Sergio Pérez Limón
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Postdoctoral Research Scholar
Department of Crop & Soil Sciences
North Carolina State University
Plant Sciences Building, Raleigh, North Carolina, 27606

Education and Employment

The Pennsylvania State University, Plant Science department 2021-2026
- PhD student under the direction of Ruairidh Sawers, PhD.

Advanced Research and Studies Center of the IPN (**CINVESTAV**), Advanced Genomic Unit (**UGA**). 2019-2021
- Research Assistant under the direction of Stewart Gillmor, PhD

Advanced Research and Studies Center of the IPN (**CINVESTAV**), Advanced Genomic Unit (**UGA**). 2017-2019
- MsC student under the direction of Ruairidh Sawers, PhD.
- Thesis title: Genetic mapping of traits characteristic of Mexican highland maize in a recombinant inbred line population evaluated per se and as testcrosses.

National Institute of Forestry, Crop and Livestock Research (**INIFAP**) 2015-2017
- Research Assistant under the direction of Alejandro Espinosa Calderon, PhD.

Professional Interdisciplinary Biotechnology Unit (**UPIBI**), Polytechnic National Institute (**IPN**) 2011-2015
- University degree in Biotechnological Engineering.
- Thesis title: Productivity of Improved Yellow Corn Varieties of Maize for the Highlands, under the direction of Alejandro Espinosa Calderon, PhD.

Publications

Rodríguez-Zapata, Fausto, Ruthie Locklear, Allison C. Barnes, Nirwan Tandukar, **Sergio Pérez-Limón**, Melanie Perryman, Miguel A. Piñeros, et al. 2026. “Uncoupling the Effects of Highland Maize Chromosomal Inversion *Inv4m* from Leaf Phosphorus Deficiency Responses.” *bioRxiv*. bioRxiv. https://doi.org/10.64898/2026.05.22.727253.

Rodríguez-Zapata, Fausto, Hannah Pil, Nirwan Tandukar, Lauren Insko, Carolina Escalona-Weldt, Zehta Fazler, Alejandro Aragón-Raygoza, …, **Sergio Pérez-Limón**, et al. 2026. “The Teosinte *Mexicana* Chromosomal Inversion *Inv4m* Modulates Maize Flowering Time, Plant Height, and Growth Regulation Gene Networks.” *bioRxiv*. bioRxiv. https://doi.org/10.64898/2026.06.16.732082.

Coyac-Rodríguez, José Luis, **Sergio Pérez-Limón**, Elizabeth Hernández-Jaimes, Marcela Hernández-Coronado, Daniel Camo-Escobar, Ana Laura Alonso-Nieves, María de Jesús

Ortega-Estrada, Nicole Gómez-Capetillo, Ruairidh J. H. Sawers, and Carlos Ortiz-Ramírez. 2026. “The Genetic Architecture of Leaf Vein Density and Its Importance for Photosynthesis in Maize.” *The New Phytologist*, no. nph.71318 (June). https://doi.org/10.1111/nph.71318.

Perez-Limón, Sergio, Ana Laura Alonso-Nieves, M. Rosario Ramírez-Flores, G. Carolina Cintora-Martínez, M. Nancy Salazar-Vidal, Jessica Carcaño-Macías, Melanie G. Perryman, et al. 2026. “The MexMAGIC Population Reveals the Genetic Architecture of Clinal Trait Variation in Mexican Native Maize.” *bioRxiv*. bioRxiv. https://doi.org/10.64898/2026.01.17.700095.

Lopez-Valdivia, I., Vallebueno-Estrada, M., Rangarajan, H., Swarts, K., Benz, B.F., Blake, M., Sidhu, J.S., **Perez-Limon**, S., Sawers, R.J.H., Schneider, H. and Lynch, J.P. (2025), In silico analysis of the evolution of root phenotypes during maize domestication in Neolithic soils of Tehuacán. New Phytol, 248: 339-353. https://doi.org/10.1111/nph.70245

Yu, Peng, Chunhui Li, Meng Li, Xiaoming He, Danning Wang, Hongjie Li, Caroline Marcon, …, **Sergio Pérez-Limón** et al. 2024. “Seedling Root System Adaptation to Water Availability during Maize Domestication and Global Expansion.” *Nature Genetics* 56 (6): 1245–56.

Li, Meng, **Sergio Perez-Limón**, M. Rosario Ramírez-Flores, Benjamín Barrales-Gamez, Marco Antonio Meraz-Mercado, Gregory Ziegler, Ivan Baxter, Víctor Olalde-Portugal, and Ruairidh J. H. Sawers. 2022. “Mycorrhizal Status Impacts the Genetic Architecture of Mineral Accumulation in Field Grown Maize (Zea Mays Ssp. Mays L.).” *bioRxiv*. https://doi.org/10.1101/2022.12.12.520122.

González-Rodríguez, Tzitziki, **Sergio Pérez-Limón**, Héctor Peniche-Pavía, Rubén Rellán-Álvarez, Ruairidh J. H. Sawers, and Robert Winkler. 2022. “Genetic Mapping of Maize Metabolites Using High-Throughput Mass Profiling.” Plant Science: An International Journal of Experimental Plant Biology, November, 111530.

Barnes, Allison C., Fausto Rodríguez-Zapata, Karla A. Juárez-Núñez, Daniel J. Gates, Garrett M. Janzen, Andi Kur, Li Wang, …, **Sergio Pérez-Limón** et al. 2022. “An Adaptive Teosinte mexicana Introgression Modulates Phosphatidylcholine Levels and Is Associated with Maize Flowering Time.” Proceedings of the National Academy of Sciences of the United States of America 119 (27): e2100036119.

Perez-Limón, Sergio, Meng Li, G. Carolina Cintora-Martinez, M. Rocio Aguilar-Rangel, M. Nancy Salazar-Vidal, Eric González-Segovia, Karla Blöcher-Juárez, et al. 2022. “A B73×Palomero Toluqueño Mapping Population Reveals Local Adaptation in Mexican Highland Maize.” G3 12 (3). https://doi.org/10.1093/g3journal/jkab447.

Ramírez-Flores, M. Rosario, **Sergio Perez-Limon**, Meng Li, Benjamín Barrales-Gamez, Doris Albinsky, Uta Paszkowski, Víctor Olalde-Portugal, and Ruairidh Jh Sawers. 2020. “The Genetic Architecture of Host Response Reveals the Importance of Arbuscular Mycorrhizae to Maize Cultivation.” eLife 9 (November). https://doi.org/10.7554/eLife.61701.

Gonzalez-Segovia, Eric, **Sergio Pérez-Limon**, G. Carolina Cíntora-Martínez, Alejandro Guerrero-Zavala, Garrett M. Janzen, Matthew B. Hufford, Jeffrey Ross-Ibarra, and Ruairidh J. H. Sawers. 2019. “Characterization of Introgression from the Teosinte Zea Mays Ssp. Mexicana to Mexican Highland Maize.” PeerJ 7 (May): e6815.

Awards

Walter Thomas Memorial Scholarship Fund	2022-2023 2023-2024 2025-2026
Jose de la Torre Endowment for Graduate Students from Latin America	Fall 2021

Poster Presentations

Pérez-Limón, Sergio; Guerrero-Zavala, Alejandro; Aguilar-Rangel, Maria R.; Sawers, Ruairidh J. H. Mapping morphological traits characteristic of Mexican highland maize. Poster presented at: 61st Annual Maize Genetics Conference, March 14-17, 2019, St. Louis, Missouri, USA.

Sergio Pérez-Limón; Ana Laura Alonso-Nieves; Maria del Rosario Ramírez-Flores; Stewart Gillmor; Ruben Rellán-Álvarez; Ruairidh Sawers. A MAGIC Population to study functional diversity in Mexican native maize. Poster presented at: 66th Annual Maize Genetics Meeting, February 29 – March 3, 2024, Raleigh, NC, USA.

Oral Presentations and workshop

Sergio Pérez Limón, Ana Laura Alonso Nieves, Wei-Yun Lai, María Cecilia Arroyo Medina, Stewart Gillmor, Rubén Rellán Álvarez y Ruairidh J. H. Sawers. Characterization of *Zea mays* spp*. mexicana* in landraces and elite inbred lines adapted to the Highlands of Central México. Talk presented at the X National Meeting of Native Maize, Oaxa City, Oaxaca, Mexico. 05/11/2025 to 07/13/2025.

Sergio Pérez Limón; Ana Laura Alonso Nieves; Maria del Rosario Ramírez Flores3; Stewart Gillmor; Ruben Rellán Álvarez; Ruairidh Sawers. The MexMAGIC population and novel whole genome assemblies define signals of clinal adaptation. Talk presented at the XXI SMB Plant Biology Congress & 4th ASPB Mexico Section Meeting. Mérida, Yucatán, México. 20/10/2025 to 24/10/2025.

Sergio Pérez Limón, Ana Laura Alonso Nieves, Wei-Yun Lai, María Cecilia Arroyo Medina, Stewart Gillmor, Rubén Rellán Álvarez y Ruairidh J. H. Sawers. Characterization of *Zea mays* spp*. mexicana* in landraces and elite inbred lines adapted to the Highlands of Central México. Talk presented at the Engineering department at the Autonomus University of Querétaro. Online. 25/09/2025.

Sergio Pérez Limón; Ana Laura Alonso Nieves; Maria del Rosario Ramírez Flores3; Stewart Gillmor; Ruben Rellán Álvarez; Ruairidh Sawers. Characterization of admixture from *Zea mays* spp. *mexicana* in Highland adapted Mexican Maize. Talk presented at the Plant Sciences Seminar, Plant Sciences Department at the Pennsylvania State University. University Park, Pennsylvania, USA, 10/10/2025.

Pérez-Limón, Sergio; Alonso-Nieves, Ana Laura; Rellán-Álvarez, Ruben; Ross-Ibarra, Jeffrey; Sawers, Ruairidh J. H. Identification and phenotypic association of introgression of Zea mays ssp. mexicana into maize genomes. Zeavolution. 11/01/2023.

Pérez-Limón, Sergio; Alonso-Nieves, Ana Laura; Gillmor, Stewart; Rellán-Álvarez, Rubén; Sawers, Ruairidh J. H. Genetic Basis of cob and ear trains in a multiparent mapping population made of Mexican Native Maize Varieties. X National Meeting of Native Maize, Conkal, Yucatan, Mexico. 10/11/2023 to 10/13/2023.

Pérez-Limón, Sergio; How to make tortillas workshop: Nixtamalized corn as the base of the mexican cuisine. Penn State's Ag Progress Days. Russell E. Larson Agricultural Research Center, 2710 W. Pine Grove Road, Pennsylvania Furnace, PA 16865 08/10/2023.

Teacher/Mentorship

Teacher Assistant — Summer 2021, 2022, 2023, 2024, 2025

- HORT497, Section 001: Special Topics
- AGRO 410W: Physiology of Agricultural Crops

Guess Lectures — Summer 2021, 2022

- QTL analysis in biparental populations, HORT497, Ruairidh Sawers, PhD.

Other Professional Experience

Seed Biotechnology Center, **University of California, Davis** — April 20 and 22, 2021

- Participant of the the UC Davis Plant Breeding Academy^{SM} E-Series: Hybrid Breeding Strategies

Collaboration with **UNISEM** — 2020-2021

- Project “Organization, structuration and data analysis in a breeding program”

Other Leadership Experience

- Strategic Advisor of the Latin American Graduate Student Association. Directive board of 2025- 2026.
- President of the Latin American Graduate Student Association. Directive board of 2024- 2025.
- Vice President of the Latin American Graduate Student Association. Directive board of 2023- 2024.