LEONARDO VOLPATO

Precision Phenotyping Postdoctoral Research

Corteva Agriscience - Johnston, IA.
June 2023 to present

EDUCATION

2009 — **Instituto Federal do Triângulo Mineiro - IFTM**
T.E. in Technical Course in Agriculture — Uberlandia, Brazil

2014 — **Federal University of Viçosa - UFV**
B.S. in Agronomy — Viçosa, Brazil

2016 — **Federal University of Viçosa - UFV**
M.S. in Plant Breeding — Viçosa, Brazil

Thesis: Selection of soybean progeny for grain yield with the use of mixed models

2020 — **Federal University of Viçosa - UFV**
Ph. D. in Plant Breeding — Viçosa, Brazil

Thesis: High-throughput phenotyping for soybean plant maturity date and wheat plant height using unmanned aerial system

PROFESSIONAL RESEARCH EXPERIENCE

2023 | present — **Precision Phenotyping Postdoctoral Research Associate**
Corteva Agriscience — Johnston, IA - USA

- Development of precision phenotyping pipelines.
- Remote sensing and proximal sensor development pipelines.
- Precision phenotyping Data Scientist and scientific reports.

2021 | 2023 — **Postdoctoral Research Associate**
Michigan State University - MSU — East Lansing, MI - USA

- Remote sensing pipelines at dry bean breeding program.
- GxE interactions data analysis.
- Precision phenotyping using ML approaches.

2019 | 2020 — **Visiting Research Scholar**
University Of Minnesota - UMN — Minneapolis, MN - USA

- Applied remote sensing approaches in the soybean variety development pipeline.
- Conducted field data analyses using drone imagery.
- Worked collaboratively with other graduate students and technicians.
- Pipeline implemented in R to estimate plant maturity date using HTP/UAS methods

2018 | 2019 — **Visiting Student**
International Maize and Wheat Improvement Center - CIMMYT — Mexico City, Mexico

- Supported the entire remote sensing components of wheat and maize plant breeding trials.
- Performed drone imagery and software analyses.
- Conducted missions and collected data for HTP using Unmanned Aerial System (UAS).
- Pipeline developed for measuring agronomic trait such as plant height, biomass, lodging and biologic stress using UAS.

CONTACT INFO

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cnpq.com/LV
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STATISTICAL SOFTWARE

R, Python, and GIS tools.

EXPERIENCED AREAS

Statistical and bioinformatics analysis, mixed models, GxE interaction, Genotyping and Phenotyping in Plant Breeding. Machine Learning, CNN and Deep Learning. Field performance of UAS-flights. Remote pilot certificate in FAA-USA.

RESEARCH STRENGTHS

Full experience with remote sensing analysis, drone imagery use and HTP pipelines, Genomic selection and Multi-trait multi-environment models. Machine learning models.

2010 | 2014

Intern

Federal University of Viçosa - UFV

Viçosa, Brazil

- Resistance of Spodoptera frugiperda (Lepidoptera: Noctuidae) to proteins from *Bacillus thuringiensis*
- Evaluation of tropical maize (*Zea mays* L.) lines fornitrogen use efficiency
- Selection within andbetween families of ornamental pepper (*Capsicum* spp.)

PROFESSIONAL/ACADEMIC EXPERIENCE

2011 | 2012

AgroPlan-UFV - Junior Enterprise Agronomy

Federal University of Viçosa - UFV

Viçosa, Brazil

2013 | 2014

Teaching assistant in Agriculture Entomology

Federal University of Viçosa - UFV

Viçosa, Brazil

2014

Regulation of seeds and seedlings, Intern

Federal Agriculture, Livestock and Supply - MAPA

Viçosa, Brazil

2015 2017

Academic group coordinator

GenMelhor-UFV - Study Group of Genetics and Breeding

Viçosa, Brazil

2021 | 2022

Remote assistance phenotyping

Celeiro Sementes - Pipeline developed to implement phenotyping approaches in the soybean breeding program

Piaui, Brazil

SELECTED PUBLICATIONS

2018

Selection of inbred soybean progeny: an approach with population effect.

Volpato, L.; Simiqueli, G.F.; Alves, R.S.; Rocha, J. R. A. S. C.; Del Conte, M. V.; Resende, M. D. V.; Carneiro, P. C. S.; Silva, F. L. Plant Breeding, v. 138, p. i-iv, 451-672.

2019

A. Multi-trait multi-environment models in the genetic selection of segregating soybean progeny.

Volpato, L; Alves, R.S.; Teodoro, P.E.; Resende, V. M. D.; Nascimento, M.; Nascimento, A. C. C.; Ludke, W.H.; Lopes, S. F. PLoS One, v. 14, p. e0215315.

2019

SNP markers associated with soybean partial resistance to Phytophthora sojae.

Ludke, W. H.; Schuster, I.; Nora, T. D.; Oliveira, A. B.; Soares, B. A.; **Volpato, L.**; Silva, F. L. Crop Breeding and Applied Biotechnology, v. 19, p. 31-39

2020

Inference of population effect and progeny selection via a multi-trait index in soybean breeding.

Volpato, L.; Rocha, J. R. A. S. C.; Alves, R. S.; Ludke, W. H.; Oliveira, A. B.; Silva, F. L. Acta Scientiarum. Agronomy, v. 43, p. 10.4025/actasci.

2021

High Throughput Field Phenotyping for Plant Height Using UAV-Based RGB Imagery in Wheat Breeding Lines: Feasibility and Validation.

Volpato, L.; Pinto, F.; González-Pérez, L. ; Thompson, I. G. ; Borem, A.; Reynolds, M.; Gérard, B.; Molero, G.; Rodrigues, F. A. Frontiers in Plant Science, v. 12, p. 591587.

2021

High Throughput Field Phenotyping for Plant Height Using UAV-Based RGB Imagery in Wheat Breeding Lines: Feasibility and Validation.

Volpato, L.; Dobbels. A.; Borem, A,; Lorenz, A. J. The Plant Phenome J.,10.1002/ppj2.20018.

2021

Genomic selection with rapid cycling: Current insights and future prospects.

Volpato, L.; Bernardeli, A.; Gomez, F. Crop Breeding and Applied Biotechnology. 21(S): e394721S14.

2023 **A Retrospective Analysis of Historical Data of Multi-Environment Trials for Dry Bean (*Phaseolus vulgaris* L.) in Michigan.**

Volpato, L.; Gomez, F.; Wright E. Crop Science. 10.1002/csc2.21184.

2024 **Drone-Based Digital Phenotyping to Evaluating Relative Maturity, Stand Count, and Plant Height in Dry Beans (*Phaseolus vulgaris* L.) .**

Volpato, L.; Wright, E.; Gomez, F. In press. Plant Phenomics.Preprint at: https://doi.org/10.21203/rs.3.rs-3160633/v1

SELECTED AWARD

2022 **National Association of Plant Breeding (NAPB) early career award - Ames, Iowa.**

NAPB Graduate Student Poster Competition titled *"Estimation of stand count in dry beans using high resolution imagery: feasibility and validation"*.

LANGUAGE

Portuguese

Native

English

Fluent

Spanish

Working knowledge