BRENDA V. ORTIZ
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Dr. Brenda Ortiz is a Professor at Auburn University. She has an extension and research appointment in the area of Precision Agriculture. Her Ph.D. is in Agricultural Engineering from The University of Georgia. She has a 75% extension appointment and 25 research appointment. She is the leader of the statewide Precision Agriculture Extension Program in the College of Agriculture. Her main research and extension focus include: the evaluation of site specific management practices with the use of precision agriculture technologies, the evaluation of precision agriculture technologies for variable rate application of inputs (e.g., water, nutrient, seed), on-farm demonstration of precision irrigation strategies and technologies, the study and evaluation of technologies and methodologies to assess within-field soil, crop and yield variability, the study of the impact of weather and climate on agriculture especially corn and wheat crops, identification of adaptation strategies to reduce climate-related risk in agriculture, the use of field studies and crop growth simulation modeling to evaluate different management strategies for improving grain production.

EDUCATION

Ph.D. Biological and Agricultural Engineering. **The University of Georgia**. 2008

B.S. Agricultural Engineering. **Universidad Nacional de Colombia and Universidad del Valle, Colombia.** 1997

PROFESSIONAL EXPERIENCE

Auburn University, Auburn, AL – October 2019 -
Professor –Precision Agriculture Specialist, Crop, Soil and Environmental Sciences Department.

Auburn University, Auburn, AL, November 2008 – September 2019
Associate professor –Precision Agriculture Specialist, Crop, Soil and Environmental Sciences Department.

The University of Georgia, Athens, GA, August 2004-October 2008
Research Assistant, Department of Biological and Agricultural Engineering.

Colombian Sugar Cane Research Center - Centro de Investigación de la Caña de Azúcar de Colombia, CENICAÑA, August 1997-August 2004
Research Assistant, Geographic Information System area.

PUBLICATIONS

Referred Journal Articles (*Graduate student/PostDoctoral Fellow)

- *Jimenez, A-F., **B. V. Ortiz**, L. Bondesan, G. Morata. D. Damianidis. 2020. Evaluation of two recurrent neural network methods for prediction of irrigation rate and timing. Transactions of the ASABE. 63(5): 1327-1348. (doi: 10.13031/trans.13765) - **2021 ASABE Superior Paper**

- *Lena, B. P., L. Bondesan, E. A. R. Pinheiro, **B. V. Ortiz**, G. Morata, H. Kumar. 2022. Determination of irrigation scheduling thresholds based on HYDRUS-1D simulations of field capacity for multilayered agronomic soils in AL, USA. *Agricultural Water Management*. Vol 259, Jan 2022. https://doi.org/10.1016/j.agwat.2021.107234

- *Kumar, H., P. Srivastava, **B.V. Ortiz**, G. Morata, B.S., Takhellambam, J. Lamba, L. Bondesan. 2021. Field-scale spatial and temporal soil water variability in irrigated croplands. *Transactions of ASABE.* Vol. 64(4): 1277-1294

- Kerry, R., B. Ingram, E. Garcia-Cela, N. Magan, **B. V. Ortiz** and B.Scully. 2021. Determining Future Aflatoxin Contamination Risk Scenarios for Corn in Southern Georgia, USA using Spatio-temporal Modelling and Future Climate Simulations. Scientific Reports. DOI: 10.21203/rs.3.rs-152995/v1

- *Jimenez, A-F., **B. V. Ortiz**, L. Bondesan, G. Morata. 2020. Long short-term memory neural network for irrigation management: a case study from Southern Alabama, USA. Precision Agriculture. https://doi.org/10.1007/s11119-020-09753-z

- *Lena, B., **B. V. Ortiz**, A-F. Jimenez, A. Sanz-Saez, S. O'Shaughnessy, M. K. Durstock, G. Pate. 2020. Evaluation of infrared canopy temperature data in relation to soil water-based irrigation scheduling in a humid subtropical climate. Transactions of the ASABE. 63(5): 1217-1231

- D. R. Rudnick, M. Stockton, S. Taghvaeian, J. Warren, M. D. Dukes, A. Kremen, C. G. Henry, J. Aguilar, B. Ortiz, A. Andales, C. A. Burr, X. Qiao, W. Liang, S. Walthour, S. H. Amosson. 2020. Innovative Extension Methods in the U.S. to promote irrigation water management. Transactions of ASABE.63(5): 1549-1558. (doi: 10.13031/trans.13929) - **2021 ASABE Superior Paper**

- *Filho, JFDCL, **B. V. Ortiz**, K. Balkcom, D. Damianidis, T. J. Knappenberger, M. Dougherty. 2020. Evaluation of Two Irrigation Scheduling Methods and Nitrogen Rates on Corn Production in Alabama. International Journal of Agronomy Volume 2020, Article ID 8869383, 13 pages https://doi.org/10.1155/2020/8869383.

- *Filho, JFDCL, **B. V. Ortiz**, D. Damianidis, K. Balkcom, M. Dougherty, T. J. Knappenberger. 2020. Irrigation Scheduling to Promote Corn Productivity in Central Alabama. Journal of Agricultural Science; Vol. 12, No. 9; 2020

- Poncet, A. M., T. Knappenberger, C. Brodbeck, M. Fogle, J. N Shaw, **B. V. Ortiz**. 2019. Multispectral UAS Data Accuracy for Different Radiometric Calibration Methods. Remote Sensing. Vol 11(16): 1917

- *Damianidis, D., **B. V. Ortiz,** G. Windham, K. l. Bowen, G. Hoogemboom, B. T. Scully, A. Hagan, T. Knapenberger, P. Woli, W. P. Williams. 2018. Evaluating a generic drought index as a predictive tool for aflatoxin contamination of corn: From plot to regional level. *Crop Protection*. 113: 64-74. https://doi.org/10.1016/j.cropro.2018.07.013. (50%)

- Eunhye Yoo, Ruth Kerry, Ben Ingram, **B V. Ortiz**, Brian Scully. 2018. Defining and Characterizing Aflatoxin Contamination Risk Areas for Corn in Georgia, USA: Adjusting for Collinearity and Spatial Correlation. *Spatial Statistics*. In Press. Available online 2 July 2018. https://doi.org/10.1016/j.spasta.2018.06.003. (15%)

- *Damianos Damianidis; **B V. Ortiz**; Kira Bowen; Gary Windham; Gerrit Hoogenboom; Austin Hagan; Thorsten Knappenberger; Hamed Abbas; Brian Scully; Spyridon Mourtzinis. 2018. Minimum temperature, rainfall and agronomic management impacts on corn grain aflatoxin contamination. Agronomy Journal. 110(5):1697–1708**.** doi: 10.2134/agronj2017.11.0628; Date posted: May 12, 2018

- Kerry, R., **B. V. Ortiz**, B. R. Ingram, B. T. Scully. 2016. A Spatio-Temporal investigation of risk factors for aflatoxin contamination of corn in southern Georgia, USA using geostatistical methods. Crop Protection 94:144–158; http://dx.doi.org/10.1016/j.cropro.2016.12.005

- *Mourtzinis, S., **B. V. Ortiz**, D. Damianidis. 2016. Climate Change and ENSO Effects on Southeastern US Climate Patterns and Maize Yield. Scientific Reports (Journal of Nature). **6**, 29777; doi: 10.1038/srep29777.

- *Sarkar, R., **B. V. Ortiz**, K. Balkcom. 2015. Strategic adaptation of nitrogen management for El Nino Southern Oscillation-induced winter wheat systems. Mitigation and Adaptation Strategies for Global Change. DOI 10.1007/s11027-015-9676-6

- *Woli, P, **B. V. Ortiz**, J. Johnson, G. Hoogenboom. 2015. El Niño-Southern Oscillation effects on winter wheat in the southeastern USA. 2015. Agronomy Journal 107:2193–2204

- Tian, D., S. Asseng, C. J. Martinez, V. Misra, D. Cammarano, **B. V. Ortiz**. 2015. Does decadal climate variation influence wheat and maize production in the southeast USA? Agricultural and Forest Meteorology 204, 1–9

- Bowen, K. L., K. L. Flanders, A. K. Hagan, **B. Ortiz**. 2014. Insect damage, aflatoxin content and yield of Bt corn in Alabama. Journal of Economic Entomology 2014 107 (5): 1818-1827 doi: 10.1603/EC13442

- Vellidis, G., **B. Ortiz**, J. Beasley, R. Hill, H. Henry, H. Brannen. 2014. Reducing Digging Losses by Using Automated Steering to Plant and Invert Peanuts. Agronomy 4(3), 337-348; doi:10.3390/agronomy4030337

- *Torino, M. S., **B.V. Ortiz**, J. P. Fulton, K. S. Balkcom, and C. W. Wood. 2014. Evaluation of Vegetation Indices for Early Assessment of Corn Status and Yield Potential in the Southeastern United States. *Agronomy Journal* 106:1389–1401. doi:10.2134/agronj13.0578.

- *Woli, P., **B.V. Ortiz**, D. Buntin, K. Flanders. 2014. El Niño-Southern Oscillation (ENSO) Effects on Hessian Fly (Diptera: Cecidomyiidae) Infestation in the Southeastern USA. Environmental Entomology Journal. **doi:** http://dx.doi.org/10.1603/EN14032

- **Ortiz, B. V.,** K. B. Balkcom, L. Duzy, E. van Santen, D. L. Hartzog. 2013. Evaluation of agronomic and economic benefits of using RTK-based autoguidance systems on peanut production. *Journal of Precision Agriculture* 14(4): 357-375. DOI 10.1007/s11119-012-9297-y

- *Tapley, M., **B. V. Ortiz,** and E. van Santen. 2013. Location, Seeding Date, and Variety Interactions on Winter Wheat Yield in the Southeast USA. *Agronomy Journal* 105:509-518. doi:10.2134/agronj2012.0379

- Cammarano, D., L. Stefanova, **B. Ortiz**, M. R. Rodrigues, S. Asseng, G. Vellidis, V. Misra, G. Wilkerson, B. Basso, J. W. Jones, K. Boote. 2013. Evaluating the fidelity of downscaled climate data on simulated wheat and maize production in the southeastern US. *Regional Environmental Change Journal.* Published online: 06 February, 2013. DOI 10.1007/s10113-013-0410-1.

- Bartels, W., C.A., Furman, D.C., Diehl, F.S., Royce, D.R., Dourte, **B.**, **Ortiz,** D., Zierden, T.A., Irani, C., Fraisse, and J., Jones. 2012. Warming up to climate change: A participatory approach to engaging with agricultural stakeholders in the Southeast US. *Journal of Regional Environmental Change.* Published online: *November 2012.* DOI 10.1007/s10113-012-0371-9

- **Ortiz, B. V.,** D. G. Sullivan, C. Perry, P. Lu, R. Kemerait, R. F .Davis, A. Smith, G. Vellidis, R. Nicholds. 2012. Variable Rate Application of Nematicides on cotton Fields: A Promising Site-Specific Management Strategy. Journal of Nematology 44(1): 31-39.

- Mourtzinis, F., F. J. Arriaga, K. S. Balkcom, **B. V. Ortiz**. 2013. Corn Grain and Stover Yield Prediction at R1 Growth Stage. *Agronomy Journal* 105:1045-1050.

- Davis, R. F., S. K. Aryal, C. D. Perry, D. G. Sullivan, P. Timper, **B. V. Ortiz**, K. L. Stevenson, G. Vellidis, and G. Hawkins. 2013. Utilizing Management Zones for *Rotylenchulus reniformis* in Cotton: effects on nematode levels, crop damage, and *Pasteuria* sp. *Journal of Crop Protection* 50:53-60.

- **Ortiz, B. V.,** D. G. Sullivan, C. Perry, G. Vellidis. 2011. Delineation of management zones for southern root-knot nematode using fuzzy clustering of terrain and edaphic field characteristics. *Communications in Soil Science and Plant Analysis journal* 42(16): 1972-1994.

- **Ortiz, B. V**., S. Thomson, Huang, Y., K. N. Reddy, W. Ding. 2011. Determination of differences in crop injury from aerial application of glyphosate using vegetation indices. *Computers and Electronics in Agriculture* 77:204-213

- Persson, T., **Ortiz, B.**, D. Bransby, S. Sladden, W. Wu, G. Hoogenboom. 2011. Determining the impact of climate and soil variability on switchgrass (Panicum virgatum L.) production in the southeastern USA; a simulation study. *Biofuels, Bioproducts & Bioenergy journal* (DOI: 10.1002/bbb.288).

- **Ortiz, B. V.,** C. Perry, G. Vellidis, D. G. Sullivan. 2010. Geostatistical modeling of the spatial variability and risk areas of southern root-knot nematodes in relation to soil properties. Geoderma 156:243-252

- Persson, T., A. Garcia y Garcia, J. Paz, **B.V. Ortiz**, G. Hoogemboom. 2010. Simulating the production potential and net energy yield of maize-ethanol in the southeastern USA. European Journal of Agronomy 32:272-279

- Huang, Y., S. Thomson, **B. V. Ortiz,** K. N. Reddy, W. Ding, R.M. Zablotowicz, and J. R. Bright. 2010. Airborne Remote Sensing Assessment of the Damage to Cotton Caused by Spray Drift from Aerially Applied Glyphosate through Spray Deposition Measurements. *Biosystems Engineering* 107:212-220

- **Ortiz, B. V.,** G. Hoogenboom, G. Vellidis, K. Boote, R. F. Davis, C. Perry. 2009. Adapting the CROPGRO cotton model to simulate cotton biomass and yield under southern root-knot nematode parasitism. *Transactions of ASABE* 52(6):2129-2140.

- Van Etten ML, L.B. Prevost, A.C. Deen, **B. V. Ortiz**, L.A. Donovan, S-M. Chang. 2008. Gender differences in reproductive and physiological traits in a gynodioecious species, *Geranium maculatum* (Geraniaceae). *International Journal of Plant Sciences* 169 (2).

Extension Publications

- **Ortiz, B. V**., B. P. Lena, G. Morata, L. Bondesan, Pereira De Oliveira, L., J. Oldag, A F. Jimenez-Lopez, H. Kumar, K. Balkcom, G. Pate, A. Sanz-Saez. 2020. DigitalAg@Farms – 2019 report. Alabama Cooperative Extenison System. 27p (prepared in 2020, published on Jan. 2021).

- Morata, G., B. Goodrich, **B. V. Ortiz**. 2019. Investment Costs of Center Pivot Irrigation in Alabama – Three Scenarios. ANR-2541. Alabama Cooperative Extension System. https://www.aces.edu/blog/topics/crop-production/investment-costs-of-center-pivot-irrigation-in-alabama-three-scenarios/

- **Ortiz, B**., A. Hagan, R. Kemerait, K. Flanders, S. Tubs, S. Monfort, M. Abney, E. Sikora, D. Buntin, D. Delaney, D. Monks, W. Birdsong, D. Wright, J. Johnson, K. Balkcom, J. Langcuster. 2016. Climate and Crops – Adapting crops to a variable Climate. iBook. Publisher: Alabama Cooperative Extension System. 129 p.

- Woli, P; **Ortiz, B.**, K. Flanders, A. Hagan, B. Kemerait, D. Wright. 2014. Adapting Corn Production to climate in Alabama. ANR-2090. http://www.aces.edu/pubs/docs/A/ANR-2090/ANR-2090.pdf

- Woli, P; **Ortiz, B.**, K. Flanders, A. Hagan, B. Kemerait, D. Wright. 2014. Adapting Wheat Production to climate in Alabama. ANR-2046. http://www.aces.edu/pubs/docs/A/ANR-2046/ANR-2046.pdf

- Woli, P; **Ortiz, B.** 2014. El Niño-Southern Oscillation and its Impact on Alabama's Climate. ANR-2091. http://www.aces.edu/pubs/docs/A/ANR-2091/ANR-2091.pdf

- Woli, P; **Ortiz, B.**, K. Flanders, A. Hagan, B. Kemerait, D. Wright. 2013. Adapting Corn Production to climate in the Southeast. http://www.agroclimate.org/seclimate/wp-content/uploads/2013/07/Corn-Production-and-Climate-Variability.pdf

- Woli, P; **Ortiz, B.**, K. Flanders, A. Hagan, B. Kemerait, D. Wright. 2013. Adapting Wheat Production to climate in the Southeast. http://www.agroclimate.org/seclimate/wp-content/uploads/2013/07/Wheat-Production-and-Climate-Variability.pdf

- **Ortiz, B.**, C. Burmester, K. Balkcom, D. Delaney, C. Mitchell, M. Patterson, K. Flanders, A. Hagan, J. P. Fulton, and M. Runge. 2012-2013 Alabama Winter Wheat Production Guide. Alabama Cooperative Extension System. ANR-0992. 41 p. http://www.aces.edu/pubs/docs/A/ANR-0992/ANR-0992.pdf

- Sarkar, R., **B. V. Ortiz,** V. Sharda, P. Srisvastava. 2012. The ABCs of Climate Variability. Alabama Cooperative Extension System. ANR-1437. 4p**.**

- **Ortiz, B. V.**, M. Tapley, E. van Santen. Planting Date and Variety Selection effects on Wheat Yield. **2012.** Alabama Cooperative Extension System. ANR-1442. 4p**.**

- **Ortiz, B. V.,** C. Burmester, K. Balkcom, D. Delaney, C. Mitchell, M. Patterson, K. Flanders, A. Hagan, J. Fulton, M. Runge**.** 2012-2013 Alabama Winter Wheat Production Guide. Alabama Cooperative Extension System. ANR-0992. 43p**.**

- **Ortiz, B. V.**, J. Shaw, J. Fulton. 2011. Basis of Crop Sensing. ACES publication ANR-1352. 6p.

Extension Digital Irrigation Newsletter

- As part of the Alabama Irrigation Extension Program, 14 digital newsletters were prepared in 2020. https://www.aces.edu/blog/topics/farming/alabama-irrigation-management-newsletter/

Abstracts - Proceedings / Conference papers / Posters

Pereira de Oliveira, L., B. V. Ortiz, R. Pereira da Silva, K. Balkcom, G. Pate, M. Oliveira. 2020. Impact of Hydraulic Downforce on Cotton Crop and Soil Properties after Planting. ***In*** Proceedings of ASA, CSSA and SSSA International Annual Meetings in Virtual Meeting. November 9-13, 2020.

Oliveira, M., B. V. Ortiz, R. Pereira da Silva, G. Morata, A-F Jimenez Lopez. 2020. Can we improve the accuracy of corn yield forecasting using the concept of management zones through machine learning models? ***In*** Proceedings of ASA, CSSA and SSSA International Annual Meetings in Virtual Meeting. November 9-13, 2020. (Poster)

Ortiz, B. V., G. Morata, L. Bondesan, B. P. Lena, H. Kumar, Jasmeet Lamba, P. Srivastava, T. B. Raper. 2020. Putting Irrigation Technology into the hands of Alabama Farmers. ***In*** Proceedings of ASA, CSSA and SSSA International Annual Meetings in Virtual Meeting. November 9-13, 2020.

Massey, P. and B. V. Ortiz. 2020. Training Farmers to Utilize Soil Sensor Data and Variable Rate Irrigation to Increase Crop Yield and Decrease Irrigation Water Use. ***In*** Proceedings of ASA, CSSA and SSSA International Annual Meetings in Virtual Meeting. November 9-13, 2020. Undergraduate Poster.

Thurmond, M., B. V. Ortiz, P. Massey, H. Whatley, T. Stephenson, B Mason, B. P. Lena. 2020. Undergraduate students and their efforts towards informing Alabama farmers of innovative irrigation management practices. ***In*** Proceedings of ASA, CSSA and SSSA International Annual Meetings in Virtual Meeting. November 9-13, 2020. Undergraduate Poster.

Kumar, H., Srivastava, P., Ortiz, B. V., Takhellambam, B. S., Morata, G., Bondesan, L., Lamba, J. (2020). Spatiotemporal Soil Moisture Variability in Corn and Cotton Fields with Uniform Irrigation During the Growing Season. AGU Fall meeting, December 1-17, 2020. *Conference proceedings poster.*

Bondesan, L., **B. V. Ortiz**, G. T. Morata, D. Damianidis, A. F. Jimenez, G. Vellidis, F. Morari. 2019. Evaluating and improving soil sensor-based variable irrigation scheduling on farmers' fields in Alabama. In: J.A. Taylor (Ed.), Precision Agriculture'19 – *Proceedings of the 12th European Conference on Precision Agriculture (ECPA2019)*, Montpellier, FR *(peer reviewed paper).*

Jimenez, A-F., **B. V. Ortiz**, L. Bondesan, G. T. Morata, D. Damianidis. 2019. Artificial Neural Networks for irrigation management: a case study from Southern Alabama, USA. In: J.A. Taylor (Ed.), Precision Agriculture'19 – *Proceedings of the 12th European Conference on Precision Agriculture (ECPA2019)*, Montpellier, FR *(peer reviewed paper).*

Ortiz, B. V., A. Hagan, R. C. Kemerait, K. Flanders, S. Tubbs, D. Monks, W. S. Monfort, M. Abney, W. Birdsong, D. Wright, D. Zierden, E. Sikora, D. P. Delaney, D. Buntin, J. Johnson, K. Balkcom, A. Majundar. 2017. Helping Southeast Us Farmers To Adapt To Climate Variability: A Climate Ibook. In Proceedings of the International Congress of Agricultural Sciences – AGROCIENCIAS. Havana, Cuba, 20-24 November, 2017.

Ortiz, B. V., F. Morlin, C. Brodbeck. Exploring the use of Canopy Temperature for irrigation Scheduling. American Society of Agronomy Meeting. Tampa, Florida. 22-25 October, 2017.

Del Corso, M., **B. V. Ortiz**, and C. Brodbeck. Study of Irrigation and Nitrogen Rate Impact on Corn Yield and Spectral Reflectance in Alabama. American Society of Agronomy Meeting. Tampa, Florida. 22-25 October, 2017.

Kerry, R., B. R. Ingram**,** F. Navarro, **B. V.Ortiz**, B. T. Scully. 2017. Determining Corn Aflatoxin Risk within Counties in Southern Georgia using Remotely Sensed Data, USA**.** In: J.A. Taylor (Ed.), Precision Agriculture'17 – *Proceedings of the 11th European Conference on Precision Agriculture (ECPA2017)*, Edinburgh, Scotland *(peer reviewed paper).*

Felipe, N., B. R. Ingram**,** R. Kerry, **B. V.Ortiz**, , B. T. Scully. 2017. A Web-based GIS Decision Support Tool for Determining Corn Aflatoxin Risk: A Case Study Data from Southern Georgia, USA. In: J. A. Taylor (Ed.), Precision Agriculture'17 – *Proceedings of the 11th European Conference on Precision Agriculture (ECPA2017)*, Edinburgh, Scotland *(peer reviewed paper).*

Ortiz, B. V., W. Bartels, C. Fraisse, D. Zierden. 2017. Increasing agricultural production and resilience through data services and decision support systems. INFORMS Conference. (Invited Presentation). Houston, Texas. October 23-26, 2017.

Ortiz, B. V., A. Hagan, R. C. Kemerait, K. Flanders, S. Tubbs, W. S. Monfort, M. Abney, E. Sikora, D. Buntin, D. P. Delaney, D. Monks, W. Birdsong, D. Wright, D, J. Johnson, K. Balkcom. 2017. Climate and Crops iBook – A resource to help Southeast farming adapting to a Variable Climate. In Proceedings of the Beltwide Cotton Conference. Dallas, Texas. 4-6, January, 2017.

Ortiz, B. V., M. Del Corso, G. Pate. 2017. Impact of Late Nitrogen Application on Corn Yield and Spectral Reflectance. Results of Preliminary studies in Alabama. 15th Annual Nitrogen Use Efficiency Meeting. Baton Rouge, Louisiana. 7-9, August, 2017.

F. Morlin, **B. V. Ortiz**, P. C. de Menezes, L. A. da Silva Gírio, C. Zerbato, M. del Corso, C. E. Angeli Furlani. Evaluation of Two Canopy Sensors for Estimation of Saptio-Temporal Variability of Soybean Growth. 15th Annual Nitrogen Use Efficiency Meeting. Baton Rouge, Louisiana. 7-9, August, 2017. (Poster). 3rd place graduate student poster competition.

Kerry, R., **B. Ortiz**, B. Ingram, B. Scully, E. Yoo. 2016. Irregularly Sampled Data in Space and Time: Using Poisson Kriging to Reduce the Influence of Uncertain Observations in Assessing the Risk of Aflatoxin Contamination of Corn in Southern Georgia, USA. *Proceedings of the 12th Spatial Accuracy Assessment in Natural Resources and Environmental Sciences International Symposium.* Montpellier, France, 5-8 July, 2016. *(peer reviewed paper).*

Ortiz, B.V., V. Zanella, K. Thorp, F. Morari, G. Hoogenboom. 2015. Coupling Crop Simulation Modeling and Crop Sensing to Improve within-Field Nitrogen Management. American Society of Agronomy Meeting. Minneapolis, Minnesota. 15-18 November, 2015

Kerry, R., **B. V. Ortiz**, B. Ingram. 2015. Differentially Sampled Data in Space and Time: Using Poisson Kriging to Analyze Aflatoxin Contamination of Corn in Southern Georgia, USA. *Pedometrics* 2015, Cordoba, Spain, September 14-15, 2015.

Zanella, V., **B. V. Ortiz**, K. Thorp, F. Morari, G. Mosca, G. Hoogenboom. 2015. Combining crop sensing and simulation modeling to assess within-field corn nitrogen stress. In: J.V. Stafford (Ed.), Precision Agriculture 2015 – *Proceedings of the 10th European Conference on Precision Agriculture (10ECPA)*, Tel aviv, Israel *(peer reviewed paper).*

Damianidis, D., **B. V. Ortiz**, G. Windham, B. Scully, and P. Woli. 2015. Predicting pre-harvesy aflatoxin corn contamination with a drought index. In: J.V. Stafford (Ed.), *Precision Agriculture 2015 – Proceedings of the 10th European Conference on Precision Agriculture* (10ECPA), Tel aviv, Israel *(peer reviewed paper).*

Ortiz, B.V., C. Fraisse, D. Dourte, W. Bartels, D. Zierden, P. Knox. 2015. Climate-related risk management in agriculture: Its importance for coping with current and future climate changes in the Southeastern USA. *2015 American Dairy Science Association and American Society of Animal Science Annual meeting*. Orlando, Florida. 13-15 July, 2015.

Guertal, E. A., **B. V. Ortiz**, E. J. Sikora. 2015. Golf Course Nematodes in Alabama – Population and Control Options. O*NTA 47th Annual Meeting*. Varadero, Cuba. 17-22 May, 2015.

Ortiz, B. V., C. Fraisse, D. Daniel, W. Bartels, D. Zierden, P. Knox, M. Risse, G. Vellidis, S. Templeton, M. Thomas. 2015. From climate variability to climate change: Building adaptive capacity among row crop farmers in the Southeastern USA. *Third Global Science Conference on Climate Smart Agriculture*. Montpellier, France. 16-18 March, 2015.

Damianidis, D., **B. V. Ortiz**, G. L. Windham, P. Woli. 2015. Predicting Aflatoxin Contamination Risk in Corn with a Generic Drought Index. S*outhern Association of Agricultural Scientists.* Atlanta, Georgia, February 2-5, 2015.

Ortiz, B. V., P. Woli, D. Buntin, K. Flanders, J. Johnson. 2015. Climate Variability and Adaptation Options for Cereal Crops in the Southeast USA. *Southern Association of Agricultural Scientists. Atlanta,* Georgia, February 2-5, 2015.

Ortiz, B. V., P. Woli, D. Buntin, K. Flanders, E. van Santen. 2014. Use of the ENSO forecast for adapting winter wheat management strategies in the Southeastern USA. Adaptation Futures 2014 – *Third International Climate Change Adaptation Conference*. Fortaleza, Brazil. 12-16 May, 2014.

Woli, P., **B. V. Ortiz**, J. Johnson, G. Hoogenboom. 2014. El Niño-Southern Oscillation (ENSO) Effects on Hessian Fly Infestation in Wheat in the Southeastern USA. *American Society of Agronomy Meeting*. Long Beach, California. 2-5 November, 2014.

Woli, P., **B. V. Ortiz**, D. Buntin, K. Flanders. 2014. El Niño-Southern Oscillation Effects on the Yield Difference Between Early and Late Maturity Varieties of Winter Wheat in the Southeastern USA. *American Society of Agronomy Meeting*. Long Beach, California. 2-5 November, 2014.

Ortiz, B. V., J. P. Fulton, A. Tagarakis, M. S. Torino, G. Pate, B. Arnall. 2014. How does sensor-based Variable Rate N application differ from Uniform N rate?: Lessons learned from corn on-farm studies in Alabama. Poster 203. *American Society of Agronomy Meeting*. Long Beach, California. 2-5 November, 2014.

van Santen, E., **B. V. Ortiz**, W. Alison, A. Blount, V. A. Corriher, D. Hancock, R. La Guardia Nave, L. R. Nelson, J. K. Rogers, S. Roberts, S. Ray Smith Jr. 2014. Effect of ENSO Phase on Seasonal Forage Yield of Annual Ryegrass. Poster 743. *American Society of Agronomy Meeting*. Long Beach, California. 2-5 November, 2014.

Ortiz, B. V., P. Woli, D. Buntin, K. Flanders, E. van Santen. 2014. Use of ENSO Forecast for adapting winter wheat management strategies in the Southeastern USA. In *Proceedings of the Third International Climate Change Adaptation Conference* – Adaptation Futures 2014, Fortaleza, Brazil, May 12-16, 2014. *Poster*.

Vellidis, G., **B. Ortiz**, J. Beasley, R. Hill, H. Henry, and H. Brannen. 2013. Using RTK-based GPS guidance for planting and inverting peanuts. In: J.V. Stafford (Ed.), *Precision Agriculture '13 –*

Proc. of the 9th European Conference on Precision Agriculture (9ECPA), Lleida, Spain, p.357-364. **Received "Best paper award"** *(peer reviewed paper).*

Torino, M., **B. V. Ortiz,** J. Fulton, K. Balkcom, W. Wood. Evaluation of Vegetation Indices (VI) for their Sensitivity to Corn Biomass and Chlorophyll Content Changes Associated with Nitrogen Fertilization. In *Proceedings of ASA-CSSA-SSSA International Annual Meetings, Cincinnati, Ohio, October 21-24, 2012. Abstract*

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B. V. Ortiz, S. Thomson, Yanbo, H., K. N. Reddy, W. Ding and H. Stone. 2010. Determination of crop injury from aerial application of glyphosate using vegetation indices and geostatistics. In *Proceedings of the 10th International Conference of Precision Agriculture, Denver, Colorado, 18-21 Jul., 2010.*

B. V. Ortiz, Perry D. G. Sullivan, B. Kemerait, Pamela Lu, R. F. Davis, and A. Smith. 2010. Variable rate application of nematicides on cotton fields: a promising site-specific management strategy. In *Proceedings of the 10th International Conference of Precision Agriculture, Denver, Colorado, 18-21 Jul., 2010.*

K. Balkcom, **B. V. Ortiz,** W. Goodman, J.P. Fulton. 2010. Profitability of rtk autoguidance and its influence on peanut production. In *Proceedings of the 10th International Conference of Precision Agriculture, Denver, Colorado, 18-21 Jul., 2010.*

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R. C. Kemerait, C. D. Perry, **B. V. Ortiz**, P. Lu, R. F. Davis, D. Sullivan, F.H.Sanders and R. L. Nichols. Risk Management Zones for Southern Root-Knot Nematodes: The Reality and Challenges in Georgia. In *Proceedings of Beltwide Cotton Conference*, New Orleans, Lousiana, 4-7 Jan., 2010

C. D. Perry, R. C. Kemerait, **B. V. Ortiz**, P. Lu, R. F. Davis, D. Sullivan and R. L. Nichols. Development and Assessment of Risk Zones for Management of Southern Root-Knot Nematodes at Three Locations in Georgia. In *Proceedings of Beltwide Cotton Conference*, New Orleans, Lousiana, 4-7 Jan., 2010

Ortiz, B. V., G. Hoogenboom, G. Vellidis, Boote, K., C. Perry. 2009. Prediction of within field cotton yield losses caused by the southern root-knot nematode with cropping system model-CROPGRO-cotton. In *Proceeding of the Seven European Conference on Precision Agriculture (7ECPA).*

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G. Vellidis, **B. Ortiz**, G. Ritchie, A. Peristeropoulos, R.W. Hill, C. Perry, and K. Rucker. 2009. Using GreenSeeker® to drive variable rate application of plant growth regulators and defoliants on cotton. *In Proceeding of the Seven European Conference on Precision Agriculture (7ECPA).* Wageningen, Netherlands. 6-8 July. 2009. (peer reviewed paper).

Ortiz, B. V., G. Hoogenboom, G. Vellidis, R. F. Davis, Boote, K., C. Perry. 2009. Modeling the effects of Southern Root-knot Nematode on Cotton Biomass and Yield. In *Proceedings of 2008 ASABE Annual International Meeting.* Reno, NV. 21-24 Jun. 2009.

Ortiz, B. V., C. Perry D. G. Sullivan, B. Kemerait, A. Ziehl, R. F. Davis, G. Vellidis. 2008. Cotton Yield Response to Variable Rate Nematicides According to Risk Zones. In *Proceedings of 2008 ASABE Annual International Meeting. Rhode Island*, Providence 29 June – 3 July. 2008.

Ortiz, B. V., C. Perry D. G. Sullivan, B. Kemerait, A. Ziehl, R. F. Davis, G. Vellidis. 2008. Cotton Yield Response to Variable Rate Nematicides According to Risk Zones. In *Proceedings of Beltwide Cotton Conference*, Nashville, Tennessee, 8-11 Jan., 2008.

Selected extension/outreach meetings organized over the last five years

Ortiz, B. V., L. Bondesan, G. Morata, B. Lena, Tyler Sandlin, Donna Shanklin, D. Williams. 2019. Alabama Irrigation Workshop. Decatur, January 22nd, 2019. 100 people. Organizer and speaker.

Ortiz, B. V., L. Bondesan, G. Morata, B. Lena, W. Birdsong, B. Dillard, J. Kelton. 2019. Alabama Irrigation Workshop. Dothan, January 23nd, 2019. 70 people. Organizer and speaker.

Ortiz, B. V., L. Bondesan, G. Morata, B. Lena, Donna Shanklin Tyler Sandlin, D. Williams. 2019. Irrigation Field Day, Town Creek, AL. June 26th, 2019. 70 people. Organizer and speaker.

Ortiz, B. V., L. Bondesan, G. Morata, B. Lena. 2019. Alabama Precision Agriculture Workshop, Birmingham, AL. July 30th, 2019. 70 people. Organizer and speaker.

Gamble, A., B. Ortiz, S. Li, T. Sandlin, D. Delaney, R. Prasad, K, Balkcom. 2018. 2018 Alabama Row Crops Short Course. Auburn, AL. December 13-14, 2018. 260 people. Co-organizer

B. Ortiz, Gamble, A., S. Li, T. Sandlin, D. Delaney, R. Prasad, K, Balkcom. 2017. 2017 Alabama Row Crops Short Course. Auburn, AL. December 12-13, 2017. 180 people. Co-organizer

Ortiz, B. 2016. Advanced Precision Agriculture Workshop. I organized this one-day statewide workshop to showcase five precision agriculture management strategies. Auburn, AL. January 28, 2016. 130 people. Organizer.

B. Ortiz. 2016. 2016 Corn and Wheat Short Course. Auburn, AL. December 12-13, 2016. 95 people. Organizer

Selected international invited presentations over the last three years

- 2020. Do we have to adapt extension approaches to the digital farming environment?. Final seminar. Food and Agriculture Organization (FAO). Rome, Italy. February 21, 2020.
- 2020. Should farmers or the extension approach adapt to the possibilities of digital agriculture? Technical University of Munich. Freising, Germany. February 7th, 2020.
- 2019. Strengthening Extension Programs in the Digital Era. Seminar. Food and Agriculture Organization (FAO). Rome, Italy. October 30th, 2019. 2019. Invited by USDA- Foreign Agricultural Service to represent USA during an APEC workshop in Korea. Workshop title: Smart Agriculture Policies for Sustainable Growth. Presentation title: Smart Farming: Key Strategies to Sustainable Agriculture USA Perspective. Seoul, Korea. June 11-12, 2019.
- Invited by USDA- Foreign Agricultural Service to represent USA on an APEC meeting in Taipei, Taiwan. Workshop title: Promoting gender inclusion in Smart Agriculture. Presentation title: Challenges and opportunities to closing the gap between ageing farmers and youth in agriculture. Taipei, Taiwan. October 22-24, 2018.
- 2018. Crop Growth Simulation Modeling applied to Peanut Production. Graduate Course: Advances in Peanut Production. Sao Paulo State University, Jaboticabal campus, Brazil. August 1-3, 2018.

Professional Memberships:
American Society of Agricultural and Biological Engineers (ASABE), 2004-present
International Society of Precision Agriculture (ISPA), 2018-present
American Society of Agronomy (ASA), 2009-present
Crop Science Society of America, 2009-present

Public Service, Professional Service and Professional Memberships

- 2020 *Vice-leader* of ASA Extension and Education Systems Community
- 2015 *Leader* of American Society of Agronomy (ASA) Precision Agriculture Systems Community
- 2014 *Vice-leader* of ASA Precision Agriculture Systems Community
- 2015: *Reviewer, Grant Proposal* - USDA/CARE program
- 2013: *Reviewer, Grant Proposal* - USDA/A3141 NIFA program
- 2012: *Reviewer, Grant Proposal* – Alabama Agricultural Experimental Station
- 2010-2011: *Reviewer, Grant Proposal* - USDA/SBIR
- 2009 - PRESENT: Leader of the Cuba working group of Auburn University – College of Agriculture.
- 2011 - PRESENT: *Editor, Associate Editor* - Trans of ASABE and Applied Engineering in Agriculture
- 2008 - 2011: *Editor, Associate Editor* – Agronomy Journal
- 2004 - PRESENT: American Society of Agricultural and Biological Engineers
- 2009 - PRESENT: American Society of Agronomy
- 2009 - PRESENT: American Society of Crop Science

Honors and Awards

- 2020. **Rittenour Award for Excellence** in Production Agriculture & Forestry Research from the Alabama Farmers Federation. Montgomery, Alabama. September 2020.
- 2019. Visiting Scientist at the Food and Agriculture Organization (FAO) of UN. (09/19 to 02/20)
- 2018. **Invited speaker to** XLVII Brazilian Congress of Agricultural Engineering - CONBEA. August 7th, 2018.
- 2018. Appointed to **Adjunct faculty** at Sao Paulo State University, Brazil. August 2018.

- 2018. **Invited by the Sao Paulo State University** in Brazil to be part of a group international and national faculty teaching the course: Advances in Peanut Production. August 1-8, 2018.
- 2017. 2017 **ASABE Educational Aids Blue Ribbon Award**. Category: Publications, Comprehensive (33 or more pages). Award received for the iBook "Climate and Crops: Adapting Farming to a Variable Climate".
- 2017. **Richard L. Guthrie Award** for Achievement in International Agriculture. Auburn University College of Agriculture.
- 2017. **Dean's Grantsmanship Award**, Auburn University College of Agriculture and Alabama Agricultural Experiment Station.
- 2017. The Climate and Crops iBook was **selected as an <u>international finalist</u>** in two categories as **Best Book of the Year** during the 2017 iBooks Author Conference. The Climate and Crops iBook was finalist in the categories of: Best Book of the Year, Education (Science) and Best Book of the Year, Education (Overall).
- 2017. **3rd Place** graduate student poster competition to Franciele Morlin, visiting student from Brazil. 15th Annual Nitrogen Use Efficiency Meeting. Baton Rouge, Louisiana. August 7-9, 2017.
- 2017. **Invited by the Sao Paulo State University** in Brazil to give three Precision Agriculture lectures with field practices and discuss research opportunities. February 11-19, 2017.
- **Visitor Scholar Fellowship from Technical University of Munich** (TUM), Germany. May 1-10, 2016. I was awarded with this fellowship to visit TUM, learn and discuss Precision Agriculture Research and give two lectures to MSc students from the Precision Agriculture program/
- 2015. My Ph.D. student, Damianos Damianidis won the 2nd place **during the graduate student oral presentation** of the 2015 Southern Branch American Society of Agronomy meeting in Atlanta, GA. February 2015.
- 2014. **NIFA Partnership Award** received from USDA-NIFA. For outstanding leadership and innovation in climate extension, by engaging agricultural producers and helping the implement them management strategies to protect crops from weather extremes. October, 2014.
- 2014. National winner of **Achievement Award** received from the National Association County Agricultural Agents. July 22, 2014.
- 2014. National winner of **Search for Excellence award** - Remote Sensing & Precision Ag Category from the National Association County Agricultural Agents. July 22, 2014.
- 2014. Alabama winner of **Achievement Award** received from the Alabama Association County Agricultural Agents. April, 2014.
- 2014. Alabama winner of **Search for Excellence award** - Remote Sensing & Precision Ag Category from the Alabama Association County Agricultural Agents. April, 2014.
- 2013. 2013 **Best Paper Award** for the paper "Using RTK-based GPS guidance for planting and investing peanuts" during the 9th European Conference of Precision Agriculture. Lleida, Spain. July 2013. <u>Note</u>: 95 papers from all over the world were presented at the conference. My contribution to this paper was of 50%. The paper was presented by the first author Dr. George Vellidis.
- 2012. My M.Sc. student, Mathew Tapley won the **Best graduate student oral presentation** during the 2012 Southern Branch American Society of Agronomy meeting in Birmingham, AL. February 2012.
- 2012. Nominated to receive the **2012 Junior Faculty Award** from the College of Agriculture. Auburn University.
- 2011. **Dean's Grantsmanship Award 2011** - College of Agriculture. Auburn University.
- 2011. Nominated to receive the **2011 Junior Faculty Award** from the College of Agriculture. Auburn University.
- Dean's Grantsmanship Award 2011 - Auburn University College of Agriculture.
- 2010 - Outstanding Scientific Paper Award. Georgia Association of Plant Pathologists -2010 meeting. Savannah, GA.

OUTREACH/EXTENSION

a. Description. The implementation of site-specific management practices by many U.S. producers has resulted in yield increases, reduction of year-to-year yield variability, and increases in input use efficiency. Increasing Alabama stakeholders' awareness, knowledge, skills, and adoption of efficient and effective site-specific management strategies will increase profitability and contribute to environmental stewardship. From 2009-2016 my programs had a strong emphasis on Corn and Wheat management, but my responsibilities changed to a Precision Ag. Extension Specialist in Summer 2016, allowing me to focus on the demonstration of precision agriculture technologies to implement site-specific management on Alabama row crops. My Extension program has had three primary goals:

1. Increase field corn and wheat profitability by providing Alabama farmers with information and training on the most effective site-specific agronomic management practices;
2. Increase climate science literacy and raise awareness and demonstrate the use of climate forecasting as a management tool;
3. Increase overall stakeholder knowledge and skills on the use of Precision Agriculture technologies and associated management strategies.

a. **Mission.** The central foundation of my extension program is to provide educational opportunities and training to agricultural producers, extension agents, crop consultants, and affiliated stakeholders. My mission is to deliver unbiased, research-based educational programs that enable people to improve their quality of life and ensure their efforts are economically and environmentally sustainable. I develop applied research and extension projects focused on site-specific management of row crops; specifically, corn and wheat. The research projects provide new knowledge with outputs that have direct impact and applicability to Southeastern U.S. farmers. The participatory outreach approach allows direct stakeholder input during the planning, implementation, and identification of effective management options. Because I firmly believe in a team approach to problem solving, I work in collaboration with the members of the ACES Agronomic Crops Team as well as extension specialists and researchers from across the region.

Scholarship. My professional expertise in agricultural engineering (B. Sc. and Ph.D.) and agronomy (Ph.D. research and tenure in Auburn University) allow me to evaluate problems from various perspectives. For example, I use my expertise in precision agriculture, crop growth simulation modeling, and agroclimatology to evaluate agronomic management strategies for different growing conditions in Alabama. My extension program, focused on identification of solutions to challenges faced by Southeast farmers, has been strengthened through collaboration with specialists from other disciplines (e.g., climatologist, entomologists, plant pathologists, soil scientists). Examples of this multidisciplinary work are reflected in extension publications and referred journal articles. An example is the Extension iBook "*Climate and Crops: Adapting Farming to a Variable Climate*". I was the leader of that project that involved more than 25 Extension Specialists from four Southeast Universities. My extension programs have gained recognition over the years because of the relevant farming issues addressed, the innovation, and the knowledge generated and shared. Some recognitions received are: 1) the *Climate and Crops iBook*, first iBook of this kind in the USA, received from the American Society of Agricultural and Biological Engineers (ASABE) the 2017 Blue ribbon award for long extension publication and was an international finalist in two categories as **Best Book of the Year** during the 2017 iBooks Author Conference; 2) recipient and leader of a $1M dollar grant from NRCS to conduct on-farm demonstrations of irrigation practices in Alabama (2017-2020); 3) As member of a five year multi-state climate extension project funded by USDA-NIFA, I was one of the recipients of the 2014 **NIFA Partnership Award** ; 4) selected

as the 2015 chair of the Precision Agriculture Systems community of the American Society of Agronomy (ASA) and in 2020 as the Vice leader of the Extension and Education community of ASA. Other recognition measures are indicated by the increased number of invitations received to participate in state, regional, national, and international meetings and projects.

When I started working with Alabama farmers on demonstration of best management practices for grain crops, I recognized farmers needed to implement changes in order to increase productivity and profitability. Four years after I joined Auburn University, I designed and started the Alabama Corn and Wheat short course. A one and half day event that brought to Alabama the best specialists on row crop agriculture from the Midwest and Southeast states. This yearly event reunites farmers, crop consultants, private company representatives, extension specialists, and researchers to discuss cutting edge management practices. This event has gained a lot of interest and attention among Alabama farmers and now we receive more than 250 participants every year. Last year, I was approached by members of the Alabama farmers federation to discuss how we can make this event a statewide or even regional event when we combine not only the technical aspects but also a type of tradeshow.

The adoption of irrigation in Alabama for row crops production is the lowest among the Southeast states. Therefore, in recent years, the focus of my extension and outreach efforts is on increasing literacy and adoption of irrigation best management practices. In 2017, I was able to secure more than 1-million-dollar funding from the Natural Resource Conservation Service (NRCS) – Conservation and innovation program to conduct on-farm demonstration and training of best irrigation practices. http://ocm.auburn.edu/newsroom/news_articles/2017/10/auburn-agriculture-professor-seeks-to-expand-irrigation-in-alabama.php. In 2020, five-million dollars from NRCS-CIG were secured to continue the irrigation demonstration work as well as cover crops demonstrations, work that will be conducted by other CSES colleagues.

A network of irrigation demonstration sites across the state of Alabama have been established with the collaboration and support of AU undergraduate and graduate students, extension agents, NRCS personnel, and farmers. We are using those sites to train farmers, consultants, and extension agents on the use of irrigation technology and best irrigation strategies. This video is an example of the work we are doing with farmers and the impact of our work: https://www.youtube.com/watch?v=vyySSBE_kGI&t=1s . In 2020, I involved several AU undergraduate and graduate students on the production of a weekly irrigation newsletter. More than one thousand people are receiving this weekly report that is intended to support Alabama farmers with weekly irrigation decisions. https://us17.campaign-archive.com/home/?u=501131dc3c2706ca87d17d599&id=8eba56b847. The Alabama Farmers Federation and their members have recognize the value of this work and selected me as the recipient of the 2020 **Rittenour Award for Excellence** in Production Agriculture & Forestry Research (https://alfafarmers.org/farmers-federation-honors-extension-research-experts/).

International extension and outreach activities are also part of my program. Currently, I have international collaboration with the Food and Agricultural Organization (FAO), Sao Paulo State University (Jaboticabal campus), Technical University of Munich in Freising, University of Padova, Colombia Oil Palm Research Center, and several research and education institutions in Cuba. This international work has been focused on participation in workshops, seminars, invited presentations, and advising international students (10) on the area of Precision Agriculture. The more recent collaboration with FAO is focused on development of training materials to support extension specialists and agents on the design and monitoring of extension programs in develop and developing countries.