

Dr. Cheryl R. Boyer

Kansas State University, Department of Horticulture and Natural Resources
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EDUCATION

Ph.D. Horticulture (2008)

Auburn University, Auburn, AL

M.S. Horticulture (2005)

Oklahoma State University, Stillwater, OK

B.L.A. Landscape Architecture (2003)

Oklahoma State University, Stillwater, OK

PROFESSIONAL EXPERIENCE

- **Associate Professor and Extension Specialist** (Nursery Crops, Horticultural Marketing), Department of Horticulture and Natural Resources at Kansas State University. Responsibilities: 75% Extension, 25% Research. July 2014-present.
Co-Founder, Kansas State University Center for Rural Enterprise Engagement (February 2015 to present)
- **Assistant Professor and Extension Specialist** (Ornamental Nursery Crops), Department of Horticulture, Forestry and Recreation Resources at Kansas State University. Responsibilities: 75% Extension, 25% Research. August 2008-June 2014.
- Graduate Research Assistant, Department of Horticulture (Auburn University). Advisor: Dr. Charles Gilliam (June 2005-July 2008)
- Graduate Research Assistant, Department of Horticulture & Landscape Architecture (OSU) Advisor: Dr. Janet Cole (May 2003-May 2005)
- GPS (Global Positioning System) Data Technician, Department of Horticulture & Landscape Architecture (OSU). Advisors: Drs. Lou Anella & Doug Needham (2000-2002)

EXTENSION OUTREACH

Extension Publications and Factsheets

- **Boyer, C.R.** May 2018. Prairie Star Annual Flowers. Kansas State University Research and Extension Publication MF-2769.
- **Boyer, C.R.**, and R.L. Ruether. January 2017. Prairie Star Annual Flowers. Kansas State University Research and Extension Publication MF-2769.
- **Boyer, C.R.**, and R.L. Ruether. January 2016. Prairie Star Annual Flowers. Kansas State University Research and Extension Publication MF-2769.
- Rivard, C., C. Lavis, **C. Boyer**, and W. Upham. October 2014. Drip irrigation for community gardens. Kansas State University Research and Extension Publication MF-3124.
- Prelse, D. and **C. Boyer**. April 2014. Crop residues: Abundance and considerations for alternative uses. Kansas State University Research and Extension Publication MF-3165.
- **Boyer, C.** February 2014. Deciduous shrubs for Kansas. Kansas State University Research and Extension Publication MF-3116.
- **Boyer, C.** February 2014. Evergreen shrubs for Kansas. Kansas State University Research and Extension Publication MF-3117.
- **Boyer, C.**, E. Blythe, J. Griffin and B. Morales. December 2013. Use of root-promoting products for vegetative propagation of nursery crops. Kansas State University Research and Extension Publication MF-3105.
- Bilderback, T., **C. Boyer**, M. Chappell, G. Fain, D. Fare, C. Gilliam, B. Jackson, J. Lea-Cox, A. LeBude, A. Niemiera, J. Owen, J. Ruter, K. Tilt, S. Warren, S. White, T. Whitwell, R. Wright, and T. Yeager. Southern Nursery Association. 2013. Best management practices: Guide for Producing Nursery Crops. 3rd Ed. SNA, Acworth, GA. [*Authorship is listed alphabetically*]
- **Boyer, C.** and E. Nolting. August 2011. Water gardening: Disappearing fountains. Kansas State University Research and Extension Publication MF-2925.
- **Boyer, C.**, W. Upham, C. Barden, and J. Griffin. 2011. How to prune shrubs. Kansas State University Research and Extension Publication MF-2998.
- Nolting, E. and **C. Boyer**. October 2010. Landscape design. Kansas State University Research and Extension Publication MF-2925.

Websites

- ksu.edu/CREE and RuralEngagement.org
 - K-State site and resource blog for the Center for Rural Enterprise Engagement
- KansasRoots.org
- PrairieStarFlowers.com
- SustainableSubstrates.com
- KansasCommunityGardens.org
- KansasHealthyYards.org

Speaker at Public Extension Meetings

I speak on a variety of topics at venues across the state and nationally including Extension trainings, workshops, informational meetings, public events and research field days. Industry-related presentations take place with local and national organizations and trade shows. Since August 2008 until August 2018 I have delivered more than 260 presentations with a total in-person audience outreach of approximately 10,600. Below are some topics I speak about.

- **Recommended Woody Landscape Plants for Kansas**
- **Recommended Annual and Perennial Flowering Plants for Kansas**
- **Alternative Substrates for Nursery Crop Production**
- **Planting, Maintenance and Pruning**
- **Nursery Industry in Kansas**
- **New-Media Marketing for Nurseries, Garden Centers and Extension**

TEACHING EXPERIENCE

- Kansas State University
 - Courses (guest lectures):
 - HORT 575, Nursery Management
 - HORT 350, Plant Propagation
 - HORT 201, Introduction to Horticultural Science
 - HORT 374, Landscape Plants 1
- Graduate Teaching Assistant, Auburn University
 - Course: Intermediate Landscape Design
- Graduate Teaching Assistant, Oklahoma State University
 - Business and Practice of Arboriculture, Plant Propagation, Indoor Plants and Interior Plantscaping, Landscape Plants II, Principles of Horticultural Science

E-BOOK CHAPTERS

- **Boyer, C.R.** (2013). Kansas Healthy Yards and Communities. In T. Rhodus (Ed.), *Changing the Pace - Adopting a Pecha Kucha Approach to Presentations* [iBooks 3.0 or later] (pp. 25-27). Retrieved 1/31/2013 from <https://itunes.apple.com/us/book/changing-pace-adopting-pecha/id594201341?ls=1>

WEBINARS

- **Boyer, C.R.** and S. Stebner. February 11, 2016. Social Media Engagement. The Western Nursery & Landscape Association Education Series.
- Baker, L.M., **C.R. Boyer** and H.H. Peterson. April 21, 2016. The State of New-Media Marketing in the Green Industry and Implications for Small, Rural Businesses. North Central Regional Center for Rural Development. https://youtu.be/k6zQFkrip_s
- **Boyer, C.R.** July 21, 2016. Lunch and Learn: 5 Questions to Ask Your Social Media Manager. The Virginia Nursery and Landscape Association Webinar Series.
- **Boyer, C.R.** November 2, 2016. Online Marketing and Social Media for Small Producers. South Dakota Hops Conference, Mitchell, South Dakota (delivered via Zoom).
- **Boyer, C.R.**, L.M. Baker, and H.H. Peterson. 2015. Supporting rural business success through new media marketing research. North Central Regional Center for Rural Development. 12 May 2015. <https://youtu.be/IEvhqTbOgPI>

REFEREED PUBLICATIONS

*indicates graduate student as lead author

- *Yao, B., A. Shanoyan, H.H. Peterson, **C.R. Boyer**, L.M. Baker. 2018. The use of new-media marketing in the green industry: Analysis of social media use and impact on sales. *Agribusiness* 1-17; DOI: <https://doi.org/10.1002/agr.21581>.
- Peterson, H.H., **C.R. Boyer**, L.M. Baker, and B. Yao. 2018. Trends in use of new-media marketing in ornamental horticulture industries. *Horticulturae* 4(4), 32; DOI: <https://doi.org/10.3390/horticulturae4040032>.

- Baker, L.M., **C.R. Boyer**, H.H. Peterson and A.E.H. King. 2018. Online opportunities: A quantitative content analysis benchmark study of online retail plant sales. HortTechnology 28:516-523; DOI: <https://doi.org/10.21273/HORTTECH03901-17>.
- *Stebner, S., L.M. Baker, H.H. Peterson, and **C.R. Boyer**. 2017. Marketing with more: An in-depth look at relationship marketing with new media in the green industry. J. of Appl. Communications 101:7-18; DOI: <https://doi.org/10.4148/1051-0834.1001>.
- Barton, E.T., E.A. Barton, S. Barton, **C.R. Boyer**, J. Brosnan, P. Hill, J. Hoyle, J. Reid, J. Seger, and E. Stafne. 2017. Using technology to enhance extension education and outreach. HortTechnology 27:177-186; DOI: <https://doi.org/10.21273/HORTTECH03608-16>.
- *Stebner, S., **C.R. Boyer**, L.M. Baker, H.H. Peterson. 2017. Relationship marketing: A qualitative case study of new-media marketing use by Kansas garden centers. Horticulturae 3(1), 26; DOI:[10.3390/horticulturae3010026](https://doi.org/10.3390/horticulturae3010026).
- Barden, C., **C.R. Boyer**, B. Morales, L. Fisher. 2017. Promoting red elm (*Ulmus rubra* Muhl.) germination with gibberellic acid. J. of Forestry 115:393-396. DOI: <https://doi.org/10.5849/jof.16-045>.
- *Brock, J.A., J.J. Griffin, and **C.R. Boyer**. 2015. Rooting stem cuttings of herbaceous and woody ornamentals in substrates containing eastern redcedar (*Juniperus virginiana*). J. Environ. Hort. 33(4):155-159.
- *Carmichael, T.R., **C.R. Boyer**, J.J. Griffin, S.L. Warren, and C.C. Lavis. 2014. Production and landscape establishment of nursery crops in eastern redcedar-amended substrates. J. Environ. Hort. 32:77-83.
- *Pool, J.R., J.J. Griffin, **C.R. Boyer** and S.L Warren. 2013. Short-term recurring drought affects growth and photosynthetic capacity of four conifer species. J. Environ. Hort. 31:39-42.
- *Starr, Z.W., **C.R. Boyer**, and J.J. Griffin. 2013. Post harvest processing of eastern redcedar and hedge-apple substrates affect nursery crop growth. J. Environ. Hort. 31:7-13.
- *Starr, Z.W., **C.R. Boyer**, and J.J. Griffin. 2012. Eastern redcedar (*Juniperus virginiana*) as a substrate component effects growth of three tree species. J. Environ. Hort. 30:189-194.
- *Pool, J., J.J. Griffin, **C.R. Boyer** and S.L. Warren. 2012. Establishment and growth of transplanted conifers in the Southern Great Plains. J. Environ. Hort. 30:214-218.

- **Boyer, C.R.**, T.V. Gallagher, C.H. Gilliam, G.B. Fain, H.A. Torbert, and J.L. Sibley. 2012. Description of clean chip residual forest harvest and its availability for horticultural uses in the southeastern United States. *HortTechnology* 22:381-387.
- **Boyer, C.R.**, H.A. Torbert, C.H. Gilliam, G.B. Fain, T.V. Gallagher, and J.L. Sibley. 2012. Nitrogen immobilization in plant growth substrates: Clean chip residual, pine bark, and peatmoss. *Intl. J. Agron.*
<<http://www.hindawi.com/journals/ija/2012/978528/>>
- Murphy, A.M., C.H. Gilliam, G.B. Fain, H.A. Torbert, T.V. Gallagher, J.L. Sibley and **C.R. Boyer**. 2011. Low-value trees as alternative substrates in greenhouse production of three annual species. *J. Environ. Hort.* 29:152-161.
- Markham, J.W. III, D.J. Bremer, **C.R. Boyer**, and K.R. Schroeder. 2011. Effect of container color on substrate temperatures and growth of red maple and redbud. *HortScience* 46:721-726.
- Cochran, D.R., C.H. Gilliam, G.R. Wehtje, G.B. Fain, R.D. Wright and **C.R. Boyer**. 2010. Herbicide efficacy in alternative substrates for container-grown nursery crops. *J. Environ. Hort.* 28:19-26.
- Cole, J.C., **C.R. Boyer**, M.E. Payton, and K.E. Conway. 2009. Anthracnose on wintercreeper *Euonymus* is not reduced with polyethylene sheeting or sodium hypochlorite. *J. Environ. Hort.* 27:115-118.
- **Boyer, C.R.**, C.H. Gilliam, G.B. Fain, T.V. Gallagher, H.A. Torbert, and J.L. Sibley. 2009. Production of woody nursery crops in clean chip residual substrate. *J. Environ. Hort.* 27:56-62.
- **Boyer, C.R.**, G.B. Fain, C.H. Gilliam, T.V. Gallagher, H.A. Torbert, and J.L. Sibley. 2008. Clean chip residual as a substrate for perennial nursery crop production. *J. Environ. Hort.* 26:239-246.
- **Boyer, C.R.**, G.B. Fain, C.H. Gilliam, T.V. Gallagher, H.A. Torbert, and J.L. Sibley. 2008. Clean chip residual: A substrate component for growing annuals. *HortTechnology* 18:423-432.
- Fain, G.B., C.H. Gilliam, A.L. Witcher, J.L. Sibley and **C.R. Boyer**. 2008. *WholeTree* substrate and fertilizer rate in production of greenhouse-grown petunia (*Petunia x hybrida* Vilm.) and marigold (*Tagetes patula* L.). *HortScience* 43:700-705.
- Fain, G.B., C.H. Gilliam, J.L. Sibley and **C.R. Boyer**. 2008. *WholeTree* substrates derived from three species of pine in production of annual vinca. *HortTechnology* 18:13-17.

- Fain, G.B., C.H. Gilliam, J.L. Sibley and **C.R. Boyer**. 2008. Establishment of greenhouse-grown *Tagetes patula* and *Petunia hybrida* in 'WholeTree' substrates. *Acta Hort.* 782:387-393.
- **Boyer, C.R.**, J.C. Cole, and M.E. Payton. 2008. Survey of cultural practices used in production of wintercreeper euonymus. *HortTechnology* 18:158-161.
- **Boyer, C.R.**, J.C. Cole and K.E. Conway. 2006. Effectiveness of copper sulfate pentahydrate, mancozeb, and hydrogen dioxide in controlling anthracnose on wintercreeper *Euonymus*. *J. Environ. Hort.* 25(1):21-26.

CONFERENCE PROCEEDINGS AND ABSTRACTS

*indicates graduate student as lead author

**indicates undergraduate student as lead author

- *Reid, D., **C.R. Boyer**, L.M. Baker, and H.H. Peterson. 2019. Picture perfect: Influence of image characteristics on Facebook messages for horticultural products. Paper accepted for presentation at the 2019 Southern Association of Agricultural Scientists (SAAS), ornamental horticulture section. (In Press)
- Johnson, W., B. McCornack, F. Miller, B. Garcia, M. Kennelly, J. Hoyle, W. Upham, and **C. Boyer**. 2018. KSU Integrated pest management team: Getting the word out! K-State Research and Extension Annual Conference [Poster]
- Miller, F., B. McCornack, W. Johnson, R. Cloyd, S. Zukoff, M. Kennelly, J. Hoyle, **C. Boyer**, and A. Teeter. 2018. Make a difference? Make an IPM impact graphic. K-State Research and Extension Annual Conference [Poster]
- Miller, C.T., **C.R. Boyer**, and A. Teeter. 2018. Undergraduate students and the extension mission of land grant universities: Engagement through course field trips. Intl. Congress of Educational Innovation in Agrarian Issues (Lima, Peru). [Oral]
- Baker, L.M., H.H. Peterson, and **C.R. Boyer**. 2018. Engaging the unengaged: Incorporating undergraduate students in community-engaged scholarship. Engagement Scholarship Consortium Proc. p.10 [Abstract]
- **Boyer, C.R.**, L.M. Baker, and H.H. Peterson. 2018. Plant purchasing preferences of millennial-aged consumers: A qualitative case study. Proc. Southern Nurs. Assoc. Res. Conf. (In Press)

- **Boyer, C.R.**, L.M. Baker, and H. H. Peterson. 2017. Current status of E-commerce in the green industry. International Plant Propagator's Society Conference Proceedings (In Press).
- Miller, F.L., B. McCornack, W. Johnson, S. Zukoff, **C. Boyer**, R. Cloyd, J. Hoyle, M. Kennelly, and A. Teeter. 2018. Make a difference? Make an IPM impact graphic! Proc. 9th Intl. Integrated Pest Mgmt. Symp. p.66
https://ipmsymposium.org/2018/Documents/IPMSymp18_Full_Program_with_Abst_racts.pdf
- **Boyer, C.R.**, C.T. Miller, and A. Teeter. 2016. Facilitating exposure and understanding of extension resources to undergraduate students. HortScience 51(9): S266-S267. Abstr. [Poster]
- **Boyer, C.R.**, L.M. Baker and H.H. Peterson. 2016. The Center for Rural Enterprise Engagement: Helping green industry businesses navigate new media. HortScience 51(9): S335-S336. Abstr. [Oral]
- **Thomas, D., C. Craig, S. Capoun, L.M. Baker, A.E.H. King, **C.R. Boyer**, and H.H. Peterson. 2016. The e-commerce landscape: An environmental scan of online greenhouse retailing. HortScience 51(9): S336. Abstr. [Poster]
- **Kruse, N., L.M. Baker, I. Campbell, S. Stebner, H.H. Peterson, and **C.R. Boyer**. 2016. Connecting online: Garden center's use of Facebook to market online. Poster presented at the 2016 Gamma Sigma Delta College of Agriculture Undergraduate Research Showcase, Manhattan, KS. Abstr. [Poster]
- **Thomas, D., C. Craig, S. Capoun, L.M. Baker, A.E.H. King, **C.R. Boyer**, and H.H. Peterson. 2016. The e-commerce landscape: An environmental scan of greenhouse online retailing. Poster presented at the 2016 Gamma Sigma Delta College of Agriculture Undergraduate Research Showcase, Manhattan, KS. Abstr. [Poster]
- *Pool, J.R., **C.R. Boyer**, and J.J. Griffin. 2016. Drought stress of selected *Viburnum* sp. for Kansas. Proc. of the Intl. Soc. Hort. Sci. 3rd Intl. Symp. on Woody Ornamentals of the Temperate Zone (In Press) Abstr. [Poster]
- Miller, C.T., **C.R. Boyer**, and A. Teeter. 2016. Exposing undergraduate students to the extension mission of land grant universities using a course field trip. J. of N. Amer. Colleges and Teachers of Ag. (In Press) Abstr. [Poster]
- *Stebner, S., L.M. Baker, **C.R. Boyer**, H.H. Peterson, and J. Crow. 2015. Green growth: An exploratory study of garden centers' use of new-media marketing. Journal of Interactive Marketing (Abstr.) [Presented at the 2015 Direct/Interactive Marketing Research Summit in Boston, MA on Oct. 4. Program of the MarketingEDGE professional organization]

<http://www.marketingedge.org/events/marketing-research-summit/sunday-proceedings-2015> [Oral]

- Miller, F., B. McCornack, S. Zukoff, W. Johnson, **C. Boyer**, R. Cloyd, M. Kennelly, and J. Hoyle. 2015. Promoting IPM and enhancing decision-making among Kansas stakeholders through Innovative programming. Proc. 8th Intl. Integrated Pest Mgmt. Symp. p.97
<http://www.ipmcenters.org/ipmsymposium15/Documents/IPM_2015_Proceedings-final.pdf> [Poster]
- **Boyer, C.R.**, L.M. Baker, H.H. Peterson, and S. Stebner. 2015. Like it, pin it, follow it: Opportunities and challenges for social media marketing in garden centers and nurseries. HortScience 50:S77. (Abstr.) [Oral]
- *Stebner, S., **C.R. Boyer**, L.M. Baker, and H.H. Peterson. 2015. Green growth: An exploratory study of metro and non-metro garden centers' use of new media marketing. HortScience 50:S289. (Abstr.) [Poster]
- Khachatryan, H., A. Rihn, B. Campbell, B. Behe, C.R. Hall, and **C.R. Boyer**. 2015. State promotional campaign awareness and visual attention. HortScience 50:S77. (Abstr.) [Oral]
- **Boyer, C.R.**, E. Neier, C.L. Rivard, F. Miller, C. Marr. 2015. Funding Kansas community gardens: Lessons from a mini-grant project. HortScience 50:S232. (Abstr.) [Poster]
- *Stebner, S., A. Holderness, L.M. Baker, **C.R. Boyer**, and H.H. Peterson. 2014. Social growth: Evaluating Kansas garden centers social media presence. [Poster presented at the 2014 Association for Communication Excellence in Agriculture, Natural Resources, and Life and Human Sciences Conference, Portland, OR.]
- *Brock, J.A., J.J. Griffin, and **C.R. Boyer**. 2014. Chipped *Juniperus virginiana* as a perlite substitute in stem cutting propagation. Proc. Southern Nurs. Assoc. Res. Conf. 59:254-257.
- Hoyle, J.A., J. McCurdy, and **C.R. Boyer**. 2014. Use of non-traditional data management tools for extension impact reporting. HortScience 49(9):S313. (Abstr.) [Poster]
- **Ashmore, L., L.M. Baker, S. Stebner, A. Holderness, **C. Boyer**, and H. Peterson. 2014. Expanding the marketing mix for garden centers through social media. Poster presented at the 2014 Gamma Sigma Delta College of Agriculture Undergraduate Research Showcase, Manhattan, KS.

- **Hannigan, K., L.M. Baker, S. Stebner, **C. Boyer**, and H. Peterson. 2014. Social media marketing in the garden center industry. Poster presented at the 2014 Gamma Sigma Delta College of Agriculture Undergraduate Research Showcase, Manhattan, KS.
- **Swanson, B., H.H. Peterson, **C.R. Boyer**, and L.M. Baker. 2014. Social media marketing for locally owned independent garden centers. HortScience 49(9):S18. (Abstr.) [Oral]
- **Boyer, C.R.**, L.M. Baker, and H.H. Peterson. 2014. Social media marketing by garden centers: Findings from a pilot study. HortScience 49(9):S29. (Abstr.) [Oral]
- **Boyer, C.R.**, L.M. Baker, and H.H. Peterson. 2013. Opportunities for social media marketing in retail garden centers. Proc. Southern Nurs. Assoc. Res. Conf. 58:46-51. [Oral]
- *Carmichael, T.R., **C.R. Boyer**, S.L. Warren, C.C. Lavis and J.J. Griffin. 2013. Cyclic irrigation does not overcome low water holding capacity of *Juniperus virginiana*-based substrates for greenhouse production of *Rudbeckia*. HortScience. 48(9):S300. (Abstr.) [Poster]
- *Carmichael, T.R., **C.R. Boyer**, J.J. Griffin and S.L Warren. 2013. Transplant establishment of container-grown plants produced in Eastern Redcedar substrate. HortScience. 48(9):S353-S345. (Abstr.) [Poster]
- **Boyer, C.R.**, J. Smith, D. Pryor, R. St. John, and A. Stevens. 2012. Kansas healthy yards and communities. HortScience 47(7): S26. Abstr.
- **Boyer, C.R.** 2012. Infographics: A novel way to communicate program impact. HortScience 47(7): S3. Abstr.
- **Boyer, C.R.** 2012. Incorporating social media into the conference experience. HortScience 47(7): S55. Abstr.
- *Carmichael, T.R., **C.R. Boyer**, and J.J. Griffin. 2012. Growth of containerized nursery crops in a cedar amended substrate. HortScience 47(7): S166. Abstr.
- *Morales, B.M., C.J. Barden, and **C.R. Boyer**. 2012. Improving germination of red elm (*Ulmus rubra*) seeds with gibberellic acid. Proc. Kansas Natural Resources Conference. p. 21. < <http://www.kansasnrc.org/>>
- *Carmichael, T.R., **C.R. Boyer**, and S.L. Warren. 2012. Effect of irrigation frequency on *Sedum* grown in alternative substrates. Proc. Southern Nurs. Assoc. Res. Conf. 57:2-5.

- *Pool, J., J.J. Griffin, **C.R. Boyer**, S.L. Warren. 2012. Growth comparison of two conifer species in the Great Plains. Proc. Southern Nurs. Assoc. Res. Conf. 57:173-176.
- *Brock, J., J.J. Griffin, and **C.R. Boyer**. 2012. Rooting stem cuttings of woody ornamentals in a cedar amended substrate. Proc. Southern Nurs. Assoc. Res. Conf. 57:284-286.
- *Morales, B., C. Barden, **C. Boyer**, J. Griffin, L. Fisher and J. Thompson. 2012. Improving germination of Red Elm (*Ulmus rubra*), Gray Alder (*Alnus incana*) and Buffaloberry (*Shepherdia canadensis*) seeds with giberellic acid. Proc. Natl. Intertribal Nurs. Council. USDA Forest Service, Proc. RMRS-P-68. <http://www.fs.fed.us/rm/pubs/rmrs_p068/rmrs_p068_093_095.pdf>
- **Boyer, C.R.**, J.E. Altland, J.S. Owen, Jr. 2011. SustainableSubstrates.com: An extension outreach tool. HortScience 46(9):S377. Abstr.
- *Starr, Z.W., **C.R. Boyer**, and J.J. Griffin. 2011. Propagation of chrysanthemum and ivy geranium in redcedar substrate. HortScience 46(9):S395. Abstr.
- *Starr, Z.W., **C.R. Boyer** and J.J. Griffin. 2011. Alternative nursery substrates for the Great Plains: *Maclura pomifera*. HortScience 46(9): S326-S327. Abstr.
- *Pool, J., J.J. Griffin, **C.R. Boyer**, and S.L. Warren. 2011. Root and shoot growth of four field grown conifer species. HortScience 46(9):S322. Abstr.
- *Pool, J., J.J. Griffin, **C.R. Boyer**, and S.L. Warren. 2011. Irrigation frequency affects growth and photosynthetic capacity of four conifer species. Proc. Southern Nurs. Assoc. Res. Conf. 56:374.1-374.4.
- *Starr, Z.W., **C.R. Boyer**, and J.J. Griffin. 2011. Cedar substrate particle size affects growth of container-grown *Rudbeckia*. Proc. Southern Nurs. Assoc. Res. Conf. 56:236-240.
- *Morales, B.M., **C.R. Boyer**, C.J. Barden, and J.J. Griffin. 2010. Improving germination of red elm (*Ulmus rubra*) seeds with gibberellic acid. Proc. Intl. Plant Prop. Soc. 60:535-537.
- *Starr, Z.W., **C.R. Boyer**, and J.J. Griffin. 2010. Growth of *Pistacia chinensis* in a cedar amended substrate. Proc. Intl. Plant Prop. Soc. 60:602-606.
- *Starr, Z.W., **C.R. Boyer**, and J.J. Griffin. 2010. Growth of containerized *Acer saccharinum* from seed in a cedar-amended substrate. HortScience 45:3971. Abstr.
- **Boyer, C.**, J. Owen and J. Altland. 2010. Development of sustainable and alternative substrates for nursery container crops. Proc. Southern Nurs. Assoc. Res. Conf. 55:410-412.

- *Starr, Z., **C. Boyer**, and J. Griffin. 2010. Growth of containerized *Taxodium distichum* in a cedar-amended substrate. Proc. Southern Nurs. Assoc. Res. Conf. 55:344-348.
- **Boyer, C.R.**, T.V. Gallagher, C.H. Gilliam, G.B. Fain, H.A. Torbert, and J.L. Sibley. 2009. Availability of clean chip residual as a growth substrate in the Southeast United States. Proc. Southern Nurs. Assoc. Res. Conf. 54:208-211.
- **Boyer, C.R.**, H.A. Torbert, C.H. Gilliam, G.B. Fain, T.V. Gallagher, and J.L. Sibley. 2008. Physical properties and microbial activity in forest residual substrates. Proc. Southern Nurs. Assoc. Res. Conf. 53:42-45.
- **Boyer, C.R.**, G.B. Fain, C.H. Gilliam, T.V. Gallagher, H.A. Torbert, and J.L. Sibley. 2008. Growth of woody plants in clean chip residual substrate. Georgia Green Industry Assoc. Journal 19:18-22.
- **Boyer, C.R.**, T.V. Gallagher, C.H. Gilliam, G.B. Fain, H.A. Torbert, J.L. Sibley. 2008. Survey of forest residual availability for nursery production in the southeast. HortScience 43: 1126. Abstr.
- **Boyer, C.R.**, G.B. Fain, C.H. Gilliam, J.L. Sibley, T.V. Gallagher, and H.A. Torbert. 2007. Performance of container-grown *Loropetalum* grown in clean chip residual substrate. Proc. Intl. Plant Prop. Soc. 57:685-691.
- **Boyer, C.R.**, G.B. Fain, C.H. Gilliam, T.V. Gallagher, H.A. Torbert, and J.L. Sibley. 2007. Forest residuals: New substrates for container-grown crops. HortScience 42:861. Abstr.
- Ingram, D.M., G.B. Fain, C.H. Gilliam, **C.R. Boyer**, P.M. Hudson, and K.K. Crouse. 2007. Comparison of organic and inorganic substrates in greenhouse tomato production. HortScience 42: 989. Abstr.
- Fain, G.B., C.H. Gilliam, J.L. Sibley, and **C.R. Boyer**. 2007. Production of hardy garden mums in *WholeTree* substrate. Proc. Southern Nurs. Assoc. Res. Conf. 52:498-501.
- **Boyer, C.R.**, G.B. Fain, C.H. Gilliam, H.A. Torbert, T.V. Gallagher, and J.L. Sibley. 2007. Production of *Buddleia davidii* and *Verbena canadensis* in clean chip residual. Proc. Southern Nurs. Assoc. Res. Conf. 52:489-491.
- **Boyer, C.R.**, C.H. Gilliam, G.B. Fain, T. V. Gallagher, H.A. Torbert, and J.L. Sibley. 2007. Clean chip residual amended with composted poultry litter as a substrate for *Lantana camara*. Proc. Southern Nurs. Assoc. Res. Conf. 52:485-488.

- **Boyer, C.R.**, G.B. Fain, C.H. Gilliam, H.A. Torbert, T. V. Gallagher, and J.L. Sibley. 2007. *WholeTree* as a substrate for *Lantana camara*. Proc. Southern Nurs. Assoc. Res. Conf. 52:481-484.
- **Boyer, C.R.**, C.H. Gilliam, G.B. Fain, J.L. Sibley, H.A. Torbert, and T. V. Gallagher. 2007. Lime and micronutrient use in clean chip residual substrate amended with composted poultry litter or peat for use in annual production. Proc. Southern Nurs. Assoc. Res. Conf. 52:76-79.
- **Boyer, C.R.**, G.B. Fain, C.H. Gilliam, T.V. Gallagher, H.A. Torbert, and J.L. Sibley. 2007. Evaluation of clean chip residual and composted poultry litter as a growth substrate for container-grown *Lantana camara*. HortScience 42:454-455. Abstr.
- **Boyer, C.R.**, G.B. Fain, C.H. Gilliam, T.V. Gallagher, H.A. Torbert, and J.L. Sibley. 2007. Clean chip residual (CCR) substrate for container-grown perennials: Effect of supplemental nitrogen rates. HortScience 42:439. Abstr.
- **Boyer, C.R.**, G.B. Fain, C.H. Gilliam, T.V. Gallagher, H.A. Torbert, and J.L. Sibley. 2006. A new substrate for container-grown plants: Clean Chip Residual. Proc. Intl. Plant Prop. Soc. 56:553-559.
- Fain, G.B., C.H. Gilliam, J.L. Sibley, **C.R. Boyer**. 2006. Establishment of greenhouse-grown herbaceous ornamental plants in '*WholeTree*' substrates. Proc. 4th Intl. Symp. on Seed, Transplant, and Stand Establishment of Horticultural Crops. 782:387-393. Abstr.
- **Boyer, C.R.**, G.B. Fain, C.H. Gilliam, H.A. Torbert, T.V. Gallagher, and J.L. Sibley. 2006. A new substrate for container-grown plants: Clean Chip Residual. 33rd Annual Hort. Field Day MSU CREC. 33:23. Abstr.
- Fain, G.B., C.H. Gilliam, J.L. Sibley and **C.R. Boyer**. 2006. Suitability of processed whole pine tree as a substrate component for production of greenhouse crops. Proc. Intl. Plant Prop. Soc. 56:180-187.
- **Boyer, C.R.**, G.B. Fain, C.H. Gilliam, T.V. Gallagher, H.A. Torbert, and J.L. Sibley. 2006. Alternative substrates for bedding plants. Proc. Southern Nurs. Assoc. Res. Conf. 51:22-25.
- Fain, G.B., C.H. Gilliam, J.L. Sibley, and **C.R. Boyer**. 2006. Evaluation of an alternative, sustainable substrate for use in greenhouse crops. Proc. Southern Nurs. Assoc. Res. Conf. 51:651-654.
- **Boyer, C.R.**, G.B. Fain, C.H. Gilliam, T.V. Gallagher, H.A. Torbert, and J.L. Sibley. 2006. Evaluation of freshly chipped pine tree substrate for container-grown *Lantana camara*. HortScience 41:1027. Abstr.

- **Boyer, C.R.** and J.C. Cole. 2005. Anthracnose severity on *Euonymus fortunei* grown on plastic or gravel with or without periodic bleach applications. HortScience 40:875. Abstr.
- **Boyer, C.R.**, J.C. Cole, and K.E. Conway. 2004. Effectiveness of copper sulfate pentahydrate and mancozeb in controlling anthracnose on *Euonymus fortunei*. HortScience 39:791-792. Abstr.

TRADE MAGAZINE ARTICLES

- **Boyer, C.R.** 2018. Strategic new-media marketing is worth the investment. Lawn and Garden Retailer Magazine. April 2018.
- Neier, E.S. and **C.R. Boyer**. 2014. A unique grant program for new community gardens in Kansas. In: Food Justice, special edition, Community Greening Review. American Community Gardening Association 19:9.
<<https://communitygarden.org/wp-content/uploads/2014/10/Greening-Review-2014.pdf>>
- **Boyer, C.R.** 2013. Mixin' it up. Greenhouse Management Magazine. April 2013. P 36-38.

THESES AND DISSERTATIONS

- Luan, Jianqiao. Modernizing Landscape Design Extension Resource. Kansas State University. Manhattan, MS Report.
- Yao, B. 2016. Adoption of New Media Marketing by Nurseries and Garden Centers. Kansas State University, Manhattan, MS Thesis.
- Stebner, S. 2015. Green Growth: An Exploratory Study of Metro and Non-Metro Garden Centers' use of New-Media Marketing. Kansas State University, Manhattan, MS Thesis.
- Carmichael, T.R. 2013. Landscape establishment and irrigation management of ornamental plants grown in Eastern Redcedar substrate. Kansas State Univ., Manhattan, MS Thesis.
- Morales, B.M. 2012. Sexual and asexual propagation of red elm (*Ulmus rubra*), grey alder (*Alnus incana*), and buffaloberry (*Shepherdia canadensis*). Kansas State Univ., Manhattan, MS Thesis.

- Starr, Z.W. 2011. Evaluation of Eastern Redcedar as a substrate for container-grown plant production. Kansas State Univ., Manhattan, MS Thesis.
- **Boyer, C.R.** 2008. Evaluation of clean chip residual as an alternative substrate for container-grown plants. Auburn Univ., Auburn, PhD Diss.
- **Boyer, C.R.** 2005. Nursery production of *Euonymus fortunei*: Chemical and cultural practices for controlling anthracnose. Okla. State Univ., Stillwater, MS Thesis.

GRANTS FUNDED

- Miller, F., B. McCornack, W. Johnson, **C. Boyer**, R. Cloyd, M. Kennelly, W. Upham, S. Zukoff, J. Hoyle, C. Thompson, D. Peterson, C. Rivard, E. DeWolf, S. Duncan, and R. Ruether. 2017-2020. Merging traditional methods with transformative approaches to enhance stakeholder engagement and IPM adoption. USDA NIFA: Crop Protection and Pest Management Program. 3 years. \$872,099.
- **Boyer, C.R.**, L.M. Baker and H.H. Peterson. 2016-2019. Courting the consumer: Social media marketing of farm products. USDA Agricultural Marketing Service, Federal State Marketing Improvement Program. 3 years. \$123,835.
- Hoch, B., C.T. Miller, and **C.R. Boyer**. 2016-2017. Increasing exposure and understanding of horticulture extension resources to horticulture undergraduate students. Kansas State University College of Agriculture Innovations in Teaching, Learning and Assessment Program. 2 years. \$3,100.
- Baker, L.M., **C.R. Boyer** and H.H. Peterson. 2016. New media marketing bootcamp (for green industry businesses). K-State Global Campus New Program Grant. 1 year. \$9,550.
- Miller, F., B. McCornack, E. DeWolf, D. Peterson, **C. Boyer**, R. Cloyd, M. Kennelly, J. Hoyle and W. Upham. 2014-2016. Promoting IPM and enhancing decision making among Kansas stakeholders through innovative programming. USDA NIFA: Crop Protection and Pest Management Program. 3 years. \$834,000. (Boyer \$61,700).
- **Boyer, C.R.** and R.M. Mitchell. 2015. GreenKids: Cultivating sustainability through childhood nature play. Kansas State University Green Action Fund Grant. 6 months. \$10,000.
- Rivard, C., E. Pliakoni, C. Shoemaker, **C. Boyer**, and M. Taylor. 2014. Development of an instrument to document economic impact of fruit and vegetable growers in Kansas. Kansas Dept. of Ag. Specialty Crop Block Grant. 1 year. \$30,387.

- **Boyer, C.R.**, L.M. Baker, and H.H. Peterson. 2013-2015. Social media strategies for rural nurseries and garden centers. USDA Agricultural Marketing Service, Federal State Marketing Improvement Program. 2 years. \$107,160.
- Miller, F., B. McCornack, E. DeWolf, D. Peterson, **C. Boyer**, R. Cloyd, M. Kennelly and W. Upham. 2013. Innovative programming resources for Kansas stakeholders to enhance IPM decisions. USDA NIFA: Extension IPM Coordination and Support Program. \$289,200.
- **Boyer, C.**, C. Rivard, and F. Miller. 2011-2014. Kansas community gardens. Kansas Health Foundation. 3 years, \$546,030.
- **Boyer, C.R.** and J.J. Griffin. 2011. NurseryWorks. Division of Continuing Education new workshop grant. \$3,000.
- **Boyer, C.R.** 2011. Request to bring Ed Gilman (Univ. of Florida) to participate in the ADVANCE Distinguished Lecture Series (for untenured, tenure-track female faculty members). \$1,200.
- Miller, F.L., R.J. Whitworth, E. DeWolf, W. Upham, **C.R. Boyer**, B. McCornack, L.L. Buschman, W.T. Schapaugh Jr., C.M. Smith, and T.W. Phillips. 2010. Extension IPM coordination in Kansas. USDA NIFA: Extension IPM Coordination and Support Program. 3 years. \$273,119. Year 1: \$91,040 (Boyer \$6,000).
- Griffin, J., **C. Boyer**, and M. Kennelly. 2009. Rediscovering conifers in Kansas. Kansas Dept. of Ag. Specialty Crop Block Grant. \$44,688.
- Murphy, J., M. Fisher, **C. Boyer**, and C. Barden. 2009. Culturally important plants: New propagation techniques for declining populations. USDA Tribal Colleges Research Grant Program. \$149,985, K-State portion: \$78,425.
- **Boyer, C.R.**, and J.E. Altland. 2008-13. Development of alternative substrates for container nursery crops. USDA-ARS Cooperative Agreement via the Floriculture and Nursery Research Initiative. Each year; \$125,000, Boyer portion, Year 1: \$29,270; Year 2: \$29,268; Year 3: \$43,902; Year 4: \$43,902; Year 5: \$43,860.
- Gilliam, C.H., G.B. Fain, **C.R. Boyer**, J.L. Sibley, H.A. Torbert, T.V. Gallagher. 2008. Block Grant Alternative Substrates: Effect of fertilizer rate in alternative substrates for container-grown plants; Effect of alternative substrates on production of plants in large containers; On-site demonstration of alternative substrates at nurseries across the Southeast U.S.; Effect of alternative substrate age on woody ornamental plant production. Horticultural Research Institute: 1 year, \$50,000.
- Gilliam, C.H., G.B. Fain, **C.R. Boyer**, A. Witicher, E. Blythe, J. Spiers, T.V. Gallagher, H.A. Torbert, J.L. Sibley. 2008. Block Grant with Auburn University, USDA-ARS

Southern Horticultural Laboratory and Mississippi State University: Evaluation of Forest Residuals for Use in Nursery Crop Production in the Southeast U.S. and Characterization and Supply of Forest Residuals for Use as Horticultural Growth Substrates. Horticultural Research Institute. 1 year, \$75,000.

- Gilliam, C.H., G.B. Fain, **C.R. Boyer**, T.V. Gallagher, H.A. Torbert, and J.L. Sibley. 2007. Alternative substrates for nursery and greenhouse production. ACES/AAES. 1 year. \$52,900.
- Gilliam, C.H., G.B. Fain, T.V. Gallagher, J.L. Sibley, H. A. Torbert, and **C.R. Boyer**. 2006-2009. Development of a value-added forestry in-field harvesting by-product as an alternative media for container nursery crop production. Alabama Agricultural Experiment Station (Ag and Ag-Related Research). Year 1: \$40,000; Year 2: \$40,000; Year 3: \$40,000.
- Gilliam, C.H., J.L. Sibley, H.A. Torbert, G.B. Fain and **C.R. Boyer**. 2006. Development of value-added poultry waste products for use in horticultural industries. Alabama Agricultural Initiatives (Poultry Waste). Year 1: \$68,590. Year 2: \$69,450.
- **Boyer, C.R.**, C.H. Gilliam, and G.B. Fain. 2007. Evaluation of clean chip residual as a growth substrate for container-grown woody ornamentals. Center for Applied Nursery Research. 1 year. \$2,000.
- Gilliam, C.H., **C.R. Boyer**, G.B. Fain, T.V. Gallagher, H.A. Torbert, and J.L. Sibley. 2007. Evaluation of a forestry in-field harvesting by-product as an alternative substrate in containerized nursery crop production. Horticultural Research Institute. 1 year. \$18,500.

GRANTS PENDING

GRANTS APPLIED FOR BUT NOT FUNDED

- Baker, L.M., H.H. Peterson, R.D. Swensen, H.S. Carter, and **C.R. Boyer**. 2018. Graduate studies in science communication: Sharable modules. USDA NIFA Higher Education Challenge Grant Program. 3 years. \$750,000.
- Baker, L.M., H.H. Peterson and **C.R. Boyer**. 2017. Telling your story: Online marketing strategies for rural agricultural producers. USDA AFRI \$500,000.

- Baker, L.M., **C.R. Boyer**, H.H. Peterson, R.D. Swensen, and K.M. Boone. 2017. Partnering to equip agriculturalists with digital communication skills. USDA NIFA Higher Education Challenge Grant Program. 3 years. \$750,000.
- Baker, L.M., **C.R. Boyer** and H.H. Peterson. 2016. Scaling up rural green industries through e-commerce to strengthen communities. U.S. Dept. of Agr., Agr. And Food Res. Initiative Foundational Grant Program—Innovation for Rural Entrepreneurs and Communities priority area. 3 years. \$499,611.
- Williams, K., C. Miller, **C. Boyer**, and S. Harbstreit. 2016. Developing horticulture knowledge modules for high school agriculture teachers that support and leverage FFA career development events. USDA SPECA Challenge Grant. 2 years. \$50,000.
- **Boyer, C.R.**, L.M. Baker, and H.H. Peterson. 2015. Enabling online marketing for nurseries and garden centers: A needs and feasibility assessment of logistics and infrastructure. USDA SCRI Pre-proposal for a planning grant.
- **Boyer, C.R.**, L.M. Baker, and H.H. Peterson. 2015. Courting the consumer: Determining customer preferences for new media marketing in garden centers. Horticulture Research Institute. 1 year. \$45,000.
- Miller, C., K. Williams, **C. Boyer**, and S. Harbstreit. 2015. Developing horticulture knowledge modules for high school agriculture teachers that support and leverage FFA career development events. USDA SPECA Challenge Grant. 2 years. \$50,050.
- Baker, L.M., H.H. Peterson and **C.R. Boyer**. 2015. Seeking the specialty crop consumer: Determining consumer preferences for new media marketing messages. Kansas Department of Agriculture Specialty Crop Block Grant. 1 year. \$45,222.
- Baker, L.M., H.H. Peterson, and **C.R. Boyer**. 2015. Cultivating virtual entrepreneurs: Effective online marketing and communication for farm-based enterprises. USDA AFRI. 3 years. \$176,905
- Griffin, J.J., and **C.R. Boyer**. 2014. Enhancing tree establishment through efficient irrigation. Tree Research and Education Endowment Fund. 3 years. \$99,266.
- Griffin, J.J., **C.R. Boyer**, and H.H. Peterson. 2013. Improving plant quality on retail nursery lots for season-long profits. Horticultural Research Institute. 1 year. \$25,475.
- **Boyer, C.R.**, L.M. Baker, and H.H. Peterson. 2012. Using social media to improve financial sustainability of rural nurseries and garden centers. North Central Region-Sustainable Agriculture Research and Education Pre-Proposal. \$134,236.

- **Boyer, C.R.**, J.J. Griffin, C.T. Miller, G. Davis, and J.R. Pool. 2012. Evaluating ornamental specialty crops for Kansas landscapes: *Viburnum* as hardy shrubs. Kansas Dept. of Ag. Specialty Crop Block Grant. 1 year. \$65,801.
- Griffin, J.J., **C.R. Boyer**, and M.S. Wilson. 2012. Public outreach for the promotion of pines and the prevention of pine wilt. Kansas Dept. of Ag. Specialty Crop Block Grant. 1 year. \$30,221.
- Tosee, M., M. Fisher, W. Welton, C. Barden, J. Griffin, **C. Boyer**. 2012. New propagation techniques for red elm. USDA-NIFA Tribal Colleges Research Grant Program. \$134,680, K-State portion: \$79,980.
- Evans, M.R., M. Mickelbart, M.P. Popp, J.S. Owen, Jr., J.E. Altland, G.B. Fain, C. Kubuta, B.E. Jackson, and **C.R. Boyer**. 2012. Developing a national coordinated vision for specialty crops root substrates research and education. NIFA Specialty Crops Research Initiative. \$50,000.
- **Boyer, C.**, J. Griffin, J. Smith, and R. St.John. 2012. Kansas healthy yards and communities website redesign. Kansas Center for Sustainable Agriculture and Alternative Crops Pilot/Feasibility Project Grants. \$1,675.
- Carmichael, T.R., and **C.R. Boyer**. 2012. Water use efficiency in local, sustainable nursery crop substrates. North Central Region-Sustainable Agriculture Research and Education Graduate Student Grant Program. 1 year. \$10,000.
- Kennelly, M.M., **C.R. Boyer**, R.A. Cloyd, J.J. Griffin, and T.C. Todd. 2012. Integrated research and community outreach for prevention and management of pine wilt. NIFA: North Central Research and Integrated Pest Management. 3 years. \$105,548.
- **Boyer, C.**, F. Miller and C. Rivard. 2011. The 'People's Gardens' of Kansas: Growing new roots for healthy communities. USDA-NIFA People's Garden Grant Program. 2 years, \$150,000.
- Griffin, J., **C. Boyer**, R. Cloyd, and M. Kennelly. 2011. Conifers for Kansas. Kansas Dept. of Ag. Specialty Crop Block Grant. \$49,193.
- Fain, G., J. Altland, J. Owen, **C. Boyer**, E. Blythe, C. Gilliam, S. Leavengood, C. Seavert, D. Sullivan, G. Wehtje, J. Albano, S. Prior, J. Sibley, G. Kirker, B. Jackson, T. Bilderback, J. Julian, H. Mathers, C. Cogger, and R. Hummel. 2011. Development of cost effective, renewable and regional substrates for production of containerized specialty crops. NIFA Specialty Crops Research Initiative. 5 years. Total request: \$4,396,284; Boyer portion: \$388,934.

- Griffin, J., M. Kennelly, and **C. Boyer**. 2010. Do preventative fungicide applications affect the rooting of stem cuttings? Horticultural Research Institute. 1 year. \$26,230.
- Fain, G., J. Altland, J. Owen, **C. Boyer**, E. Blythe, C. Gilliam, S. Leavengood, C. Landgren, T. Rinehart, C. Seavert, D. Sullivan, and G. Wehtje. 2010. Development of cost effective, renewable and regional substrates for production of containerized specialty crops. NIFA Specialty Crops Research Initiative. 5 years. Total request: \$4,183,871; Boyer portion: \$316,101.
- Kennelly, M.M., **C.R. Boyer**, R.A. Cloyd, J.J. Griffin, and T.C. Todd. 2009. Integrated research and community outreach for prevention and management of pine wilt. NIFA: North Central Research and Integrated Pest Management. 3 years. \$142,137.
- **Boyer, C.**, J. Griffin, S. Warren, and K. Williams. 2009. Investigation of Eastern Red Cedar as a substrate for ornamental nursery crops. Horticultural Research Institute. 1 year. \$25,092.
- Kennelly, M.M., J. Griffin, **C. Boyer**, and L. Brannon. 2009. Do preventative fungicide applications affect the rooting of stem cuttings? Horticultural Research Institute. 1 year. \$20,600.
- Fain, G., J. Altland, J. Owen, E. Blythe, T. Bilderback, **C. Boyer**, L. Brannon, C. Gilliam, T. Gallagher, C. Krause, J. Griffin, S. Leavengood, C. Landgren, T. Rinehart, B. Shindler, C. Seavert, D. Sullivan, J. Sibley, K. Williams, and G. Wehtje. 2009. Sustainable nursery and greenhouse growing substrates produced from regional biomass. CSREES Specialty Crops Research Initiative. 5 years. Federal request \$3,932,801. K-State portion: \$557,753.
- Griffin, J., **C. Boyer**, and S. Warren. 2009. Diversified substrates for Kansas nursery growers. Kansas Dept. of Ag. Specialty Crop Block Grant. \$21,256.
- Griffin, J., **C. Boyer**, and S. Warren. 2008. Propagation and production of Kansas native species for the nursery industry. Kansas Dept. of Ag. Specialty Crop Block Grant. 1 year. \$48,290.
- Fain, G., C. Gilliam, J. Altland, **C. Boyer**, J. Sibley, E. Blythe, T. Rinehart, and T. Gallagher. 2008. Development and commercial usage of sustainable nursery and greenhouse growing substrates produced from underutilized forestry biomass. USDA-ARS Specialty Crop Research Initiative. 4 years. Total request: \$1,000,000. Boyer portion: \$60,000 (\$15,000 per year).

- Gilliam, C.H., G.B. Fain, **C.R. Boyer**, T.V. Gallagher, H.A. Torbert, and J.L. Sibley. 2009. Alternative substrates for nursery production. AAES. Requested 2 years. \$149,496.
- Gilliam, C.H., J.L. Sibley, H.A. Torbert, G.B. Fain and **C.R. Boyer**. 2009. Development of value-added poultry waste products for use in horticultural industries. AAES. Requested 2 years. \$166,486.
- Fain, G.B., C.H. Gilliam, and **C.R. Boyer**. 2007. Evaluation of consumer preference for nursery crops grown in forest residuals. Horticultural Research Institute. 1 year. \$22,000.
- Gallagher, T.V., G.B. Fain, C.H. Gilliam, J.L. Sibley, H.A. Torbert and **C.R. Boyer**. 2007. *WholeTree* substrate for nursery and greenhouse production. AAES McIntire-Stennis. 3 years: \$50,000 each year, total of \$150,000.
- Gilliam, C.H., T.V. Gallagher, J.L. Sibley, and **C.R. Boyer**. 2006. Equipment Grant: Development of a value-added forestry in-field harvesting by-product as an alternative media for container nursery crop production. Alabama Agricultural Experiment Station (Ag and Ag-Related Research). \$26,426.
- Gilliam, C.H., T.V. Gallagher, J.L. Sibley, G.B. Fain, H.A. Torbert and **C.R. Boyer**. 2006. Clean chip residual: A cost saving substrate for nursery crop producers. Alabama Agricultural Experiment Station. 3 years. \$143,122.
- Gilliam, C.H., T.V. Gallagher, J.L. Sibley, G.B. Fain, H.A. Torbert, and **C.R. Boyer**. 2006. Development of a value added forestry in-field harvesting by-product as an alternative media for container nursery crop production. Sustainable Agriculture Research and Education (SARE). 3 years. \$227,200.

GRADUATE STUDENTS ADVISED (MAJOR PROFESSOR)

- **Andrés León-Reyes**. Summer 2018-present. Parks Management and Conservation. Kansas State University, Manhattan, PhD Dissertation.
- **Jianqiao Luan**, 2018. (Co-Advised with Dr. Greg Davis) Revision of Extension Landscape Design Resources. Kansas State University, Manhattan, MS report.
- **Scott Stebner**. 2015. (Co-advised with Dr. Lauri Baker, Dept. of Agricultural Communications) Green Growth: An Exploratory Study of Metro and Non-Metro Garden Centers' use of New-Media Marketing. Kansas State University, Manhattan, MS Thesis.

- **Joshua Pool.** Summer 2012-present. Landscape Ornamentals for Kansas. Kansas State University, Manhattan, PhD Dissertation.
- **Travis Carmichael.** 2013. Landscape establishment and irrigation management of ornamental plants grown in eastern redcedar substrate. Kansas State University, Manhattan, MS Thesis.
- **Brenda Michelle Rivera Morales.** 2012. Culturally important plants: New propagation techniques for declining populations. Kansas State University, Manhattan, MS Thesis.
- **Zachariah Starr.** 2011. Growth of containerized ornamental plants in cedar-amended potting substrates. Kansas State University, Manhattan, MS Thesis.

GRADUATE STUDENTS ADVISED (COMMITTEE MEMBER)

- **Karen Schneck.** Spring 2019-present. Horticulture. Kansas State University, Manhattan, MS Thesis.
- **Ernest Jones.** Fall 2018-present. Agricultural Communications. Kansas State University, Manhattan, MS Thesis.
- **Dani Dagan.** Summer 2018-present. Parks Management and Conservation. Kansas State University, Manhattan, MS Thesis.
- **Marisol Mayorga.** Summer 2018-present. Parks Management and Conservation. Kansas State University, Manhattan, PhD Dissertation.
- **Anissa Zagonel.** Spring 2018-present. Agricultural Communications. Kansas State University, Manhattan, MS Thesis.
- **Jesse Gilmore.** Spring 2018-present. Horticulture—Urban Food Systems. Kansas State University, Manhattan, MS Report.
- **Deanna Reid.** Fall 2017 to present. Agricultural Communications. Kansas State University, Manhattan, MS Thesis.
- **Lindsay Stucki.** Fall 2016 to Spring 2017. Landscape Architecture. Kansas State University, Manhattan, MS Thesis.
- **Raul Jefferson Osorio Morillo.** 2017. GIS Approach to Estimate Windbreak Crop Yield Effects in Kansas-Nebraska. Kansas State University, Manhattan. MS Thesis.
- **Ryan Armbrust.** Fall 2014-present. Propagation of Male Eastern Redcedar from Cuttings. Kansas State University, Manhattan. MS Report.

- **Molly Fusselman.** Spring 2014-present. Growing Growers survey. Kansas State University, Olathe, MS Thesis. DNF
- **Matthew Wilson.** 2016. Explorations of Pine Wilt Disease Management in Kansas and Use of Virtual Maps as a Study Tool for Teaching Plant Identification Courses. Kansas State University, Manhattan, PhD Dissertation.
- **Becatien Yao.** 2016. Adoption of New Media Marketing by Nurseries and Garden Centers. Kansas State University, Manhattan, MS Thesis.
- **Justin Brock.** 2014. Rooting Stem Cuttings of Shantung Maple (*Acer truncatum*), Mound Layering Shantung and Caddo Sugar Maples (*Acer saccharum*), and Using Eastern Redcedar (*Juniperus virginiana*) as a Substrate Component in Stem Cutting Propagation. Kansas State University, Manhttan, MS Thesis.
- **Joshua Pool.** 2012. Rediscovering conifers in Kansas. Kansas State University, Manhattan, MS Thesis.
- **John Markham III.** 2010. Color and shading of containers affects root-zone temperatures and growth of nursery plants. Kansas State University, Manhattan, MS Thesis.

HONORS & AWARDS

- Gamma Sigma Delta **Excellence in Extension Award (2017)**
- **K-State Research and Extension Team Award (2014)**
 - **Community Garden Team: C. Boyer,** C. Dipman, C. Marr, F. Miller, E. Neier, C. Rivard
 - **Extension Integrated Pest Management Team: C. Boyer,** R. Cloyd, E. DeWolf, R. Dremsa, S. Duncan, J. Hoyle, W. Johnson, M. Kennelly, B. McCornack, F. Miller, D. Peterson, J. Shroyer, C. Thompson, W. Upham, J. Whitworth, S. Zuckoff
- American Society for Horticultural Science Extension Division Award for **Outstanding Leaflet (Use of Root-Promoting Products for Vegetative Propagation of Nursery Crops; 2014; co-authors E.K. Blythe, J.J. Griffin, and B.M. Morales)**
- American Society for Horticultural Science—Southern Region: **2014 John E. Hutchinson Extension Award for Young Professionals**
- **2012 Communicator of the Year** from the KSRE Department of Communications and the Association for Communication Excellence in Agriculture, Natural Resources, and Life and Human Sciences.

- American Society for Horticultural Science Extension Division Award for **Outstanding Website (SustainableSubstrates.com)**; 2012; co-authors J.E. Altland and J.S. Owen, Jr)
- Gamma Sigma Delta **Early Career Award** (2012)
- Epsilon Sigma Phi **Horizon Award (State)**; 2011)
- University Professional Continuing Education Association Central Region **Innovative Program Award** for NurseryWorks (2011)
- Epsilon Sigma Phi **Horizon Award** (2011)
- **Auburn University Top Ten Outstanding Doctoral Student Award** (2007)
- **1st Place**: Ph.D. Student Oral Competition, ASHS-SR Annual Meeting, Mobile, AL. (2007)
- **Best Graduate Poster**: Graduate Student Poster Competition, ASHS-SR Annual Meeting, Mobile, AL. (2007)
- **1st Place**: Student Paper/Oral Competition, International Plant Propagator's Society-Southern Region (IPPS) annual meeting, Charlotte, NC. (2006)
- **1st Place**: Ph.D. Student Paper/Oral Competition, Southern Nurserymen's Association (SNA) Annual Research Conference, Atlanta, GA. (2006)
- **3rd Place**: Graduate Student Poster Competition, American Society for Horticultural Science (ASHS) annual meeting, New Orleans, LA. (2006)
- OSU College of Agricultural Sciences and Natural Resources **Top Ten Senior** (2003)
- Moesel **Top GPA Senior Award**, Horticulture & Landscape Architecture Department, OSU (2002)
- **National Collegiate Architecture and Design Award**, Oklahoma State University (2002)
- OSU Leadership Conclave (1998)

PROFESSIONAL AFFILIATIONS

- International Plant Propagators' Society, 2009-present
- American Society for Horticultural Science, 2003-present.
- American Society for Horticultural Science, Southern Region, 2003-present.
- Southern Nurseryman's Association (2011-present)
- Sigma Xi, 2005-present.
- Epsilon Sigma Phi, 2009-present
- Gamma Sigma Delta, 2010-present
- Sigma Lambda Alpha (Landscape Architecture) (Inducted 2002)

- Phi Kappa Phi (Inducted 2001)
- Golden Key International Honor Society (Inducted 2001)
- Pi Alpha Xi (Horticulture) (Inducted 2000)
- National Society of Collegiate Scholars (Inducted 2000)
- Alpha Zeta (Agriculture Student) (Inducted 1999)
- Phi Eta Sigma (Freshman) (Inducted 1998)