Leonardo M. Bastos

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Education

Ph.D. in Soil Fertility Management/Precision Agriculture with minor in Statistics – University of Nebraska-Lincoln / 2015-2019

M. S. in Agronomy/Soil Microbiology – Kansas State University / 2012-2014

B.S. in Agronomy – Federal University of Santa Maria, Brazil / 2007-2011

Brief Bio

I am an Assistant Professor in Integrative Precision Agriculture in the Department of Crop and Soil Sciences at the University of Georgia and have dedicated my career to exploring agronomically sustainable solutions that optimize farm output while minimizing environmental impacts. My research program focuses on proximal and remote sensor-based plant vigor assessment and variable rate fertilizer and plant growth regulator recommendation, and regional to country-scale environmental characterization of crop response using open-source weather and soils data, machine learning, and statistical programing. I teach two courses per year related to using statistical programing languages to collect, analyze, and develop precision agriculture workflows; and on data science and statistical programming applications in agriculture that include experimental design and machine learning. I make all my teaching material open-source and freely available on YouTube and GitHub (see laboratory website link above for more information).

Work Experience

Assistant Professor in Integrative Precision Agriculture – University of Georgia – 2022 – current

Post-Doctoral Researcher in Integrative Precision Agriculture – University of Georgia – 2022 Jan–July, under the supervision of Dr. Wesley Porter

Post-Doctoral Researcher in Cropping Systems Remote Sensing – Kansas State University – 2019 – 2021 (2.5 years), under the supervision of Dr. Ignacio Ciampitti

Selected Refereed Publications

Google Scholar link: https://scholar.google.com.br/citations?user=vFZqRRsAAAAJ&hl

1. Scarpin, G. J., Bhattarai, A., Hand, L. C., Snider, J. L., Roberts, P. M., & **Bastos, L. M.** (2025). Cotton lint yield and quality variability in Georgia, USA: Understanding genotypic and environmental interactions. *Field Crops Research*, *325*, 109822. https://doi.org/10.1016/j.fcr.2025.109822
2. Ortez, O. A., Lindsey, A. J., Thomison, P. R., Coulter, J. A., Singh, M. P., Carrijo, D. R., Quinn, D. J., Licht, M. A., & **Bastos, L. M.** (2023). Corn response to long-term seasonal weather stressors: A review. *Crop Science*, *63*(6), 3210–3235. https://doi.org/10.1002/csc2.21101
3. Weisberger, D. A., **Bastos, L. M.**, Sykes, V. R., & Basinger, N. T. (2023). Do cover crops suppress weeds in the U.S. Southeast? A meta-analysis. *Weed Science*, *71*(3), 244–254. https://doi.org/10.1017/wsc.2023.21
4. **Bastos, L. M.**, Faye, A., Stewart, Z. P., Akplo, T. M., Min, D., Prasad, P. V. V., & Ciampitti, I. A. (2022). Variety and management selection to optimize pearl millet yield and profit in Senegal. *European Journal of Agronomy*, 139, 126565. https://doi.org/10.1016/j.eja.2022.126565

5. Fink, K. P., Grassini, P., Rocateli, A., **Bastos, L. M.**, Kastens, J., Ryan, L. P., Lin, X., Patrignani, A., & Lollato, R. P. (2022). Alfalfa water productivity and yield gaps in the U.S. central Great Plains. *Field Crops Research*, *289*, 108728. https://doi.org/10.1016/j.fcr.2022.108728
6. Correndo, A. A., Rosso, L. H. M., Hernandez, C. H., **Bastos, L. M.**, Nieto, L., Holzworth, D., & Ciampitti, I. A. (2022). metrica: An R package to evaluate prediction performance of regression and classification point-forecast models. *Journal of Open Source Software*, *7*(79), 4655. https://doi.org/10.21105/joss.04655
7. Santos, L. B., **Bastos, L. M.**, de Oliveira, M. F., Soares, P. L. M., Ciampitti, I. A., & da Silva, R. P. (2022). Identifying nematode damage on soybean through remote sensing and machine learning techniques. *Agronomy*, *12*(10), 2404. https://doi.org/10.3390/agronomy12102404
8. Carcedo, A. J. P., **Bastos, L. M.**, Yadav, S., Mondal, M. K., Jagadish, S. V. K., Kamal, F. A., Sutradhar, A., Prasad, P. V. V., & Ciampitti, I. (2022). Assessing impact of salinity and climate scenarios on dry season field crops in the coastal region of Bangladesh. *Agricultural Systems*, *200*, 103428. https://doi.org/10.1016/j.agsy.2022.103428
9. **Bastos, L. M.**, Froes de Borja Reis, A., Sharda, A., Wright, Y., & Ciampitti, I. A. (2021). Current status and future opportunities for grain protein prediction using on- and off-combine sensors: a synthesis-analysis of the literature. *Remote Sensing*, *13*(24), 5027. https://doi.org/10.3390/rs13245027
10. Hernández, C. M., Faye, A., Ly, M. O., Stewart, Z. P., Vara Prasad, P. V., **Bastos, L. M.**, Nieto, L., Carcedo, A. J. P., & Ciampitti, I. A. (2021). Soil and climate characterization to define environments for summer crops in Senegal. *Sustainability*, *13*(21), 11739. https://doi.org/10.3390/su132111739
11. Jaenisch, B. R., Munaro, L. B., **Bastos, L. M.**, Moraes, M., Lin, X., & Lollato, R. P. (2021). On-farm data-rich analysis explains yield and quantifies yield gaps of winter wheat in the U.S. central Great Plains. *Field Crops Research*, *272*, 108287. https://doi.org/10.1016/j.fcr.2021.108287
12. Momesso, L., Crusciol, C. alexandre costa, Soratto, R. P., Tanaka, K. S., Costa, C., **Bastos, L. M.**, & Ciampitti, I. A. (2021). Cover crop and early nitrogen management for common bean in a tropical no-till system. *Agronomy Journal*, agj2.20815. https://doi.org/10.1002/agj2.20815
13. **Bastos, L. M.**, Rice, C. W., Tomlinson, P., & Mengel, D. (2021). Untangling soil-weather drivers of daily N_2O emissions and fertilizer management mitigation strategies in no-till corn. *Soil Science Society of America Journal*, saj2.20292. https://doi.org/10.1002/saj2.20292
14. Secchi, M. A., **Bastos, L. M.**, Stamm, M. J., Wright, Y., Foster, C., Messina, C. D., & Ciampitti, I. A. (2021). Winter survival response of canola to meteorological variables and adaptative areas for current canola germplasm in the United States. *Agricultural and Forest Meteorology*, *297*, 108267. https://doi.org/10.1016/j.agrformet.2020.108267
15. **Bastos, L. M.**, Carciochi, W., Lollato, R. P., Jaenisch, B. R., Rezende, C. R., Schwalbert, R., Vara Prasad, P. V., Zhang, G., Fritz, A. K., Foster, C., Wright, Y., Young, S., Bradley, P., & Ciampitti, I. A. (2020). Winter wheat yield response to plant density as a function of yield environment and tillering potential: A review and field studies. *Frontiers in Plant Science*, *11*, 54. https://doi.org/10.3389/fpls.2020.00054

Society Service

1. Vice-deputy elected, Nitrogen Community with the International Society of Precision Agriculture. 2025-2027.
2. Associate Editor, Agronomy Journal, Precision Conservation and Farming. 2025-2027.
3. Leader, Precision Agriculture Systems Community with the American Society of Agronomy. 2024.
4. Vice-leader elected, Precision Agriculture Systems Community with the American Society of Agronomy. 2023.