Roger Kjelgren

Director, Mid Florida Research and Extension Center
University of Florida-Institute Food and Agricultural Systems
rkjelgren@ufl.edu

EDUCATION

1985-88 PhD, Forestry. Center for Urban Horticulture, University of Washington, Seattle WA. Dissertation: *Urban microclimate effects on the growth and performance of Liquidambar styraciflua L.*

1980-83 MS, Soil Science. Dept. Soil Science, Oregon State University, Corvallis OR. Thesis: *Willamette Valley winter wheat fertilizer nitrogen use efficiency*

1978-80 Post-baccalaureate. Department of Crop Husbandry and Plant Breeding, the Royal Veterinary and Agricultural University, Copenhagen, Denmark. Project: *Harvest index, Danish barley*

1976-78 Bachelors degree, Soil Science. Department of Agronomy, Washington State University, Pullman WA

1974-76 Associate of Arts, Bellevue Community College, Bellevue WA

1972-73 Grand View College, Des Moines IA

PROFESSIONAL HISTORY

2017-18 AAAS Leshner Fellow in Science Engagement

2016--- Director, Mid Florida Research and Extension Center, University of Florida

2012-13 Jefferson Science Fellow-Intelligence Community analyst on smallholder agriculture in emerging Asian economies, Department of State, Washington DC.

2009--- Adjunct professor, Lamont-Doherty Earth Observatory, Columbia University NY (*paleo climate reconstruction from tree rings*)

2007-12 International Program Development, College of Agriculture, Utah State University (*PRC China and SE Asia focus*)

2006--- Professor, Horticulture, Dept. Plants, Soils, and Climate, Utah State University. (*60% research, 35% teaching, focus on urban capacity to conserve, low water landscaping and dendrochronology*)

2007-08 Interim Department Head, Plants, Soils, and Climate, Utah State University

2006 Visiting scholar, University of Queensland at Gatton (*conducted study on water stress behaviors of native perennial wildflowers*)

2005-06 Fulbright scholar, Kasetsart University, Bangkok, Thailand. (*Conducted research on physiology of tropical street tree species, taught English*)

2004 Leadership training, USDA Agricultural Experiment Station Committee on Organization and Policy (ESCOP)

1998-06 Associate Professor Horticulture, Dept. Plants, Soils, and Biometeorology, Utah State University. (*75% research, 20% teaching, focus on precision irrigation and low water landscaping*)

1992-98 Assistant Professor Horticulture, Dept. Plants, Soils, and Biometeorology, Utah State University. (*75% research, 20% teaching, focus on landscape plant water use)*

1988-91 Assistant Professor of Landscape Horticulture, Dept. of Plant and Soil Science, Southern Illinois University, Carbondale IL. (*50% research, 50% teaching on nursery production and mineland reclamation with trees*)

PROFESSIONAL ACTIVITIES

Administration-Leadership Development

- Interim head, 2007-2008, department of Plants, Soils, and Climate. Undergraduate curriculum review and upgrade to emphasize sustainability, new program development (residential design and management degree), Coordinated with College of Agriculture and Applied Science departments to develop an appropriate model for hiring a statistical consultant.
- Director, Center for Water Efficient Landscaping (CWEL) 1999-2008. Funded 1999, encompasses three additional colleagues in turf and ornamentals extension/research. CWEL mission is "To promote water conservation in irrigated urban landscapes through research on effective irrigation and sustainable landscaping and disseminating to the green industry, water purveyors, and Cooperative Extension". Oversaw state line item, federal special congressional allocation, contract budgets, pursuing further funding opportunities, mentoring junior faculty, overseeing web page development.
- ESCOP (Experiment Station Committee on Policy) leadership training program 2004: 4-day initial training, self-directed project, culminating 3-day experience in Washington DC with USDA and state congressional delegation.

INTERNATIONAL

Sabbaticals

Jefferson Science Fellow in Bureau of Intelligence and Research (INR), State Department, August 2012-July 2013 (http://sites.nationalacademies.org/PGA/Jefferson/PGA_070557)

- Science educator and analyst for Economic Office INR, writing assessments on smallholder agricultural and natural resource issues in south and South East Asian emerging economies.
- Independent project on trajectory of female undergraduate enrollment in the sciences among emerging economies.
- Followed process of presidential daily brief in Office Director National Intelligence.
- Jefferson Science Presentation on Burma Agriculture-Forestry Nexus to State Department 18 December 2012.
- Co-authored paper in Science and Diplomacy, "Tacit Diplomacy in Life Sciences" March 2014 (http://www.sciencediplomacy.org/perspective/2014/tacit-diplomacy-in-life-sciences)

Asia sabbatical, November 2005-November 2006.

- Six months (Nov. 05-May 06) on a research/teaching Fulbright Scholar award at Kasetsart University, Bangkok, in the College of Forestry. Conducted research into water use of tropical trees for use as urban street trees, and consulted on an urban forestry masters curriculum.
- Six months (May 06-Nov 06) at the Center for Native Floriculture at University of Queensland, Australia, in College of Agriculture and Natural Resources; conducted research into water relations and drought tolerance of native Australian woody plants in urban environments.

RESEARCH Publications (most recent and relevant)

- *Cumulative nearly 70 peer reviewed publications*
- *Career 1100+ citations, H-index 20; Since 2010 ~600 citations, H-index 12 (Google Scholar)*

Project: Dendrochronology-Paleo Hydroclimate

Voelker, S. L., R. J. DeRose, M. F. Bekker, C. Sriladda, N. Leksungnoen, and R. K. Kjelgren. 2018. Anisohydric water use behavior links growing season evaporative demand to ring-width increment in conifers from summer-dry environments. Trees 32:735–749

Sun, Y., Bekker, M.F., DeRose, R.J. R. Kjelgren and S.-Y. Wang. 2017. Statistical treatment for the wet bias in tree-ring chronologies: a case study from the Interior West, USA. *Environ Ecol Stat* 24, 131–150

DeRose, J, M. Bekker, E. Allen, T. Bardsley, B. Buckley, R. Kjelgren, T. Rittenour, and S. Wang. 2015. A millennium-length reconstruction of Bear River stream flow using Utah Juniper. J. Hydrology . 529: 524-534

DeRose, J, M. Bekker, E. Allen, T. Bardsley, R. Kjelgren, B. Buckley. 2015. The dendrochronological potential of Utah juniper (Juniperus osteosperma (Torr.)). Tree-Ring Research, 72(1):1-14.

Sriladda, C, R. Kjelgren, J. DeRose, M. Bekker, B. Buckley. 2015. Ring increment of two Western Juniper species is related to seasonal evapotranspiration and water balance. *In preparation for Tree Physiology*

Bekker, M.F., R.J. DeRose, B.M. Buckley, R. Kjelgren, and N.S. Gill. 2014. A 576-Year Weber River Streamflow Reconstruction from Tree Rings for Water Resource Risk Assessment in the Wasatch Front, Utah. J. Amer. Water Res. Assoc. 50:1338-1348.

Allen, E.F., T.M. Rittenour, R.J. DeRose, M.F. Bekker, R. Kjelgren, and B.M. Buckley. 2013. A tree-ring based reconstruction of Logan River streamflow, in northern Utah. Water Res. Research. 49:1-10.

Sun, Y., M.F. Bekker, R.J. DeRose, R. Kjelgren, S.Y. Wang. 2017. Statistical treatment for the wet bias in tree-ring chronologies: a case study from the Interior West, USA. Environ. Ecol. Statistics. 24:131-150.

Project: Low water landscaping with Intermountain West drought tolerant native plants

Sriladda, C., H. Kratsch, T. Monaco, S. Larson, F.K. Shen, and R. Kelgren. 2015. A hybrid of riparian Shepherdia argentea and xeric Shepherdia rotundifolia: description, and traits suitable for low water urban landscapes. HortScience 51:822–828. 2016.

Leksungnoen, N., R. Kjelgren, Richard C. Beeson, Jr., Paul G. Johnson, Grant E. Cardon, and Austin Hawks. 2014. Salt Tolerance of Three Tree Species Differing in Native Habitats and Leaf Traits. HortScience. 49:1194-1200.

Sriladda, C., R. Kelgren, H. Kratsch, T. Monaco, S. Larson, and F.K. Shen. 2014. Ecological adapation of the endemic Shepherdia rotundifolia to conditions in its Colorado Plateau Range. Western North Amer. Nat.

Sriladda, C., H. Kratsch, S. Larson, and R. Kjelgren. 2012. Morphological and genetic variation among Sphaeralcea Species in a high desert environment. HortScience. 47: 715-720.

Book: Meyer, S. E., *R. Kjelgren, D. Morrison, B. Varga. 2009. Landscaping on the new frontier: waterwise design for the Intermountain West. 200 pp. USU Press, Logan, UT. (Kjelgren initiated this book as a design follow up to "Waterwise: native plants…").

Book: Mee, W., J. Barnes, *R. Kjelgren, R. Sutton, T. Cerny, C. Johnson. 2003. Waterwise: native plants for Intermountain landscapes. 220 pp. USU Press, Logan, UT. (first two authors were landscape architecture students directed by Kjelgren, who wrote all narrative text and organized the book).

Project: Woody Plant Water Use and Urban Evapotranspiration

Beeson, R. C., H. T. T. Duong, and R. Kjelgren. 2017. Developing a simple water use model of Ilex x 'Nellie R. Stevens' from liners to four meter tall trees. J. Agricult. Studies 5:83-96.

Beeson, R. C., H. T. T. Duong, and R. Kjelgren. 2017. Water Use of Juvenile Live Oak (*Quercus virginiana*) Trees over Five Years in a Humid Climate. Open J. Forestry 8:1-14.

Kjelgren, R., R. C. Beeson, D. Pittenger, and T. Montague. 2015. Simplified Landscape Irrigation Demand Estimation: SLIDE Rules. Applied Engineering in Agriculture. Vol. 32(4): 363-378.

Sun, H., K. Kopp, S. Larsen, and R. Kjelgren. 2012. Water efficient urban landscapes – integrating different water use categorizations and plant types. HortScience 47:254-263.

Lowry, J., D. Ramsey, and R. Kjelgren. 2011. Predicting urban forest growth and its impact on residential landscape water demand in a semiarid urban environment. Urban For. Urban Greening. 10:193-204.

Leksungnoen, N., P. Johnson, and R. Kjelgren. 2012. Physiological responses of turfgrass species to drought stress under high desert conditions. HortScience 47:105-111.

Kjelgren, R., L. Wang, and D. Joyce. 2009. Water deficit stress responses of three herbaceous native Australian ornamental species. HortScience 44:1358-1365. Leksungnoen, N., P. Johnson, and R. Kjelgren. 2012. Physiological responses of turfgrass species to drought stress under high desert conditions. HortScience 47:105-111.

Kjelgren, R., L. Wang, and D. Joyce. 2009. Water deficit stress responses of three herbaceous native Australian ornamental species. HortScience 44:1358-1365.

Project: Urban Water Policy

Glenn, D., J.L. Endter-Wada, R. Kjelgren, and C.M. Neale. 2015. Tools for evaluating and monitoring effectiveness of urban landscape water conservation interventions and programs. Landscape Urban Planning 139: 82-93.

Farag, F., C. Neale, R. Kjelgren, and J. Endter-Wada. 2011. Estimating landscape irrigated areas and potential water conservation at the rural-urban interface using remote sensing and GIS. Photogrametric Eng. Remote Sensing. 77:1113-1122.

Rosenberg, D. E., K. Kopp , H. A. Kratsch , L. Rupp, P. Johnson, and R. Kjelgren. 2011. Value Landscape Engineering: identifying costs, water use, labor, and impacts to support landscape choice. J. Amer. Water Res. Assoc. DOI: 10.1111/j.1752-1688.2011.00530.

Kilgren, D., J. Endter-Wada, R. *Kjelgren and P. Johnson. 2010. Implementing water conservation in an institutional setting; A case for situational problem solving. J. Amer. Water Res. Assoc. 46:1205–1220.

Endter-Wada, J., J. Kurtzman, S. Kenan, R. Kjelgren, and C. Neale. 2008. Situational waste in landscape watering: residential and business water use in an urban Utah community. J. Amer. Water Res. Assoc. 44:902-920.

Project: International Urban Forestry/Agriculture and other

Kantar, M. B., B.C. Runck, B. Raghavan, A. B. Joglekar, S. Senay, J. Neyhard, J. Bradeen, M. S. Gomez, R. Kjelgren. 2019. The many-faced Janus of plant breeding. Plants, People, Planet 1:306–309. https://doi.org/10.1002/ppp3.30

Zhou, H.; Niu, X.; Yan, H.; Zhao, N.; Zhang, F.; Wu, L.; Yin, D.; Kjelgren, R. Interactive Effects of Water and Fertilizer on Yield, Soil Water and Nitrate Dynamics of Young Apple Tree in Semiarid Region of Northwest China. *Agronomy* 2019, *9*, 360.

Leksungnoen, N, W. Eiadthong, R. Kjelgren. 2017. Thailand's catastrophic flood: Bangkok tree mortality as a function of taxa, habitat, and tree size. Urban For Urban Greening 22: 111-119

Kjelgren, R., L. Puangchit, C. Sriladda, and M. Someechai. 2014. Monsoonal dry season water relations of three tropical tree species growing in the streetside forest of Bangkok, Thailand. Submitted to Urban Forestry and Urban Greening; Reviewed, revised, resubmitting.

D.R. Benson and R. Kjelgren. 2014. Tacit Diplomacy in Life Sciences: A Foundation for Science Diplomacy. Science and Diplomacy-AAAS. March, 2014. http://www.sciencediplomacy.org/perspective/2014/tacit-diplomacy-in-life-sciences.

Kjelgren, R., L. Puangchit, C. Sriladda, and M. Someechai. 2014. Water stress response of three tropical species varying in leaf habit used as urban street trees in monsoonal southeast Asia. To Scientia horticulturae. In Preparation.

Kjelgren, R, D. Joyce, and D. Doley. 2013. Subtropical–tropical urban tree water relations and drought stress response strategies. Arborcult. Urban Forestry 39:124-130.

Kjelgren, R, D. Hole, and P. Johnson. 2012. Globally engaging American agriculture and natural resource students through service learning study abroad. J. Developments Sustain. Agricult. 7:14-22.

Trisuart, Y. S. Rajendra, and R. Kjelgren. 2011. Plant Species vulnerability to climate change in peninsular Thailand. Applied Geography. 31:1106-1114.

Kjelgren, R., Y. Trisurat, N. Baguinon, L. Puangchit, and P. Y. Tan. 2011. Tropical street trees and climate uncertainty in Southeast Asia. HortScience. 46:167-142.

Kjelgren, R., L. Puangchit, C. Sriladda, and M. Someechai. 2008. Water use of four street tree species in Bangkok, Thailand. Acta Horticulturae 792:405-409.

Thaiutsa, B., L. Puangchit, R. Kjelgren, and W. Arunpraparut. 2008. Urban green space, street tree and heritage large tree assessment in Bangkok, Thailand. Urban Forestry Urban Greening 7:219- 229.

RESEARCH Funding

- *Principal Investigator unless otherwise indicated as Co-PI; (Key to funding type: Compet.=competitive award, Contract=contractual award, Allocate.=legislative allocation)*

- *Nearly $5 million total research funding over 22 years, either directly or collaboratively: $1.5 million in competitive grants, $1 million in contracts, and almost $2.3 million in state and federal legislative allocations*

TEACHING - OUTREACH

1. **Graduate Programs**
   - Five Ph.D., 12 MS students graduated
   - **MPSH:WELS**. Developed one-year degree program, Masters of Professional Studies in Horticulture: Water Efficient Landscaping Specialization (MPSH:WELS). MPSH:WELS is a Plan C, terminal degree program that meshes a horticultural background with communication skills, water policy, and advanced water conservation techniques. The goal is for graduates to be able to develop an effective program in landscape water conservation when employed in either the public or private sector. MPSH:WELS is 29 classroom semester credits, and four credits of summer internship experience working for a firm or business with a stake in landscape water management where the student conducts a small research project on some facet of landscape water conservation. Nearly all graduated students are employed landscape water conservation position.. Eleven students graduated, 2002-2007.

3. **Outreach**
   - Landscape Horticulture Field Day. Initiated 1996, offered bi-annually to showcase woody plant and turfgrass research. Attendance from 110-140, and attendee surveys verifying favorable response to presenting research findings through field days.
   - Native Plant Symposium. 1999-2003, bi-annual meeting of USU and outside experts on production, selection, and use of Intermountain West native plants in ornamental landscapes. Initially a full day in 1999, subsequent symposia have been offered in the afternoons of the field days. Attendance from 110-130.
   - Utah's Choice Plant Introduction Program. Participated in conceptual development of this program to promote 40 top Utah native trees, shrubs, perennial wildflowers, and grasses for use in low water landscapes. The Center for Water Efficient Landscaping and Utah Botanical Center donated $4,000 each in 2003 to the Intermountain Native Plant Growers Association (INPGA) to purchase pot tags, nursery placards, and posters, and to put up a website. The INPGA has solicited membership in the program from several large nurseries from Arizona and New Mexico as well as local nurseries, and is selling pot tags and placards to support the program to any nursery willing to carry these plants.
   - WaterWise Plant Tag Program. Under CWEL, helped develop conceptual foundation and financial support for this program to recognize desirable low water use species. Worked with other Utah government and local organizations to organize a list of drought tolerant ornamental trees, shrubs, herbaceous perennials, ornamental grasses, and ground covers adapted to Utah's arid climate and cold winters, available in the industry, relatively easy to maintain in the landscape, and remain aesthetically acceptable under limited water availability.
   - Selected Extension/outreach talks. While not having an explicit Extension appointment, I generally give from 3-5 major Extension talks a year around the country on landscape water conservation, landscape tree water use, selection of woody plants, and now SLIDE Rules and satellite-based urban evapotranspiration estimation. Listed are only invited outreach talks from the past 10 years: