Joel Reyes-Cabrera, Ph.D.

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Professional experience

January 2022 – present	Assistant Professor of Horticulture Texas A&M University-Kingsville Citrus Center
February 2020 – December 2021	Independent Consultant Managua, Nicaragua
August 2019 – February 2020	Assistant Professor of Agricultural Sciences, Eastern New Mexico University
July 2017- July 2019	Postdoctoral Fellow, University of Missouri
Feb- July 2017	Postdoctoral Research Associate, University of Florida
2010	Research Assistant EARTH University, Guacimo, Costa Rica
2008	Undergraduate Research Assistant Agricultural and Biological Engineering, University of Florida

Education

2013-2017	**Ph.D. in Agronomy & Crop Science** University of Florida, Gainesville, FL
2011-2013	**M.S. in Horticultural Sciences** University of Florida, Gainesville, FL
2006-2009	**B.S. in Agricultural Sciences** EARTH University, Guacimo, Costa Rica

Funding and programs

Grant[a]	Agency	Role	Amount	Period
Biochar, an opportunity to increase soil water storage in citrus orchards	Texas Water Development Board	PI	$55,865	2022-2025
Connecting the dots in the global fresh produce market	USDA Hispanic Serving Institutions	Co-PI	$270,096	2022-2026
Evaluation of post-harvest factors to increase citrus	Texas Citrus Producers	PI	$30,000	2022-2024

fruits shelf-life	Board			
Development of sustainable irrigation and nutrient management for citrus groves in South Texas	Valley Agricultural and Development Council	PI	$53,000	2023-202
NRT-HDR Transdisciplinary Research and Education for Air and Water Resources Solutions in Coastal Communities	NSF	Co-PI	$2,000,000	2023-2028
Evaluation of onion (*Allium cepa*) and sour orange rootstocks performance and physiology under different soil amendments	Greater Texas Foundation Undergraduate Research	PI	$2,830	2024
Sustainable organic citrus production using improved agroecological management strategies	NIFA-ICGP	Co-PI	$2,000,000	2024-2028
Evaluation of micronutrients application on grapefruit fruit growth rate and postharvest physiology.	Texas Citrus Producers Board	PI	$30,000	2024-2025
Total funding participated			**$4.4 million**	
Total funding to my program			**$621,695**	

[a] Extramural grants (USD) directly supporting Dr. Cabrera's research since joining TAMUK-January 2022. Major funding sources include TWDB, TCPB, VADC, NSF, USDA-HSI, NIFA-ICGP.

Present job responsibilities (25% teaching, 75% research)

Courses taught

PLSS 5352 Advanced Plant Physiology
PLSS 4390 Precision Agriculture
PLSS 5390 Precision Agriculture
PLSS 5390 Environmental Crop Nutrition
PLSS 3381 Crop Physiology

Research description

Experiments in the Cabrera lab focuses on pre and post-harvest citrus physiology and horticulture. We conduct research in field and controlled conditions. We explore integrated nutrient management, combining organic and inorganic sources of essential nutrients for sustainable and profitable farming. Integrating chemical and organic fertilizers via a balanced approach is crucial for maximizing crop yield and preserving soil fertility.

Outreach description

Projects in the lab are supported through a variety of funding sources, thereby our extension program seeks to provide science-based information to improve producers' profitability and support on their operation.

Peer-reviewed publications (career total: 18, total citations: 335, citation index: 9)

Senior/principal author (s): underline
Self: bold
Graduate student in Dr. Cabrera's program: g
Post-doctoral associate/Fellow in Cabrera's program: p

18. Sherris, A., Robbins, C.R., Li, H., Ren, J., Ramirez, D., Jin, K., **Reyes-Cabrera, J.** 2025. Documenting takes on recycling, honing rapid ethnographic skills: transdisciplinary graduate student explorations in rural U.S. southwestern. 2025 ASEE Annual Conference & Exposition, Montreal, Quebec, Canada. *Accepted*.

17. De Leon, D.A., Nelson, S.D., Sétamou, M., Bhandari, A., Zamora, E., Zaragoza, A., Donato, M.C., **Reyes-Cabrera**, **J.** 2024. Enhanced nutrition programs to rehabilitate freeze-stressed citrus. HortScience. 59, 1763-1771.

16. **Reyes-Cabrera, J.,** C.A. Adams, J. Nielsen, and J.E. Erickson. 2023. Yield, nitrogen, and water-use efficiency of grain sorghum with diverse crown root angle. Field Crops Research. 294, 108878.

15. Xu, W., G. Yu, Y. Cui, R. Gloaguen, A. Zare, J. Bonnette, **J. Reyes-Cabrera**, A. Rajurkar, D. Rowland, R. Matamala, J.D. Jastrow, T.E. Juenger, F.B. Fritschi. 2022. PRMI: A dataset of minirhizotron images for diverse plant root study. AI for Agriculture and Food Systems (AIAFS). Workshops at the AAAI conference on artificial intelligence.

14. **Reyes-Cabrera, J.,** R.G. Leon, and J.E. Erickson. 2021. Biochar affects soil water content of field soybean in the southeastern U.S. *Agrosyst. Geosci. Environ.* e20197.

13. Yu, G., A. Zare, W. Hu, R. Matamala, **J. Reyes-Cabrera**, F.B. Fritschi, and T.E. Juenger. 2020. Weakly supervised Minirhizotron image segmentation with MIL-CAM. In: Bartoli A., Fusiello A. (eds) Computer Vision – ECCV 2020 Workshops. ECCV 2020. Lecture Notes in Computer Science, vol 12540. Springer, Cham. https://doi.org/10.1007/978-3-030-65414-6_30.

12. **Reyes-Cabrera, J.,** J.E. Erickson, R.G. Leon, D.G. de Quadros, M.L. Silveira, and L.E. Sollenberger. 2020. Bahiagrass pasture and elephantgrass bioenergy cropping systems differ in root traits. Agron. J. 112, 4810-4821.

11. Yu, G., A. Zare, H. Sheng, R. Matamala, **J. Reyes-Cabrera**, F.B. Fritschi, and T.E. Juenger. 2020. Root identification in minirhizotron imagery with multiple instance learning. Mach. Vision Appl. 31: 43.

10. Xu, W., G. Yu, A. Zare, B. Zurweller, D.L. Rowland, **J. Reyes-Cabrera**, F. Fritschi, R. Matamala, and T.E. Juenger. 2020. Overcoming small minirhizotron datasets using transfer learning. Comput. Electron. Agric. 175, 105466.

9. Adams, C.B., **J. Reyes-Cabrera**, Jackson Nielsen, and J.E. Erickson. 2020. Root system architecture in genetically diverse populations of grain sorghum compared to shallow and steeply rooted monocultures. Crop Sci. 60, 2709-2719.

8. Silveira, M.L., C.B., Brandani, M.M. Kohmann, J.E. Erickson, **J. Reyes-Cabrera**, R.G. Leon, L.E. Sollenberger, V. Piotto, D.G. de Quadros, and S. Mello. 2020. Short-term effects of bioenergy cropping on soil C and N dynamics in a Florida Ultisol. SSSAJ. 84, 1233-1246.

7. **Reyes-Cabrera, J.,** J.E. Erickson, R.G. Leon, M.L. Silveira, and L.E. Sollenberger. 2019. Amending marginal sandy soils with biochar and lignocellulosic fermentation residual sustains fertility in elephantgrass bioenergy cropping systems. Nutr. Cycl. Agroecosys. 115: 69-83.

6. **Reyes-Cabrera, J.,** J.E. Erickson, R.G. Leon, M.L. Silveira, D. L. Rowland., L.E. Sollenberger, and K.T. Morgan. 2017. Converting bahiagrass pasture land to elephantgrass bioenergy production enhances biomass yield and water quality. Agr. Ecosyst. Environ. 248: 20-28.

5. **Reyes-Cabrera, J.,** R.G. Leon, J.E. Erickson, M.L. Silveira, D. L. Rowland., and K.T. Morgan. 2017. Differences in biomass and water dynamics between a cotton-peanut rotation and a sweet sorghum bioenergy crop with and without biochar and vinasse as soil amendments. Field Crop. Res. 214: 123-130.

4. **Reyes-Cabrera, J.**, R.G. Leon, J.E. Erickson, M.L. Silveira, D. L. Rowland., and K.T. Morgan. 2017. Biochar changes shoot growth and root distribution of soybean during early vegetative stages. Crop Sci. 57: 454-461.

3. **Reyes-Cabrera, J.**, L. Zotarelli, M. D. Dukes, D. L. Rowland, and S. A. Sargent. 2016. Soil moisture distribution under drip irrigation and seepage for potato production. Agr. Water Manage. 169:183-192.

2. **Reyes-Cabrera, J.**, L. Zotarelli, D. L. Rowland, M. D. Dukes, and S.A. Sargent. 2014. Drip as alternative irrigation method for potato in Florida sandy soils. Am. J. Potato Res. 91: 504-516.

1. Makani, M.N., S.A. Sargent, L. Zotarelli, and **J. Reyes-Cabrera**. 2013. Postharvest quality of tablestock potatoes in response to drip irrigation and harvest time. Proc. FL. State Hortic. 126: 184-186.

Abstracts and Presentations

33. Gonzalez, M., J.V. da Graça, **J. Reyes-Cabrera**, M. Sétamou, M. Kunta. Growth evaluation of citrus rootstocks seedlings and graft-transmission of citrus viruses and viroids in different

rootstocks. International Organization of Citrus Virologists XXIII. Victoria, Australia. March 2025.

32. Nelson, S.D., Zaragoza, A., De Leon, D.A., Zamora, E., **Reyes-Cabrera**, **J.,** Sétamou, M. Soil amendment strategies to rehabilitate freeze damaged citrus trees for sustainable crop management. American Society of Horticultural Sciences Annual Conference. Honolulu, HI. September 2024.

31. Alapati, D.K., V. Ancona, M. Setamou, **J. Reyes-Cabrera**. Exploration of cover crops benefits to citrus production in Texas. 78th Annual Subtropical Agriculture & Environments Society Conference. South Padre Island, TX. February 2024.

30. Karakala, H.R., V. Ancona, D. Laughlin, **J. Reyes-Cabrera**. Biochar, an opportunity to increase soil health in Texas citrus orchards. 78th Annual Subtropical Agriculture & Environments Society Conference. South Padre Island, TX. February 2024.

29. Alapati, D.K., V. Ancona, M. Setamou, **J. Reyes-Cabrera**. Exploration of cover crops benefits to citrus production in Texas. 35th Annual Texas Plant Protection Conference. Bryan, TX. December 2023.

28. Karakala, H.R., V. Ancona, D. Laughlin, **J. Reyes-Cabrera**. Biochar, an opportunity to increase soil health in Texas citrus orchards. 35th Annual Texas Plant Protection Conference. Bryan, TX. December 2023.

27. **Reyes-Cabrera, J**. Towards a more resilient and robust citrus production in Texas – cover crops. Crop Science Society of America. Crop Ecology, Management and Quality Session II. St. Louis, MO. November 2023.

26. **Reyes-Cabrera, J.**, Donato, C. Can cover crops do anything for the Texas citrus industry? American Society of Horticultural Sciences Annual Conference. Orlando, FL. July 2023.

25. Robles, L., J. Jimenez, **J. Reyes-Cabrera**. Enhancing synergistic cover crops relations in citrus orchards. American Society of Agronomy. Land Management and Conservation Session. Baltimore, MD. November 2022.

24. **Reyes-Cabrera, J.**, J. Jimenez, A. Satpute. Biochar return to citrus orchards to increase soil moisture retention. American Society of Agronomy. Environmental Quality Session. Baltimore, MD. November 2022.

23. Ruiz, J.F., A. Zare, F.B. Fritschi, F. Torralbo, **J. Reyes-Cabrera**, and Y. Cui. Imaging plant roots in soil using X-ray computed tomography. IS&T International Symposium on Electronic Imaging 2020.

22. Hui, D., R. Matamala, F. Fritschi, T.E. Juenger, J.D. Jastrow, S.M. Hofmann, **J. Reyes-Cabrera**, and J. Bonnette. Impacts of climate and switchgrass cultivar on diurnal and seasonal variations of soil respiration at three sites across a latitudinal gradient in the U.S. 2019 AGU Fall Meeting, San Francisco, CA, 10-14 Dec.

21. Harris, B., **J. Reyes-Cabrera**, and F. Fritschi. Root anatomical characteristics of a segregating switchgrass population. Undergraduate Research & Creative Achievements Forum. University of Missouri. Columbia, Missouri, 2019.

20. Quevedo, I., F. Torralbo, **J. Reyes-Cabrera**, and F. Fritschi. Physiological differences between switchgrass and giant reed used for lignocellulosic bioenergy production in the

U.S. Midwest. Undergraduate Research & Creative Achievements Forum. University of Missouri. Columbia, Missouri, 2019.

19. Edwards, J., **J. Reyes-Cabrera**, E. Singer, J. Bonnette, T. Woyke, F. Fritschi, and T.E. Juenger. The genetic architecture of root-associated microbiome composition in switchgrass. 2019 DOE Joint Genome Institute user meeting.

18. Brandani, C.B., M.M. Kohmann, M. Silveira, J. Erickson, **J. Reyes-Cabrera**, and L.E. Sollenberger. Short-term effects of converting perennial pastures to bioenergy cropping on soil C and N dynamics in a Florida Ultisol. Soil Science Society of America. San Diego, CA. January, 2019. Submitted.

17. Matamala, R., K. Behrman, T. Juenger, J. Jastrow, F. Fritschi, L. Zhang, P. Fay, T. Vugteveen, **J. Reyes-Cabrera**, J. Bonnette. Phenology and morphological and physiological trait adaptations of switchgrass cultivars across a latitudinal gradient in the U.S. 2018 AGU Fall Meeting, Washington, D.C., 10-14 Dec.

16. **Reyes-Cabrera, J.**, T.E. Juenger, J. Bonnette, D. Lowry, and F. Fritschi. 2018. Ecotype divergence of switchgrass root characteristics in the U.S. Midwest. American Society of Agronomy. Crop Physiology and Metabolism Session. Baltimore, MD. November 2018.

15. Gagliano, C., **J. Reyes-Cabrera**, and F. Fritschi. Colonization of arbuscular mycorrhizal fungi in upland and lowland switchgrass varieties across two geographical locations. Undergraduate Research & Creative Achievements Forum. University of Missouri. Columbia, Missouri, 2018.

14. Polovich, C., **J. Reyes-Cabrera**, and F. Fritschi. 2018. Behind the scenes of creating a high-throughput phenotyping tool. Undergraduate Research & Creative Achievements Forum. University of Missouri. Columbia, Missouri, 2018.

13. **Reyes-Cabrera, J.**, J.E. Erickson, M. Silveira, and R.L. Leon. Converting bahiagrass pasture land to elephantgrass biomass cropping systems alters nutrients dynamics. American Society of Agronomy. Crop Ecology, Management and Quality Session. Tampa, FL. October, 2017.

12. Na, C., **J. Reyes-Cabrera**, J.E. Erickson, M.P. Singh, and M. Silveira. Soil CO_2 efflux from elephantgrass (*Pennisetum purpureum* L.) under different nutrient management regimes. American Society of Agronomy. Crop Ecology, Management and Quality Session. Tampa, FL. October, 2017.

11. Erickson, J.E., M. Silveira, and **J. Reyes-Cabrera**. Biochar ameliorates adverse effects of a perennial tall grass bioenergy crop on ecosystem services. Ecological Society of America, 2017.

10. **Reyes-Cabrera, J.**, J.E. Erickson, and R.G. Leon. Sweet sorghum for biofuels is an alternative to conventional cotton-peanut rotation in the southeastern U.S. American Society of Agronomy: Bioenergy System Session. Phoenix, AZ. November, 2016.

9. **Reyes-Cabrera, J.**, R.G. Leon, and J.E. Erickson. Elephantgrass exhibits higher biomass production and water use efficiency and less nitrate leaching than bahiagrass. American Society of Agronomy: Crop Ecology, Management and Quality Session. Phoenix, AZ. November, 2016.

8. **Reyes-Cabrera, J.**, R.G. Leon, J.E. Erickson, D.L. Rowland, M.L. Silveira, and K.T. Morgan. Biochar effects on soybean root growth and plant water status. American Society of Agronomy: Agronomic, Environmental, and Industrial Uses of Biochar Session. Minneapolis, MN. November, 2015.

7. Makani, M. N., S. A. Sargent, L. Zotarelli, and **J. Reyes-Cabrera**. Yield and postharvest quality of tablestock potato (*Solanum tuberosum L.)* in response to irrigation method and harvest time. 2014 ASHS Annual Conference.

6. Makani, M. N., S.A. Sargent, L. Zotarelli, and **J. Reyes-Cabrera**. 2013. Postharvest quality of tablestock potatoes in response to drip irrigation and harvest time. Proc. Proc. Fla. State Hort. Soc. 126: 184–186.

5. Rens, L. R., L. Zotarelli, M. Paranhos, **J Reyes-Cabrera**, G. B. Buck, and C. Barrett. 2012. Soil moisture mapping of potato farms utilizing four irrigation practices: seepage, subsurface drip, tile irrigation, and surface drip. ASHS Annual Conference.

4. **Reyes-Cabrera J.**, L. Zotarelli, M. D. Dukes, S. Sargent, D. L. Rowland, and M. Makani. 2012. Use of drip irrigation for tablestock and chipping potato production in Florida sandy soils. ASHS Annual Conference.

3. **Reyes-Cabrera J.**, L. Zotarelli, M. Dukes, D. Rowland, and S. Sargent. 2012. Drip irrigation as an alternative strategy to increase water savings for potato production in northeast Florida. Third UF Water Institute Symposium. Gainesville, FL.

2. Makani, M. N., S. A. Sargent, **J. Reyes-Cabrera**, L. Zotarelli. 2012. The effect of irrigation method, harvest time, and storage on mechanical injury and tuber quality of tablestock potato (*Solanum tuberosum* L.). ASHS Annual Conference.

1. Perret J.S., **J. Reyes-Cabrera**, V.R. Bazán, B.K. Singh, K.T. Morgan, and R.A. Gilbert. 2010. Lysimeter experiments to investigate the fate and transport of vinasse application in tropical soils. 21st Century Watershed Technology: Improving Water Quality and Environment, CD-Rom Proceedings, 21-24 February 2010 (EARTH University, Costa Rica), ASABE Publication Number 701P0210cd.

Extension Publications

Christensen, C.T., **J. Reyes-Cabrera**, L.R. Rens, J.E. Pack, L. Zotarelli, C. H. Hutchinson, W.J. Dahl, D. Gergela, and J. White. 2016. Growing potatoes in the Florida home garden. Horticultural Sciences Department, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida. EDIS Publication HS933. 9p. http://edis.ifas.ufl.edu/hs183

Teaching experience

2024	Instructor, Crop Physiology – undergraduate Texas A&M University-Kingsville
2023	Instructor, Environmental Crop Nutrition Texas A&M University-Kingsville
2023	Instructor, Precision Agriculture Texas A&M University-Kingsville

2022	Instructor, Advanced Crop Physiology Texas A&M University-Kingsville
2019	Instructor, Introduction to Soil Sciences Eastern New Mexico University
2019	Instructor, Principles of Horticulture (Dual enrollment) Eastern New Mexico University
2019	Guest Lecturer, Soil resources, fertility, and fertilizers, Grain Crops University of Missouri
2019	Guest Lecturer, Bioenergy Crops, Grain Crops University of Missouri
2018	Guest Lecturer, Bioenergy Crops, Plants and their cultivation University of Missouri
2017	Guest Lecturer, Bioenergy Crops, Grain Crops University of Missouri.
Fall 2016	Teaching Assistant, Environmental Crop Nutrition University of Florida
Spring 2015	Teaching Assistant, Genetics University of Florida
Spring 2013	Teaching Assistant, Growing fruit for fun and profit University of Florida

Mentoring

2024	***Hemanth Reddy Karakala*** (Master), TAMUK.
2024	***Dileep Kumar Alapati*** (Master), TAMUK.
2019	***Bacari J. Harris*** (Undergraduate), *University of Missouri.* Undergraduate Research Experience for Undergraduates. Provided Primary guidance during a 4-month research assistantship.
2019	**Isaac Quevedo** (Undergraduate) *University of Missouri.* Undergraduate Research Experience for Undergraduates. Provided Primary guidance during a 4-month research assistantship.
2018	**Claire M. Gagliano** (Undergraduate), University of Missouri Provided primary guidance during a 4-month research assistantship.
2018	**Christian Polovich** (Undergraduate), University of Missouri Provided primary guidance during a 4-month research assistantship.

Professional and Scientific Organizations

American Society for Horticultural Sciences (ASHS)	2022-present
International Society of Root Research (ISRR)	2017-present
American Society of Agronomy (ASA)	2013-present
Soil Science Society of America (SSSA)	2013-present

Crop Science Society of America (CSSA)	2013-present
New Mexico Academy of Science	2019-2021
American Geophysical Union	2019-2021

Reviewer for Journals

Crop Science (2016 - present)
Agronomy Journal (2016 - present)
Frontiers of Plant Science (2019 - present)
Agricultural Water Management (2018 - present)
Journal of Plant Nutrition and Soil Science (2018 - present)
Scientia Agricola (2017 - 2023)
Chilean Journal of Agricultural Research (2017 – 2023)
Agronomy- MDPI (2019 - 2023)
Weed Science (2019 - 2023)

Editorial duties

Associate Editor for Frontiers in Agronomy (2023 - present).

Awards & Honors

Certificate in effective college instruction from The Association of College and University Educators (ACUE) ($500)	2023
Travel grant from Mizzou Postdoctoral Association ($300)	2019
Third place poster competition Bioenergy Session / ASA ($150)	2016
Linton E. Grinter Award Recipient ($2,500)	2013
EARTH University Honors College Outstanding Junior	2008
Norwegian Agency for Development Cooperation (NORAD) Scholarship Recipient	2006

University Service Activities

1. Serving as secretary of the “Citrus Crops” Interest Group of ASHS.
2. I serve as member of the Citrus Center Grove Care Committee.
3. I serve as member of the TAMUK Administrator Evaluation Committee for the 2022-2024 term.
4. I serve on the AAES department strategic planning committee.
5. I serve in the Annual Faculty Lecture Selection committee.
6. I serve on the AAES undergraduate catalog committee.

Last update 18 January 2025.
Joel Reyes-Cabrera