Hydrangea macrophylla* as affected by environmental factors. 2011 Annual conference of the American Society for Horticultural Science. Waikoloa, HI.
- ¹¹⁶ Peter A., R. Soranz Ferrarezi, P.A. Thomas, M. van Iersel. 2011. *In situ* measurements of the electrical conductivity of substrates: the relationship between bulk EC, pore water EC, and substrate water content. 2011 Annual conference of the American Society for Horticultural Science. Waikoloa, HI.
- ¹¹⁵ Thomas, P.A., M. Chappell, J.M. Ruter, S. Dove and M. van Iersel. 2011. Monitoring environmental conditions and substrate water content for more efficient irrigation in nurseries. 2011 Annual conference of the American Society for Horticultural Science. Waikaloa, HI.
- ¹¹⁴ Mattos, E., R. Hunt, M. van Iersel, M. Cabrera and K.C. Das. 2011. Changes in chlorophyll

fluorescence parameters in different growth stages of *Chlorella sorokiniana*. *1st International Conference on Algal Biomass, Biofuels and Bioproducts*. Saint Louis, MO.

- ^{113*} van Iersel, M.W. 2011. New irrigation technologies. Moving nursery producers toward sustainability. University of Florida, North Florida Research and Education Center – Quincy, FL (recorded PowerPoint).
- ¹¹² Kim, J., A. Malladi, and M.W. van Iersel, M.W. 2011. Abscisic acid-related gene expression and physiological responses of petunia at different substrate water contents. Annual meeting of the Plant Growth Regulation Society of America, Chicago, IL.
- ^{111*} van Iersel, M.W. 2011. ABA research at the University of Georgia: water use, physiology and gene expression. Valent BioSciences, Long Grove, IL.
- ^{110*} van Iersel, M.W. 2011. Water issues in the greenhouse industry. Annual Meeting of the National Greenhouse Manufacturers Association, Saint Louis, MO.
- ^{109*} van Iersel, M.W. 2011. Annuals, perennials, and woody ornamentals: How much water do they need? GGIA Wintergreen, Duluth, GA.
- ¹⁰⁸ Kim, J., A. Malladi, and M. van Iersel. 2011. Physiological responses of petunia to different levels of drought stress. CANR open house, GGIA Wintergreen, Duluth, GA.
- ¹⁰⁷ Soranz Ferrarezi, R. and M.W. van Iersel. 2011. Monitoring and controlling subirrigation with soil moisture sensors: a case study with hibiscus. CANR open house, GGIA Wintergreen, Duluth, GA.
- ¹⁰⁶ Astacio M.G. and M. van Iersel. 2011. Unexplained wilting of tomatoes after exposure to large doses of exogenous abscisic acid (ABA). CANR open house, GGIA Wintergreen, Duluth, GA.
- ¹⁰⁵ O'Meara, L., M. Chappell, and M.W. van Iersel. 2011. Water consumption of *hydrangea macrophylla* as affected by environmental factors. CANR open house, GGIA Wintergreen, Duluth, GA.
- ¹⁰⁴ Bayer, A., I. Mahbub, M. Chappell, J. Ruter, and M. van Iersel. 2011. Growth of 'Panama red' hibiscus in response to substrate water content. CANR open house, GGIA Wintergreen, Duluth, GA.
- ¹⁰³ Peter, A., P.A. Thomas, and M.W. van Iersel. 2011. Growth of petunia as affected by substrate moisture content and fertilizer rate. CANR open house, GGIA Wintergreen, Duluth, GA.
- ¹⁰² Astacio M.G. and M. van Iersel. 2011. Unexplained wilting of tomatoes after exposure to large doses of exogenous abscisic acid (ABA). SNA research conference, Mobile, AL.
- ¹⁰¹ O'Meara, L., M. Chappell, and M.W. van Iersel. 2011. Water consumption of *hydrangea macrophylla* as affected by environmental factors. SNA research conference, Mobile, AL.
- ¹⁰⁰ van Iersel, M., W. Ross, S. Dove, M. Chappell, P. Thomas, J. Ruter, and S. Wells. 2011. Substrate water content dynamics in nurseries: Real-time monitoring can improve irrigation practices. SNA research conference, Mobile, AL.

99. Bayer, A., I. Mahbub, M. Chappell, J. Ruter, and M. van Iersel. 2011. Growth of 'panama red' hibiscus in response to substrate water content. SNA research conference, Mobile, AL.
98. Kim, J., A. Malladi, and M. van Iersel. 2011. Physiological responses of petunia to different levels of drought stress. SNA research conference, Mobile, AL.
97. Peter, A., P.A. Thomas, and M.W. van Iersel. 2011. Growth of petunia as affected by substrate moisture content and fertilizer rate. SNA research conference, Mobile, AL.
96. Soranz Ferrarezi, R. and M.W. van Iersel. 2011. Monitoring and controlling subirrigation with soil moisture sensors: a case study with hibiscus. SNA research conference, Mobile, AL.
- 95.* van Iersel, M.W. and S.E. Burnett. 2010. Plant water use and drought stress physiology: Manipulating irrigation for efficient water use and high quality plants. *Taiwan – USA Symposium on Technology of Cultivation and Molecular Breeding for Ornamental Crops*. Taichung, Taiwan.
- 94.* van Iersel, M. 2010. Getting nutrient timing right. 107th Annual Conference of the American Society for Horticultural Science, Palm Springs, CA.
- 93.* van Iersel, M. 2010. Converting carbohydrates into biomass: the role of respiration and its importance in modeling plant carbon use. 107th Annual Conference of the American Society for Horticultural Science, Palm Springs, CA.
92. Miralles, J., M. van Iersel, S. Burnett. 2010. Controlling water content and electrical conductivity in soilless substrates using in situ sensors. 107th Annual Conference of the American Society for Horticultural Science, Palm Springs, CA. <http://ashs.org/db/horttalks/detail.lasso?id=838>
- 91.* van Iersel, M.W. 2010. Integrated water and nutrient management in greenhouse production systems. 2010 National Water Conference, Hilton Head, SC.
90. Astacio, M.G. and M.W. van Iersel. 2010. Determining the effects of exogenous abscisic acid on evapotranspiration of tomato (*Solanum lycopersicum*). SNA research conference, Mobile, AL.
89. Kim, J. and M.W. van Iersel. 2010. Photosynthesis and water use of vinca (*Catharanthus roseus*) during drought: the effect of different drying rates. SNA research conference, Mobile, AL.
88. Lea-Cox, J., R.T. Fernandez, G. Zinati, C. Hong, R. Cabrera, D. Merhaut, J. Albano, M. van Iersel, T. Yeager, and D. Buhler. 2009. NDC216: A new multistate group for water management and quality for ornamental crop production and health. 2009 National Water Conference, St. Louis, MO.
87. Kim, J. and M.W. van Iersel. 2009. Modeling daily water use of abutilon and lantana based on environmental conditions. 2009 Annual Conference of the American Society for Horticultural Science, St. Louis, MO.
86. Kim, J. and M.W. van Iersel. 2009. Daily water requirements of petunias as a function of plant age and environmental conditions. 2009 Annual Conference of the American Society

for Horticultural Science, St. Louis, MO.

85. Fernandez, R.T., J. Lea-Cox, G. Zinati, C. Hong, R. Cabrera, D. Merhaut, J. Albano, M. van Iersel, T. Yeager, and D. Buhler. 2009. NCDC216: A New Multistate Group for Water Management and Quality for Ornamental Crop Production and Health. 2009 Annual Conference of the American Society for Horticultural Science, St. Louis, MO.
- 84*. van Iersel, M.W. 2009. Using soil moisture sensors for controlled drought stress experiments. 2009 Annual Conference of the American Society for Horticultural Science, St. Louis MO. <http://ashs.org/db/horttalks/detail.lasso?id=638>.
- 83*. van Iersel, M.W and S. Dove. 2009. Water content in soilless substrates: spatial and temporal dynamics. 2009 Annual Conference of the American Society for Horticultural Science, St. Louis, MO.
- 82*. van Iersel, M.W. and J. Lea-Cox. 2009. Using soil moisture sensors for irrigation control. Annual meeting of USDA regional project NCERA-101, Controlled environment technology and use. Park City, UT.
- 81*. Kim, J. and M.W. van Iersel. 2009. Modeling daily water use of abutilon and lantana based on environmental conditions. Annual meeting of USDA regional project NCERA-101, Controlled environment technology and use. Park City, UT.
80. van Iersel, M.W., A. Ogden, J. Kim, C. Radcliffe, L. Donovan, and A. Sugiyama. 2009. High tunnel microenvironment affects leaf and bud temperatures of southern highbush blueberries (*Vaccinium corymbosum* L.). GreenSys 2009, Quebec City Canada.
- 79*. van Iersel, M.W., S. Dove, and S.E. Burnett. 2009. The use of soil moisture sensors for improves uniformity and irrigation control in greenhouses. GreenSys 2009, Quebec City, Canada.
78. Fernandez, R.T., J. Lea-Cox, G. Zinati, C. Hong, R. Cabrera, D. Merhaut, J. Albano, M. van Iersel, T. Yeager and D. Buhler. 2009. NCDC216: A New Multistate Group for Water Management and Quality for Ornamental Crop Production and Health SNA research conference, Atlanta, GA.
77. Kim, J. and M.W. van Iersel. 2009. Daily water use of abutilon and lantana at various substrate water contents. SNA research conference, Atlanta, GA.
76. van Iersel, M., R.M. Seymour, M. Chappell, F. Watson, and S. Dove. 2009. Soil moisture sensor-based irrigation reduces water use and nutrient leaching in a commercial nursery. SNA research conference, Atlanta, GA.
- 75*. van Iersel, M.W. 2009. New technologies for water conservation in the landscape. GGIA Wintergreen, Athens, GA. 1/21/2009.
- 74*. van Iersel, M.W. 2009. Efficient irrigation: Better crops with less water. GGIA Wintergreen, Athens, GA. 1/21/2009.
73. Howard, A.R., L.A. Donovan, and M.W. van Iersel. 2008. Stomatal conductance responses to changing vapor pressure deficit: Do daytime patterns of regulation apply at night? 93rd ESA

annual meeting, Milwaukee, WI.

72. van Iersel, M.W. 2008. Strategic water independence: what can you do now, at a minimal cost? Southeastern Greenhouse Conference and trade Show, Greenville, SC.
71. van Iersel, M.W. and J.-G. Kang. 2008. Fertility effects on acclimation of *Philodendron scandens* to low light levels. SNA research conference, Atlanta, GA.
70. Lee, M.K. and M.W. van Iersel. 2008. Salinity effects on growth and physiology of chrysanthemum. SNA research conference, Atlanta, GA.
69. Kim, J. and M.W. van Iersel. 2008. ABA drenches Induce Stomatal Closure and Prolong Shelf Life of *Salvia splendens*. SNA research conference, Atlanta, GA.
68. Ogden, A. and M.W. van Iersel. 2008. Predicting nighttime low temperatures in unheated high tunnels. 2008 Annual Conference of the American Society for Horticultural Science, Orlando, FL.
67. Ogden, A., G. Krewer, E. Andrews, and M. van Iersel. 2008. Benefits of high tunnels for Southern highbush blueberry production include frost protection and early, large yields. 2008 Annual Conference of the American Society for Horticultural Science, Orlando, FL.
66. Kim, J., M. van Iersel, and J.-G. Kang. 2008. ABA drenches can increase the shelf life of *Salvia splendens*. 2008 Annual Conference of the American Society for Horticultural Science, Orlando, FL.
- 65*. van Iersel, M.W. 2008. Controlling greenhouse irrigation with soil moisture sensors: practical applications and basic research. Department of Horticulture and Landscape Architecture, Purdue University.
- 64*. van Iersel, M.W. 2008. Estimating carbon use efficiency, growth respiration, and maintenance respiration from canopy gas exchange measurements. 2008 International Conference on Controlled Environment Agriculture, Cocoa Beach, FL.
- 63*. van Iersel, M.W. 2008. Monitoring and controlling substrate water content in controlled environments. 2008 International Conference on Controlled Environment Agriculture, Cocoa Beach, FL.
- 62*. van Iersel, M.W. 2008. Automating irrigation based on soil moisture data. IV Annual Irrigation Scheduling Course, University of Lleida, Lleida, Spain.
- 61*. van Iersel, M.W. 2008. Measuring water content and EC in soilless substrates. IV Annual Irrigation Scheduling Course, University of Lleida, Lleida, Spain.
- 60*. van Iersel, M.W. 2007. Canopy gas exchange measurements in controlled environments: Principles and data interpretation. 2007 Agronomy Meetings, November 5-9, New Orleans.
- 59*. van Iersel, M.W. 2007. Controlling greenhouse irrigation with soil moisture sensors: practical applications and basic research. Department of Horticulture, University of Kentucky.
58. van Iersel, M.W. 2007. Making greenhouse irrigation more efficient: effects of substrate water content on the growth and physiology of *vinca*. SNA research conference, Atlanta,

GA.

- 57*. van Iersel, M.W. 2007. Soil moisture sensors for irrigation automation: how much water do plants need? 2007 Farwest Show, Portland, OR.
- 56*. van Iersel, M.W. 2007. Efficient greenhouse irrigation: how much water do plants need? GGIA Techshop, SNA annual meeting, Atlanta, GA.
55. Nemali, K., D. Radcliffe, and M. van Iersel. 2007. Plant available water and pore size distribution in soilless substrates. 2007 Annual meeting of the American Society for Horticultural Science, Scottsdale, AZ. (Poster)
54. Smalley, T. and M. van Iersel. 2007. Maximizing learning and minimizing costs through cooperative study abroad garden tours. 2007 Annual meeting of the American Society for Horticultural Science, Scottsdale, AZ. (presented by Tim Smalley)
53. Kang, J.G. M. van Iersel, and S. Burnett. 2007. Irrigation scheduling in greenhouses: Substrate water content effects on growth and physiology of vinca (*Catharanthus roseus*). 2007 Annual meeting of the American Society for Horticultural Science, Scottsdale, AZ.
52. Ogden, A., G. Krewer, and M.W. van Iersel. 2007. High tunnels trigger earlier flowering and fruit set in organic southern highbush blueberry. Annual meeting of the American Society for Horticultural Science, Scottsdale, AZ. (presented by Andrew Ogden)
51. Nemali, K. and M. van Iersel. 2007. Physiological responses of tomato to different rates of drought stress. 2007 Annual meeting of the American Society for Horticultural Science, Scottsdale, AZ.
- 50*. van Iersel, M.W. 2006. Respiration and temperature: is the Q_{10} concept meaningful? Department of Horticulture, Texas A&M University.
49. van Iersel, M.W., S.E. Burnett and S. Dove. 2006. Increasing irrigation efficiency: water requirements of petunia and salvia. 2006 SNA research conference, Atlanta, GA.
- 48*. van Iersel, M.W. 2006. Whole-plant photosynthesis measurements: What, how and why? (Part of colloquium on 'Photosynthesis: from chloroplast to ecosystem') 2006 Annual meeting of the American Society for Horticultural Science, New Orleans, LO.
47. Montesano, F., and M.W. van Iersel. 2006. NaCl stress in hydroponic tomatoes can be alleviated by calcium. 2006 Annual meeting of the American Society for Horticultural Science, New Orleans, LO.
- 46*. van Iersel, M.W. 2006. Beyond routine measurements: Using dataloggers for control and complicated measurements (part of workshop on 'Effective use and applications of current technology in horticulture'). 2006 Annual meeting of the American Society for Horticultural Science, New Orleans, LO. <http://ashs.org/db/horttalks/detail.lasso?id=72>.
45. van Iersel, M.W. 2005. Measuring and reporting growing conditions in controlled environments. 2005 Annual meeting of the American Society for Horticultural Science, Las Vegas, NV.
44. Scoggins, H. and M.W. van Iersel. 2005. In situ probes for direct measurement of substrate

soluble salts: Effects of substrate moisture content and fertilizer concentration. 2005 Annual meeting of the American Society for Horticultural Science, Las Vegas, NV.

43. van Iersel, M.W. and S. Dove. 2005. Whole-plant photosynthesis of containerized hydrangeas and abelias as affected by substrate moisture content. 2005 Annual meeting of the American Society for Horticultural Science, Las Vegas, NV.
- 42*. van Iersel, M.W. 2004. Respiration and temperature: is the Q_{10} concept meaningful? Department of Horticulture, Clemson University.
41. van Iersel, M.W. 2004. Respiration and temperature (part of workshop on Respiration: How does it affect the carbon balance of plants?). 2004 Annual meeting of the American Society for Horticultural Science, Austin, TX.
40. van Iersel, M.W. 2004. Respiratory Q_{10} of lettuce increases with increasing plant size. 2004 Annual meeting of the American Society for Horticultural Science, Austin, TX.
39. Van Iersel, M.W. 2004. Respiration and temperature: is the Q_{10} concept meaningful? Department of Horticulture, University of Georgia.
38. van Iersel, M.W. 2004. Developing a nutritional program. Southeastern Greenhouse Conference and Trade Show, Greenville, SC.
37. van Iersel, M.W. 2004. Correcting post-plant pH and nutritional problems. Southeastern Greenhouse Conference and Trade Show, Greenville, SC.
36. van Iersel, M, J. Frantz, and B. Bugbee. 2003. Temperature effects on photosynthesis, respiration, and growth of lettuce. 100th Annual International Conference of the American Society for Horticultural Science, Providence, RI.
35. van Iersel, M. 2003. Potential acidity and actual pH of a fertilizer solution determine its effect on growing medium pH. 100th Annual International Conference of the American Society for Horticultural Science, Providence, RI.
34. van Iersel, M.W. 2002. Carbon exchange rates of four bedding plant species: short-term temperature effects. Department of Horticulture, The University of Georgia.
33. van Iersel, M.W. 2001. Are your plants on the right diet? Southeastern Greenhouse Conference and Trade Show, Greenville, SC.
32. van Iersel, M.W. 2001. Are your plants on the right diet? Ohio Short Course, Columbus, OH.
31. van Iersel, M.W. 2001. Applying Marathon by subirrigation. Ohio Short Course, Columbus, OH.
30. van Iersel, M.W. 2001. Carbon exchange rates of four bedding plant species: short-term temperature effects. Crop Physiology Laboratory. Utah State University.
29. Kang, J.-G. and M. van Iersel. 2000. Interactions of temperature and fertilizer concentration affect growth of petunia and geranium. 97th Annual Conference of the American Society for Horticultural Science, Orlando, FL.
28. van Iersel, M. and J.-G. Kang. 2000. Fertilizer concentration affects whole plant CO_2

exchange of subirrigated pansies. 97th Annual Conference of the American Society for Horticultural Science, Orlando, FL.

27. van Iersel, M.W. 2000. Managing growing medium EC and pH. Southeastern Greenhouse Conference and Trade Show, Greenville, SC.
26. van Iersel, M.W. and P.L. Seymour. 1999. Estimating growth and maintenance respiration from semi-continuous CO₂ exchange measurements. NASA, Kennedy Space Center, FL.
25. van Iersel, M.W. and P.L. Seymour. 1999. Carbon allocation in vinca estimated from time series analysis of CO₂ exchange measurements. Crop Physiology laboratory. Utah State University.
24. van Iersel, M.W. and R. Oetting. 1999. Imidacloprid applications for whitefly control on poinsettia using ebb-and-flow systems. 96th Annual Conference of the American Society for Horticultural Science, Minneapolis, MN.
23. van Iersel, M.W. and O.M. Lindstrom. 1998. Temperature response of whole plant CO₂ exchange rates of magnolia (*Magnolia grandiflora* L.). 95th Annual Conference of the American Society for Horticultural Science, Charlotte, NC.
22. van Iersel, M.W. 1998. Growth and maintenance respiration of *Catharanthus roseus* L. estimated from CO₂ exchange. 25th International Horticultural Congress. Brussels, Belgium.
21. van Iersel, M.W. 1997. Auxin effects on post-transplant growth of vinca seedlings. 24th Annual Meeting of the Plant Growth Regulation Society of America.
20. van Iersel, M.W. 1997. Auxins increase post-transplant growth of vinca. 94th Annual Conference of the American Society for Horticultural Science, Salt Lake City, UT.
19. van Iersel, M.W., D. Olsen, and R. Oetting. 1997. Coconut coir as a growing mix component. III. Plant growth. 1997 Annual meeting of the Georgia Entomological Society.
18. van Iersel, M.W. 1997. Innovative approaches to water quality and conservation in the greenhouse industry. Georgia 1997 Water Resources Conference.
17. van Iersel, M.W. 1997. Continuous crop CO₂ exchange measurements: Possibilities and limitations. Envirotron seminar series, Georgia Experiment Station, Griffin, GA.
16. van Iersel, M.W. 1997. Minimizing greenhouse run-off! The 1997 Greenhouse Update for Commercial Growers. Atlanta, GA.
15. van Iersel, M.W. 1996. Growth and development of *Salvia splendens* as affected by pot volume. 93rd Annual Conference of the American Society for Horticultural Science, Lexington, KN.
14. van Iersel, M. and L. Freeman. 1996. Growth regulators affect post-transplant growth of bedding plants. Ornamental Horticulture Open House, Georgia Station, Griffin.
13. van Iersel, M.W. and B.G. Bugbee. 1995. Fungicide effects on gas exchange and growth of bedding plants. ASA meetings, St. Louis, MI.
12. van Iersel, M.W. 1995. Fungicides in floriculture: Effects on gas exchange and growth.

Department of Horticulture. The University of Georgia, Athens.

11. van Iersel, M.W. 1993. Water relations of developing cotton fruits. Department of Agronomy, University of Arkansas, Fayetteville.
10. van Iersel, M.W., D.M. Oosterhuis, and W.M. Harris. 1993. Water transport pathways in developing cotton fruits. ASA Meetings, Cincinnati, OH.
9. van Iersel, M.W., D.M. Oosterhuis, and W.M. Harris. 1993. Symplastic and apoplastic water pathways into cotton fruit. 1993 Beltwide Cotton Physiology Conference. New Orleans, LA.
8. van Iersel, M.W., T.L. Kirkpatrick, and D.M. Oosterhuis. 1993. Effects of *Meloidogyne incognita* on cotton growth and various physiological parameters. 1993 Beltwide Cotton Pathology Conference. New Orleans, LA.
7. van Iersel, M.W., D.M. Oosterhuis, and W.M. Harris. 1992. Quantification of apoplastic water flow to cotton leaves and fruit. ASA Meetings. Minneapolis, MN.
6. van Iersel, M.W., and D.M. Oosterhuis. 1992. Comparison of the fruit water relations of three cotton cultivars. 1992. Beltwide Cotton Physiology Conference. Nashville, TN.
5. van Iersel, M.W., and D.M. Oosterhuis. 1991. Water relations of cotton bolls. Thirtieth annual technical conference. Arkansas Agricultural Pesticide Association. Fayetteville, AR.
4. van Iersel, M.W., and D.M. Oosterhuis. 1991. Water relations of developing cotton fruits. 1991 Beltwide Cotton Physiology Conference. San Antonio, TX.
3. van Iersel, M.W. 1989. The influence of ethylene on chlorophyll and carotenoid concentrations in sweet pepper during ontogeny. Department of Plant Physiology, Agricultural University, Wageningen, The Netherlands.
2. van Iersel, M.W. 1988. Leaf photosynthesis of tomato as affected by light intensity and CO₂-concentration. Department of Horticulture, Agricultural University, Wageningen, The Netherlands.
1. van Iersel, M.W. 1989. Simulation of the development of corn and sugar beet. Department of Theoretical Production Ecology, Agricultural University, Wageningen, The Netherlands.

Popular press highlights of research

Elliott, S. 2014. Providing the gift of water for poinsettias and other ornamental crops.

<http://blogs.usda.gov/2014/12/12/providing-the-gift-of-water-for-poinsettias-and-other-ornamental-crops/#more-55810>.

Kovalycsik, M. 2014. Is overwatering costing you? Are you overwatering? Follow these tips for reducing water usage and growing healthier crops. DeltaT solutions.

http://www.deltatolutions.com/enews/Overwatering_Costs.html

Melancom, M. 2013. UGA study shows soil-moisture sensor system slashes nursery water use by 70 percent. Georgia Faces. http://www.caes.uga.edu/applications/gafaces/?public=viewStory&pk_id=4851.

- Kuack, D. 2013. Making sense of greenhouse irrigation. Greenhouse product news. http://www.gpnmag.com/sites/default/files/06_Irrigation_GPN0613%20FINAL.pdf.
- Dosatron blog. 2012. Dosatron supports project looking at reducing fertilizer leaching through automated irrigation. <http://www.dosatronusa.com/blog/?p=1191>.
- Schupska, S. 2011. UGA, Georgia nurserymen pinpoint plants' water use. GrowingGeorgia.com. <http://growinggeorgia.com/news/2011/02/uga-georgia-nurserymen-pinpoint-plants-water-needs/>.
- Hendrick, K. 2010. Blue: the new green. Floral management. <http://www.multibriefs.com/briefs/saf/FMAug10UpSupplyChain.pdf>.
- Mihalek, P. 2010. When to water. Greenhouse Grower. <http://www.greenhousegrower.com/structures-equipment/equipment/when-to-water/>.
- Schupska, S. 2007. Georgia looks to reserve water resources. Southeast farm Press. <http://southeastfarmpress.com/georgia-looks-preserve-water-resources>.
- UGA-CAES news service. 2007. Cutting water use will boost greenhouses' bottom line. Gainesville Times. <http://gainesvillelegals.com/news/stories/20070215/localnews/156409.shtml>.

Outreach/Extension

Peer-reviewed learning modules

- Bayer, A. and M. van Iersel. 2015. Interpreting sensor data. In: Managing irrigation through distributed networks knowledge center. M. Chappell, P.A. Thomas and J.D. Lea-Cox. (Eds.). Published online at <https://myelms.umd.edu/courses/1110356>. 10 p.
- van Iersel, M., 2014. All about sensors. In: Managing irrigation through distributed sensors networks knowledge center. M. Chappell, P.A. Thomas and J.D. Lea-Cox. (Eds.). Published online at <https://myelms.umd.edu/courses/1110349>. 17 p.
- Bayer, A. and M. van Iersel. 2014. What is a weather station and should I have an on-site weather station? In: Managing irrigation through distributed networks knowledge center. M. Chappell, P.A. Thomas and J.D. Lea-Cox. (Eds.). Published online at <https://myelms.umd.edu/courses/1110351>. 17 p.

Other

- Bayer, A., M. van Iersel, and M. Chappell. 2017. What is a Weather Station and Can It Benefit Ornamental Growers? [UGA Cooperative Extension Bulletin 1475](#). 6 pp.
- van Iersel, M.W. 2010. Organic blueberry production in high tunnels. Part of farm tour associated with 2010 Georgia Organics Conference. (40 people, 2/19/2010) (<http://www.cropsoil.uga.edu/documents/final-farmtour-pagebypage.pdf>)
- van Iersel, M.W. 2010. Automation of greenhouse irrigation with soil moisture sensors. Cobb County Master Gardeners (20 people, 2/26/2010)

van Iersel, M.W. Floriculture production and physiology research at the University of Georgia. Presented to the Board of Directors of the American Floral Endowment. (25 people, 1/13/2010)

Consulting

Various large companies, including forestry and biotech.

International/National service:

Media communications committee, American Society for Horticultural Science, 2017-current. (member).

Publications task force, American Society for Horticultural Science, 2017-current. (member).

Program committee, Fifth International Meeting on Controlled Environments, Brisbane, Australia, 2016.

Organizer and moderator of a colloquium on 'Vertical farming: challenges and opportunities' 2015 Annual meeting of the American Society for Horticultural Science, New Orleans, LA.

Chair, Chair-elect, Controlled environment working group, American Society for Horticultural Science. 2013-2015.

Organizing committee, [Fourth International Meeting on Controlled Environments](#), Cambridge, UK, 2012.

Organizing committee, NSF workshop on Vertical Farming, College Park, MD, 2012. www.challengesinverticalfarming.org.

Reviewer of HORT-CRISP proposals, 2010.

Reviewer of NASA proposals, 2009, 2010.

Secretary, Vice-chair, Chair, Past Chair, USDA project NCERA-101 'Committee on Controlled Environment Technology and Use' (2009 - 2013).

Steering committee member, USDA project NCDC-216 'Water Management and Quality for Ornamental Crop Production and Health' 2009-2010.

Continuing education committee, American Society for Horticultural Science, 2007-2011. (member).

National issues task force, American Society for Horticultural Science, 2007-current. (member)

Vice-president, Research division of the American Society for Horticultural Science, 2007-2009.

Vice-president elect, Research division of the American Society for Horticultural Science, 2006-2007.

Membership committee, American Society for Horticultural Science, 2006-2009. (member)

Georgia representative, NE1017 'Developing and Integrating Components for Commercial Greenhouse Production Systems'. 2006-2012.

Consulting editor, Journal of the American Society for Horticultural Science, Photosynthesis and source-sink physiology subject category, 2003-current.

Organizer and moderator of a workshop on 'Respiration: How does it affect the carbon balance of plants?' 2004 Annual meeting of the American Society for Horticultural Science, Austin, TX.

Organizer and moderator of a workshop on 'Statistics for controlled environment research' 2004 Annual meeting of the American Society for Horticultural Science, Austin, TX.

Chair, Chair-elect, Crop physiology working group, American Society for Horticultural Science (2002 - 2006).

Member, editorial board, 2003-2006. Journal of Plant Nutrition.

Associate editor, HortScience (1999 - 2002).

Georgia representative, Regional project NCERA-101 'Committee on Controlled Environment Technology and Use' (1999 - current).

Research grants and gifts:

Dr. van Iersel has received research funding from a variety of sources, including government agencies (NASA, USDA-NIFA, Georgia Dept. of Agriculture, Georgia Research Alliance), grower organizations, and agrochemical industry. Funding for his research is summarized in the following tables. Amounts in brackets indicate amount allocated to Dr. van Iersel's lab.

Competitive research grants

| <u>Year</u> | <u>Title</u> | <u>Funded by:</u> | <u>Amount</u> | <u>Prin./_ coop.</u> |
|----------------|---|---|-------------------------|--------------------------|
| 2018 - 2020 | Adaptive supplemental lighting to reduce energy costs in greenhouses | American Floral Endowment | \$37,530 | PI |
| 2017- 2018 | Optimizing the cost-effectiveness of lighting in controlled environment agriculture | UGA – CAES – Grants on the edge | \$11,601 (\$6,601) | Co-PI |
| 2017 - 2019 | Plant-adaptive supplemental lighting control system (grant to company co-founded by me, \$122,584 to UGA) | USDA-NIFA-Small Business Innovation Research | \$596,680 (\$30,000) | Co-PI |
| 2017- 2018 | Development of low-maintenance tensiometer. Phase 1A | Georgia Research Alliance | \$25,000 | PI |
| 2017- 2018 | Smart cyber-physical systems for controlled-environment agriculture | UGA - Presidential Interdisciplinary Seed Grant | \$140,162 (\$35,000) | Co-PI |
| 2017 | A biofeedback system for plant-based control of LED lights. Phase 2B. | Georgia Research Alliance | \$70,466 | PI |
| 2017 | Effects of postharvest blue light treatment on ripening, fruit quality and disease incidence in blueberries | Southern Region Small Fruit Consortium | \$5,000 (\$500) | Co-PI |
| 2017 | Measurement and control equipment for academic purposes | Campbell Scientific, Inc. | \$22,400 (in kind) | PI |
| 2016- 2018 | Cost-effective LED lighting | American Floral Endowment | \$40,000 | PI |
| 2016- 2017 | A biofeedback system for plant-based control of LED lights. Phase 2A. | Georgia Research Alliance | \$60,466 | PI |
| 2015 | Development of learning modules for controlled environment production engineering/technology courses | Ohio State University | \$1,200 | PI |
| 2015 | Controlling plants flowering with LED grow lights | Georgia Centers of Innovation | \$5,000 | PI |
| 2015 | Controlling plants flowering with LED grow lights | PhytoSynthetix, LLC | \$5,000 (in kind) | PI |
| 2015 | Increasing the efficiency of LED lighting through biofeedback and real-time | Fred C. Gloeckner Foundation, Inc. | \$10,000 | PI |

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| | control | | | |
| 2015-2016 | A biofeedback system for LED lighting systems (Phase 1) | USDA-NIFA-SBIR | \$95,278 (\$51,778) | Co-PI |
| 2015 | A biofeedback system for plant-based control of LED lights. Phase 1B. | Georgia Research Alliance | \$35,000 | PI |
| 2015 | Using precision irrigation technology to increase the economic competitiveness and environmental sustainability of Georgia specialty crop producers | Georgia Department of Agriculture – Specialty Crop Block Grant | \$24,261 | Co-PI |
| 2014 | A bio-feedback system for plant-based control of LED lights. Phase 1A. | Georgia Research Alliance | \$30,000 | PI |
| 2014 | Using precision irrigation technology to increase the economic competitiveness and environmental sustainability of Georgia specialty crop producers | Georgia Department of Agriculture – Specialty Crop Block Grant | \$47,000 | Co-PI |
| 2012 | Reducing fertilizer applications and runoff with soil moisture sensor-controlled irrigation | Center for Applied Nursery Research | \$2,430 | PI |
| 2012 | A stand-alone system to measure plant water use and irrigation volume in nurseries | Center for Applied Nursery Research | \$2,500 | PI |
| 2011 | Quantifying water requirements of hydrangea and gardenia | Center for Applied Nursery Research | \$2,260 | PI |
| 2010-2011 | Irrigation automation in greenhouses using substrate moisture sensors | American Floral Endowment | \$24,000 (\$12,000) | Co-PI |
| 2010 | Determining the water requirements of hydrangea: effects of plant age and environmental conditions | Center for Applied Nursery Research | \$2,500 | PI |
| 2009-2014 | Precision irrigation and nutrient management for nursery, greenhouse and green roof systems: Wireless sensor networks for feedback and feedforward control | USDA-CSREES-SCRI | \$5,161,495 (\$520,000) | Co-PI |
| 2009-2010 | Quantification of carbon assimilation in interiorscape plants | National Foliage Foundation | \$25,000 (12,500) | Co-PI |
| 2008 | Modeling daily water use of greenhouse crops | Fred C. Gloeckner Foundation, Inc. | \$10,000 (\$5,000) | Co-PI |
| 2008 | Prolonging the shelf life of ornamental plants during retail with ABA applications | Center for Applied Nursery Research | \$2,500 | PI |

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| 2008 | Using irrigation controllers to reduce irrigation and leachate volume of containerized plant | Center for Applied Nursery Research | \$2,400 (\$1,200) | PI |
| 2008 | Investigating the efficiency of an anti-evaporation fabric to control evaporation from surface water supplies | Center for Applied Nursery Research | \$1,100 (\$400) | Co-PI |
| 2006 | Irrigation Automation in Greenhouses: Better Crops with Less Water | Fred C. Gloeckner Foundation, Inc. | \$6,400 (\$3,200) | PI |
| 2006-2009 | Certificate program in organic agriculture at the University of Georgia | USDA-CSREES Higher education challenge grant | \$148,778 (\$90,000) | Prin./ Coop. |
| 2006-2009 | Out-of-season small fruit production for improved profitability of organic farming | USDA-CSREES Integrated organic program | \$313,517 | Prin. |
| 2005 | Irrigation Automation in Greenhouses: Better Crops with Less Water | Fred C. Gloeckner Foundation, Inc. | \$5,500 | Prin. |
| 2005 | Controlling irrigation of hydrangea based on plant water use | Center for Applied Nursery Research | \$2,000 | Prin. |
| 2004 | The development of new Abelia cultivars through interspecific hybridization | Georgia Seed Development Commission | \$35,000 (1,000) | Coop. |
| 2004 | Determining water requirements of nursery crops | Center for Applied Nursery Research | \$2,000 | Prin. |
| 2003 | Minimizing runoff and increasing water-use efficiency of nursery crops with pulse irrigation | Center for Applied Nursery Research | \$1,700 | Prin. |
| 2003 | The development of new Abelia cultivars through interspecific hybridization | Georgia Seed Development Commission | \$35,000 (2,000) | Coop. |
| 2001-2003 | The use of electrolyzed water for foliar disease control | USDA pest management alternatives | \$122,315 | Coop. |
| 2000 | Electrolyzed water as a safe alternative to fungicides for control of foliar diseases | Fred C. Gloeckner Foundation, Inc. | \$6,500 (\$1,000) | Coop. |

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|-------------|---|-------------------------------------|------------------------|----------|
| 2000 | Carbon fixation and allocation during plant development: a time series analysis | UGA Research Foundation | \$5,800 | Prin. |
| 1999-2000 | CO ₂ exchange rate as an indicator for the heat tolerance of bedding plants | Fred C. Gloeckner Foundation, Inc. | \$5,100 | Prin. |
| 1999-2000 | Screening of <i>Abelia</i> germplasm for heat tolerance | Georgia Seed Development Commission | \$6,900 | Prin. |
| 1999 | Improving landscape establishment of bare-root perennials with auxin applications. | Horticultural Research Institute | \$4,000 | Prin. |
| 1997-1998 | Improving garden performance with auxin applications. | Bedding Plant Foundation, Inc. | \$3,500 | Prin. |
| 1997-1998 | Improving growth and nutrient uptake with auxin applications. | Fred C. Gloeckner Foundation, Inc. | \$5,440 | Prin. |
| 1995 - 1997 | Crop production optimization using CO ₂ gas exchange (at Utah State University). | NASA | \$460,000 ¹ | Coop. |
| 1995 | Fungicide phytotoxicity to bedding plants (at Utah State University). | Foley & Lardner | \$72,000 | Co-Prin. |

Industry funding

| <u>Date</u> | <u>Title</u> | <u>Funded by:</u> | <u>Amount</u> | <u>Prin./coop.</u> |
|-------------|---|--------------------|---------------|--------------------|
| 2015 | Biostimulants for protection against abiotic stresses | ICL-Everris | \$5,000 | Prin. |
| 2015 | Biostimulants for protection against abiotic stresses | ICL-Everris | \$10,000 | Prin. |
| 2015 | Unrestricted gift | James Greenhouses | \$1,000 | Prin. |
| 2013 | Improving water use efficiency with ABA | Valent BioSciences | \$10,000 | Prin. |
| 2012 | Manipulating water use of plants with ABA and ABA analogs | Valent BioSciences | \$10,000 | Prin. |

¹ Dr. van Iersel left Utah State University before the start of this project

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| 2012 | Construction of load cell systems | Scotts Company | \$4,000 | Prin. |
| 2011 | Construction of irrigation control system and load cell system | Valent BioSciences | \$7,700 | Prin. |
| 2011 | Effects of soil surfactants on soilless substrates | Lamberti USA | \$5,000 | Prin. |
| 2011 | Improving water use efficiency of ornamental plants with ABA applications | Valent BioSciences | \$20,000 | Prin. |
| 2010 | Prolonging the shelf life of ornamental plants during retail with ABA applications | Valent BioSciences | \$10,000 | Prin. |
| 2010 | EC measurements in soilless substrates | Spectrum Technologies | \$2,500 | Prin. |
| 2010 | Soil moisture and light sensors | Spectrum Technologies | \$900 (in-kind) | Prin. |
| 2010 | Soil moisture and EC sensors | Decagon Devices | \$5,000 (in kind) | Prin. |
| 2009 | Prolonging the shelf life of ornamental plants during retail with ABA applications | Valent BioSciences | \$10,000 | Prin. |
| 2009 | Soil moisture sensors | Decagon Devices | \$10,000 (in kind) | Prin. |
| 2008 | Irrigation controllers | Acclima | \$4,000 (in kind) | Prin. |
| 2008 | CO ₂ and volatiles removal from the air by annual bedding plants | Sakata | \$15,000 (\$15,000) | Co-PI |
| 2008 | Prolonging the shelf life of ornamental plants during retail with ABA applications | Valent BioSciences | \$7,500 | Prin. |
| 2006 | Irrigation controller | Dynamax | \$200 (in kind) | Prin. |
| 2006 | Soil moisture probes | Decagon | \$450 (in kind) | Prin. |
| 2005 | Growing media | Fafard, Inc. | \$870 (In kind) | Prin. |
| 2004 | Unrestricted gift | Georgia Flower Growers Association | \$100 | Prin. |
| 2004 | Greenhouse environment datalogger | Spectrum Technologies | \$587 (in-kind) | Prin. |

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| 2004 | Reducing leaching from hanging baskets with absorbent non-woven fabric | ATEX-USA | \$2,000 | Prin. |
| 2004 | Water use and needs of landscape trees in a nursery setting | Southeastern Growers | \$5,575 | Prin. |
| 2003 | Soil EC meter | Spectrum Technologies | \$300 (In kind) | Prin. |
| 2003 | Growing media | Fafard, Inc. | \$1000 (In kind) | Prin. |
| 2003 | Fertilizer injector | H.E. Anderson | \$540 (In kind) | Prin. |
| 2001 | Comparison of different micronutrient mixes | Whitmire-Microgen | \$5,000 | Prin. |
| 2001 | Fertilizer guidelines for <i>Begonia semperflorens</i> | Sunbelt Greenhouses | \$400 (In kind) | Prin. |
| 2001 | Phytotoxicity of EO water on bedding plants | Speedling Inc. | \$600 (In kind) | Prin. |
| 2001 | Growing media | Fafard, Inc. | \$830 (In kind) | Prin. |
| 2000 | Comparison of different fertilizers | The Scotts Co. | \$300 (In kind) | Prin. |
| 2000 | Comparing a soil EC probe with the PourThru method | Spectrum Technologies, Inc. | \$400 (in kind) | Prin. |
| 1999 | Imidacloprid applications in ebb-and-flow systems | Olympic Horticultural Products | \$5,000 | Prin. |
| 1998 | Whitefly control on poinsettias in ebb-and-flow systems | Olympic Horticultural Products | \$5,000 | Prin. |
| 1996 | Comparing growing media for use in subirrigation systems | The Scotts Company | \$800 (in kind) | Prin. |

Special project funding

| <u>Date</u> | <u>Title</u> | <u>Funded by:</u> | <u>Amount</u> | <u>Prin./ coop.</u> |
|-------------|-------------------------------|----------------------|---------------|-------------------------|
| 2014 | Faculty summer research grant | UGA provost's office | \$5,000 | Prin. |
| 2013 | Faculty summer research grant | UGA provost's office | \$5,000 | Prin. |
| 2012 | Faculty summer research grant | UGA provost's office | \$5,000 | Prin. |

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| 2001 | Fertilizer effects on growth and quality of variegated ivy | Assistant Dean, Griffin Campus | \$2,000 | Prin. |
| 2001 | Fertilizer guidelines for greenhouse production of ornamental pepper | UGA Center for Urban Agriculture | \$2,500 | Prin. |
| 2000 | The use of electrolyzed water in floriculture | UGA Center for Urban Agriculture | \$5,000 (\$2,000) | Co-Prin. |
| 2000 | Travel support for visiting scientist | UGA-CAES International Agriculture | \$780 | Prin. |
| 1999-2000 | Support for visiting scientist from South Korea | UGA-CAES International Agriculture | \$1,000 | Prin. |
| 1999 | Insect control in subirrigation systems | UGA Center for Urban Agriculture | \$10,000 | Prin. |
| 1999 | Design and installation of a whole plant gas exchange system | Assistant Dean, CAES Griffin Campus | \$36,000 | Prin. |
| 1998 | Coastal cultivars | USDA/CSREES | \$233,693 (\$4,000) | Coop. |
| 1997 | Coastal cultivars | USDA/CSREES | \$186,921 (\$2,500) | Coop. |
| 1995 | Installation of ebb-and-flow research facility | Assistant Dean, CAES Griffin Campus | \$3,600 | Prin. |