

HECTOR HUGO FAJARDO DURAN

Graduate Research Assistant in Biosystems Analytics

North Carolina State University, Department of Biological and Agricultural Engineering

3100 Faucette Drive, Raleigh, NC 27695-7625 • hhfajard@ncsu.edu • 225-746-3871

EDUCATION

<u>College/University</u>	<u>Major</u>	<u>Degree & Year</u>
North Carolina State University	Biological and Agricultural Engineering (Systems Analysis Concentration) & Certificate in Ag Data Analytics	PhD., 2026
Louisiana State University	Soil fertility & Certificate in GIS	M.Sc., 2022
Higher University of San Andres (Universidad Mayor de San Andrés)	Agricultural Engineering	B.Sc., 2015

RESEARCH AND PROFESSIONAL EXPERIENCE

North Carolina State University (NCSU), Raleigh, NC

- Graduate Research Assistant, Department of Biological and Agricultural Engineering (BAE). August 2022 to present.
 - Interdisciplinary research and training through the NSF-funded Science and Technologies for Phosphorus Sustainability (STEPS) Center.
 - Hydrological process-based modeling with Soil and Water Assessment Tool (SWAT).
 - Statistical and machine learning modeling for nutrient management in agricultural systems. Expertise in Data Analytics.

Louisiana State University (LSU), Baton Rouge, LA

- Graduate Research Assistant, School of Plant, Environmental, and Soil Sciences (SPESS). August 2019 to 2022.
 - Soil extraction procedures and plant tissue analysis for content and determination of nutrients. Expertise in laboratory procedures.
 - Remote sensing data management in agriculture, for ground-based and aerial imagery. Expertise in remote sensing procedures.

Work Experience (Industry), La Paz & Tarija, Bolivia

- Irrigation systems management consultant: Different irrigations systems in Bolivia. 2014 –2019
 - Agricultural extension officer. Projected the irrigation plan and designed the operation and maintenance program of the irrigation system. Worked with farmers' associations conformed by 30 to 280 small farmers.

Higher University of San Andres (Universidad Mayor de San Andrés), La Paz, Bolivia

- Research Assistant: Institute of agricultural and natural resources research (IIAREN, from the acronym in Spanish). August 2013 – June 2014
 - Researched in Aquacrop model calibrating and validating the soil fertility component of the model for quinoa.

- Teacher Assistant: Course on "Soil management and conservation". 2013
 - Taught to an average to 35 students per semester on, theoretical classes on soil degradation and practices to preserve and manage soil.
- Teacher Assistant: Course on "Soil Science". 2011 –2012
 - Taught to an average of 50 students per semester on, theoretical classes on soil properties and laboratory classes on soil physics.

PUBLICATIONS

REFEREED JOURNAL PUBLICATIONS

- Van Gaelen, H., Tsegay, A., Delbecque, N., Shrestha, N., García, M., **Fajardo, H.**, Miranda, R., Vanuytrecht, E., Abrha, B., Diels, J., Raes, D. 2015. A semi-quantitative approach for modelling crop response to soil fertility: evaluation of the Aquacrop procedure. *Journal of Agricultural Science*, 153(7), 1218–1233.
- **Fajardo, H.**, Garcia, M., Raes, D., Van Gaelen H. 2017. Validation of the Aquacrop model for different soil fertility levels in quinoa crop in the Bolivian highlands. *Cintex Journal*. Volume 21 – Number 2. Research and Extension Center of the Pascual Bravo University Institution.

NON-REFEREED TECHNICAL AND EXTENSION PUBLICATIONS

- B. Tubana, D. Forestieri, **H. Fajardo**, D. Mayorga, H. Mendoza, K. Guardado, A. Bratton, S. Navarro and M. Dalen. 2022. Research on Soil Fertility in Sugarcane Production. LSU AgCenter Sugar Research Station 2021 Annual Report. pp. 166-172.
- B. Tubana, D. Forestieri, H. Mendoza, M. Dalen, **H. Fajardo**, K. Guardado, A. Bratton, S. Navarro and D. Mayorga. 2022. Nitrogen Management Research in Louisiana Sugarcane Production Systems. LSU AgCenter Sugar Research Station 2021 Annual Report. pp. 173-181.
- B. Tubana, D. Forestieri, J. Cruz, M. Dalen, **H. Fajardo**, D. Mayorga, H. Mendoza, D. Scudeletti, and D. Galam. 2021. Research on Soil Fertility in Sugarcane Production. LSU AgCenter Sugar Research Station 2020 Annual Report. pp. 167-175.
- B. Tubana, D. Forestieri, H. Mendoza, M. Dalen, **H. Fajardo**, J. Cruz, D. Galam, and D. Mayorga. 2021. Nitrogen Management Research in Louisiana Sugarcane Production Systems. LSU AgCenter Sugar Research Station 2020 Annual Report. pp. 176-187.
- B. Tubana, D. Forestieri, H. Mendoza, M. Dalen, **H. Fajardo**, J. Cruz, D. Burns, R. Frazier, and S. Viator. 2020. Nitrogen Management Research in Louisiana Sugarcane Production Systems. LSU AgCenter Sugar Research Station 2019 Annual Report. pp. 179-189.
- B. Tubana, **H. Fajardo**, and D. Forestieri. 2020. Sensor-Based Prediction of Cover Crops Biomass and Nutrient Recovery. *Louisiana Agriculture Magazine* 63(4):13.
- García, M., Miranda, R., **Fajardo, H.** 2013. Manual of soil fertility management under deficit irrigation for quinoa crop in the Bolivian highlands UNESCO – CAZALAC – LAC.

HONORS AND AWARDS

- Second place Master Student Oral Competition, Cover Crop Management Community, ASA-CSSA-SSSA International Annual Meeting, 2022.
- Graduate Student Travel Award, American Society of Agronomy – Crop Science Society of America – Soil Science Society of America, 2022.

- Graduate Merit Award, College of engineering North Carolina State University, 2022
- Robert O. Evans Fellowship Award, North Carolina State University, 2022.
- Bridge Program Award from the Accelerate Integration of Engineering and Agricultural Research using Artificial Intelligence Network of Networks, North Carolina State University, 2022
- American Society of Sugar Cane Technologists Fellowship Award, 2022
- Louisiana Agricultural Consultants Association Scholarship, 2022
- Encompass Scholar for the 2021–2022-year, American Society of Agronomy – Crop Science Society of America – Soil Science Society of America.
- American Society of Sugar Cane Technologists Fellowship Award, 2021
- Third place Master Student Oral Competition, Cover Crop Management Community, ASA-CSSA-SSSA International Annual Meeting, 2020
- Phi Kappa Phi Honor Society LSU Chapter Fellowship Award, Outstanding Masters Student, 2020.
- American Society of Sugar Cane Technologists Fellowship Award, 2020
- Scholarship from The Bolivian Government, for a Master's degree on Soil Science, 2019
- Scholarship from The Egyptian International Center for Agriculture, for a Training course in Soil and Water Management, 2017.
- Award for young researchers “Humberto Gandarillas Santa Cruz”, National Academy of Sciences Bolivia, October 2016, La Paz, Bolivia.

CONFERENCE ABSTRACTS AND PRESENTATIONS

- **H. Fajardo**, D. Forestieri, D. Mayorga, H. Mendoza, J. Cruz, K. Guardado, M. Vieira, M. Dalen and B. Tubana. Evaluation of NDVI for Predicting Cover Crops Biomass and Nutrient Uptake Under Louisiana Sugarcane Production System. ASA-CSSA-SSSA International Annual Meetings. November 6-9, 2022, Baltimore, MD.
- **H. Fajardo**, D. Forestieri, H. Mendoza, D. Mayorga, K. Guardado, M. Vieira, M. Dalen and B. Tubana. Impact of Planting Method and Rate of Cover Crops on Soil Nutrients Levels and on Sugarcane Yield and Quality Components. ASA-CSSA-SSSA International Annual Meetings. November 6-9, 2022, Baltimore, MD.
- K Guardado, B. Tubana, D. Forestieri, H. Mendoza, **H. Fajardo**, M. Dalen, D. Mayorga, M. Vieira and C. Darnall. Effect of Implementing Best Management Practices in Louisiana's Sugarcane Production System. ASA-CSSA-SSSA International Annual Meetings. November 6-9, 2022, Baltimore, MD.
- D. Mayorga, B. Tubana, M. Dalen, H. Mendoza, D. Forestieri, **H. Fajardo**, K. Guardado, M. Vieira and C. Darnall. Effect of Different Sulfur Fertilizers on Soybean-Corn Rotation System in Louisiana. ASA-CSSA-SSSA International Annual Meetings. November 6-9, 2022, Baltimore, MD.
- J. Cruz, B. Tubana, M. Dalen, **H. Fajardo**, H. Mendoza, D. Mayorga, L. Fultz and J. Ham. Effect of Silica-Solubilizing Bacteria Inoculants on Plant-Available Silicon Content of Selected Louisiana Soils and Its Impact on Rice Productivity. ASA-CSSA-SSSA International Annual Meetings. November 6-9, 2022, Baltimore, MD.
- **H. Fajardo**, N. Nelson, D. Obenour. Coupling process-based and isotope mixing models for phosphate source attribution in ecological systems. Tri-State American Society of Agricultural and Biological Engineers Meeting. November 3-4, 2022, Raleigh, NC.
- **H. Fajardo**, D. Forestieri, D. Mayorga, H. Mendoza, J. Cruz, M. Dalen, and B. Tubana. Evaluation of NDVI for Predicting Cover Crops Biomass and Nutrient Uptake under Louisiana Sugarcane Production System. ASSCT Annual Joint Meeting. June 21-23, 2022, Bonita Spring, FL.

- **H. Fajardo**, D. Forestieri, H. Mendoza, D. Mayorga, K. Guardado, A. Bratton, M. Dalen, and B.S. Tubana. Impact of Planting Method and Rate of Cover Crops on Soil Nutrient Levels and on Sugarcane Yield and Quality Components. ASSCT Annual Joint Meeting. June 21-23, 2022, Bonita Spring, FL.
- K. Guardado, B. Tubana, D. Forestieri, H. Mendoza, **H. Fajardo**, M. Dalen, D. Mayorga, and A. Bratton. Effect of Implementing Best Management Practices on Productivity and Water Quality on Sugarcane Production in Louisiana. ASSCT Annual Joint Meeting. June 21-23, 2022, Bonita Spring, FL.
- **H. Fajardo**, D. Forestieri, D. Mayorga, H. Mendoza, J. Cruz, M. Dalen, and B. Tubana. Impact of Planting Method and Rate of Cover Crops on Soil Nutrients Levels and on Sugarcane Yield and Quality Components. ASA-CSSA-SSSA International Annual Meetings. November 7-10, 2021, Salt Lake City, UT.
- D. Forestieri, B. Tubana, H. Mendoza, J. Cruz, D. Mayorga, J. Mite, **H. Fajardo**, M. Dalen, K. Guardado, and S. Navarro. Establishing the Relationship between Ground Sensor-and Aerial Image-Based Vegetation Index for Precision Nitrogen Management in Louisiana Sugarcane. ASA-CSSA-SSSA International Annual Meetings. November 7-10, 2021, Salt Lake City, UT.
- H. Mendoza, B. Tubana, D. Forestieri, M. Dalen, D. Mayorga, **H. Fajardo**, and J. Cruz. Effect of Different Nitrogen Sources on Cane, Sugar Yield, Leaf and Soil Nitrogen Content Under Louisiana Sugarcane Production System. ASA-CSSA-SSSA International Annual Meetings. November 7-10, 2021, Salt Lake City, UT.
- D. Mayorga, D. Forestieri, M. Dalen, **H. Fajardo**, H. Mendoza, J. Cruz, and B. Tubana. Effect of Different Sulfur Based Fertilizers on Soybean-Corn Rotation System in Louisiana. ASA-CSSA-SSSA International Annual Meetings. November 7-10, 2021, Salt Lake City, UT.
- K. Guardado, B. Tubana, D. Forestieri, M. Dalen, H. Mendoza, **H. Fajardo**, D. Mayorga, and S. Navarro. Implementing Best Management Practices in Louisiana Sugarcane Production Systems. ASA-CSSA-SSSA International Annual Meetings. November 7-10, 2021, Salt Lake City, UT.
- **H. Fajardo**, D. Forestieri, D. Mayorga, H. Mendoza, J. Cruz, M. Dalen and B.S. Tubana. Impact of planting method and rate of cover crops on soil nutrients levels and on sugarcane yield and quality components. ASSCT Annual Joint Meeting. June 15-16, 2021, Virtual.
- B.S. Tubana, H. Mendoza, D. Forestieri, J. Cruz, D. Mayorga, **H. Fajardo**, and M. Dalen. Potential of N Testing in Soil and Leaf Tissue as Decision Tools for N Application in Sugarcane. June 15-16, 2021, Virtual.
- D. Forestieri, B.S. Tubana, H. Mendoza, J. Cruz, D. Mayorga, **H. Fajardo**, and M. Dalen. Establishing the Relationship between Ground Sensor-and Aerial Image-Based Vegetation Indices for Precision Nitrogen Management in Louisiana Sugarcane. ASSCT Annual Joint Meeting. June 15-16, 2021, Virtual.
- H. Mendoza, B. Tubana, D. Forestieri, D. Mayorga, **H. Fajardo**, J. Cruz and M. Dalen Effect of Different Nitrogen Sources on Sugarcane Productivity, Soil and Leaf Tissue Nitrogen Content under Louisiana Sugarcane Production System. ASSCT Annual Joint Meeting. June 15-16, 2021, Virtual.
- **H. Fajardo**, B. Tubana, D. Forestieri, D. Mayorga, H. Mendoza, B. Campos, J. Cruz, D. Galam. 2020. Evaluation of NDVI for Predicting Cover Crops Biomass and Nutrient Uptake. ASA-CSSA-SSSA International Annual Meetings. November 9-13, 2020, Virtual.
- D. Forestieri, B. Tubana, M. Sebial Dalen, D. Galam, D. Mayorga, **H. Fajardo**, H. Mendoza, J. Cruz, B. Campos, E. Escobar and A. Lovo. 2020. Validation of Sugarcane Yield Potential Model Using Converted Aerial Image-Based Normalized Difference Vegetation Index. ASA-CSSA-SSSA International Annual Meetings. November 9-13, 2020, Virtual.

- J. Cruz, B. Tubana, L. M. Fultz, J. Hyun Ham, M. Dalen, D. Forestieri, W. Paye, D. Galam, B. Ferreira, D. Mayorga, **H. Fajardo** and H. Mendoza. 2020. Effectiveness of Multi-Trait Silicate-Solubilizing Bacteria in Enhancing the Growth and Yield of Rice. ASA-CSSA-SSSA International Annual Meetings. November 9-13, 2020, Virtual.
- H. Mendoza, B. Tubana, D. Forestieri, D. Mayorga, **H. Fajardo**, J. Cruz, M. Dalen, D. Galam, W. Paye, J. Bamrungrai and B. Campos. 2020. Evaluating the Effect of Coated Urea and Urea-Ammonium-Nitrate Fertilizers on Cane, Sugar Yield, Leaf and Soil Nitrogen Content Under Louisiana Sugarcane Production System. ASA-CSSA-SSSA International Annual Meetings. November 9-13, 2020, Virtual.
- D. Mayorga, D. Forestieri, M. Dalen, H. Mendoza, **H. Fajardo**, J. Cruz, B. Campos, D. Galam and B. Tubana. 2020. Sulfur Sources and Rates on Soybean-Corn Production Systems in Louisiana. ASA-CSSA-SSSA International Annual Meetings. November 9-13, 2020, Virtual.
- B. Ferreira, J. R. Mite, M. Dalen, D. Forestieri, D. Galam, **H. Fajardo**, J. Cruz, D. Mayorga, H. Mendoza and B. Tubana. 2020. Influence of Establishment Date on Cover Crops Biomass Yield and Soil Productivity Potential. ASA-CSSA-SSSA International Annual Meetings. November 9-13, 2020, Virtual.

ORGANIZATIONS/ACTIVITIES

- Member, Biological and Agricultural Engineering Graduate Students Association, 2022 to present.
- Member, Golden Key International Honor Society, 2021 to present.
- Treasurer, School of Plant, Environmental, and Soil Sciences Graduate Students Association, 2020 to 2022.
- Member, The Honor Society of Phi Kappa Phi, 2020 to present.
- Member, American Society of Sugar Cane Technologists, 2020 to 2022
- Member, American Society of Agronomy, 2019 to present.
- Member, Crop Science Society of America, 2019 to present.
- Member, Soil Science Society of America, 2019 to present.
- Member, School of Plant, Environmental, and Soil Sciences Graduate Students Association, 2019 to 2022.
- Member, Bolivian Society of Soil Science, 2011 to present.