

Cristiano Lemes da Silva

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Profile

Geneticist with experience in classic breeding methods, genomic selection, QTL mapping, and genome-wide association analysis using genotyping-by-sequencing and SNP-chip data. Responsible for running and genomic predictions for the Kansas State Wheat Breeding Program since 2015. My career goal is to maximize crop performance by combining modern genomic approaches and breeding strategies.

Education

Kansas State University, USA

Jan 2014 – Dec 2017

Doctor of Philosophy (Ph.D.) in Genetics

Dissertation: Genomic Approaches for Mapping and Predicting Disease Resistance in Wheat

Federal University of Technology of Parana, Brazil

Feb 2011 – Feb 2013

Master of Science (MS) in Agronomy

Federal University of Technology of Parana, Brazil

Feb 2006 – Dec 2010

Bachelor of Science (BS) in Agronomy

Professional Experience

Kansas State University, USA

2014 – 2017

Position: Graduate Research Assistant – K-State Wheat Breeding Program

- Performed QTL mapping analysis using genotyping-by-sequencing data with the R package ‘qtl’ for multiple disease-related traits.
- Responsible for running genomic selection and cross-predictions for the K-State Wheat Breeding Program since 2015 using multiple statistical models.
- Conducted genome-wide association studies (GWAS) for Fusarium head blight (FHB) and wheat rust resistance using panels of elite breeding lines and 15 years of historical data from multiple breeding programs in the Central Plains of U.S.
- Managed large genotypic datasets with thousands of markers and genotypes, designed field-based breeding experiments, and handled a historical breeding data using a database in R.
- Developed and advanced multiple populations for mapping studies, performed field evaluations and selections for disease resistance in wheat including FHB, wheat rust, barley yellow dwarf virus (BYDV), and soil-borne wheat mosaic virus (SBWMV).
- Evaluated mapping populations in the field and greenhouse for multiple wheat pathogens.
- Presented research results (oral and posters) in annual meetings and published articles in scientific journals.
- Assisted with the development of the app FieldBook by translating it to Portuguese.
- Reviewed scientific manuscripts for Agronomy Journal in 2017.
- Collaborated with the K-State Wheat Blast Research Group for planning and allocation of experiments in Bolivia and Brazil.

Heartland Plant Innovations, USA

Feb 2014 – Apr 2014

Position: Temporary Intern

- During two months helped with various activities of doubled haploid production of wheat including emasculation, pollination with corn, harvest of haploids, tissue culture, and embryo rescue

Federal University of Technology of Parana, Brazil

2011 – 2013

Position: Graduate Research Assistant

- Conducted field experiments of wheat, designed yield trials, performed phenotypic selections, data collection, and statistical data analysis
- Advised five undergrads students and collaborated on writing research proposals to get funds from multiple national agencies.
- Taught part of a Plant Genetics course for 30 undergrads and co-authored 16 scientific articles.
- Participated in the organization of scientific events and presented research results at multiple conferences.

Federal University of Technology of Parana, Brazil

2006 – 2010

Position: Undergraduate Research Assistant

- Worked with field experiments of oats and wheat trials, including operations of planting, harvesting, collecting phenotypic data, and preparing summary reports.
- Received a prestigious Scholarship for scientific initiation in research, extension, and teaching activities.
- Participated in the organization of academic events including symposiums, workshops, and congresses.

Industry Experience

Wheat Breeding Intern at Biotrigo Genetica

Jul 2010 – Dec 2010

- Accompanied breeding-related activities such as field selections of segregating populations, generation advancement, emasculations, and evaluation of wheat diseases in nurseries and yield trials.
- Assisted with activities in the quality lab: sample preparation, milling, mixograph, pre-harvest sprouting tests, protein determination with NIR, and visual kernel selection.
- Helped with the paperwork for registration cultivars, and presented field days for growers.

Wheat Breeding Consultant for Biotrigo Genetica

May 2013 – Dec 2017

- Provided support for the molecular breeding lab and breeding team in various projects. Advised the choice of molecular markers, protocols, data analysis, and interpretation marker-assisted selection results.
- Intermediated collaborations with public and private research partners. Planned and performed crosses and backcrosses for projects of germplasm development and trait introgression.
- Participated in video conferences with third parties for contracting services, helping with decision-making and development of new niches of market.
- Lead genotyping projects and QTL mapping studies of traits associated with disease resistance such as tan spot, soilborne mosaic virus, and wheat blast.

Skills and Qualifications

- Experience in programming/coding with R, Python, Linux, Tassel 4 and 5.
- Machine learning: scheduled, ran and scaled jobs in the K-State Super Computer (Beocat) using multiple processes, parallel computing, generating automated pipelines to output results.
- Capable of using multiple statistical software: SAS, MapChart, JoinMap, Genes, and Microsoft Office.
- Possess the interpersonal skills of team-working, communication, problem-solving, and leadership.
- Fluent in English, Portuguese, and advanced level of Spanish.

Areas of Expertise

Field Phenotyping, Experimental Design, Statistical Analysis, Quantitative Analysis, Basic Bioinformatics, Big Data Management, Predictive Modeling, Genotyping-By-Sequencing, Marker Assisted Selection, QTL Mapping, Genomic Selection, Cross-Prediction, Genome Wide Association Studies, SNP-genotyping, Gene Pyramiding, Germplasm Development.

Awards and Honors

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- Recipient of the Warren Genetics Scholarship in 2015, 2016, and 2017.
 - Recipient of multiple Scholarships in the K-State Department of Agronomy from 2014 – 2017.

Selected Publications

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1. Jarquín D., **Lemes da Silva C.**, Gaynor R.C., Poland J. *et al.* (2017). Increasing Genomic-Enabled Prediction Accuracy by Modeling G×E Interactions in Kansas Wheat. *Plant Genome*, v.10(2): 1-15.
 2. **Lemes da Silva C.**, Bornhofen E., Todeschini M.H., Mioli A.S. *et al.* (2015). Selecting Wheat Genotypes for Yield and Baking Quality in Multi-Environment Trials. *Ceres*, v.62 (4): 333-341.
 3. **Lemes da Silva C.**, Benin G., Rosa A.C., Beche E., Bornhofen E., *et al.* (2015). Monitoring levels of deoxynivalenol in wheat flour of Brazilian varieties. *Chilean J. Agric. Res.*, v.75(1): 50-56.
 4. Storck L., Benin G., **Lemes da Silva C.** *et al.* (2015). A Geostatistical Approach for Testing Wheat Lines Using a Non-Replicated Design. *Australian Journal of Crop Science*, v.9(5): 424-430.
 5. Munaro L.B., Benin G., **Lemes da Silva C.** *et al.* (2014). Brazilian Spring Wheat Homogeneous Adaptation Regions can be Dissected in Major Mega-Environments. *Crop Science*, v. 54: 1374-1383.
 6. Beche E., Benin G., **Lemes da Silva C.** *et al.* (2014). Genetic Gain in Yield and Changes Associated with Physiological Traits in Brazilian Wheat During the 20th Century. *European Journal of Agronomy*, v.61: 49-59.

More publications: https://www.researchgate.net/profile/Cristiano_Lemes2/publications

Professional Memberships

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- Member of the National Association of Plant Breeders (NAPB) August 2015 – present

Personal References

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- **Allan Fritz:** Hard Red Winter Wheat Breeder and Professor at Kansas State University – akf@ksu.edu
 - **Jesse Poland:** Associate Professor at Kansas State University, Associate Director of the Wheat Genetics Resource Center and Director of the Feed the Future Innovation – jpoland@ksu.edu
 - **Robert Bowden:** Hard Winter Wheat Genetics Researcher at USDA and Adjunct Professor at Kansas State University – robert.bowden@ars.usda.gov
 - **Romulo Lollato:** Assistant Professor of Agronomy, Wheat and Forages Extension Specialist at Kansas State University – lolato@ksu.edu