John White Bagwell

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EDUCATION

University of Georgia, Griffin, GA August 2020-Present
Doctor of Philosophy
Major: *Plant Breeding, Genetics and Genomics*, Areas of Emphasis: *Wheat Genetics, Rust Pathology, and Hessian Fly Control*
Advisors: Dr. Bochra Bahri and Dr. Mohamed Mergoum
Current Overall GPA: 3.67/4.00

Auburn University, Auburn, AL August 2018-August 2020
Master of Science
Major: *Crop, Soil and Environmental Sciences*, Areas of Emphasis: *Crop Physiology, Microbiology, and Plant Breeding and Genetics*
Advisor: Dr. Charles Chen
Thesis: "Improving Drought Stress Tolerance of Peanut Using PGPR and Orange Peel Amendment"
Overall GPA: 3.77/4.00

University of Georgia, Athens, GA August 2013-December 2017
Bachelor of Science in Agriculture
Major: *Agriscience and Environmental Systems*, Area of Emphasis: *Plant Breeding and Genetics*
Overall GPA: 3.49/4.00

RELEVANT EXPERIENCE

Doctoral Dissertation Experiments, *Doctoral Candidate*, Griffin, GA, Plains, GA, and Williamson, GA August 2020-Present
- Conduct QTL analysis to find significant associations for Hessian fly resistance in biparental populations
- Carry out GWAS on diversity panel phenotype data to find novel QTLs for resistance to different diseases
- Phenotype diversity panel lines in multiple fields for disease resistance and agronomic traits
- Identify candidate genes with TASSEL and EnsemblPlants to confirm diversity panel lines to prioritize for later studies
- Applied linkage disequilibrium decay analysis to raw QTL data to detect beneficial QTLs for pathogen and insect pest resistance

Bahri Lab, *Graduate Research Assistant*, Athens, GA, and Griffin, GA August 2020-Present
- Performed fungal DNA extraction, PCR, and gel electrophoresis to document new sorghum and tall fescue diseases in Georgia
- Extracted turfgrass DNA to genotype a tall fescue mapping population and identify SSR markers associated with rust resistances
- Characterized new switchgrass genotypes from a diversity panel using chloroplast markers to develop future projects
- Helped write drafts of an intended review on grass endophytes to summarize recent publications and recommend future projects

Mergoum Lab, *Graduate Research Assistant*, Griffin, GA, Plains, GA, and Williamson, GA August 2020-Present
- Inoculate greenhouse plants with leaf rust to find novel disease resistance marker-trait associations
- Maintain wheat biparental populations and diversity panels for variety improvement
- Used diversity panel phenotyping data to confirm cultivars to cross-pollinate for increased disease resistance
- Utilized KASP markers to validate the presence of Hessian fly resistance gene *H32* in a resistant wheat parent

Master's Thesis Experiment, *Master's Student*, Auburn, AL December 2018-August 2020
- Mixed soil to provide an ideal environment for greenhouse peanut crops
- Recorded physiological data and monitored changes in stress and growth to analyze experiment data
- Analyzed and visualized results in R to determine optimal harvest time

Chen Lab, *Graduate Research Assistant*, Auburn, AL, Headland, AL, Shorter, AL, and Dawson, GA August 2018-August 2020
- Collected maize, soybean, and peanut physiological data to understand crop health and treatment effects
- Prepared peanut leaves for RNA analysis to identify genetic markers and plants for drought tolerance research
- Operated an LI-6400XT to compare photosynthetic data from different peanut treatments
- Participated in planting and harvesting peanuts for cultivar improvement

UGA CAGT Crop Science Greenhouses, *Greenhouse Technician*, Athens, GA February 2018-June 2018
- Optimized greenhouses to allow for proper research
- Managed numerous plant species to fulfill the department's research goals
- Heated and mixed soil to protect plant health

Wallace Lab, *Undergraduate Researcher and Technician*, Athens, GA May 2016-August 2016, January 2017-April 2017
- Planted, managed, and collected data from field plots to compare cultivar performance
- Created Google My Maps files to understand maize plot trends
- Ran a greenhouse experiment to quantify a correlation between maize leaf color and nitrogen stress

INVOLVEMENT

Pike County STEM Internship Program, *Mentor*, Griffin, GA August 2022-November 2022, August 2023-Present
- Instructed an intern on how to perform an entomology experiment to show them how science benefits farmers
- Teach a high school student to analyze images of wheat leaf rust so they can understand how modern technology helps scientists

UGA Young Scholar Program, *Mentor*, Griffin, GA June 2023-July 2023
- Trained high school students to conduct plant breeding experiments to inspire them to pursue STEM careers

PBGG Retreat Planning Committee, *Volunteer*, Columbus, GA and Griffin, GA November 2022-May 2023
- Evaluated venues to find the best place to host the retreat
- Took pictures of retreat activities and worked with other volunteer photographers to document the event

Griffin RESA Regional Science and Engineering Fair, *Judge*, Griffin, GA January 30, 2023
- Interviewed high school students to help them think critically about their projects

Griffin-Spalding County Schools District Science Fair, *Judge*, Griffin, GA January 11, 2023
- Provided constructive feedback on high school students' posters to improve their scientific research

Scientists Engaging and Educating Decision-makers Ambassador Award, *Student*, Online November 2022-August 2023
- Practice advocacy skills to influence lawmakers affecting science policy

Plant Breeding Practicum, *Menu Planner*, Griffin, GA May 2022
- Made restaurant reservations to accommodate 30 students and professors for a summer class
- Organized menus from three restaurants to allow for working lunches

UGA IPBGG Graduate Student Association, *Plant Sale and Fundraising Chair*, Griffin, GA May 2021-May 2022
- Acquired resources for a plant sale to raise money for PBGG graduate student events

Annual American Peanut Research and Education Society Meeting, *Volunteer*, Auburn, AL July 11, 2019
- Cleaned up the conference area to allow for other meetings to take place afterwards in a timely manner

Intern for a Day Program with the Environmental Protection Agency, *Intern*, Athens, GA December 18, 2017
- Walked through chemical processes required to analyze soil contents to uncover environmental health concerns

Intern for a Day Program with the Georgia Department of Agriculture, *Intern*, Atlanta, GA May 10, 2017
- Interviewed former plant breeders as they shared how plant breeding had evolved since when they first started

PUBLICATIONS

- **Bagwell, J.**, M. Subedi, S. Sapkota, B. Lopez, B. Ghimire, Z. Chen, G. D. Buntin, B. A. Bahri, M. Mergoum, September 17, 2023, Quantitative trait locus analysis of Hessian fly resistance in soft red winter wheat, Genes, 2023, Vol. 14, no. 9: 1812. https://doi.org/10.3390/genes14091812.
- Subedi, M., B. Ghimire, **J. Bagwell**, J. Buck, M. Mergoum, January 5, 2023, Wheat end-use quality: State of art, genetics, genomics-assisted improvement, future challenges, and opportunities, Frontiers in Genetics, 2022, Vol. 13, https://doi.org/10.3389/fgene.2022.1032601.
- **Bagwell, J.**, M. Subedi, B. Ghimire, B. Lopez, S. Sutton, J. W. Buck, M. Mergoum, B. A. Bahri, December 26, 2022, Genetics of resistance to bacterial leaf streak, leaf rust, and stripe rust diseases using a GWAS in soft red winter wheat, Phytopathology, 2022, Vol. 112(11S): Plant Health 2022 Supplement, p. S3.196, https://doi.org/10.1094/PHYTO-112-11-S3.1.
- Saxena, H., M. Willis, W. T. Spratling, **J. Bagwell**, C. B. Vermeer, A. D. Martinez-Espinoza, P. Raymer, B. A. Bahri, December 26, 2022, Emergence of two new fungal diseases on tall fescue in Georgia, Phytopathology, 2022, Vol. 112(11S): Plant Health 2022 Supplement, p. S3.185, https://doi.org/10.1094/PHYTO-112-11-S3.1.
- Bahri, B. A., S. Sapkota, **J. Bagwell**, Z. Chen, P. Raymer, A. D. Martinez-Espinoza, August, 2, 2021, Stem rust and crown rust of tall fescue in Georgia and the development of an F1 population to identify stem rust resistance genes, Phytopathology, 2021, Vol.111(10S), p.S2.84, https://doi.org/10.1094/PHYTO-111-10-S2.1.

POSTER PRESENTATIONS

- **John W. Bagwell**, Madhav Subedi, Suraj Sapkota, Benjamin Lopez, Zhenbang Chen, G. David Buntin, Bochra A. Bahri, Mohamed Mergoum. *Analysis of a Hessian fly resistance gene in soft red winter wheat in Georgia*. IPBGG Annual Retreat, May 17-19, 2023, Columbus, GA, USA.
- **John W. Bagwell**, Madhav Subedi, Suraj Sapkota, Bikash Ghimire, Benjamin Lopez, James W. Buck, Mohamed Mergoum, Bochra A. Bahri. *Genome-wide association studies to analyze quantitative trait loci for leaf rust resistance discovery in soft red winter wheat in the US southeast*. Georgia Association of Plant Pathologists Annual Retreat, March 7-8, 2023, Savannah, GA, USA.
- **John W. Bagwell**, Madhav Subedi, Suraj Sapkota, Benjamin Lopez, Zhenbang Chen, G. David Buntin, Bochra A. Bahri, Mohamed Mergoum. *Understanding the genetics of resistance to Hessian fly in soft red winter wheat*. Georgia/Florida Soybean and Small Grains Expo, December 15, 2022, Perry, GA, USA.
- **John W. Bagwell**, Madhav Subedi, Suraj Sapkota, Bikash Ghimire, Benjamin Lopez, M. Ali Babar, James W. Buck, Mohamed Mergoum, Bochra A. Bahri. *Using genome-wide association studies (GWAS) to discover genes governing the resistance to leaf rust in soft red winter wheat.* Georgia/Florida Soybean and Small Grains Expo, December 15, 2022, Perry, GA, USA.
- **John W. Bagwell**, Madhav Subedi, Bikash Ghimire, Benjamin Lopez, James W. Buck, Mohamed Mergoum, Bochra A. Bahri. *QTL analysis and identification of new sources of resistance to leaf rust in soft red winter wheat using GWAS*. ASA, CSSA, SSSA International Annual Meeting, November 6-9, 2022, Virtual Poster, Baltimore, MD, USA.
- **John W. Bagwell**, Madhav Subedi, Bikash Ghimire, Benjamin Lopez, Steve Sutton, James W. Buck, Mohamed Mergoum, Bochra A. Bahri. *Genetics of resistance to bacterial leaf streak, leaf rust, and stripe rust diseases using a GWAS in soft red winter wheat*. Plant Health 2022, August 6-10, 2022, Pittsburgh, PA, USA.
- **John W. Bagwell**, Madhav Subedi, Suraj Sapkota, Benjamin Lopez, G. David Buntin, Bochra A. Bahri, Mohamed Mergoum. *Deciphering the genetics of Hessian fly resistance in soft red winter wheat in the US southeast*. CROPS Conference, June 13-16, 2022, Huntsville, AL, USA.
- **John W. Bagwell**, Madhav Subedi, Bikash Ghimire, Benjamin Lopez, Steve Sutton, James W. Buck, Mohamed Mergoum, Bochra A. Bahri. *Deciphering leaf rust resistance in soft red winter wheat using GWAS*. IPBGG Annual Retreat, May 25-27, 2022, Jekyll Island, GA, USA.
- **John W. Bagwell**, Madhav Subedi, G. David Buntin, Bochra A. Bahri, Mohamed Mergoum. *Deciphering the genetics of Hessian fly resistance in soft red winter wheat in the US southeast*. Plant Center Retreat, December 15-16, 2021, Young Harris, GA, USA, Deciphering the genetics of Hessian fly resistance in soft red winter wheat in the US southeast (uga.edu).
- **John W. Bagwell**, Mohammad K. Hassan, Alvaro Sanz-Saez, Francesco Moen, Joseph W. Kloepper, Mark R. Liles, Charles Y. Chen. *Drought Tolerance of Peanut Using PGPR and Orange Peel Amendment*. 52nd American Peanut Research and Education Society Annual Meeting, July 14-15, 2020, Virtual Conference.
- **John W. Bagwell**, Mohammad K. Hassan, Alvaro Sanz-Saez, Francesco Moen, Hunter Wood, Joseph W. Kloepper, Mark R. Liles, Charles Y. Chen. *Drought Tolerance of Peanut Using PGPR and Orange Peel Amendment*. College of Agriculture Graduate Student Research Poster Showcase, October 23, 2019, Auburn, AL, USA.
- Mohammad K. Hassan, Melissa Boersma, **John W. Bagwell**, Mark R. Liles, Joseph W. Kloepper. *Orange peel powder increases growth promotion of peanut by Bacillus velezensis PGPR strains and nodulation by indigenous Rhizobia*. 51st American Peanut Research and Education Society Annual Meeting, July 9-11, 2019, Auburn, AL, USA.

ORAL PRESENTATIONS

- **John W. Bagwell**, Urtnasan Ganbaatar, Mohamed Mergoum. *Wheat Breeding: Hessian fly, leaf rust, and wheat breeding practices of the University of Georgia*. Borlaug International Agricultural Science and Technology Fellowship Program, July 12, 2023, Oral Presentation, Darkhan, Mongolia.
- **John W. Bagwell**, Madhav Subedi, Suraj Sapkota, Benjamin Lopez, Zhenbang Chen, G. David Buntin, Bochra A. Bahri, Mohamed Mergoum. *Genetic resistance to Hessian fly in soft red winter wheat in the southeastern US*. Entomological Society of America Southeastern Branch Meeting, March 12-15, 2023, Oral Presentation, Little Rock, AK, USA.
- **John W. Bagwell**, Madhav Subedi, Bikash Ghimire, Benjamin Lopez, Steve Sutton, James W. Buck, Mohamed Mergoum, Bochra A. Bahri. *Deciphering the genetics of leaf rust resistance in soft red winter wheat*. Turfgrass Research Field Day, August 3, 2022, Griffin, GA, USA.
- **John W. Bagwell**, Madhav Subedi, G. David Buntin, Bochra A. Bahri, Mohamed Mergoum. *Deciphering the genetics of Hessian fly resistance in soft red winter wheat in the US southeast*. PFG Seminar Series, February 2, 2022, Virtual Presentation.
- **John W. Bagwell**, Mohammad K. Hassan, Alvaro Sanz-Saez, Francesco Moen, Joseph W. Kloepper, Mark R. Liles, Charles Y. Chen. *Drought Tolerance of Peanut Using PGPR and Orange Peel Amendment*. Auburn University College of Agriculture Graduate Student Professional Development Tour at Bayer Crop Science, March 9-12, 2020, St. Louis, MO, USA.

CERTIFICATION

- Gylling Data Management, Inc. ARM Software Training and Certification on Navigation, Settings, Protocol and Trial Creation, Assessment Entry, Study Rules, and Reporting on October 10, 2019, Auburn University, Auburn, AL, USA.

AWARDS

University of Georgia Graduate Research Assistantship: Fall 2020 – Present

University of Georgia Fonseca Scholarship ($1,000): Fall 2022

Georgia Seed Association Scholarship ($2,000): Summer 2022

University of Georgia PBGG Travel Award ($750): Summer 2022

Auburn University Graduate Research Assistantship: Fall 2018 – Summer 2020

York Graduate Travel Fellowship ($1,250): Spring 2019

2016 Georgia Crop Production Alliance Scholarship ($1,000): Fall 2016

University of Georgia Dean's List (At least a 3.5/4.0 GPA for the semester): Spring 2016

University of Georgia Presidential Scholar (All As for the semester): Fall 2015