

# Kimberly A. Williams

Curriculum Vita, 1-23

Professor of Greenhouse Management

University Distinguished Teaching Scholar, Kansas State University

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## PROFESSIONAL HISTORY

**University Distinguished Teaching Scholar, 2010-present.** Kansas State University, Manhattan.

**Professor. 2006 - present.** Kansas State University, Manhattan.

**Associate Professor. 2001 - 2006.** Kansas State University, Manhattan.

**Assistant Professor. August 1997 - 2000.** Kansas State University, Manhattan.

Teaching: 60% (current courses underlined): HORT 190 *Pre-Internship in Horticulture*; HORT 377 *Interior Landscaping*; HORT 570 *Greenhouse Operations Management*; HORT 590 *Horticulture Internship*; HORT 600 *Herbaceous Plant Production*, HORT 625 *Floral Crops Production and Handling*; HORT 640 *Commercial Floral Design*, HORT 705 *Hydroponic Food Production* and HORT 752 *Horticulture in Horticultural Therapy*

Research: 40%: Floriculture nutritional physiology & plant interaction with arthropod pests; soilless root medium physiochemical and microbial properties; production in high tunnel structures and hydroponic systems; physiological disorders; intumescences and edema; scholarship of teaching and learning

Advising: 25 to 35 students; Horticulture Club, 2001-2004

Horticulture AG\*IDEA Institutional Liaison

**Assistant Professor. Summer 1995 - July 1997.** University of Illinois, Urbana.

Teaching, 40%: *Greenhouse Management and Production* and *Floricultural Crops Production*

Research, 60%: Floriculture and hydroponics education, physiology, and nutrition

**Graduate Research and Teaching Assistant. 1988-1995.** North Carolina State University, Raleigh.

## EDUCATION

**Ph.D. 1995.** North Carolina State University, Raleigh.

Major: Horticultural Science. Minor: Soil Science.

Dissertation: *Increasing phosphate and potassium retention of container substrates through the use of aluminum, clay, and zeolite amendments.*

**M.S. 1991.** North Carolina State University, Raleigh.

Major: Horticultural Science. Minor: Botany (Plant physiology).

Thesis: *Development of a low-level, sustained-release nitrogen source for greenhouse crops using organic waste materials.*

**B.S. 1988.** Kansas State University, Manhattan.

Major: Horticulture. Options: Science and Greenhouse Management. GPA: 3.9 Magna cum laude.

## SELECTED AWARDS AND HONORS

### Teaching

Iman Outstanding Faculty Award for Teaching, KSU Alumni Association (\$5,000), 2020

Outstanding Education Publication Award, American Society for Horticultural Science, 2014

College of Agriculture Scholarship of Teaching and Learning Award (\$1,500), 2013

Outstanding Undergraduate Educator Award, American Society for Horticultural Science, 2011

Coffman Chair, University Distinguished Teaching Scholar, Kansas State University (\$10,500), 2010-2011

USDA Food and Agriculture Sciences Excellence in Teaching Award, North Central Region (\$2,000), 2009

Outstanding Education Publication Award, American Society for Horticultural Science, 2008

College of Agriculture Excellence in Graduate Teaching Award (\$1,000), 2008

NACTA Teacher Fellow, North American Colleges and Teachers of Agriculture, 2007

Tilford Multiculturalism Fellow, Kansas State University's Tilford Group (grants of \$4,000), 2006-2007

Outstanding Advising Award, Kansas State University Gamma Sigma Delta Eta Chapter, 2005-2006

Faculty Fellow, Peer Review of Teaching; Course Portfolio for HORT 625 (\$1,000), 2004-2005

Outstanding Education Publication Award, American Society for Horticultural Science, 2004

Outstanding Teaching Award, Kansas State University Gamma Sigma Delta Eta Chapter, 2002-2003

Advisor of the Year, Kansas State University College of Agriculture, 2001-2002

Teaching Award of Merit, National Association of Colleges and Teachers of Agriculture, 2002

North Carolina State University Outstanding Teaching Assistant Award, 1994  
Alumni Association Award for Graduate Teaching, North Carolina State University, 1994

### **Research**

Alex Laurie Award for “most outstanding research paper published during 2000 in” the American Society for Horticultural Science journals, 2001

Alex Laurie Award for “most outstanding research paper published during 1996 in” the American Society for Horticultural Science journals, 1997

### **Other**

K-State Woman of Distinction, 2012

Honorary State FFA Degree, Kansas FFA Association, 2012

Outstanding Mentor Award, K-State Research and Extension, 2011

## **PROFESSIONAL ACADEMIC AFFILIATIONS AND HONOR SOCIETIES**

American Floral Endowment, Ball Internship-Scholarship Selection Committee, 2013-present

American Society for Horticultural Science, 1988-present

Chair, Floriculture Working Group, 2003-2005

Chair-elect, Floriculture Working Group, 2002-2003

Chair, Ornamental Publication Award Committee, 2003-2004

Ornamentals Publication Award Committee, 2002-2003

Ken Post Outstanding Floriculture Research Award Committee, 2003-2009

North American Colleges and Teachers of Agriculture (NACTA), 1991-present

NCR-101 Committee on Controlled Environment Technology and Use, 1996-present

Phi Kappa Phi, initiated 1987

Gamma Sigma Delta, initiated 1987

Pi Alpha Xi, Omega Chapter, initiated 1987

Golden Key National Honor Society, initiated 1987

Pi Alpha Xi, Iota Chapter (NCSU): President, 1990-91; Secretary, 1989-90

Pi Alpha Xi, Beta Chapter (University of Illinois): Faculty Advisor, 1995-1997

Pi Alpha Xi, Omega Chapter (Kansas State University): Faculty Advisor, 1999-2012

Gamma Sigma Delta, University of Illinois Chapter: Vice-president, 1996-1997; Secretary-Treasurer, 1995-1996

Gamma Sigma Delta, Kansas State University Chapter: Chair of Undergraduate Recognition Committee, 1999-2000

Student Teaching and Research Recognition Committee, 2005-2006; Chair 2006-2007.

NCSU Horticultural Science Graduate Student Association, 1988-1995; Secretary/Treasurer, 1989-1990

## **PROFESSIONAL INDUSTRY AFFILIATIONS**

Kansas Greenhouse Growers' Association, 1997-present

AmericanHort (formerly OFA—An Association of Floriculture Professionals), 1997-present

Publications Committee, 2001-2007

Industry Newcomer and Outreach Committee, 2002-2007

North Carolina Commercial Flower Growers Association, 1991-2000

## **SELECTED SERVICE AND PROFESSIONAL DEVELOPMENT ACTIVITIES [Kansas State University only]**

ESCO/ACOP Leadership Development Program (Class 14) [Now, LEAD 21 Program], 2004-2005

National FFA Floriculture Career Development Event Planning Committee, 2015-2020

### University

Advisory Board of Faculty Exchange for Teaching Excellence, 2010-present; Co-chair 2012-2014

Search Committee for Director, Center for the Advancement of Teaching and Learning, 2012-2013

Search Committee for Vice-Provost for Undergraduate Studies, 2012

Graduate Council, 2000-2001

Graduate Academic Affairs Committee, 2000-2001

Advisory Committee for the search for the Assistant Dean of the Graduate School, 2001

President's Commission on Multicultural Affairs, 2001-2003

Big 12 Faculty Fellowship and Mentoring Awards Selection Committee, 2002-2005

Women and Minorities Grants Selection Committee, 2003-2006

### College

Greenhouse Operations Committee, 2019-present

Search Committee for Associate Dean of Academic Programs, 2020

Search Committee for Dean of the College of Agriculture and Director of K-State Research and Extension, 2010

Promotion and Tenure Committee, 2008-2010; 2015-present  
 Search Committee for Associate Dean of Academic Programs, 2004-2005 and 2019-2020  
 Distance Education Committee, 2000-2001  
 Diversity Committee, 1999-present  
     Chair, 2000-present  
     Chair of Search Committee for Assistant Dean for Diversity Programs, 2002-2003  
 5-year Administrative Review Committee for Associate Dean of Academic Programs, 2003 and 2016  
 Student and Faculty Awards Committee, 2000-2001; 2002-2003

#### Department

Acting Department Head, August-October 2018  
 Chair, Search Committee for Head of Department, 2006-2007 and 2014  
 Chair, Greenhouse Committee, 2006-present; Member, 1998-present  
 Department Committee on Planning (DCOP), 2002-present  
 5-year Administrative Review Committee for Department Head, 2002 and 2012  
 Coordinated curriculum revisions for 6 HORT specializations, 2001; and for 9 HORT specializations, 2009  
 Chair, Communications Task Force, 2008-2009; and Website Committee, 2009-2011

**REFEREED PUBLICATIONS** [12 teaching publications italicized; undergraduate and graduate student authors advised by KAW underlined; Total 50]

*Miller, C.T., R.L. Harkess, C. Haynes, **K.A. Williams**, and A. Wright. 2023. Conference Workshop Proceedings: Developing a Scholarship of Teaching and Learning (SoTL) Portfolio in Applied Horticulture. HortTechnology 33(1):59-64.*

Goossen, R. and **K.A. Williams**. 2021. Characterizing the phytotoxic effects of hydrogen peroxide root dips on phalaenopsis orchid plants. HortTechnology 31(6):810-816. KAES # 21-326-J.

Schwab, J.D., **K.A. Williams**, and J.J. Griffin. 2021. Asexual propagation by stem cuttings of half-high and low-bush blueberries in soilless substrates. Journal of Environmental Horticulture. 39(2):47-51. KAES # 21-140-J.

Wu, Qingyu, Sunghun Park, M.B. Kirkham, and **K.A. Williams**. 2017. Transcriptome analysis reveals potential mechanisms for inhibition of intumescence development by UV radiation in tomato. Environmental and Experimental Botany. 134:130-140. KAES #16-380-J.

Burnett, S.E., N.S. Mattson, and **K.A. Williams**. 2016. Substrates and fertilizers for organic container production of herbs, vegetables, and herbaceous ornamental plants grown in greenhouses in the United States. Scientia Hort. 208:111-119. KAES# 15-455-J.

Kerschen, E.W., C. Garten, **K.A. Williams**, and M.M. Derby. 2016. Evapotranspiration from spider and jade plants improves relative humidity in an interior environment. HortTechnology 26(6):803-810. KAES # 16-373-J.

***Williams, K.A.**, C.T. Miller, and W. Upham. 2016. Relationship between high school student participation in state-level FFA career development events and matriculation at the host university: a case study in horticulture at Kansas State University. HortTechnology 26(6):862-868. KAES # 15-262-J.*

**Williams, K.A.** and J. Nelson. 2016. Challenges of using organic fertilizers in hydroponic and recirculating production systems. XXIX International Horticultural Congress on Horticulture: Sustaining Lives, Livelihoods and Landscapes (IHC2014): Acta Horticulturae. 1112:365-370. ISBN 978-94-62611-06-1. KAES # 15-216-A.

*Lavis, C.C., **K.A. Williams**, J. Fallin, P.K. Barnes, S.J. Fishback, and S. Thien. 2016. Assessing a faculty development program for the adoption of brain-based learning strategies. J. Faculty Development. 30(1):57-69. KAES# 16-083-J.*

**Williams, K.A.**, J.K. Craver, C.T. Miller, N. Rud and M.B. Kirkham. 2015. Differences between the physiological disorders of intumescences and edemata. In: R.A. Criley, ed. XXIX IHC – Proc. Int. Symp. On Ornamental Horticulture in the Global Greenhouse. Acta Horticulturae. 1104.59:401-405. ISBN 978-94-62610-90-3. KAES# 15-214-A.

Craver, J.K., C.T. Miller, **K.A. Williams**, and N.M. Bello. 2014. Ultraviolet radiation affects intumescence development in ornamental sweetpotato (*Ipomoea batatas*). HortScience 49(10):1277-1283. KAES# 14-379-J.

Craver, J.K., C.T. Miller, **K.A. Williams**, and D.L. Boyle. 2014. Characterization and comparison of lesions on ornamental sweetpotato 'Blackie', tomato 'Maxifort', interspecific geranium 'Caliente Coral', and bat-faced cuphea 'Tiny Mice.' J. Amer. Soc. Hort. Sci. 139(5):603-615. KAES# 14-384-J.

Craver, J.K. and **K.A. Williams**. 2014. *Assessing student learning from an experiential module in a greenhouse management course using hydroponics and recirculating solution culture.* HortTechnology 24(5):610-617. KAES# 14-418-J. **Winner of the ASHS Outstanding Education Publication Award for 2014.**

Altamimi, M.E., R.R. Janke, **K.A. Williams**, N.O. Nelson, and L.W. Murray. 2013. Nitrate-nitrogen sufficiency ranges in leaf petiole sap of *Brassica oleracea* L., pac choi grown with organic and conventional fertilizers. HortScience 48(3):357-368.

Jenkins, M.M., **K.A. Williams**, and L.A. Brannon. 2013. Increased knowledge about floral preservatives influences consumers' perception of the quality and value of a floral arrangement purchase. HortTechnology 23(2):142-148.

Johnson, W.A., R.A. Cloyd, J.R. Nechols, **K.A. Williams**, N.O. Nelson, D. Rotenberg, and M.M. Kennelly. 2012. Effect of nitrogen source on pac choi (*Brassica rapa* L.) chemistry and interactions with the diamondback moth (*Plutella xylostella* L.). HortScience 47(10):1457-1465.

Cloyd, R.A., **K.A. Williams**, F.J. Byrne, and K.E. Kemp. 2012. Interactions of light intensity, insecticide concentration, and time on the efficacy of systemic insecticides in suppressing populations of the sweetpotato whitefly (Hemiptera: Aleyrodidae) and the citrus mealybug (Hemiptera: Pseudococcidae). J. Economic Entomology. 105(2):505-517.

Paparozi, E.T., **K.A. Williams**, R. Geneve, H. Hatterman-Valenti, C. Haynes, H. Kraus, C. McKenney, and J. Pitts. 2011. *Development of the AG\*IDEA Alliance's Horticulture Graduate Certificates Program and inter-institutional course share.* HortTechnology. 21:688-691.

Wu, Q, T. Shigaki, **K.A. Williams**, J-S Han, C.K. Kim, K.D. Hirschi, and S. Park. 2011. Expression of an Arabidopsis  $\text{Ca}^{2+}/\text{H}^{+}$  antiporter CAX1 variant in petunia enhances cadmium tolerance and accumulation. J. Plant Physiology. 168(2011):167-173.

Knewton, S.J.B., R. Janke, M.B. Kirkham, **K.A. Williams**, and E.E. Carey. 2010. Trends in Soil Quality under High Tunnels. HortScience 45:1534-1538.

Lavis, C.C. **K.A. Williams**, and S.J. Thien. 2009. *Assessing intellectual development of Horticulture undergraduates using the Perry scheme and Learning Environments Preferences Instrument.* NACTA Journal. 52(4):25-31.

Ogutu, R.A., **K.A. Williams**, and G.M. Pierzynski. 2009. Phosphate sorption of calcined materials used as components of soilless root media characterized in laboratory studies. HortScience. 44(2):431-437.

Opit, G.P., J. Perret, K. Holt, J.R. Nechols, D.C. Margolies, and **K.A. Williams**. 2009. Comparing chemical and biological control strategies for twospotted spider mites (Acari: Tetranychidae) in commercial greenhouse production of bedding plants. J. Economic Entomology. 102:336-346.

Zhao, X., J.R. Nechols, K.A. Williams, W. Wang, and E.E. Carey. 2009. Comparison of phenolics in organically and conventionally grown pac choi (*Brassica rapa* L. Chinensis group). J. Sci. Food and Agric. 89:940-946.

Carey, E.E., L. Jett, W.J. Lamont, T.T. Nennich, M.D. Orzolek, and **K.A. Williams**. 2009. Horticultural crop production in high tunnels in the United States – a snapshot. HortTechnology. 19(1):37-43.

Spaw, M., **K.A. Williams**, L. Hodges, E.T. Paparozi, and I.L. Mallberg. 2008. *A case study to teach the diagnostic process: Determining the cause of chlorosis in a crop of cut dicentra.* HortTechnology 18(1):168-176. KAES #05-254-J. **Winner of the ASHS Outstanding Education Publication Award for 2008.**

Chen, Y., G.P. Opit, V.M. Jonas, **K.A. Williams**, J.R. Nechols, and D.C. Margolies. 2007. Twospotted spider mite population level, distribution, and damage on ivy geranium in response to different nitrogen and phosphorus fertilization regimes. J. Econ. Ent. 100(6):1821-1830. KAES # 04-383-J.

Holt, K.M., G.P. Opit, J. Nechols, D. Margolies, and **K.A. Williams**. 2007. Comparing chemical and biological control strategies of twospotted spider mites in mixed production of ivy geranium and impatiens. *HortTechnology*. 17(3):322-327. KAES #06-118-J.

Opit, G.P., G.K. Fitch, D.C. Margolies, J.R. Nechols, and **K.A. Williams**. 2006. Overhead and drip-tube irrigation affect twospotted spider mites and their biological control by a predatory mite on impatiens. *HortScience*. 41(3):691-694. KAES # 06-012-J.

Schumacher, S.K., T.L. Marsh, and **K.A. Williams**. 2006. Optimal pest control in greenhouse production of ornamental crops. *Agricultural Economics*. 34:39-50.

Chen, Y. and **K.A. Williams**. 2006. Quantifying western flower thrips (*Frankliniella occidentalis* Pergande) (Thysanoptera: Thripidae) damage on ivy geranium (*Pelargonium peltatum*) with Adobe Photoshop and Scion Image software. *J. Kans. Ent. Soc.* 79(1):83-87. KAES #04-384-J.

Opit, G.P., J.R. Nechols, D.C. Margolies, and **K.A. Williams**. 2005. Survival, horizontal distribution, and economics of releasing predatory mites (Acari: Phytoseiidae) using mechanical blowers. *Biological Control*. 33:344-351. KAES #05-42-J.

Opit, G.P., Y. Chen, **K.A. Williams**, J.R. Nechols, and D.C. Margolies. 2005. Plant age, fertilization, and biological control affect damage caused by twospotted spider mites on ivy geranium: development of action threshold. *J. Amer. Soc. Hort. Sci.* 130(2):159-166. KAES #04-174-J.

Chen, Y., **K.A. Williams**, B.K. Harbaugh, and M.L. Bell. 2004. Effects of tissue phosphorus and nitrogen in Impatiens wallerana on western flower thrips (*Frankliniella occidentalis*) population levels and plant damage. *HortScience* 39(3):545-550. KAES #03-157-J.

*Davis, G. and K.A. Williams*. 2004. *Closing the loop on the internship experience with a new pre-internship course*. *Acta Hort.* 641:29-34. KAES #03-44-J.

Spaw, M. and **K.A. Williams**. 2004. *Full Moon Farm builds high tunnels: a case study in site planning for crop production structures*. *HortTechnology* 14(2):449-454. KAES #04-012-J. **Winner of the ASHS Outstanding Education Publication Award for 2004.**

Spaw, M., **K.A. Williams**, and L.A. Brannon. 2004. *Summary lecture versus web-based method for instruction of site planning for protected environment structures*. *North American Colleges and Teachers of Agriculture (NACTA) Journal* 48(4):45-50. KAES # 04-246-J.

Opena, G.B. and **K.A. Williams**. 2003. Use of precharged zeolite to provide aluminum during blue hydrangea production. *J. Plant Nutrition* 26(9):1825-1840. KAES# 02-32-J.

David, M., J. Swiader, and **K.A. Williams**. 2003. Nitrogen nutrition, but not potassium, affects powdery mildew development in *Hiemalis begonia*. *J. Plant Nutrition* 26(1):159-176.

**Williams, K.A.** and E.T. Paparozzi. 2002. *Model to develop a synchronous, inter-institutional course using distance technologies*. *North American Colleges and Teachers of Agriculture (NACTA) J.* 46(3):28-33. KAES# 02-123-J.

Opit, G.P., V.M. Jonas, **K.A. Williams**, D.C. Margolies, and J.R. Nechols. 2002. Effects of cultivar and irrigation management on population growth of the twospotted spider mite *Tetranychus urticae* on greenhouse ivy geranium. *Experimental Applied Acarology*. 25:849-857. KAES# 02-295-J.

**Williams, K.A.**, P.V. Nelson, and D. Hesterberg. 2000. Phosphate and potassium retention and release during chrysanthemum production from pre-charged materials. I. Alumina. *J. Amer. Soc. Hort. Sci.* 125(6):748-756. **Winner of the Alex Laurie Award.**

**Williams, K.A.** and P.V. Nelson. 2000. Phosphate and potassium retention and release during chrysanthemum production from pre-charged materials. II. Calcined clay and brick chips. *J. Amer. Soc. Hort. Sci.* 125(6):757-764.

*Paparozzi, E.T. and K.A. Williams*. 2000. *Using chat rooms in a plant nutrition course: bane or boon?* *HortTechnology* 10(2):280-

282. *KAES # 00-80-J.*

Carlino, J.L., K.A. Williams, and E.R. Allen. 1998. Evaluation of zeolite-based root media for potted chrysanthemum production. *HortTechnology* 8(3):373-378.

Catanzaro, C.J., **K.A. Williams**, and R.J. Sauve. 1998. Slow release versus water soluble fertilization affects nutrient leaching and growth of potted chrysanthemum. *J. Plant Nutrition* 21(5):1025-1036.

**Williams, K.A.** and P.V. Nelson. 1997. Using precharged zeolite as a source of potassium and phosphate in a soilless container medium during potted chrysanthemum production. *J. Amer. Soc. Hort. Sci.* 122(5):703-708.

**Williams, K.A.** and P.V. Nelson. 1996. Modifying a soilless root medium with aluminum influences phosphorus retention and chrysanthemum growth. *HortScience* 3(31):381-384. **Winner of the Alex Laurie Award.**

**Williams, K.A.** and P.V. Nelson. 1992. Low, controlled nutrient availability provided by organic waste materials for chrysanthemum. *J. Amer. Soc. Hort. Sci.* 177(3):422-429.

**Williams, K.A.** and P.V. Nelson. 1992. Growth of chrysanthemum at low, relatively steady nutrient levels in a commercial-style substrate. *HortScience* 27(8):877-880.

#### REFEREED BOOK

Merhaut, D.J., **K.A. Williams**, and S.S. Mangiafico, eds. 2018. *Water, Root Media, and Nutrient Management for Greenhouse Crops*. Publication 3551 (Book). University of California Agriculture and Natural Resources Press, Oakland, CA. ISBN-13: 978-1-60107-983-1.

**Williams, K.A.**, D.J. Merhaut, and S.S. Mangiafico. 2018. Integrating Irrigation, Root Media, Fertilization and Environmental Factors in Greenhouse Production. *In: Water, Root Media, and Nutrient Management for Greenhouse Crops*, pp. 3-9. Publication 3551. University of California Agriculture and Natural Resources Press, Oakland, CA.

**Williams, K.A.** and M.R. Evans. 2018. Wetting Agents in Root Media. *In: Water, Root Media, and Nutrient Management for Greenhouse Crops*, pp. 113-117. Publication 3551. University of California Agriculture and Natural Resources Press, Oakland, CA.

Cavins, T. and **K.A. Williams**. 2018. Root Media: Testing and Interpretation. *In: Water, Root Media, and Nutrient Management for Greenhouse Crops*, pp. 121-135. Publication 3551. University of California Agriculture and Natural Resources Press, Oakland, CA.

Scoggins, H. and **K.A. Williams**. 2018. Formulating Fertilization Programs. *In: Water, Root Media, and Nutrient Management for Greenhouse Crops*, pp. 139-164. Publication 3551. University of California Agriculture and Natural Resources Press, Oakland, CA.

#### BOOK CHAPTERS [Total 13]

*LED Lighting for Urban Agriculture* [co-authored one chapter of book]

**Williams, K.A.**, C.T. Miller and J.K. Craver. 2016. Light quality effects on intumescence (oedema) on plant leaves. *In: Kozai, T., K. Fujiwara, and E. Runkle, eds. LED Lighting for Urban Agriculture*, pp. 275-286. Springer-Japan. *KAES #17-086-B.*

*Tips on Operating a Profitable Greenhouse Business* [one of three primary authors]

**Williams, K.** and W. Uva. 2005. Variable costs, p. 19-22. *In: Tips on Operating a Profitable Greenhouse Business*. OFA Services, Inc.

**Williams, K.** and W. Uva. 2005. Calculating variable costs, p. 23-31. *In: Tips on Operating a Profitable Greenhouse Business*. OFA Services, Inc.

**Williams, K.** 2005. Labor costs, p. 32-39. *In: Tips on Operating a Profitable Greenhouse Business*. OFA Services, Inc.

**Williams, K.** 2005. Calculating costs of propagation, p. 40-46. *In: Tips on Operating a Profitable Greenhouse Business*. OFA Services, Inc.

**Williams, K.** and R. Cloyd. 2005. Calculating costs of pest management, p. 47-55. *In: Tips on Operating a Profitable*

Greenhouse Business. OFA Services, Inc.

*Cutting Propagation of Floral Crops*

**Williams, K.** 2006. Profiles of propagation businesses. In: Dole, J. and J. Gibson, eds. *Cutting propagation of floral crops*. Ball Publishing, Batavia, Illinois.

**Williams, K.** 2006. Water. In: Dole, J. and J. Gibson, eds. *Cutting propagation of floral crops*. Ball Publishing, Batavia, Illinois.

*Production of Vegetative Annuals*

Gibson, J.L. and **K.A. Williams**. 2003. Successful propagation of vegetative annuals. In: *Production of Vegetative Annuals*. North Carolina State University.

**ABSTRACTS AND PRESENTATIONS** [\* Signifies presenter; Teaching presentations italicized; Total 73]

Wiens, L.W. and **K.A. Williams**. 2022. Pre-treatment of Potted *Tradescantia* spp. With Anti-Gibberellin Plant Growth Regulators Slows Growth in an Interior Green Wall. 57(9S). *Abstr.*

**Williams, K.A.** and L.W. Wiens. 2022. Face-to-face versus Zoom Lecture Participation as a Predictor of Performance in a Greenhouse Management Course. 57(9S). *Abstr.*

**Williams, K.A.** and O. DeWolf. 2022. Wastewater from a Commercial Water Purification System Results in Hydroponic Lettuce and Basil Growth Comparable to Reverse Osmosis and Municipal Water. 57(9S). *Abstr.*

Goossen, R.\*, **K.A. Williams**, and J. O'Mara. 2021. Characterizing the phytotoxic effects of hydrogen peroxide root dips on *Phalaenopsis* orchids. HortScience 56(9):S119-120. *Abstr.*

**Williams, K.A.\***, C.T. Miller, and N. Busch. 2021. *Introducing controlled environment horticulture as a career through a phenomena-based storyline use in high school science classrooms*. HortScience 56(9):S236. *Abstr.*

Schwab, J.D.\* and **K.A. Williams**. 2019. *Reverse crossword puzzle assignments increase student confidence but not knowledge of greenhouse terminology*. NACTA Conference. *Abstr.* 222.

Schwab, J.D.\*, **K.A. Williams**, and J.J. Griffin. 2019. Asexual Propagation of Half-High Blueberries in Hydroponic Substrates: Cutting Location and Rooting Hormone. ASHS Annual Conference. Poster board #198. *Abstr.*

Schwab, J.D.\* and **K.A. Williams**. 2019. Asexual Propagation of Half-High and Low-Bush Blueberries in Hydroponic Substrates: pH and Fertilization. ASHS Annual Conference. Poster board #199. *Abstr.*

Schneck, K., **K.A. Williams\***, D. Haynos, and R. Peterson. 2019. Updating poinsettia graphical tracking curves for greenhouse growers. ASHS Annual Conference. Poster board #377. *Abstr.*

**Schwab, J.D.\* and K.A. Williams**. 2019. *Reverse crossword puzzle assignments for teaching greenhouse terminology*. ASHS Annual Conference. *Oral Presentation Abstr.*

**Williams, K.A.**, N. Martini\*, G. Hock, and C. Miller. 2018. Instructional resources to teach science concepts while promoting careers in horticulture. NACTA J. 62 (Suppl. 1):55. *Abstr.*

Hoch\*, B., C. Miller, **K. Williams**, and J. Griffin. 2017. Assessing the tolerance of Texas red oak, Durand oak, and pin oak to high substrate pH. Poster #201. 52(9):S301. *Abstr.*

Miller, C.T.\*, A. Osorio, and **K.A. Williams**. 2016. *Cuphea* species and cultivars differ in occurrence of intumescence. Annual Meeting of the American Society for Horticultural Science (2016), Poster #294.

**Dunn, B.L.\* and K.A. Williams**. 2015. *Evaluation of a collaborative writing project: student development of a literature review in inter-institutional teams*. 2015 ASHS Annual Conference. 4-7 August, 2015. *Abstr.* 256.

Miller, C.T.\*, J.K. Craver, M.G. Cruz, and K.A. Williams. 2015. Screening of ornamental sweetpotato (*Ipomoea batatas*) cultivars for intumescence development. 2015 ASHS Annual Conference 4-7 August, 2015. Abstr. 357.

**Williams, K.A.\***, J.K. Craver, C.T. Miller, N.A. Rud, and M.B. Kirkahm. 2014. Differences between the physiological disorders of intumescences and edemata. Poster presentation in Section 15: Ornamental horticulture in the global greenhouse. International Horticultural Congress, Brisbane, Australia. 17-22 August 2014.

**Williams, K.A.\*** 2014. Challenges of using organic fertilizers in hydroponic and recirculating production systems. Oral presentation in Symposium 30: Organic by-products in growing media, hydroponics & aquaponics. International Horticultural Congress, Brisbane, Australia. 17-22 August 2014.

*Craver, J.K. and K.A. Williams\**. 2014. *Assessing student learning from an experiential hydroponics production module in a greenhouse management course. Poster presentation. Big XII Teaching and Learning Conference, Stillwater, Oklahoma. 4-5 August 2014.*

*Williams, K.A.\** 2014. *Implementing the scholarship of teaching and learning in your classroom. Professional development workshop, 90-min. Big XII Teaching and Learning Conference, Stillwater, Oklahoma. 4-5 August 2014.*

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- Williams, K.A.** 1997. Getting geared up to avoid poinsettia nutrition problems. *The combined newsletter of the Oklahoma and Kansas Greenhouse Growers' Associations* 1(2):4-5.
- Williams, K.A.** and P.V. Nelson. 1997. Does the future hold no more phosphate and potassium in your liquid fertilization program? *Ohio Florists' Assoc. Bulletin* #817.
- Williams, K.A.** 1996. La concimazione del futuro. *Clamer informa* 21(10):25-28.
- Williams, K.A.** 1996. What you don't know about media, fertilizer, and water could hurt your plants. *Greenhouse management and production* 16(3):44-45.
- Williams, K.A.** and J. Lehmann. 1996. Vinca: From start to finish. *Greenhouse Grower* 14(6):94.
- Williams, K.A.** 1995. Reduce fertilizer runoff by keeping nutrients in the pot. *GrowerTalks* 59(8):56-59.
- Williams, K.A.** 1995. Greenhouse fertilization of the future: imagine the possibilities. *North Carolina Flower Growers' Bulletin* 40(2):9-13.

#### PODCASTS FOR INDUSTRY

Williams, K.A. and K. Schneck. 2019. Caring for your poinsettia. 2:45 video by KSRE posted Dec. 18, 2019. 2.9K views as of 1/18/19.

Delivered to *Greenhouse Grower Bench Runner* e-mail subscriber list of 11,870 people each week. All podcasts are archived at:

<http://www.greenhousegrower.com/ggtv/?cid=2>

- Williams, K.A. 2013. Producing Freesia as a Greenhouse Crop, released 11/13/13.
- Williams, K.A. 2013. The Case of the Yellow-leaved Calibrachoa, released 9/18/13.
- Williams, K.A. 2013. Twists on Incorporating Organic Fertilizers into Root Media, released 7/17/2013.
- Williams, K.A. 2013. Types of Irrigation Systems for Container Plants, released 4/3/2013
- Williams, K.A. 2013. Cold Temperature Period for Bulb and Woody Crops, released 1/30/13
- Williams, K.A. 2012. Tips on Watering Plugs, released 12/19/2012
- Williams, K.A. 2012. Basics of Manual Pinching, released 10/5/2012
- Williams, K.A. 2012. Determining Leaching Fractions, released 6/20/2012
- Williams, K.A. 2012. Structure Types, released 5/16/2012
- Williams, K.A. 2012. Watering Potted Crops, released 3/7/12; **Top 5 video on GGTV in 2012**
- Williams, K.A. 2012. Checking Fertilizer Injector Accuracy with Electrical Conductivity, released 2/8/12
- Williams, K.A. 2011. How to Start Organic Transplants, released 12/14/2011
- Williams, K.A. 2011. Microbial Activity of Root Media, released 11/20/2011
- Williams, K.A. 2011. Latex Eruption in Poinsettia, released 10/12/2011
- Williams, K.A. 2011. Case of the Late-season Whitefly Problem (with R. Cloyd), released 9/21/2011
- Williams, K.A. 2011. Making Cents of Cost Analysis, released 8/3/2011

- Williams, K.A. 2011. How to Measure pH and EC Using the Saturated Medium Extraction Method, released 6/15/2011
- Williams, K.A. 2011. Salt Toxicity, released 6/8/2011
- Williams, K.A. 2011. Calibrating pH and EC Meters, released 4/13/11
- Williams, K.A. 2011. The Perplexing Case of the Diseased Gloxinia, released 2/3/11
- Williams, K.A. 2010. Using Clays in Root Media, released 12/15/2010
- Williams, K.A. 2010. The Case of Geraniums in Decline, released 11/3/2010
- Williams, K.A. 2010. Using Nitrogen Fertilizer to Manage Root Medium pH, released 10/27/2010
- Williams, K.A. 2010. Selecting Fertilizer Formulations to Manage Plant Growth, released 10/6/2010
- Williams, K.A. 2010. Using High Tunnels, released 9/8/2010
- Williams, K.A. 2010. Overview of Plant Nutrition, released 8/11/2010
- Williams, K.A. 2010. Sources of Essential Plant Nutrients, released 8/4/2010
- Williams, K.A. 2010. Solve this Problem—Red-margined Geranium Leaves, released 6/9/2010.
- Williams, K.A. 2010. Understanding Nutrient Antagonisms, released 6/2/2010.
- Williams, K.A. 2010. Solve this Production Problem—Purpling Geraniums, released 1/27/2010.
- Williams, K.A. 2009. Testing Irrigation Water, released 12/23/2009.
- Williams, K.A. 2009. Nutrient Management and Organic Fertilizers, released 10/28/2009.
- Williams, K.A. 2009. Types of Organic Fertilizers, released 10/21/2009.
- Williams, K.A. 2009. Heat Delay in Mums, released 7/8/2009.
- Williams, K.A. 2009. Fertilizing Fall Mums, released 7/1/2009.
- Williams, K.A. 2009. Calcium Uptake, released 6/10/2009.
- Williams, K.A. 2009. Bleaching Disorder in Geranium, released 6/03/2009.
- Williams, K.A. 2009. Wetting Agents in Root Media, released 5/20/2009.
- Williams, K.A. 2009. The Physiological Disorder Edema, released 3/18/2009.
- Williams, K.A. 2009. Managing Hydrangea Color, released 1/21/2009.
- Williams, K.A. 2008. Alkalinity in Irrigation Water, released 12/31/2008.

**EXTRA-MURAL FUNDING AWARDED FOR RESEARCH** [Kansas State University only; Total: \$2.197 million; most significant proposals in bold]

**KDA Specialty Crop Block Grant**. 2018. Williams, K.A., J. Griffin, and D. Whitney-Bammerlin. Expansion of Blueberry Production in Kansas with Greenhouse and High Tunnel Methods.

FUNDED: \$33,707

**USDA Secondary Education, Two-Year Postsecondary Education, and Agriculture in the K-12 Classroom Challenge Grant (SPECA)**. 2017. Williams, K.A., C.T. Miller, and G. Hock. Online Modules for High School Teachers that Hybridize Horticulture and Science Curricula while Promoting Horticulture as a Career.

FUNDED: \$50,000 (2 years)

**Fred C. Gloeckner Foundation**. 2017 and 2018. Williams, K.A. Updates to Graphical Tracking Guidelines for New Poinsettia Cultivars.

FUNDED: \$26,000

**Fred C. Gloeckner Foundation**. 2016. Williams, K.A. and C.T. Miller. Understanding and Abating Intumescence Development in *Angelonia* and tomato spp.

FUNDED: \$8,000.

**Fred C. Gloeckner Foundation**. 2015. Williams, K.A. and C.T. Miller. Understanding and abating intumescence development in *Cuphea* spp.

FUNDED: \$7,000

**Fred C. Gloeckner Foundation**. C. Miller, K.A. Williams, and J. Craver. 2013. Understanding and preventing intumescence development on *Ipomoea batatas* and other ornamental crops.

FUNDED: \$10,000

**BioWorks, Inc.** K.A. Williams. 2013. Trials with Verdanta Fertilizers: Hydroponic Basil, Rooting of Perennial Liners, Tomato/Pepper Transplant Production, and Poinsettia Production with EcoVita.

FUNDED: \$8,600



Fred C. Gloeckner Foundation. B. Krug, M. Daughtry, R.G. Lopez, R. Cloyd, B.E. Whipker, and K.A. Williams. 2013. E-GRO University Certificate Program.  
FUNDED: \$6,000 (kaw portion, \$750)

BioWorks, Inc. K.A. Williams. 2012. Evaluation of Verdanta organic fertilizers used to produce poinsettias.  
FUNDED: \$3,000

Sustane, Inc. K.A. Williams. 2012. Evaluation of Sustane organic fertilizers used to produce poinsettias.  
FUNDED: \$2,500.

Gloeckner Foundation: K.A. Williams. 2011-2012. Understanding the role of microbial activity on nutrient availability from organic fertilizers applied to soilless root media.  
FUNDED: \$21,600

Gloeckner Foundation: B.A. Krug, R.G. Lopez, B.E. Whipker, M. Daughtry, R.A. Cloyd, and K.A. Williams. 2011. e-GRO: electronic Grower Resources Online.  
FUNDED: \$41,800 total; Williams component: \$5,500.

MicroLite LLC: K.A. Williams. Preliminary evaluation of lamproite clay for use in soilless media.  
FUNDED: \$6,500 (8/01/2008 - 8/01/2009)

Kansas Environmental Management Associates, LLC. K.A. Williams. Evaluation of nutrient release from and plant response to struvite reclaimed from animal waste and commercially-available MagAmp.  
FUNDED: \$5,100

SunGro Horticulture. K.A. Williams. Evaluating the effect of wallstonite on sunflower growth and root medium chemical properties.  
FUNDED: \$3,000

NSF ADVANCE Institutional Transformation Project: K.A. Williams. 2009. Professional Development Opportunity for Tenure-Track Women in the College of Agriculture.  
FUNDED: \$875 (1 year)

Organic Farming Research Foundation: K.A. Williams, E. Carey, M. Spaw, R. Janke, R. Cloyd, and M. Kennelly. 2008. Developing web resources for organic production in high tunnels.  
FUNDED: \$8,271 (01/01/09 – 01/01/10)

Gloeckner Foundation: K.A. Williams and M.B. Kirkham. Causes and management of the physiological disorder edema on greenhouse crops.  
FUNDED: \$10,000 (9/01/08 – 09/30/09) + \$6,000 (9/01/09 – 8/30/10)

NSF ADVANCE Institutional Transformation Project: K.A. Williams. 2008. Professional Development Opportunity for Tenure-Track Women in the College of Agriculture.  
FUNDED: \$1,571 (1 year)

Gloeckner Foundation: K.A. Williams and M.B. Kirkham. 2007. Understanding edema on ivy geranium: Interactions between irrigation practices and environmental conditions—Is conventional wisdom correct?  
FUNDED: \$10,000 (9/01/07 – 09/30/08)

USDA Integrated Organic Program: E. Carey, R. Janke, K. Williams, C. Rajashekar, M. Kennelly, J. Nechols, R. Cloyd, and N. Nelson. 2007. Effects of organic fertility management on crop health and phytochemical content of vegetables under open field and high tunnel production.  
FUNDED: \$500,698 (6/1/07 – 5/30/10)

NSF ADVANCE Institutional Transformation Project: K.A. Williams. 2007. Professional Development Opportunity for Tenure-Track Women in the College of Agriculture.  
FUNDED: \$2,000 (1 year)

K-State IPM Mini-Grants Program: K.A. Williams and R.A. Cloyd. 2006. Impact of light intensity on the ability of systemic insecticides to control whiteflies.  
FUNDED: \$5,221 (10/01/06 - 09/30-07)

Gloeckner Foundation: K.A. Williams. 2006. Phosphorus retention of clay-type amendments for greenhouse crop production in soilless media: Is there a performance advantage?  
FUNDED: \$10,000 (Third of 3 year project: 9/01/06 - 8/31/07)

NSF ADVANCE Institutional Transformation Project: K.A. Williams. 2006. Professional Development Opportunity for Tenure-Track Women in the College of Agriculture.  
FUNDED: \$2,000 (1 year)

NSF ADVANCE Career Advancement Program: K.A. Williams and M.B. Kirkham. 2006. Request for Support - ADVANCE Career Advancement Program (Oedema project).  
FUNDED: \$11,217 (1 year)

NSF ADVANCE Internal Advisory Board (IAB) Departmental Initiative: A. Dille, M. B. Kirkham, D. Presley, C. Shoemaker, K. Williams, C. Lavis, R. Janke, K. Garrett, and M. Kennelly. 2006. (No title).  
FUNDED \$10,000 (1 year)

NSF ADVANCE Institutional Transformation Project: K.A. Williams. 2005. Professional Development Opportunity for Tenure-Track Women in the College of Agriculture.  
FUNDED: \$1,959 (1 year)

NSF ADVANCE Career Advancement Program: K.A. Williams. 2005. Long-range Planning for Graduate Program in Horticulture. ADVANCE Career Advancement Program.  
FUNDED: \$20,000 (1 year)

KSU IPM Mini-Grants Program: 2005. L. Westervelt. In collaboration with R. Ogutu, S. Dobesh, J. O'Mara, K. Williams, C. Marr, and C. Webb. 2004. Development and Implementation of Policy to Control Impatiens Necrotic Spot Virus.  
FUNDED: \$4,921 (1 year)

Fred C. Gloeckner Foundation: K.A. Williams. 2004. Nutrient retention of clay-type amendments for greenhouse crop production in soilless media.  
FUNDED: \$10,000 (1 year: 9/01/04 - 8/31/05)

NCR-SARE Graduate Student Proposal: K.M. Stolp and K.A. Williams. 2004. Comparing organic and conventional fertilization methods for cut flower production in Haygrove high tunnels.  
FUNDED: \$10,000 (2 years: 6/1/04 - 5/31-06)

NSF ADVANCE Institutional Transformation Project: K.A. Williams. 2004. Professional Development Opportunity for Tenure-Track Women in the College of Agriculture.  
FUNDED: \$1,200 (1 year)

KSU IPM Mini-Grants Program: G. Opit, K.A. Williams, J. Nechols, and D. Margolies. 2003. Can a venturi blower be used to improve the cost efficiency and effectiveness of using predatory mites to control spider mites in greenhouse crops?  
FUNDED: \$5,520 (1 year: 10/1/02-9/30-04)

Kansas NSF EPSCoR Graduate Student Travel Program: Y. Chen and K.A. Williams. Funds to travel to 2003 Entomological Society of America Meeting.  
FUNDED: \$460.

**USDA Pest Management Alternatives Program (PMAP): 2002.** J.R. Nechols, D.C. Margolies, K.A. Williams, T. Kastens, and T.L. Marsh. 2002. Alternative pest management for greenhouse bedding plants: demonstration and economic evaluation at a commercial level.

FUNDED: \$165,803 (2 years: 2/28/02-3/31/04)

Kansas NSF EPSCoR Graduate Student Travel Program: Y. Chen and K.A. Williams. Funds to travel to the International Horticultural Congress, August 2002.

FUNDED: \$460.

**USDA Initiative for Food and Agricultural Systems (IFAFS): 2001.** E.E. Carey, L. Hodges, L. Jett, D. Nagengast, D. Coltrain, K. Williams, R. Janke, and C. Rajashekar. High tunnels for the central Great Plains: profitable, season-extending, horticultural production systems.

FUNDED: \$800,000 (5 years)

**USDA National Research Initiative (NRI) CGP:** K.A. Williams, J.R. Nechols, D.C. Margolies, T. Marsh, and T. Kastens. 2000. Bioeconomic assessment of biologically based pest management on ivy geranium.

FUNDED: \$190,000 (3 years)

USDA Integrated Pest Management Grants Program—North Central Region: D.C. Margolies, J.R. Nechols, K.A. Williams, T. Kastens, and T. Marsh. 1999. Integrated crop management: Spider mites on greenhouse-grown ivy geranium.

FUNDED: \$95,000 (2 years)

Gloeckner Foundation, Inc.: K.A. Williams. 1998, 1999, 2000. Use of pre-charged zeolites to provide aluminum for blue sepal coloration during hydrangea production.

FUNDED: \$31,350 (3 years, awarded annually)

Bedding Plants Foundation, Inc.: M.L. Bell, K.A. Williams, and B.K. Harbaugh. 1998, 1999. The relationship between tissue nitrogen and phosphorus concentrations of impatiens and thrips infestation and damage.

FUNDED: \$22,100 (2 years, awarded annually)

Gloeckner Foundation, Inc.: M.L. Bell, K.A. Williams, and B.K. Harbaugh. 1998, 1999. The relationship between tissue nitrogen and phosphorus concentrations of impatiens and thrips infestation and damage.

FUNDED: \$21,950 (2 years, awarded annually)

North Central Region IR-4: K.A. Williams. 1999. Growth response of *Ruellia carolinensis* to five plant growth regulators.

FUNDED: \$2,000

Sloan Foundation Mentoring Fellowship: K.A. Williams. 1997, 1998. Studies to reduce phosphate in greenhouse effluent during container crop production.

FUNDED, \$11,592 (2 years, awarded annually)

Kansas Greenhouse Growers' Association: K.A. Williams. 1997, 1998, 1999. Support for Williams' floriculture research.

FUNDED: \$5,500 (3 years, awarded annually)

Taylor's Nursery, Inc.: K.A. Williams. 1997. Vegetative Growth Responses of *Abelia x grandiflora* 'Sunrise' to dikegulac, ethephon, and gibberellic acid.

FUNDED: \$520.

**EXTRA-MURAL FUNDING AWARDED FOR TEACHING** [Kansas State University only; Total: \$109,942; most significant proposal in bold]

**Green Action Fund Project Proposal.** 2020. Williams, K.A. and M. Anaya. From classroom to table: Continuing to supply leafy greens to the food insecure in our campus community.

FUNDED: \$1,900

Green Action Fund Project Proposal. 2017-2018. Haresnape, M. and K.A. Williams. From classroom to table: Supplying leafy greens

to the food insecure in our campus community.  
FUNDED: \$7,705

College of Agriculture Innovations in Teaching, Learning and Assessment Program. Williams, K.A. and C.T. Miller. 2015-2016. Developing and evaluating a module to present horticulture as a field of aspirational careers to high school students who visit K-State's HFRR department.  
FUNDED: \$3,000.

APLU Innovative Teaching Award. K.A. Williams and B.L. Dunn. 2014. Association of Public and Land-Grant University's Academic Programs Section. Incorporation of an inter-institutional collaborative learning project into horticulture physiology courses.  
FUNDED: \$2,000

College of Agriculture Innovations in Teaching, Learning and Assessment Program. Williams, K.A. and J.K. Craver. 2013-2014. Assessing Student Learning from a Hydroponics Production Module in HORT 570 *Greenhouse Operations Management*.  
FUNDED: \$2,400.

American Floral Endowment Educational Grant: K.A. Williams and C.T. Miller. 2011-2012. Leveraging FFA Career Development Events in floriculture as a student recruitment tool.  
FUNDED: \$2,700

KSU Division of Continuing Education: K.A. Williams. 2011. Enhancing instruction of horticulture production courses taught via distance.  
FUNDED: \$2,665

Tilford Incentive Grants: Lavis, C., K. Williams, G. Davis, and C. Shoemaker. 2006. Infusing multicultural competency into the Horticulture curriculum: redesigning and assessing multicultural competencies in an internship course sequence.  
FUNDED: \$2,000 (1/07 - 12/07)

Tilford Incentive Grants: Shoemaker, C., G. Davis, C. Lavis, and K. Williams. 2006. Infusing multicultural competency into the undergraduate Horticulture curriculum: diversity issues lecture series.  
FUNDED: \$2,000 (1/07 - 12/07)

KSU Office of Assessment and Program Review. Davis, G. and K.A. Williams. 2001. Closing the loop on the horticultural internship experience.  
FUNDED: \$2,000 (1.5 years)

**USDA-HEP Challenge Grant: Williams, K.A., E.T. Paparozzi, and S.A. Flores. 1998. Developing a world-class nutrition course: strengthened quality/contained costs.**  
**FUNDED \$70,992 (2.5 years)**

Big 12 Faculty Fellowship Program: Williams, K.A. 1998. Collaborative development of an upper-level course in Plant Nutrition and Nutrient Management with faculty at the Univ. Nebraska - Lincoln.  
FUNDED: \$1,087

Ag-Telefund: K.A. Williams. 1997. Purchase of subirrigation benches to update and enhance instruction of greenhouse production courses to support instruction of HORT 570, Greenhouse Operations Management, and HORT 625, Floricultural Crops Prod/Handling.  
FUNDED, \$1,910

Kansas Greenhouse Growers' Association: K.A. Williams. 1997, 1998, 1999, 2000. Support for floriculture teaching programs. Must be renewed annually.  
FUNDED: \$6,471 (4 years, renewed annually)

## GRADUATE STUDENTS

Major Advisor

- Lane Wiens, M.S. *In progress*.
- Jacob Schwab, M.S. 2020. Controlled and protected environment production of blueberries in the Midwest United States.
- Karen Schneck, M.S. 2020. Studies in floral crops production: effects of root-zone temperature on dahlia growth and optimizing graphical tracks for poinsettia height management.
- Joshua Craver, M.S. 2014. The effects of UVB radiation on intumescence development and the characterization of lesions from physiological disorders on ornamental sweet potato (*Ipomoea batatas*), tomato (*Solanum lycopersicum*), and interspecific geranium (*Pelargonium* spp.). Currently: Assistant Professor, Colorado State University.
- Jason Nelson, M.S. 2013. Organic and inorganic fertilization with and without microbial inoculants in peat-based substrate and hydroponic crop production.
- Morgan Jenkins, M.S. 2010. Increased knowledge about floral preservatives influences customers' perception of the quality and value of a floral arrangement purchase. Currently: Instructor, Arizona State University, and Owner, the flori.culture.
- Nicole Rud, M.S. 2009. Environmental factors influencing the physiological disorders of edema on ivy geranium (*Pelargonium peltatum*) and intumescences on tomato (*Solanum lycopersicum*).
- Rose Ogutu, Ph.D. 2008. Calcined materials as components of soilless root media: phosphate sorption characteristics and effects of phosphate and water use in greenhouse production of *Impatiens wallerana*. Currently: Extension faculty at Delaware State University.
- Katherine Stolp, M.S. 2006. Optimizing germination of *Papaver orientale* 'Temptress' and fertilization of *Eustoma grandiflorum* 'Balboa Rose'.
- Marci Spaw, M.S. 2004. Two web-based case studies for horticulture curricula and a comparison of student learning outcomes from a case study versus a summary lecture.
- Yan Chen, Ph.D. 2003. Nitrogen and phosphorus fertilization of ivy geranium (*Pelargonium peltatum*) and impatiens (*Impatiens wallerana*) affects population levels of twospotted spider mite (*Tetranychus urticae*) and western flower thrips (*Frankliniella occidentalis*). Currently: Associate Professor of Horticulture, Louisiana State University.
- Geraldine Opena, Ph.D. 2002. Use of aluminum-charged zeolite and resin for blue hydrangea production. Currently: Research Associate at Texas A&M University.
- Valerie Jonas, M.S. 2000. Optimizing fertilization and watering regimes of ivy geranium (*Pelargonium peltatum*). Currently: Retired.
- Janet Carlino, M.S. Univ. Illinois 1998. Use of pre-charged zeolite for potted chrysanthemum production in open and subirrigation systems with three media sampling methodologies.

#### Graduate Committees

Gergely Motolai, Ph.D. Horticulture, *in progress*  
 Tej Man Tamang, Ph.D. Horticulture, 2021  
 Braden Hoch, M.S. Horticulture, Spring 2018  
 Stuart Sprague, Ph.D. Horticulture, Summer 2018  
 Ying Hu, Ph.D. Horticulture, 2015  
 Danielle Hammond, M.S. Horticulture, 2013  
 Qingyu Wu, Ph.D. Horticulture, 2012  
 Zachariah Starr, M.S. Horticulture 2011  
 Ann Marie Smith, M.S. Horticulture 2010  
 May Al-Tamimi, M.S. Horticulture 2010  
 Kent Martin, Ph.D. Agronomy 2009  
 Sharon Knewton, Ph.D. Horticulture 2008  
 Xin Zhao, Ph.D. Horticulture 2006  
 Cindy Birchmeier, M.Agribusiness 2005  
 Kiffnie Holt, M.S. Entomology 2005  
 Ingrid Mallberg, M.S. Horticulture 2004, Univ. Nebraska  
 George Opit, Ph.D. Entomology 2003  
 Stanley Liphadzi, Ph.D. Agronomy 2002  
 Sara Schumacher, Ph.D. Agricultural Economics 2002  
 Katie Schulz, M.S. Agricultural Economics 2002  
 Mingwang Liu, Ph.D. Horticulture 2001  
 Jason King, M.Ag.Ed. 1999  
 Monica David, M.S. Horticulture Univ. Illinois 1999  
 Ame Moore Curtis, M.S. Horticulture Univ. Illinois 1999

Windy Boyd, M.S. Horticulture 1998

### GRANT REVIEW PANELS

USDA Higher Education Challenge Grant Program, 2010.  
NIFA Specialty Crops Research Initiative, 2015.

### INVITED PRESENTATIONS TO INDUSTRY AUDIENCES [40 total]

#### 2021 Educational Programs:

Bush, N. and K.A. Williams. Problems at the Plant Factory: Two Horticultural Phenomena. Kansas Association of Biology Teachers (KABT) Fall Conference. September 18, 2021. *Virtual*.

Williams, K.A. Revisiting Propagation Fundamentals with some HydraFiber Sprinkled In. Kansas Greenhouse Growers' Association Annual Conference. *In person*

Wijesinghe, M., M.Bowman, and K.A. Williams. Career Insights for Young Professionals: Survey Results and Webinar Recording. *Virtual*. American Floral Endowment.

#### 2019 Educational Programs:

Soilless Protected Food Production Systems Conference. Oklahoma State University, July 10, 2019.

- Williams, K.A. Basics of Nutrient Management in Recirculating Hydroponic Systems. 40 min.
- Williams, K.A. Organic Hydroponic Production. 40 min.

Cultivate'19. Columbus, Ohio. July 13-16, 2019.

- Williams, K.A. Plotting for Crop Height Management: Graphical Tracking. 60 min
- Williams, K.A. Container Blueberry Production in Greenhouses and High Tunnels. 15 min

Plug and Cutting Conference. Concord, North Carolina. September 5-6, 2019. Talks sponsored by Mycorrhizal Applications.

- Williams, K.A. Back to Basics: Understanding the Nutrient Management Pyramid. 60 min.
- Williams, K.A. Solving Nutrient Management Puzzles. 60 min.

#### 2018 Educational Program:

Williams, K.A. 2018. A survey of hydroponics cropping systems at home and across the pond. Great Plains Growers' Conference. St. Joseph, Missouri. January 13, 2018.

#### 2016 Educational Program:

Williams, K.A. and C. Miller. 2016. *Blisters, Bumps and Lesions: What We Know about the Physiological Disorders of Intumescence and Edema*. e-GRO webinar hosted by Brian Whipker. <https://www.youtube.com/watch?v=C4QrRTphks>

#### 2015 Educational Program:

Williams, K.A. and N. Mattson. 2015. *Organic Fertilizers: Successfully Making the Switch*. 1-hour webinar on February 27, 2015, webinar hosted by Brian Krug for e-GRO and sponsored by BioWorks. <https://www.youtube.com/watch?v=BQWpe-QFSg>

#### 2014 Educational Programs:

Williams, K.A. and N. Mattson. *Organic Fertilizers: Successfully Making the Switch*. Cultivate '14. Columbus, Ohio. July 11-15, 2014.

Peters, C., V. Rapapka, and K.A. Williams. *The Hydroponic Diet: Most Appropriate Nutrient Menu for Success*. Cultivate '14. July 11-15, 2014.

#### 2012 Educational Programs:

Williams, K.A. Understanding the microbial activity of your root media. OFA—An Association of Floriculture Professionals 2012 Short Course and Trade Show. July 14, 2012.

Williams, KA. Understanding the nutrient management triangle—basic level. OFA—An Association of Floriculture Professionals 2012 Short Course and Trade Show. July 17, 2012.

Williams, K.A. Understanding the microbial activity of your root medium. Kansas Greenhouse Growers' Association 2012 Educational Conference. Oct. 24, 2012.

2011 Educational Program:

Using the plant growth regulator Augeo as a chemical pinching agent. 2011. Kansas Greenhouse Growers' Association Educational Conference. October 27, 2011. Manhattan, KS. 0.5 h 50 attendees.

2010 Educational Programs:

Williams, K.A. Understanding nonpathogenic plant disorders: their causes and cures. Society of American Florists' 26<sup>th</sup> Annual Pest & Production Management Conference. February 26-27, 2010. Orlando, FL. Proceedings article, p. 80-87.

Williams, K.A. Plant nutrition: What does it take to keep your plants healthy? Kansas Greenhouse Growers' Association Educational Conference. Manhattan, Kansas. October 28, 2010. 1 h.

2009 Educational Programs:

Williams, K.A. "Nuts and Bolts of Plant Nutrient Management." The Manitoba GreenShow, Feb. 10-11, 2009. Winnipeg, MB, Canada. 2 h. 52 attendees.

Williams, K.A. 2009. "Putting the 'Dirt' back into Root Media: Using calcined materials in soilless mixes." July 13, 2009. OFA Short Course, Columbus, OH. 1 h. 55 attendees.

2008 Educational Programs:

K.A. Williams. "Top 10 misconceptions about plant nutrient management." The Green Industry Show & Conference sponsored by the Landscape Alberta Nursery Trades Association (including Alberta Greenhouse Growers' Association). Nov. 21, 2008. 1 hr.

K.A. Williams. "The edema dilemma." The Green Industry Show & Conference sponsored by the Landscape Alberta Nursery Trades Association (including Alberta Greenhouse Growers' Association). Nov. 21, 2008. 1 hr.

2007 Educational Programs:

K. Williams. "Understanding physiological disorders: their causes and cures" OFA—An Association of Floriculture Professionals 2007 Short Course and Trade Show. July 14, 2007. 1.25 h, 121 attendees

K. Williams. "The growers' cutting edge, part I: Using calcined products in soilless media: Is there a performance advantage?" OFA—An Association of Floriculture Professionals 2007 Short Course and Trade Show. July 15, 2007. 0.25 h, 65 attendees.

K. Williams. "Understanding physiological disorders: their causes and cures" East Texas Greenhouse Growers' Conference / Southwest Growers' Conference. October 24, 2007. Tyler, Texas. 1 h.

K. Williams. "Understanding physiological disorders: their causes and cures" Kansas Greenhouse Growers' Conference. October 25, 2007. Topeka, Kansas. 1 h.

2006 Educational Programs:

P.A. Hammer and K. Williams. "The dollars and sense of PGRs" OFA - An Association of Floriculture Professionals 2006 Short Course and Trade Show. July 9, 2006. 1.5 h, ~90 attendees.

K. Williams. "Basics of plant growth regulators." Kansas Greenhouse Growers' Assoc. 2006 Fall Meeting. Oct. 11, 2006. 1h.

K. Williams. "Managing nutrition to keep crops healthy." Kansas Greenhouse Growers' Assoc. 2006 Fall Meeting. Oct. 12, 2006. 1h.

2005 Educational Programs:

Williams, K. How Does Fertilization Influence Thrips & Twospotted Spider Mites? Ohio International Floral Short Course and Trade Show. July 11, 2005. 12 min

B. Fonteno and K. Williams. The Optimum Root Environment: Chemical & Physical Characteristics. Ohio International Floral Short Course and Trade Show. July 12, 2005. 1.5 h

2004 Educational Programs:

K. Williams. Making “Cents” of Integrated Crop Management for Bedding Plants. Southern Illinois Bedding Plant School, January 6, 2004. 45 min.

K. Williams. Misconceptions of Plant Nutrient Management. Southern Illinois Bedding Plant School, January 6, 2004. 45 min.

J. Nechols and K. Williams. Making “Cents” of Integrated Crop Management for Bedding Plants. OFA-An Association of Floriculture Professionals 2004 Short Course and Trade Show. July 13, 2004. 1.5 h.

2003 Educational Programs:

Faust, J., P. Konjoian, and K. Williams. Partnering for Profitability. Ohio International Floral Short Course and Trade Show. July 12, 2003. Columbus, OH. 4 h

Nechols, J. and K. Williams. Scouting for Effective IPM. Ohio International Floral Short Course and Trade Show. July 14, 2003. Columbus, OH. 1.5 h

Williams, K. Scouting for Effective Pest Management. 2003 Fall Membership Meeting and Grower Update, Oklahoma Greenhouse Growers’ Association. October 21, 2003. 50 min

Williams, K. The Economics of Pest Management. 2003 Fall Membership Meeting and Grower Update, Oklahoma Greenhouse Growers’ Association. October 21, 2003. 50 min

Williams, K. Scouting for Effective Pest Management. Kansas Greenhouse Growers’ Conference. October 23, 2003. 45 min

2002 Educational Programs:

Williams, K.A. Misconceptions about Plant Nutrition. Greenhouse Management Workshop of the Illinois Greenhouse Association. 60 min. June 4, 2002. Naiperville, IL.

Williams, K.A. Water Quality Issues. Greenhouse Management Workshop of the Illinois Greenhouse Association. 60 min. June 4, 2002. Naiperville, IL.

Faust, J., J. Gaydos, P. Konjoian, L. Traven, and K. Williams. Profitability in the Greenhouse. Ohio International Floral Short Course and Trade Show. 4 hours. July 13, 2002. Columbus, OH.

Williams, K. Greenhouse fertilization of the future: imagine the possibilities. Ohio International Floral Short Course and Trade Show. 20 min. July 15, 2002. Columbus, OH.

Williams, K.A. Costs of Production. Kansas Greenhouse Growers’ Association. 45 min. October 17, 2002. Olathe, KS.

2001 Educational Program:

Williams, K.A. Misconceptions about Plant Nutrient Management. Kansas Greenhouse Growers’ Conference. 45 min. Oct. 25, 2001.

2000 Educational Programs:

Williams, K. Excluding Insects and Disease from the Greenhouse. Kansas Greenhouse Growers’ Association Basic Growers’ School, June 21, 2000. 1 hr.

K-State Research Group. Ivy Geranium Production: Highlights of Recent Research Results. Great Plains Greenhouse Growers’ Conference. Oct. 25, 2000. 45 min.

Williams, K. From Seed to Transplant for the Small Grower. Great Plains Greenhouse Growers’ Conference. Oct. 26, 2000. 45 min.

1999 Educational Programs:

K-State Research Group. Integrating Production and Marketing Practices with Pest Management: How Can We Help? KGGA



Annual Conference, Oct. 27-28, 1999. 1 hr.

Williams, K. Water Quality. Kansas Greenhouse Growers' Association Basic Growers' School, Jun. 23-24, 1999. 1 hr.

Williams, K., S. Newman, and A. Stevens. Greenhouse Soil and Water Pollution Issues - A Panel Discussion. Kansas Greenhouse Growers' Association Basic Growers' School, Jun. 23-24, 1999.

Williams, K. Soil, Water, and Fertilizer Concentration Measurement and Analysis - Hands-On Workshop. Kansas Greenhouse Growers' Association Basic Growers' School, Jun. 23-24, 1999. 3 hrs

#### 1998 Educational Programs

Williams, K. How to Start Bedding Plants in your Home. Topeka Flower Lawn and Garden Show, Feb. 22, 1998. 60 attendees.

Williams, K. Basics of Plant Nutrition. Johnson County Advanced Master Gardener Training, Jun 18, 1998. Olathe, KS. 2 hr. 42 attendees.

Williams, K. Producing Quality Chrysanthemums and Minimizing Phosphate Fertilizer Run-off. Ohio International Floriculture Short Course and Trade Show, Jul. 10-12, 1998. Columbus, OH. 1 hr. 147 attendees.

Williams, K. Scheduling Bedding Plants. Kansas Greenhouse Growers' Association Basic Growers' School, Jun 24-25, 1998. Hutchinson, KS. 1 hr 15 min. 67 attendees.

Williams, K. Poinsettia Nutrient Management - A Case Study Approach. Great Plains Greenhouse Growers Conference and Trade Show, Oct. 28-29, 1998. Lawrence, KS. 1 hr

Williams, K. Identifying Nutrient Deficiency Symptoms of Bedding Plants. Great Plains Greenhouse Growers' Conference and Trade Show, Oct. 28-29, 1998. Lawrence, KS. 45 min.

#### 1997 Educational Programs

Williams, K. Basics of Plant Nutrition. Advanced Master Gardener Training, Sept. 20, 1997. Manhattan, KS. 1 hr. 27 Attendees.

Williams, K. Media and Nutrition for Bedding Plant Production. Kansas Greenhouse Growers' Association Annual Seminar, Oct. 22, 1997. 1 hr.

#### 1996 Educational Programs

Williams, K.A. Customizing Media and Nutrition for Bedding Plants. GrowerExpo, Chicago.

#### **PROFESSIONAL MEETINGS ATTENDED** [Kansas State University only]

- 2022 American Society for Horticultural Science Annual Meeting. Chicago, Illinois. July 30-August 3, 2022.  
NE-1835 Resource Optimization in Controlled-Environment Agriculture Annual Meeting. Chicago, Illinois. July 31, 2022.  
AERGC Annual Meeting. Minneapolis, Minnesota. July 25-28, 2022.
- 2021 American Society for Horticultural Science Annual Meeting. Denver, Colorado. August 5-9, 2021.  
NE-1835 Resource Optimization in Controlled-Environment Agriculture Annual Meeting. August 17, 2021. *Virtual*  
Kansas Association of Biology Teachers (KABT) Fall Conference. September 18, 2021. *Virtual*  
Kansas Greenhouse Growers' Association Annual Meeting. October 27, 2021. *In person*
- 2020 Great Plains Growers' Conference. St. Joseph, Missouri. January 9-10, 2020.  
NE-1835 Resource Optimization in Controlled-environment Agricultural Annual Meeting. *Virtual*. August 3, 2020.
- 2019 North American Colleges and Teachers of Agriculture (NACTA) Annual Conference, Twin Falls, Idaho. June 18-21, 2019.  
Soilless Protected Food Production Systems Conference, Stillwater, Oklahoma. July 10, 2019.  
Cultivate'19, AmericanHort, Columbus, Ohio. July 13-15, 2019.  
American Society for Horticultural Science, Las Vegas, Nevada. July 22-25, 2019.

- Plug and Cutting Conference, AmericanHort, Concord, North Carolina. September 4-6, 2019.
- 2018 Great Plains Growers' Conference, St. Joseph, Missouri. January 12-13, 2018.  
North American Colleges and Teachers of Agriculture (NACTA) Annual Conference, Ames, Iowa. June 12-15, 2018.
- 2017 National Floriculture Forum, Philadelphia, Pennsylvania. March 17-19, 2017.
- 2016 Great Plains Vegetable Growers' Conference, St. Joseph, Missouri. January 6-7, 2016.  
Big XII Teaching and Learning Conference, June 2-3, 2016. Manhattan, Kansas.
- 2015 National Floriculture Forum, Minneapolis, Minnesota. March 6-7, 2015.  
American Society for Horticultural Science, New Orleans, Louisiana. August 4-7, 2015.
- 2014 Cultivate '14 (AmericanHort Short Course and Trade Show). July 11-15, 2014. Columbus, Ohio. [3 invited presentations]  
Big XII Teaching and Learning Conference. August 4-5, 2014. Stillwater, Oklahoma. [3 presentations]  
International Horticultural Congress. August 17-22, 2014. Brisbane, Australia. [1 oral and 1 poster presentation]
- 2013 National Floriculture Forum, March 22-23, 2013. Portsmouth, New Hampshire [1 invited co-presentation].  
OFA—An Association for Floriculture Professionals Short Course and Trade Show. July 13-17, 2012. Columbus, Ohio.  
American Society for Horticultural Science (ASHS) 2013 Annual Conference, July 22-25, 2013. Palm Desert, California.  
Kansas Greenhouse Growers' Association (KGGA) 2013 Educational Conference, October 28, 2013. Manhattan, Kansas.
- 2012 NCAC-4 Meeting, May 19-20, 2012. Ithaca, New York.  
BioWorks and DeCeuster Meststoffen (DCM) Research Visit. June 20-24, 2012. Flanders area of Belgium.  
OFA—An Association for Floriculture Professionals Short Course and Trade Show. July 13-17, 2012. Columbus, Ohio. [2 invited presentations]  
Kansas Greenhouse Growers' Association (KGGA) 2012 Educational Conference. October 25, 2012. Manhattan, Kansas. [1 invited presentation]
- 2011 National Floriculture Forum, "Partnerships, Alliances, Brands, Initiatives." March 9-11, 2011. Dallas, Texas. [1 co-presentation about Hort AG\*IDEA]  
American Society for Horticultural Science Annual Conference, September 25-28, 2011. Waikoloa, Hawaii. [3 poster presentations and co-author of one oral presentation]  
Kansas Greenhouse Growers' Association (KGGA) 2011 Educational Conference, October 27, 2011. Manhattan, Kansas.
- 2010 Society of American Florists' (SAF) Production & Pest Management Conference, February 26-27, 2010. Orlando, Florida. [1 invited presentation].  
Great Plains IDEA 2010 Spring Conference & Annual Meeting, April 18-21, 2010. Kansas City, Missouri.  
Kansas Greenhouse Growers' Association (KGGA) 2010 Educational Conference, October 28, 2010. Manhattan, Kansas. [1 invited presentation].
- 2009 The Manitoba Green Show, February 10-11, 2009. Winnipeg, MB, Canada. [1 invited presentation].  
North American Association of Colleges and Teachers of Agriculture, June 17-20, 2009. Stillwater, Oklahoma. [3 presentations].  
OFA – An Association of Floriculture Professionals – International Floral Short Course and Trade Show, July 11-14, 2009. Columbus, Ohio. [1 invited presentation].  
American Society for Horticultural Science 106<sup>th</sup> Annual Conference, July 24-29, 2009. St. Louis, Missouri. [1 oral presentation, co-author on 6 presentations].
- 2008 Big 12 Workshop on Faculty Recruitment, Retention, and Leadership, January 10-11, 2008. Norman, Oklahoma.  
National Floriculture Forum, February 22-24, 2008. Raleigh, North Carolina.  
American Society for Horticultural Science 105<sup>th</sup> Annual Conference, July 21-24, 2008. Orlando, Florida.  
HortiFair, October 14-16, 2008. Amsterdam, The Netherlands.  
Costa Farms Growers' Summit, December 12-13, 2008. Miami, Florida.
- 2007 National Floriculture Forum, Jan. 22-27, 2007. Amsterdam, The Netherlands and Essen, Germany.

- North American Colleges and Teachers of Agriculture (NACTA) 53<sup>rd</sup> Annual Conference, June 20-22, 2007. Urbana-Champaign, Illinois.
- OFA—An Association of Floriculture Professionals Short Course and Trade Show, July 14-17, 2007. Columbus, Ohio.
- American Society for Horticultural Science 104<sup>th</sup> Annual Conference, July 16-19, 2007. Scottsdale, Arizona.
- East Texas Greenhouse Growers' Conference / Southwest Growers' Conference. October 23-25, 2007. Tyler, Texas.
- Kansas Greenhouse Growers' Association Annual Conference. October 24-25, 2007. Topeka, Kansas.
- 2006 National Floriculture Forum, Feb. 24-26, 2006. Grand Rapids, Michigan.
- IOBC/WPRS Working Group Meeting, Integrated Pest Control in Protected Crops, Mediterranean Climate, May 14-18, 2006. Murcia, Spain.
- Ohio International Floral Short Course and Trade Show, July 8-11, 2006. Columbus, Ohio.
- Kansas Greenhouse Growers' Association, Oct. 11-12, 2006. Back to Basics: Learn to Grow Again. Manhattan, Kansas.
- 2005 National Floriculture Forum, Feb. 24-27, 2005. Chicago, Illinois.
- ESCOP/ACOP Leadership Development Program Phase III, Feb. 27-Mar. 2, 2005. Washington D.C.
- IPM of Ornamentals Working Group Meeting, Mar. 20, 2005. Indianapolis, Indiana.
- North Central Region Teaching Symposium, May 23-25, 2005. Manhattan, Kansas.
- Ohio International Floral Short Course and Trade Show, July 10-14, 2005. Columbus, Ohio.
- American Society for Horticultural Science, July 17-21, 2005. Las Vegas, Nevada.
- 2004 30<sup>th</sup> Southern Illinois Bedding Plant School and Trade Show, Jan. 6. Belleville, Illinois.
- Mid-Am Trade Show, Jan. 14-16. Chicago, Illinois.
- National Floriculture Forum, Feb. 20-22. Miami, Florida.
- North Central Branch of the Entomological Society of America, Mar. 28-31. Kansas City, Kansas.
- ESCOP/ACOP Leadership Development Program (Class 14) Phase I, June 26-July 1. Indianapolis, Indiana.
- Ohio International Floral Short Course and Trade Show, July 10-14. Columbus, Ohio.
- American Society for Horticultural Science, July 19-21. Austin, Texas.
- South and Central Regional Meeting of the Association of Specialty Cut Flower Growers, August 6-7. Stillwater, Oklahoma.
- 2003 Great Plains Vegetable Conference, Jan. 9. St. Joseph, Missouri.
- Fourth National Integrated Pest Management Symposium, April 8-10. Indianapolis, Indiana.
- North Central Region Teaching Symposium, June 9-10. St. Paul, Minnesota.
- Ohio International Floral Short Course and Trade Show, July 12-16. Columbus, Ohio.
- American Society for Horticultural Science, Oct. 3-6. Providence, Rhode Island.
- Oklahoma Greenhouse Growers' Assoc. Fall Membership Meeting and Grower Update, Oct. 21. Stillwater, Oklahoma.
- Kansas Greenhouse Growers Association Annual Conference, Oct. 22-23. Wichita, Kansas.
- 2002 National Floriculture Forum, Apr. 9-13. San Diego to San Francisco, California.
- Greenhouse Management Workshop, Illinois Greenhouse Association, Jun. 4. Naperville, Illinois.
- Ohio International Floral Short Course and Trade Show, July 13-17. Columbus, Ohio.
- International Horticulture Congress (ASHS/ISHS), Aug. 11-17. Toronto, Canada.
- Kansas Greenhouse Growers' Association Annual Meeting, Oct. 16-17. Olathe, Kansas.
- 2001 National Floriculture Forum, Feb. 24-25. College Park, Maryland.
- Ohio International Floral Short Course and Trade Show, July 14-18. Columbus, Ohio.
- American Society for Horticultural Science, July 22-25. Sacramento, California.
- 2000 National Floriculture Forum, Feb. Chicago Botanic Garden, Chicago, Illinois.
- USDA Project Directors' Conference: A Decade of Innovation in Undergraduate Education, Mar. 5-6. Washington, D.C.
- NCR-101 Committee on Controlled Environment Technology and Use, Mar. 11-13. West Lafayette, Indiana.
- Southeast Greenhouse Growers' Conference and Trade Show, Jun. 22-24. Greenville, South Carolina.
- American Society for Horticultural Science, July 22-27.
- 1999 American Society for Horticultural Science, July 28-31. Minneapolis, Minnesota.

- 1998 NCR-101 Committee on Controlled Environment Technology, Mar. 21-24. College Park, Maryland.  
Student-centered Learning via Distance Technologies Practicum, May 11-15. Lincoln, Nebraska.  
American Society for Horticultural Science, July 11-15. Charlotte, North Carolina.  
Ohio International Floral Short Course and Trade Show, July 11-15. Cincinnati, Ohio.
- 1997 International Symposium on Growing Media and Hydroponics, May 19-26. Windsor, Ontario, Canada  
Ohio International Floral Short Course and Trade Show, July 12-16. Cincinnati, Ohio.