

2019

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, and 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 40 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 seven publications listed on the inside cover were selected for special recognition at the 12th Annual Florida Agricultural Experiment Station Research Awards Ceremony.

7 HIGH IMPACT PUBLICATIONS SELECTED FOR RECOGNITION



GENOMICS TELLS THE STORY OF CITRUS

CITRUS REC

Wu, G. A., J. Terol, V. Ibanez, A. López-García, E. Pérez-Román, C. Borredá, C. Domingo, F. R. Tadeo, J. Carbonell-Caballero, R. Alonso, F. Curk, D. Du, P. Ollitrault, M. L. Roose, J. Dopazo, F. G. Gmitter, Jr., D. A. Rokhsar, and M. Talon. 2018. **Genomics of the Origin and Evolution of Citrus.** *Nature* 554(7692): 311-316.



CAMPUS FOOD PANTRIES AND HUNGRY STUDENTS

FAMILY, YOUTH AND COMMUNITY SCIENCES

El Zein, A., A. E. Mathews, L. House and K. P. Shelnett. 2018. **Why Are Hungry College Students Not Seeking Help? Predictors of and Barriers to Using an On-Campus Food Pantry.** *Nutrients* 10(9): 1163-1176.



SUSTAINABLE FISHERIES MANAGEMENT

FOREST RESOURCES AND CONSERVATION

Asche, F., T. M. Garlock, J. L. Anderson, S. R. Bush, M. D. Smith, C. M. Anderson, J. Chu, K. A. Garrett, A. Lem, K. Lorenzen, A. Oglend, S. Tveteras, and S. Vannuccini. 2018. **Three Pillars of Sustainability in Fisheries.** *Proceedings of the National Academy of Sciences of the United States of America* 115(44): 11221-11225.



CLIMATE CHANGE AND THE ROLE OF PINE FORESTS

FOREST RESOURCES AND CONSERVATION

Bracho, R., J. G. Vogel, R. E. Will, A. Noormets, L. J. Samuelson, E. J. Jokela, C. A. Gonzalez-Benecke, S. A. Gezan, D. Markewitz, J. R. Seiler, B. D. Strahm, R. O. Teskey, T. R. Fox, M. B. Kane, M. A. Laviner, K. M. McElligot, J. Yang, W. Lin, C. R. Meek, J. Cucinella, M. K. Akers, and T. A. Martin. 2018. **Carbon Accumulation in Loblolly Pine Plantations is Increased by Fertilization Across a Soil Moisture Availability Gradient.** *Forest Ecology and Management* 424: 39-52.



DETECTING A LETHAL PALM TREE DISEASE

FORT LAUDERDALE REC

Bahder, B. W., E. E. Helmick, D-F. Mou, N. A. Harrison, and R. Davis. 2018. **Digital PCR Technology for Detection of Palm-Infecting Phytoplasmas Belonging to Group 16SrIV that Occur in Florida.** *Plant Disease* 102(5): 1008-1014.



SAVING THE AVOCADO FROM LAUREL WILT

MICROBIOLOGY AND CELL SCIENCE

Zhou, Y., P. B. Avery, D. Carrillo, R. H. Duncan, A. Lukowsky, R. D. Cave, and N. O. Keyhani. 2018. **Identification of the Achilles Heels of the Laurel Wilt Pathogen and its Beetle Vector.** *Applied Microbiology and Biotechnology* 102(13): 5673-5684.



VIRUS RISK FROM FLORIDA'S RHESUS MONKEYS

WILDLIFE ECOLOGY AND CONSERVATION

Wisely, S. M., K. A., Salyer, C. J. Anderson, C. L. Boyce, A. R. Klegarth, and S. A. Johnson. 2018. **Macacine Herpesvirus 1 Antibody Prevalence and DNA Shedding Among Invasive Rhesus Macaques, Silver Springs State Park, Florida, USA.** *Emerging Infectious Diseases* 24(2): 345-351.

AGRICULTURAL AND BIOLOGICAL ENGINEERING

Garland, N. T., E. S. McLamore, N. D. Cavallaro, D. Mendivelso-Perez, E. A. Smith, D. Jing, and J. C. Claussen. 2018. **Flexible Laser-Induced Graphene for Nitrogen Sensing in Soil.** *ACS Applied Materials & Interfaces* 10(45): 39124-39133.

Zhao, C., B. Liu, S. Piao, X. Wang, D. B. Lobell, Y. Huang, M. Huang, Y. Yao, S. Bassu, P. Ciais, J. L. Durand, J. Elliott, F. Ewert, I. A. Janssens, T. Li, E. Lin, Q. Liu, P. Martre, C. Müller, S. Peng, J. Peñuelas, A. C. Ruane, D. Wallach, T. Wang, D. Wu, Z. Liu, Y. Zhu, Z. Zhu, and S. Asseng. 2017. **Temperature Increase Reduces Global Yields of Major Crops in Four Independent Estimates.** *Proceedings of the National Academy of Sciences of the United States of America* 114(35): 9326-9331.

AGRICULTURAL EDUCATION AND COMMUNICATION

Newberry, III M. G., and G. D. Israel. 2017. **Comparing Two Web/Mail Mixed-Mode Contact Protocols to a Unimode Mail Survey.** *Field Methods* 29(3): 281-298.

AGRONOMY

Peng, Z., L. Fengxia, L. Wang, H. Zhou, D. Paudel, L. Tan, J. Maku, M. Gallo, and J. Wang. 2017. **Transcriptome Profiles Reveal Gene Regulation of Peanut (*Arachis hypogaea* L.) Nodulation.** *Scientific Reports* 7: 40066.

Wilson, C. H., M. S. Strickland, J. A. Hutchings, T. S. Bianchi, and S. L. Flory. 2018. **Grazing Enhances Belowground Carbon Allocation Microbial Biomass, and Soil Carbon in a Subtropical Grassland.** *Global Change Biology* 24(7): 2997-3009.

ANIMAL SCIENCES

Capua, I. 2018. **Discovering Invisible Truths.** *Journal of Virology* 92(20): e00757-18.

Hamblen, H., P. J. Hansen, A. M. Zolini, P. A. Oltenacu, and R. G. Mateescu. 2018. **Thermoregulatory Response of Brangus Heifers to Naturally Occurring Heat Exposure on Pasture.** *Journal of Animal Science* 96(8): 3131-3137.

CITRUS REC

Feng, S., J. H. Suh, F. G. Gmitter, and Y. Wang. 2018. **Differentiation Between Flavors of Sweet Orange (*Citrus sinensis*) and Mandarin (*Citrus reticulata*).** *Journal of Agricultural and Food Chemistry* 66(1): 203-211.

ENTOMOLOGY AND NEMATOLOGY

Bibbs, C.S., and P. E. Kaufman. 2017. **Volatile Pyrethroids as a Potential Mosquito Abatement Tool: A Review of Pyrethroid-Containing Spatial Repellents.** *Journal of Integrated Pest Management* 8(1): 21-30.

EVERGLADES REC

Bhadha, J. H., R. Khatiwad, S. Galindo, N. Xu, and J. Capasso. 2018. **Evidence of Soil Health Benefits of Flooded Rice Compared to Fallow Practice.** *Sustainable Agriculture Research* 7(4): 31-41.

Friedrichsen, C. N., S. H. Daroub, M. C. Monroe, J. R. Stepp, and S. P. Wani. 2018. **Mental Models of Soil Management for Food Security in Peri-Urban India.** *Urban Agriculture & Regional Food Systems* 3(1): 170002.

ENVIRONMENTAL HORTICULTURE

Pérez, H. E. 2018. **Enhancing Vita Non-Technical Workplace Competencies for Early Career Seed Scientists.** *Seed Science Research* 28(3): 182-185.

FLORIDA MEDICAL ENTOMOLOGY LABORATORY

Reeves, L. E., C. J. Holderman, E. M. Blosser, J. L. Gillett-Kaufman, A. Y. Kawahara, P. E. Kaufman, and N. D. Burkett-Cadena. 2018. **Identification of *Uranotaenia sapphirina* as a Specialist of Annelids Broadens Known Mosquito Host Use Patterns.** *Communications Biology* 1: 92-99.

FOOD AND RESOURCE ECONOMICS

Court, C. D., A. W. Hodges, R. L. Clouser and S. L. Larkin. 2017. **Economic Impacts of Cancelled Recreational Trips to Northwest Florida After the Deepwater Horizon Oil Spill.** *Regional Science Policy and Practice* 9(3): 143-164.

Mullally, C., and J. Lusk. 2018. **The Impact of Farm Animal Housing Restrictions on Egg Prices, Consumer Welfare, and Production in California.** *American Journal of Agricultural Economics* 100(3): 649-669.

FOOD SCIENCE AND HUMAN NUTRITION

Loso, J., D. Staub, S. E. Colby, M. D. Olfert, K. Kattelmann, M. Vilaro, J. Colee, W. Zhou, L. Franzen-Castle, and A. E. Matthews. 2017. **Gardening Experience is Associated with Increased Fruit and Vegetable Intake Among First-Year College Students: A Cross-Sectional Examination.** *Journal of the Academy of Nutrition and Dietetics* 118(2): 275-283.

FORT LAUDERDALE REC

Chouvenc, T. 2018. **Comparative Impact of Chitin Synthesis Inhibitor Baits and Non-Repellent Liquid Termiticides on Subterranean Termite Colonies Over Foraging Distances: Colony Elimination Versus Localized Termite Exclusion.** *Journal of Economic Entomology* 111(5): 2317-2328.

GULF COAST REC

Abrahamian, P., S. Timilsina, G. V. Minsavage, S. KC, E. M. Goss, J. B. Jones, and G. E. Vallad. 2018. **The Type III Effector *AvrBsT* Enhances *Xanthomonas perforans* Fitness in Field-Grown Tomato.** *Phytopathology* 108(12): 1355-1362.

Noh, Y-H., Y. Oh, J. Mangandi, S. Verma, J. D. Zurn, Y-T. Lu, Z. Fan, N. Bassil, N. Peres, G. Cole, C. Acharya, R. Famula, S. Knapp, V. M. Whitaker, and S. Lee. 2018. **High-Throughput Marker Assays for *FaRPP2*-Mediated Resistance to *Phytophthora* Crown Rot in Octoploid Strawberry.** *Molecular Breeding* 38(8): 104-114.

HORTICULTURAL SCIENCES

Gustin, J. L., S. K. Boehlein, J. R. Shaw, W. Junior, A. M. Settles, A. Webster, W. F. Tracy, and L. C. Hannah. 2018. **Ovary Abortion is Prevalent in Diverse Maize Inbred Lines and is Under Genetic Control.** *Scientific Reports* 8: 13032.

Kilasi, N. L., J. Singh, C. E. Vallejos, C. Ye, S. V. K. Jagadish, P. Kusolwa, and B. Rathinasabapathi. 2018. **Heat Stress Tolerance in Rice (*Oryza sativa* L.): Identification of Quantitative Trait Loci and Candidate Genes for Seedling Growth Under Heat Stress.** *Frontiers in Plant Science* 9: 1578.

INDIAN RIVER REC

Li, L., Z. L. He, M. M. Tfaily, P. Inglett, and P. J. Stoffella. 2018. **Spatial-Temporal Variations of Dissolved Organic Nitrogen Molecular Composition in Agricultural Runoff Water.** *Water Research* 137: 375-383.

MICROBIOLOGY AND CELL SCIENCE

Hui, W. W., K. Hercik, S. Belsare, N. Alugubelly, B. Clapp, C. Rinaldi, and M. J. Edelmann. 2018. **Salmonella enterica Serovar Typhimurium Alters the Extracellular Proteome of Macrophages and Leads to the Production of Proinflammatory Exosomes.** *Infection and Immunity* 86(2): e00386-17.

RANGE CATTLE REC

Piccolo, M. B., J. D. Arthington, G. M. Silva, G. C. Lamb, R. F. Cooke and P. Moriel. 2018. **Pre-Weaning Injections of Bovine ST Enhanced Reproductive Performance of Bos indicus-influenced Replacement Beef Heifers.** *Journal of Animal Science* 96(2): 618-631.

Xu, S., M. L. Silveira, L. E. Sollenberger, P. Viegas, J. J. J. Lacerda, and M. V. Azenha. 2018. **Conversion of Native Rangelands into Cultivated Pasturelands in Subtropical Ecosystems: Impacts on Aggregate-associated Carbon and Nitrogen.** *Journal of Soil and Water Conservation* 73(2): 156-163.

SOIL AND WATER SCIENCES

Bae, H. S., E. Morrison, J. P. Chanton, and A. Ogram. 2018. **Methanogens are Major Contributors to Nitrogen Fixation in Soils of the Florida Everglades.** *Applied and Environmental Microbiology* 84(7): e02222-17.

Sihi, D., P. W. Inglett, S. Gerber, and K. S. Inglett. 2018. **Rate of Warming Affects Temperature Sensitivity of Anaerobic Peat Decomposition and Greenhouse Gas Production.** *Global Change Biology* 24(1): e259-e274.

SOUTHWEST FLORIDA REC

Fletcher, E., K. T. Morgan, J. A. Qureshi, J. A. Leiva, and P. Nkedi-Kizza. 2018. **Imidacloprid Soil Movement Under Micro-Sprinkler Irrigation and Soil-Drench Applications to Control Asian Citrus Psyllid (ACP) and Citrus Leafminer (CLM).** *PLoS ONE* 13(3): e0192668.

Shukla, A., Shukla, S., M. D. Annable, and A. W. Hodges. 2017. **Volume Reduction Outweighs Biogeochemical Processes in Controlling Phosphorus Treatment in Aged Detention Systems.** *Journal of Contaminant Hydrology* 203: 9-17.

TROPICAL REC

Her, Y., J. Jeong, J. Arnold, L. Gosselink, R. Glick, and F. Jaber. 2017. **A New Framework for Modeling Decentralized Low Impact Developments Using Soil and Water Assessment Tool.** *Environmental Modelling and Software* 96: 305-322.

WEST FLORIDA REC

Bravo, W., R. G. Leon, J. A. Ferrell, M. J. Mulvaney, and C. W. Wood. 2018. **Evolutionary Adaptations of Palmer Amaranth (*Amaranthus palmeri*) to Nitrogen Fertilization and Crop Rotation History Affect Morphology and Nutrient-Use Efficiency.** *Weed Science* 66(2): 180-189.

Honsdorf, N., M. J. Mulvaney, R. P. Singh, K. Ammar, J. Burgueño, B. Govaerts, and N. Verhulst. 2018. **Genotype by Tillage Interaction and Performance Progress for Bread and Durum Wheat Genotypes on Irrigated Raised Beds.** *Field Crops Research* 216: 42-52.

WILDLIFE ECOLOGY AND CONSERVATION

Cattau, C. E., R. J. Fletcher, Jr., R. T. Kimball, C. W. Miller, and W. M. Kitchens. 2018. **Rapid Morphological Change of a Top Predator with the Invasion of a Novel Prey.** *Nature Ecology & Evolution* 2(1): 108-115.



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