UF | IFAS Research
UNIVERSITY of FLORIDA

2022

UF/IFAS HIGH IMPACT RESEARCH PUBLICATIONS

UF/IFAS scientists are making significant strides toward understanding and solving society's grand challenges, creating practical solutions to current and emerging threats to our environmental and socioeconomic systems, and having positive impacts in the lives of Floridians and people worldwide through their research. The new knowledge and discoveries generated by our researchers are published in some of the best nationally and internationally recognized peer-reviewed journals. Their work sets an example of excellence for academics and scientists around the globe.

Our research is having notable impacts, including:

- **Impacts on science** by extending the frontiers of fundamental scientific understanding.
- **Impacts on agricultural production** by improving agricultural practices, varieties, and technologies.
- **Impacts on human welfare** by improving human health and wellbeing.
- **Impacts on the environment** by developing sustainable practices and conservation measures.
- **Impacts on communities and the economy** by spawning new products, technologies, businesses, and jobs.

These 42 publications are excellent examples of how UF/IFAS researchers at our Gainesville campus and our Research and Education Centers (RECs) are making a difference and impacting our world. The 10 publications listed on the inside cover were selected for special recognition.

PUBLICATIONS SELECTED FOR SPECIAL RECOGNITION

IMPACT ON: **Metabolic Cycles**

Entomology and Nematology

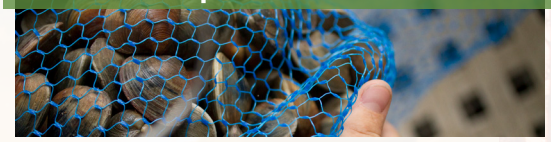
IFAS Authors: Chao Chen and Dan Hahn
Publication: "ROS And Hypoxia Signaling Regulate Periodic Metabolic Arousal During Insect Dormancy to Coordinate Glucose, Amino Acid, and Lipid Metabolism."
Journal: *Proceedings of the National Academy of Sciences*

IMPACT ON: **Gender-based Violence**

Family, Youth and Community Sciences

IFAS Author: Kimberly Wiley
Title: "Erased: Why Faculty Sexual Misconduct is Prevalent and How We Could Prevent it."
Journal: *Journal of Public Affairs Education*

IMPACT ON: **Aquaculture Production**



Food and Resource Economics

IFAS Authors: Robert Botta, Christa Court, Andrew Ropicki, and Edward Camp
Title: "Evaluating the Regional Economic Contributions of US Aquaculture: Case Study of Florida's Shellfish Aquaculture Industry."
Journal: *Aquaculture Economics & Management*

IMPACT ON: **Florida's Native Snakes**

Ft. Lauderdale REC

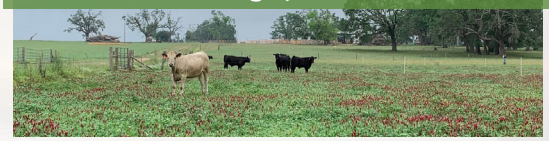
IFAS Authors: Melissa Miller, Ray Snow, Frank Mazzotti, and Christina Romagosa
Title: "Highly Competent Native Snake Hosts Extend the Range of an Introduced Parasite Beyond its Invasive Burmese Python Host."
Journal: *Ecosphere*

IMPACT ON: **Sweet Corn**

Horticultural Sciences

IFAS Authors: Ying Hu, Vincent Colantonio, Bárbara Müller, Kristen Leach, Juan Gonzalez, Esteban Rios, L. Curtis Hannah, A. Mark Settles, Marcio Resende, Christina Finegan, and Adalena Nanni
Title: "Genome Assembly and Population Genomic Analysis Provide Insights into the Evolution of Modern Sweet Corn." **Journal:** *Nature Communications*

IMPACT ON: **Grazing Systems**



North Florida REC

IFAS Authors: José Dubeux, Lynn Sollenberger, Joao Vendramini, Cheryl Mackowiak, Nicolas DiLorenzo, Liza Garcia, Luana Queiroz, and Martin Ruiz-Moreno
Title: "Water Footprint, Herbage, and Livestock Responses for Nitrogen Fertilized Grass and Grass-Legume Grazing Systems."
Journal: *Crop Science*

IMPACT ON: **Truffles and Fungi**

Plant Pathology

IFAS Authors: Ann Wilkie, Kathryn Sieving, and Matthew Smith
Title: "Discovering the Role of Patagonian Birds in the Dispersal of Truffles and Other Mycorrhizal Fungi."
Journal: *Current Biology*

IMPACT ON: **Crop Yields**

Tropical REC

IFAS Authors: Young Gu Her, Gerrit Hoogenboom, Kati Migliaccio, Rafael Muñoz-Carpena, and Zachary Brym
Title: "Modeling the Response of Dry Bean Yield to Irrigation Water Availability Controlled by Watershed Hydrology." **Journal:** *Agricultural Water Management*

IMPACT ON: **Hurricane & Forest Management**

West Florida REC

IFAS Authors: Ajay Sharma and Jason Vogel
Title: "Long-Term Effects of Catastrophic Wind on Southern US Coastal Forests: Lessons from a Major Hurricane."
Journal: *PLOS ONE*

IMPACT ON: **Plant Stress Tolerance**

Wildlife Ecology and Conservation

IFAS Authors: Hans Alborn, Emilio Bruna, Fabiane Mundim, and Emane Vieira-Neto
Title: "Disentangling the Influence of Water Limitation and Simultaneous Above and Belowground Herbivory on Plant Tolerance and Resistance to Stress."
Journal: *Journal of Ecology*

Agricultural and Biological Engineering

Cohen, A. A. B., Muneepeerakul, R., & Kiker, G. (2021). **Intra-group decision-making in agent-based models.** *Scientific Reports* 11: 17709.

Guarin, J. R., Asseng, S., Martre, P., & Bliznyuk, N. (2020). **Testing a crop model with extreme low yields from historical district records.** *Field Crops Research* 249: 107269.

Agricultural Education and Communication

Harder, A., Roberts, T. G., & Lindner, J. R. (2021). **Commonly accepted theories, models, and philosophies: The subjective norms of our discipline(s).** *Journal of Agricultural Education* 62(1): 196-211.

Agronomy

Khan, N., Bano, A. M. D., & Babar, A. (2020). **Impacts of plant growth promoters and plant growth regulators on rainfed agriculture.** *PLOS ONE* 15(4): e0231426.

Peng, Z., Zhao, Z., Clevenger, J. P., Chu, Y., Paudel, D., Ozias-Akins, P., & Wang, J. (2020). **Comparison of SNP calling pipelines and NGS platforms to predict the genomic regions harboring candidate genes for nodulation in cultivated peanut.** *Frontiers in Genetics* 11: 222.

Animal Sciences

Fan, P., Nelson, C. D., Driver, J. D., Elzo, M. A., Peñagaricano, F., & Jeong, K. C. (2021). **Host genetics exerts lifelong effects upon hindgut microbiota and its association with bovine growth and immunity.** *ISME Journal* 15(8): 2306-2321.

Rezende, F. M., Rodriguez, E., Leal-Gutiérrez, J. D., Elzo, M. A., Johnson, D. D., Carr, C., & Mateescu, R. G. (2021). **Genomic approaches reveal pleiotropic effects in crossbred beef cattle.** *Frontiers in Genetics* 12: 627055.

Citrus REC

Shahzad, F., Chun, C., Schumann, A., & Vashisth, T. (2020). **Nutrient uptake in Huanglongbing-affected sweet orange: Transcriptomic and physiological analysis.** *Journal of the American Society for Horticultural Science* 145(6): 349-362.

Suh, J. H., Guha, A., Wang, Z., Li, S. Y., Killiny, N., Vincent, C., & Wang, Y. (2021). **Metabolomic analysis elucidates how shade conditions ameliorate the deleterious effects of greening (Huanglongbing) disease in citrus.** *Plant Journal* 108(6): 1798-1814.

Entomology and Nematology

Yang, L., Richoux, G. M., Norris, E. J., Cuba, I., Jiang, S., Coquerel, Q., Demares, F., Linthicum, K. J., & Bloomquist, J. R. (2020). **Pyrethroid-derived acids and alcohols: Bioactivity and synergistic effects on mosquito repellency and toxicity.** *Journal of Agricultural and Food Chemistry* 68(10): 3061-3070.

Everglades REC

Kreutz, G. F., Sandoya, G. V., England, G. K., & Mussoline, W. (2021). **Exploring the potential of lettuce (*Lactuca sativa* L.) as an early crop in Florida's sandy soils.** *HortScience* 56(1): 59-70.

McCray, J. M., Ji, S., & Alvarado, J. S. (2021). **Sugarcane yield response to potassium fertilization as related to extractable soil potassium on Florida mineral soils.** *Agronomy Journal* 113(6): 5556-5568.

Florida Medical Entomology Laboratory

Schluep, S. M., & Buckner, E. A. (2021). **Metabolic resistance in permethrin-resistant Florida *Aedes aegypti* (Diptera: Culicidae).** *Insects* 12(10): 866.

Parker-Crockett, C., Connelly, C. R., Siegfried, B., & Alto, B. (2021). **Influence of pyrethroid resistance on vector competency for Zika virus by *Aedes aegypti* (Diptera: Culicidae).** *Journal of Medical Entomology* 58(4): 1908-1916.

Food and Resource Economics

Kassas, B., & Nayga R. M. Jr. (2021). **Understanding the importance and timing of panic buying among US households during the COVID-19 pandemic.** *Food Quality and Preference* 93: 104240.

Forest, Fisheries and Geomatics Sciences

Vilizzi, L., Copp, G. H., Hill, J. E., Adamovich, B., Aislabie, L., Akin, D., Al-Faisal, A. J., (+ 188 authors including Tuckett, Q. M.), & Clarke, S. (2021). **A global-scale screening of non-native aquatic organisms to identify potentially invasive species under current and future climate conditions.** *Science of the Total Environment* 788: 147868.

McDowell, N. G., Allen, C. D., Anderson-Teixeira, K., Aukema, B. H., Bond-Lamberty, B., Chini, L., Clark, J. S., Dietze, M., Grossiord, C., Hanbury-Brown, A., Hurtt, G. C., Jackson, R. B., Johnson, D. J., Kueppers, L., Lichstein, J. W., Ogle, K., Poulter, B., Pugh, T. A. M., Seidl, R., Turner, M. G., Uriarte, M., Walker, A. P., & Xu, C. (2020). **Pervasive shifts in forest dynamics in a changing world.** *Science* 368(6494): eaaz9463.

Ft. Lauderdale REC

Jang, M., Berthold, D. E., Yu, Z., Silva-Sanchez, C., Laughinghouse IV, H. D., Denslow, N. D., & Han, S. (2020). **Atmospheric progression of microcystin-LR from cyanobacterial aerosols.** *Environmental Science & Technology Letters* 7(10): 740-745.

Gulf Coast REC

Desaeger, J., Wram, C., & Zasada, I. (2020). **New reduced-risk agricultural nematicides - rationale and review.** *Journal of Nematology* 52: e2020-91

Peng, Z., He, Y., Parajuli, S., You, Q., Wang, W., Bhattarai, K., Palmateer, A. J., & Deng, Z. (2021). **Integration of early disease-resistance phenotyping, histological characterization, and transcriptome sequencing reveals insights into downy mildew resistance in impatiens.** *Horticulture Research* 8: 108.

Horticultural Sciences

Ferrão, L. F. V., Johnson, T. S., Benevenuto, J., Edger, P. P., Colquhoun, T. A., & Munoz, P. R. (2020). **Genome-wide association of volatiles reveals candidate loci for blueberry flavor.** *New Phytologist* 226(6): 1725-1737.

Microbiology and Cell Science

Moore, R. A., Martinetti, D., Bigg, E. K., Christner, B. C., & Morris, C. E. (2021). **Climatic and landscape changes as drivers of environmental feedback that influence rainfall frequency in the United States.** *Global Change Biology* 27(24): 6381-6393.

Schuster, L. A., & Reisch, C. R. (2021). **A plasmid toolbox for controlled gene expression across the Proteobacteria.** *Nucleic Acids Research* 49(12): 7189-7202.

Mid-Florida REC

Rihn, A., Khachatryan, H., & Wei, X. (2021). **Perceived subjective versus objective knowledge: Consumer valuation of genetically modified certification on food producing plants.** *PLOS ONE* 16(8): e0255406.

North Florida REC

Liao, Y. Y., Huang, Y., Carvalho, R., Choudhary, M., Da Silva, S., Colee, J., Huerta, A., Vallad, G. E., Freeman, J. H., Jones, J. B., Keller, A., & Paret, M. L. (2021). **Magnesium oxide nanomaterial, an alternative for commercial copper bactericides: Field-scale tomato bacterial spot disease management and total and bioavailable metal accumulation in soil.** *Environmental Science & Technology* 55(20): 13561-13570.

Range Cattle REC

Bracho, R., Silveira, M. L., Boughton, R., Sanchez, J. M. D., Kohmann, M. M., Brandani, C. B., & Celis, G. (2021). **Carbon dynamics and soil greenhouse fluxes in a Florida's native rangeland before and after fire.** *Agricultural and Forest Meteorology* 311: 108682.

Palmer, E. A., Peñagaricano, F., Vedovatto, M., Oliveira, R. A., Field, S. L., Laporta, J., & Moriel, P. (2021). **Effects of maternal gestational diet, with or without methionine, on muscle transcriptome of *Bos indicus*-influenced beef calves following a vaccine-induced immunological challenge.** *PLOS ONE* 16(6): e0253810.

Soil and Water Sciences

Jayne, T. S., & Sanchez, P. A. (2021). **Agricultural productivity must improve in sub-Saharan Africa.** *Science* 372(6546): 1045-1047.

Reisinger, A. J., Reisinger, L. S., Richmond, E. K., & Rosi, E. J. (2021). **Exposure to a common antidepressant alters crayfish behavior and has potential subsequent ecosystem impacts.** *Ecosphere* 12(6): e03527.

Southwest Florida REC

Gairhe, B., Liu, W., Batuman, O., Dittmar, P., Kadyampakeni, D., & Kanissery, R. (2021). **Environmental fate and behavior of the herbicide glyphosate in sandy soils of Florida under citrus production.** *Frontiers in Environmental Chemistry* 2: 737391.

West Florida REC

Tiwari, R., Piskáčková, T. A. R., Devkota, P., Mulvaney, M. J., Ferrell, J. A., & Leon, R. G. (2021). **Growing winter *Brassica carinata* as part of a diversified crop rotation for integrated weed management.** *Global Change Biology Bioenergy* 13(3): 425-435.

Wildlife Ecology and Conservation

Zabala, J., Trexler, J. C., Jayasena, N., & Frederick, P. (2020). **Early breeding failure in birds due to environmental toxins: A potentially powerful but hidden effect of contamination.** *Environmental Science & Technology* 54(21): 13786-13796.

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