## PERSONAL INFORMATION

Samira Islas Valdez, PhD

lij15@txstate.edu

## EDUCATION

2015-2019 — Ph.D. in Agricultural Chemistry
Department of Agricultural Chemistry and Food Science, *Universidad Autónoma de Madrid*, Madrid, Spain

2012-2014 — Master in Biotechnology
Department of Environmental Bioprocess, *Universidad Politécnica de Pachuca*, Zempoala, Mexico

2007-2012 — Engineering in Biotechnology
Department of Environmental Bioprocess, *Universidad Politécnica de Pachuca*, Zempoala, Mexico

## WORK EXPERIENCE

November 2023-present — Department of Agricultural Sciences, Texas State University
Research focuses on the incorporation of biochar, biofertilizers, and other soil amendments such as compost and vermicompost into horticultural crops. I am also assessing the potential of biofertilizers as biological control agents for oak wilt in vitro.

August 2022-October 2023 — Department of Horticulture and Landscape Architecture, Colorado State University
Isolated P- and Zn-solubilizing microbes from soils and soil amendments. Evaluated different synthetic root exudates (e.g., amino acids and organic acids) to determine their potential to solubilize P in P-deficient soil in vitro and in the greenhouse. Root exudates obtained from corn seedlings grown in vitro with P-sufficient or P-deficient nutrient solutions.

2015 – 2019 — Department of Agricultural Chemistry and Food Science, Universidad Autónoma de Madrid
Determined the maximum complexing capacity of lignosulfonates, gluconate and heptagluconate with micronutrients (Fe, Mn, and Zn) and characterized its micronutrient complexes by FTIR, HPSEC, GFC, NMR, and Mössbauer. Evaluated some complexes as Fe and Mn fertilizers in tomato and soybean plants grown in hydroponics and calcareous soil conditions conducted in a growth chamber.

February – July 2015 — High school science teacher. Center of Scientific and Technological Studies of Hidalgo State
Taught biology, chemistry, and wet-lab courses.

April – June 2014 — Institute of Investigations in Agricultural and Environment Biosciences, Agronomy Faculty, Universidad de Buenos Aires
Incorporated experimental data into a crop simulation model (DSSAT) to evaluate the effect of genetic coefficients on wheat yield in Yaqui Valley. Assisted in field soil sampling.

2013 – 2014 — Department of Environmental Bioprocess, Universidad Politécnica de Pachuca
Analyzed total suspended solids, total volatile solids, chemical oxygen demand, total organic carbon, humic and fulvic acids, organic matter, phytohormones, total coliforms and nutrients (P, N, K, Ca, Mg, Na, Fe, Cu, Mn, and Zn) in a digestate. Measured biometric parameters of field-grown barley to test the efficacy of digestate after foliar or soil application. Evaluated the soil physicochemical properties.

2011 – 2012 — Department of Environmental Bioprocess, Universidad Politécnica de Pachuca
Quantified the concentration of chlorophyll, soluble protein, and elements (Mn, Mg, K, Ca, Fe, Cu, Zn, Ni, and Pb) and determined enzymatic activities (peroxidase, nitrate reductase, superoxide dismutase, and glutamate dehydrogenase) to assess the effect of atmospheric pollution on *Tillandsia* biomonitors.

## COMPETENT SKILLS

Digital skills — IBM SPSS Statistics; Microsoft Office package; R and Rstudio software

Other skills

Spectroscopic techniques (FTIR, NMR, Mössbauer, and flame atomic absorption spectroscopy)
Chromatography size exclusion techniques (GFC and HPSEC)
Plant-soil interaction; Plant nutrition; Soil fertility
Characterization and evaluation of the efficacy of organic fertilizers
Atmospheric pollution biomonitoring

Languages

Spanish ●●●●●
English ●●●●○

## ADDITIONAL INFORMATION

Publications

-**Samira Islas-Valdez**, Reagan Sproull, Ty Sumners, and Nicole Wagner. Effect of Organic Amendments and Biostimulants on Zucchini Yield and Fruit Quality Under Alkaline Conditions. Agriculture; 15(19): 20278. https://doi.org/10.3390/agriculture15192078

**Islas-Valdez S**, Afkairin A, Rovner B, Vivanco JM. Isolation of Diverse Phosphate- and Zinc-Solubilizing Microorganisms from Different Environments. Applied Microbiology. 2024; 4(3):1042-1056. https://doi.org/10.3390/applmicrobiol4030071

-**Islas-Valdez Samira**, López-Rayo Sandra, Lucena Juan J. (2021). Implications of the Mn:ligand ratio for Mn uptake by *Glycine max* L. plants fertilized with heptagluconate and gluconate complexes. Journal of the Science of Food and Agriculture, 101(11), 4662-4671. Doi: 10.1002/jsfa.11110

-**Islas-Valdez S**, López-Rayo, S, Hristov-Emilov H, Hernández-Apaolaza L, Lucena JJ (2020). Assesing metal-lignosulfonates as fertilizers using gel filtration chromatography and high performance size exclusion chromatography. International Journal of Biological Macromolecules, 1(142), 163-171. Doi: 10.1016/j.ijbiomac.2019.09.088

-**Islas-Valdez Samira**, López-Rayo Sandra, Arcos Jessica, Menéndez Nieves, Lucena Juan J. (2020). Effect of Fe:ligand ratios on hydroponic conditions and calcareous soil in *Solanum lycopersicum L*. and *Glycine max* L. fertilized with heptagluconate and gluconate. *Journal of the Science of Food and Agriculture*, 100(3), 1106-1117. Doi: 10.1002/jsfa.10119

-Quintanar-Orozco ET, Vázquez-Rodríguez GA, Beltrán-Hernández RI, Lucho-Consntantino CA, Coronel-Olivares C, Montiel SG, **Islas-Valdez S** (2018). Enhancement of the biogas and biofertilizer production from *Opuntia heliabravoana* Scheinvar. *Environmental Science and Pollution Research*, 25(28), 28403-28412. Doi: 10.1007/s11356-018-2845-x

**-Islas-Valdez S**, Lucho-Constantino CA, Beltrán-Hernández RI, Gómez-Mercado R, Vázquez-Rodríguez GA, Herrera JM, Jiménez-González A (2017). Effectiveness of rabbit manure biofertilizer in barley crop yield. *Environmental Science and Pollution Research*, 24(33), 25731-25740. Doi: 10.1007/s11356-015-5665-2

-Herrera JM, Rubio G, Häner LL, Delgado JA, Lucho-Constantino CA, **Islas-Valdez S**, Pellet D (2016). Emerging and established technologies to increase nitrogen use efficiency of cereals. *Agronomy*, 6(2), 1-25. Doi: 10.3390/agronomy6020025

**-Islas-Valdez S**, Cruz-García D, Belrán-Hernández RI, Gómez-Mercado R, Jiménez-González A, Vázquez-Rodríguez GA, Lucho-Constantino CA (2014). Liquid biofertilizer obtained from anaerobic digestion of rabbit manure. In Díaz-Zorita M, Correa OS, Fernández-Canigia MV and Lavado RS, eds. *Fungi and other organisms that improve agricultural production*. Buenos Aires: Faculty of Agronomy, pp. 31-39.

Seminars

-**Islas-Valdez, S.** (2021). The role of biotechnology in the new green revolution. Universidad Politécnica de Pachuca. Virtual
-**Islas-Valdez, S.** (2021). Effect of Fe:ligand ratios on hydroponic conditions and calcareous soil in *Solanum lycopersicum L*. and *Glycine max* L. fertilized with heptagluconate and gluconate. Universidad Tecnológica de Gutiérrez Zamora. Virtual
-**Islas-Valdez, S.** (2014). Liquid biofertilizer obtained from anaerobic digestion of rabbit manure. Agronomy faculty, Universidad de Buenos Aires. In-person.
-**Islas-Valdez, S.** (2014). Alternative energies. Universidad Tecnológica de la Sierra Hidalguense. In-person.
-**Islas-Valdez, S.** (2014). Biological effectiveness of liquid biofertilizer in barley crop. Instituto Tecnológico de Pachuca. In-person.

Courses attended

-Using MetaboAnalyst for Metabolomics Statistics and Data Visualizations. UC Davis West Coast Metabolomics Center. 2024.
-16S microbial analysis. Online course. ATGenomics, 2021.
-PH525.1x: Statistics and R. Online course in edX (Harvard University), 2020.
-High-resolution air quality mode AERMOD: input data, simulation scenarios and interpreting results. National Chair of Chemistry CUMEX, Universidad Autónoma del Estado de Hidalgo, 2012.

Conferences

**- Samira Islas-Valdez**, Robert Rubiano, Ryan Peterson, Nicole C. Wagner. Identifying Biological Control Agents Against Oak Wilt to Reduce Environmental Toxicity. Health Scholar Showcase, Translational Health Research Center. 2025.
**Samira Islas-Valdez**, Nicole C. Wagner. Poster. Effect of acidic biochar extracts and biofertilizers on seed germination. Health Scholar Showcase, Translational Health Research Center. 2024
-**Islas-Valdez Samira**, López-Rayo Sandra, Lucena J. Juan. Effect of Fe:heptagluconate ratio on Fe nutrition in Fe-deficient tomato (*Solanum lycopersicum*) under hydroponic conditions. Oral presentation and poster. 19th International Symposium on Iron Nutrition and Interaction in Plants. Taiwan, 2018.
-Erendira Quintanar, Gabriela Váquez, Icela Beltrán, Claudia Coronel, **Samira Islas**, Carlos Lucho. Enhancement of the biogas and biofertilizer production from *Opuntia heliabravoana* Scheinvar in arid and semiarid zones. Poster. XXXIX National Meeting of the Mexican Academy of Research and Teaching in Chemical Engineering. Mexico, 2018.
-Karen Yedid Mera Sanchez, Rosa Icela Beltrán Hernández, **Samira Islas Valdez**, Gabriela Alejandra Vázquez Rodríguez, Claudia Coronel Olivares, Araceli Castañeda Ovando, Carlos Alexander Lucho Constantino. Analytical validation of radial paper chromatography technique for analyzing vermicompost. Oral presentation. XVI International Congress and XXII National Congress of Environmental Sciences. Mexico, 2017.
-**Islas-Valdez Samira**, Cieschi Teresa, Lucena-Marotta J.Juan. Implications of the Fe/ligand ratio and Fe source on the complexes formation. Poster. 18th International Symposium on Iron Nutrition and Interaction in Plants, Madrid, 2016.
-**S. Islas**, R. Gómez, R.I. Beltrán, A. Jiménez, C. Lucho. Effect of liquid biofertilizer and fertilizer applications on crop yield of barley. Poster. 4th International Symposium on Environmental Biotechnology and Engineering, Mexico, 2014.
-**Islas-Valdez S**, Gómez-Mercado R, Beltrán-Hernández I, Jiménez González A, Lucho-Constantino C. Biological effectiveness of liquid biofertilizer in barley crop (*Hordeum vulgare* L.). Poster. XXIV Argentine Congress of Soil Science. Argentina, 2014.
-Karen Yedid Mera-Sanchez, **Samira Islas Valdez**, José Novoa-Epinosa, Rosa Icela Beltrán-Hernández, Angélica Jiménez-González, Carlos Alexander Lucho-Constantino. Comparing two methods (quantitative and qualitative) for analyzing the nutritional quality of biofertilizers. Oral presentation. IV International Congress of Climate Change and Sustainable Development. Mexico, 2013.

Outreach

Plant nutrition class and soil pH experiment for 5$^{th}$ graders. Irish Elementary School Bilingual. May 22$^{nd}$, 2023.
Plant nutrition class and soil pH experiment for 5$^{th}$ graders. Science, Technology, Engineering, and Mathemathics (STEM) camps in the Gardens on Spring Creek. June 27$^{th}$, 2023.

Courses taught

Soils I and Soil Pedology, Phys and Chem.

Student mentoring

Juan Andres Aguilar Huesca. **PhD dissertation**. Chemical Research Center, Universidad Autónoma del Estado de Hidalgo (Mexico). Committee member. In progress since August 2023.
Reagan K. Sproull. **Master's thesis**. Agricultural Sciences, Texas State University (USA). Committee member. In progress since 2024.
Ty C. Sumners. **Master's Comprehensive Examination**. Agricultural Sciences, Texas State University (USA). Committee member. July, 25$^{th}$ 2025.

Peer-review service

Applied Soil Ecology Journal; Agronomy Journal; Plants; Frontiers in microbiology.

## REFERENCES

**Dr. Nicole Wagner,** *Postdoctoral scholar's advisor*
Associate Professor
Texas State University (Texas, USA)
n_w51@txstate.edu

**Dr. Juan José Lucena Marotta,** *PhD's advisor*
Full Professor and researcher
Universidad Autónoma de Madrid (Madrid, Spain)
juanjose.lucena@uam.es

**Dr. Carlos Alexander Lucho Constantino,** *Master's advisor*
Full Professor and researcher
Universidad Autónoma del Estado de Hidalgo (Hidalgo, Mexico)
carlos_lucho8906@uaeh.edu.mx