Luis Fernando Delgado Muñoz

DATA SCIENTIST - LECTURER

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I am an MSc. Agro-Industrial Engineer with expertise in data handling and analysis in agronomy. My experience spans roles as a data scientist in cassava breeding at Alliance of Bioversity and CIAT, and as a professor. I combine data-driven approaches with agricultural studies, proficient in R, Python, command line, and GIT/GitHub. Skilled in managing large datasets, developing statistical models, and effective communication. My commitment to data science in agriculture is underscored by my dedication to teaching and empowering the next generation of professionals.

Current Appointments

The Alliance Bioversity International and CIAT   *Palmira, Colombia*
DATA SCIENTIST - CASSAVA PROGRAM. ⬀   *Jul 2022–Present*

Unidad Central del Valle.   *Tulúa, Colombia*
LECTURER, ENGINEERING FACULTY, AGROPECUARY ENGINEERING PROGRAM ⬀   *Aug 2020–Present*

Education

Universidad Nacional de Colombia Sede Palmira   *Palmira, Colombia*
AGROINDUSTRIAL ENGINEERING   *2015*

Universidad Nacional de Colombia Sede Palmira   *Palmira, Colombia*
MSc. AGRICULTURAL SCIENCES   *2019*
- Best master Thesis Award Laureate (2019)
- **Thesis**: Characterization of Tabasco and Cayenne chile oleoresins under different nitrogen and soil moisture levels. ⬀

Research Experience

The Alliance Bioversity International and CIAT   *Palmira, Colombia*
DATA SCIENTIST, CASSAVA PROGRAM   *Jul 2022–Present*
- Analize data of historical trials in the past 50 years from the Cassava Program.
- Calculate the genetic gain for all breeding populations of the cassava program.
- Develop standard analysis pipelines for advance yield trials, early trials, post-harvest quality data, and genotypic data.
- Submit report on genetic gain in cassava, beans, rice and forages to Excellence in Breeding through CGIAR Genetic Innovation Initiatives.
- Support the breeding team through the full breeding cycle from design, and data analysis to publication.
- Management and storage of data analysis in the Cassava2050 gitHub account See GitHub ⬀
- Collaborate with the OneCG Biometrics Group to develop data analysis tools.

The Alliance Bioversity International and CIAT - Manpower group   *Palmira, Colombia*
RESEARCH ASSISTANT FELLOW, QUALITY POSTHARVEST LAB, CASSAVA PROGRAM   *Dec 2020–Jun 2022*
- Provide support for raw root processing, textural analysis, and optimal cooking time evaluations of breeding populations of the cassava program.
- Training of panelists on the sensory attributes of cooked cassava roots and establishment of the first sensory panel of the cassava breeding program.
- Provide support for data cleaning, curation, and statistical analysis of RTB Foods project data.

Universidad Nacional de Colombia Sede Palmira   *Palmira, Colombia*
STATISTICAL DATA ANALYST   *Dec 2021–Feb 2022*
- Statistical analysis of Hass avocado demonstration plots in the municipality of Roldanillo.
- Statistical analysis of blackberry crop demonstration plots in the municipality of Pradera

Teaching and Supervision

Lecturer *Tulúa, Colombia*

Universidad Unidad Central del Valle Cauca *Aug 2020–Present*

- Provide teaching at the Faculty of Engineering, Agricultural Engineering Course, including subjects: Research Tools I and Experimental Design with R Programming.

Guest lecturer *Faisalabad, Pakistan*

International Atomic Energy agency *Nov 2023–Nov 2023*

- Invited by the IAEA to train participants from Pakistan, South East Asia and the Pacific Islands in experimental design and phenotypic data analysis at the Regional Training Course in Experimental Design and Data Analysis of Mutant Populations.

Lecturer *Palmira, Colombia*

Universidad Nacional de Colombia Sede Palmira *Feb 2020–Jul 2023*

- Provide teaching at the Faculty of Engineering and Administration, PhD program: Food Science and Technology, courses include: Analysis and Experimental Design

Additional training and professional development

2023	**Data Bootcamp for Genomic Prediction in Plant Breeding** (University of Minnesota)
2023	**Genomewide Markers in plant breeding** (University of Minnesota)
2023	**A Short Introduction to ASReml-R** (VSN international)
2022	**Genomic Prediction and Selection** (NextGen Cassava Breeding Project)
2021	**Phenotypic modelling of multi-enviroment trials** (Wageningen University)
2021	**Design of experiments for optimization** (Udemy)

Skills

Analytical	Programming	Software/Tools
Phenotype database curation/management	R (advanced)	Git
Univariate/multivariate data analysis	Python (intermediate)	GitHub
Linear mixed models	Asreml	Shiny
Reproducible research	Linux (intermediate)	LaTeX

Selected presentations

2023	**Data analysis pipeline in cassava breeding, Cali, Colombia**, Presented at the Alliance Science Seminar Series See recording ↗
2023	**Enhancing the Nutritional Value and Agronomic Performance of Tuber Crops: Making Genetic Gains in Biofortified Cassava Over a Decade at CIAT, Ben Guerir, Morocco.**, Poster presentation at The African Plant Breeders Association Conference 3rd Edition See poster ↗
2023	**Adding value and minimizing losses: Post-harvest deterioration in Cassava, Cali, Colombia**, Presented at the Cassava retreat 2023 See slides ↗
2022	**Mattson cooker improves the accuracy of cassava cooking time evaluation, Nairobi, Kenya**, Poster presentation at 19th International Triennial Symposium of the International Society for Tropical Root Crops (ISTRC)
2022	**International sustainable agriculture training course**, Presented at Universidad Central del Valle del Cauca for undergraduated students from Colombia and Guatemala
2022	**Assessing Boiled Cassava Cooking time: Mattson cooker replaces subjective fork detection method on boiled cassava roots**, Presented at the RTBfoods Webinar See recording ↗
2017	**Agro-industrial trends in the uses of capsicum species**, Invited to speak at the 1 st Ibero-American Congress on Agrifood Sciences, SENA

Publications

2024

Iragaba, P., Adinsi, L., **Delgado, L. F.**, Nanyonjo, A. R., Nuwamanya, E., Wembabazi, E., Kanaabi, M., Honfozo, L., Hotegni, F., Djibril-Moussa, I., Londoño, L. F., Bugaud, C., Dufour, D., Kawuki, R. S., Akissoé, N., & Tran, T.(2024). **Definition of sensory and instrumental thresholds of acceptability for selection of cassava genotypes with improved boiling properties**.J Sci Food Agric. `https://doi.org/10.1002/jsfa.13363`

2023

Meghar, K., Tran, T., **Delgado, L.F.**, Ospina, M.A., Moreno, J.L., Luna, J., Londono, L.F., Dufour, D., Davrieux, F.(2023). **Hyperspectral imaging for the determination of relevant cooking quality traits of boiledcassava**.J Sci Food Agric. `https://doi.org/10.1002/jsfa.12654`

Mestres C., Taylor M., McDougall G., Arufe S., Tran T., Nuwamanya E., Dufour D., Nakitto M., Meghar K., Rinaldo D., Ollier L., Domingo R., Moreno J.L., **Delgado Muñoz, L.F.**, Kouassi H.A., Diby N'Nan Afoué S., Mbeguie-A-Mbeguie D., Akissoe N., Adinsi L., Rolland-Sabate A. (2023). **Contrasting effects of polysaccharide components on the cooking properties of Roots, Tubers and Bananas (RTBs)**.J Sci Food Agric. `https://doi.org/10.1002/jsfa.12914`

Ayetigbo, O., Arufe, S., Kouassi, A., Adinsi, L., Adesokan, M., Escobar, A., **Delgado, L. F.**, Tanimola, A., Oroniran, O., Kendine Vepowo, C., Nakitto, M., Khakasa, E., Chijioke, U., Nowakunda, K., Ngoh Newilah, G., Otegbayo, B., Akissoe, N., Lechaudel, M., Tran, T., … Dufour, D. (2023). **Review of instrumental texture measurements as phenotypic tool to assess textural diversity of root, tuber and banana food products.** J Sci Food Agric. `https://doi.org/10.1002/jsfa.13072`

References

- Xiaofei Zhang, PhD. Assistant Professor. Phone: +1 (612)802-8711 Email: `xfczhang@ucdavis.edu`

- Danilo Moreta, PhD. Postdoctoral researcher Cassava program CIAT. Phone: +57 321 2531441 Email: `d.moreta@cgiar.org`