

Gerardo H. Nunez | *curriculum vitae*

CONTACT INFORMATION

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EDUCATION

Ph. D. Horticultural Sciences expected: Dec 2015

University of Florida, Gainesville, Florida

Thesis: Comparison of root biology in southern highbush blueberry (*Vaccinium corymbosum*) and sparkleberry (*V. arboreum*): Soil adaptation, root architecture, and microbial communities

Committee: Dr. Rebecca Darnell, Dr. James Olmstead, Dr. Bruce Schaeffer, Dr. Jose Chaparro, and Dr. John Davis

B. S. Biology, minor in Business Management 2010

Fairleigh Dickinson University, Teaneck, New Jersey

Thesis: Enhancement of *Fragaria chiloensis* organoleptic quality and yield through a gibberellic acid (GA₃) treatment during fruit set

Mentor: Dr. Alice Benzecry

DISSERTATION RESEARCH

My dissertation research features phytological and microbial phenomena that affect the soil adaptation of the southern highbush blueberry (SHB, *Vaccinium corymbosum* hybrids) and wild species *V. arboreum*. I found that *V. arboreum* exhibited different root-associated microbial communities and deeper root systems than SHB, but neither taxa acidified their rhizosphere. I also identified candidate microbial taxa and SHB genes that affect soil adaptation in the *Vaccinium* genus. Together, these results suggest that root-associated microbial communities and root architecture may contribute to the differences in soil adaptation between *V. arboreum* and SHB.

OTHER RESEARCH

- Horticultural Sciences Department
University of Florida, Gainesville, FL Springs 2013, 2014
I designed and executed two survey-based experiments to test the impact that agricultural literacy can have on student perception of organic produce and produce containing genetically modified organisms. I found that agricultural literacy affects student perception of these products. This research resulted in two refereed publications.

- School of Natural Sciences
Fairleigh Dickinson University, Teaneck, NJ Aug 2009 - May 2010
I designed and executed an experiment to test the effect of an application of gibberellic acid (GA₃) during anthesis in the fruit production and post-harvest attributes of eleven different ecotypes of *Fragaria chiloensis*. I found that GA₃ applications did not affect fruit set in *F. chiloensis*. The results from this research were part of my senior honors thesis.
- Colegio de Agricultura, Alimentos y Nutrición
Universidad San Francisco de Quito, Quito, Ecuador Summer 2009
I assisted in the collection and germination of seeds from over 30 native plant species from the valley of Quito. Additionally, I assisted in surveying an area of over 20 square miles for germplasm of *Fragaria chiloensis*.

REFEREED PUBLICATIONS

- Nunez, G. H., J. W. Olmstead, and R. L. Darnell. 2015. Rhizosphere acidification is not part of the strategy I iron deficiency response of *Vaccinium arboreum* and the southern highbush blueberry. *HortScience* 50(7):1064-1069.
- Nunez, G. H., A. P. Kovalski, and R. L. Darnell. 2014. Formal education can affect students' perception of organic produce. *HortTechnology* 24(1):64-70.
- Nunez, G. H., A. P. Kovalski, B. Casamali, and R. L. Darnell. Can science and genetics literacy affect student perception of genetically modified organisms?. *AgBioForum* (accepted)

PUBLICATIONS IN PREPARATION

- Nunez, G. H., J. W. Olmstead, and R. L. Darnell. Substrate treatment, proximity to the roots, and plant genotype influence the bacterial and fungal rhizosphere microbiomes of *Vaccinium arboreum*, *V. corymbosum*, and an interspecific hybrid. *New Phytologist* (intended)
- Nunez, G. H., C. L. Harmon, A. Vitoreli, M. Velez-Climent, J. W. Olmstead, and R. L. Darnell. Ferric chelate reductase activity of fungi and oomycota isolated from the southern highbush blueberry rhizosphere. *Applied and Environmental Microbiology* (intended)
- Nunez, G. H., J. W. Olmstead, and R. L. Darnell. Inoculation with iron-reducing organisms does not positively impact the iron nutrition of southern highbush blueberry. *Plant and Soil* (intended)
- Nunez, G. H., J. W. Olmstead, and R. L. Darnell. Towards marker assisted breeding for root architecture traits in southern highbush blueberry. *Journal of the American Society for Horticultural Science* (intended)

ABSTRACTS

- Nunez, G. H., J. W. Olmstead, and R. L. Darnell. 2015. Microbial iron reduction: a secondary source of Fe²⁺ in the southern highbush blueberry rhizosphere. *HortScience* 50(9):S123.
- Nunez, G. H., J. W. Olmstead, and R. Darnell. 2014. Plant-microbe partnerships in the southern highbush blueberry rhizosphere: the case of iron nutrition. *HortScience* 49(9):S154.

- Nunez, G. H., J. W. Olmstead and R. Darnell. 2013. Plant architecture of *Vaccinium* genotypes as influenced by soil characteristics. HortScience 48(9):S152.
- Nunez, G. H., C. L. Harmon, A. Vitoreli, R. Darnell, and J. W. Olmstead. 2013. Friend or foe? Nitrate and iron reduction in the roots and rhizosphere of *Vaccinium corymbosum* and *Vaccinium arboreum*. HortScience 48(9):S278.
- Nunez, G. H., R. L. Darnell, and J. W. Olmstead. 2012. Root morphology of *Vaccinium* spp. in response to iron concentration. HortScience 47(9):S408.

PRESENTATIONS

International (contributed)

- Rhizosphere acidification is not part of the strategy I iron deficiency response of *Vaccinium corymbosum* and *Vaccinium arboreum*
6th International Symposium on Physiological Processes on Roots of Woody Plants, Nagoya, Japan, 2014. Poster presentation.
- Fungal iron and nitrate reduction in the roots of *Vaccinium corymbosum* and *Vaccinium arboreum*
32nd New Phytologist Symposium, Buenos Aires, Argentina, 2013. Poster presentation.
- Gel-based techniques for spatial visualization of iron reduction and rhizosphere acidification in *Vaccinium* spp.
10th International Symposium on *Vaccinium* and Other Super Fruits, Maastricht, The Netherlands, 2012. Poster presentation.

National (invited)

- Blueberry root physiology
Global Blueberry Workshop, Driscoll Strawberry Associates, Oxnard, CA, 2015. Oral presentation in English and Spanish.
- Dissecting the blueberry iron uptake mechanism: rhizosphere acidification, iron reduction, and microbial interactions
Building Future Faculty Program, North Carolina State University, Department of Crop Science, Raleigh, NC, 2015. Oral presentation.

National (contributed)

- Microbial iron reduction: a secondary source of Fe²⁺ in the southern highbush blueberry rhizosphere
American Society of Horticultural Science Annual Conference, New Orleans, LA, 2015. Oral presentation.
- Plant-microbe partnerships in the southern highbush blueberry rhizosphere? The case of iron nutrition
American Society of Horticultural Science Annual Conference, Orlando, FL, 2014. Oral presentation.

- Friend or foe? Bacterial nitrate and iron reduction in the roots and rhizosphere of *Vaccinium corymbosum* hybrids and *Vaccinium arboreum*
American Society of Horticultural Science Annual Conference, Palm Desert, CA, 2013.
Poster presentation.
- Plant architecture of *Vaccinium* genotypes as influenced by soil characteristics
American Society of Horticultural Science Annual Conference, Palm Desert, CA, 2013. Oral presentation.
- Breeding for root traits in *Vaccinium* spp.
3rd Annual National Association of Plant Breeders Meeting, Tampa, FL, 2013. Poster presentation.
- Root morphology of *Vaccinium* spp. in response to iron concentration
American Society of Horticultural Science Annual Conference, Miami, FL, 2012. Poster presentation.
- Bioremediation and the challenge of removing chlorine from PVC-contaminated soils
Northeast Regional Honors Council Conference, Annapolis, MD, 2009. Oral presentation.

TEACHING EXPERIENCE

- **Instructor**, Growing Fruit for Fun and Profit Springs 2012 - 2014
Horticultural Sciences Department, University of Florida
I designed and taught a 1000-level, multi-section agricultural literacy course with over 300 students. I managed a team of seven graduate teaching assistants. Additionally, I coordinated guest lectures by fourteen faculty members from the Horticultural Sciences and Food Science and Human Nutrition departments. I delivered lectures on the topics of plant nutrition, South American fruit crops, and urban agriculture.
- **Invited lectures**, Horticultural Physiology Fall 2014
Horticultural Sciences Department, University of Florida
I developed and delivered three lectures on the topics of plant nutrient uptake, gene expression and signal transduction in 4000-level course. My lectures included in-class exercises to aid in student understanding of material.
- **Content Tutor**, Intro Botany, Plant Diversity, Genetics Aug 2012 – Dec 2014
University of Florida Athletic Association, Gainesville, FL
I developed study materials and provided one-on-one tutoring to supplement course textbooks and instructors' slides in order to facilitate student-athlete's scholarly achievement and contribute to NCAA competition eligibility.
- **Graduate Teaching Assistant**, Horticultural Physiology Fall 2012
Horticultural Sciences Department, University of Florida
I graded comprehensive essay exams and provided one-on-one feedback to undergraduate and graduate students in major requirement class.

