

CURRICULUM VITAE

Personal Information

Name: Ricardo Hernández
E-mail: rhernan4@ncsu.edu, ricahm@gmail.com

Education

Doctorate: The University of Arizona, Doctor of Philosophy, Plant Physiology/Control Environment Agriculture, Fall 2013. GPA 3.9
Minor: The University of Arizona, Agriculture and Biosystems Engineering. Fall 2013
Minor: The University of Arizona, Entrepreneurship, Eller School of Business. Fall 2013
Masters: Texas A&M University. Master of Science with concentration in Biological Control and Integrated Pest Management. Spring 2009. GPA 4.0.
Bachelors: New Mexico State University. Bachelor of Science in Agriculture, Agronomy with concentration on crop consultation. Fall 2005. GPA 4.0

Honors

- NMSU High Honors Graduate top 1.5 % of the College (Fall 2005)
- NMSU Outstanding Senior Award (Fall 2005),
- NMSU Deans List (Spring 2004- Fall 2005)
- NMSU Crimson Scholars (Fall 2004-Fall 2005)
- NMSU Alumni Scholarship (Spring 2003-Fall 2005)
- Emmette Chapman Memorial Scholarship (Spring 2005-Fall 2005)
- John and Ruth Overpeck Memorial Scholarship (Spring 2005-Fall 2005)
- Noble T. Jones Scholarship (Spring 2004-Fall 2004).
- Texas A&M Research Assistantship (Fall, 2006- Fall 2008)
- Texas Academy of Science Graduate Student Grant Award (Fall 2007)
- Student poster competition award Subtropical Plant Science Society (January 2009).
- Student oral competition award first place American Society of Horticultural Science (2012)
- New Venture Competition second place. Grafted Growers- Indoor production of grafted vegetables for the retail and commercial markets. Eller School of Business (2012).
- Winner of venture incubation space at the HIVE business accelerator, Tucson AZ. 6 months of free space and consulting (2012).
- Student poster competition award first place Committee on Controlled Environment Technology and Use (2013).
- Outstanding Dissertation award, School of Plant Sciences, University of Arizona (2014).

Publications

Hernández, R. and C. Kubota (2015). Physiological responses of cucumber seedlings under different blue and red photon flux ratios using LEDs. *Environmental and Experimental Botany*.
<http://dx.doi.org/10.1016/j.envexpbot.2015.04.001>

Hernández, R. and C. Kubota (2015). Physiological, morphological, and energy-use efficiency comparisons of LED and HPS supplemental lighting for cucumber transplant production. *HortScience* 50(3): 351-357.

Hernández, R., Kubota, C. (2014) Growth and morphological response of cucumber seedlings to supplemental red and blue photon flux ratios under varied solar daily light integrals. Submitted, *Scientia Horticulturae* 173C (2014), pp. 92-99

Hernández, R., Kubota, C. (2014). LEDs supplemental lighting for vegetable transplant production: spectral evaluation and comparisons with HID technology. *Acta Horticulturae*. In press.

Hernández, R., Dragotakes, A., Kubota, C. (2014). Pulsing effects of supplemental LED lighting on cucumber seedlings. *Acta Horticulturae*. In press.

Hernández, R., Kubota, C. (2012). Tomato seedling growth and morphological responses to supplemental led lighting red:blue ratios under varied daily solar light integrals. Proceedings of the VII International symposium on light in horticultural systems. *Acta Horticulturae*. 956.

Hernández, R., Guo K., Harris M., Liu, T. X, (2011) Effects of selected insecticides on adults of two parasitoid species of *Liriomyza trifolii*: *Ganaspidium nigrimanus* (Figitidae) and *Neochrysocharis formosa* (Eulophidae). *Insect Science*. Vol 18: 512-520.

Liu, T. X, Kang L., Lei Z., **Hernández, R.**, (2010). Recent advances in entomological research: hymenopteran parasitoids and their role in biological control of vegetable *Liriomyza* leafminers (pp. 228-243). Higher Education Press.

Hernández, R., Harris M., Liu, T. X, (2010) *Liriomyza* and parasitoid species on peppers in the lower rio grande valley of Texas. *Southwestern Entomologist* Vol 35(1):33-43.

Hernández, R., Harris M., Liu, T. X., (2010) Impact of insecticides on parasitoids of the leafminer, *Liromiza trifolii*, in pepper in south Texas. *Journal of Insect Science*. Vol 11:61.

Micheletto S., Rodriguez-Uribe L, **Hernández R.**, Richins D.R., Curry, J., O'Connell, M.A.(2007). Comparative transcript profiling in roots of *Phaseolus acutifolius* and *P. vulgaris* under water deficit stress. *Plant Science*. Vol 179: 5.

Hernández, R., Rodriguez, L., O'Connell, MA (2006) Transcripts in drought stressed tepary bean roots. GenBank dbEST #EC911224 to EC911921.

Manuscripts under preparation

Hernández, R., Kubota, C. Cucumber transplants response to supplemental LED and HID lighting in terms of plant growth rate, plant development and fixture electrical efficiency.

Hernández, R., Kubota, C. Growth and development of tomato and pepper seedlings under supplemental R:B photon flux and varied solar DLI.

Hernández, R., Kubota, C. Comparison of supplemental LED and HID lighting in terms of tomato transplant growth and development and fixture electrical consumption.

Hernández, R., Kubota, C. Morphological and growth rate effects of different supplemental lighting spectrums on four greenhouse bell pepper cultivars

Publications in commercial magazines

Feature article in Urban AG-news under re-prints worth reading section
<http://urbanagnews.com/emag/issue-10/>

Work Experience

Postdoctoral Research Associate

(September 2013 – present)

School of Plant Sciences, College of Agriculture and Life Sciences

Conducting research in plant physiology under controlled environment. Current project focuses on the evaluation of LED lights as supplemental and sole source technology for greenhouse crops including plant responses to spectral evaluation, and supplemental LED lighting comparison with conventional High Pressure sodium lighting.

R&D Director/Co-founder

(September 2013 – present)

Grafted Growers LLC

A venture focused on the production of vegetable grafted plants under closed-type growing systems. Responsibilities include the development of new closed-type growing technologies and the production of high quality grafted vegetable plants, and edible greens for the retail and commercial market. In addition, the company produces unique growing techniques and technologies for different crops species. Current product line is grafted tomato transplants and edible greens sold in AZ greenhouses and retail centers.

PhD student

(August 2010 – September 2013)

Dr. Chieri Kubota, Plant Sciences, University of Arizona

Conducted research in the field of plant sciences and biosystems engineering under controlled environment agriculture. Training focused on environmental parameters affecting plant growth and development under controlled environment agriculture. Research focused on plant responses to new technologies of supplemental LED lighting

Crop and Technology Consultant

(May 2009 – August 2010)

Richard Wildman. Agriculture Consulting Services, Rochester NY

Providing consulting services to farmers across NY State in pest management, nutrient management, environmental regulation and precision agriculture. Including, but not limited to, chemical weed, disease and insect control. Nutrient recommendations. Precision agriculture such as mapping, field traffic control, real time kinematics, yield data analysis, GIS systems and GPS technologies.

Masters student

(August 2006- March 2009)

Dr. Tong-Xian Liu. Texas AgriLife research. Texas A&M University.

Conducting independent research in the field of integrated pest management and biological control. Evaluating *Liriomyza* pest (Diptera: Agromyzidae) and natural enemies in the Lower Rio Grande Valley of Texas, including their biology, species composition and effects of insecticides in both the pest and natural enemies. Following scientific research procedures and data analysis in order to present the results in a peer-reviewed scientific journal.

Research Specialist

(May 2003- July 2006)

Dr. Mary O'Connell. Agriculture laboratory, New Mexico State University.

Performing procedures in microbiology and molecular biology techniques including microarrays, northern blots, PCR amplification, agarose gel electrophoresis, RNA isolation, DNA isolation and purification, and rescues in order to isolate specific genes, proteins, and alkaloids from important region crops. Performing comparative analysis of the molecular response to drought stress in *phaseolus spp.* Studying molecular determinants for Phytophthora Resistance.

Integrated Pest Management Intern

(May 2005- August 2005)

Dr. Tom Fuchs and Mr. Warren Multer, Texas Cooperative Extension IPM program.

Identifying different cotton insect pest, their feeding activity, their main cotton stage attacking and their key predators. Scouting using techniques such as pheromone traps and field insect population. Analyzing pecan orchards pests, pecan cluster infestation survey and the basis on insecticide application to pecan trees. Drip irrigation application vs banded fertilizer application test plots.

Instruction Experience

Undergraduate student advisor (January 2011- present)

University of Arizona School of Plant Sciences

Teaching undergraduate students to develop the critical skill set for impactful research. Including record keeping, decision making, time management, report writing, communication with producers, quality assurance, and experiment supervision. Graduate students under my supervision are required to disseminate their research work through publications and/or presentations on national conferences.

Graduate Student advisor (September 2013- present)

University of Arizona School of Plant Sciences

Responsible of advising masters and Ph. D. students in terms of experimental design, statistical analysis, analytical instrumentation, and publication writing. Furthermore, I am also in charge of organizing and leading laboratory discussions in the Kubota research program.

Undergraduate internship supervisor (September 2013- present)

Grafted Growers LLC

Responsible on advising and training undergraduate student interns in terms of controlled environment agriculture and business management. Students in the internship are required to learn the basic skill set of a propagation grower, including plant growing, pest management, scheduling, supervision of entry level employees, and quality control. In addition, students are also required to interact with customers (retail garden centers, other growers) for feedback and new product development.

Extension teaching (three courses taught)

University of Arizona; Grafted Growers LLC

Extension teaching to master gardeners and the community in the topics of vegetable grafting including the science and theory as well as hands on workshops.

Invited speaker presentations

Transplant production under controlled environment with artificial light for greenhouse and indoor cultivation. International Congress on Controlled Environment Agriculture 2015 (ICCEA 2015).

Plant Lighting Basics & Applications. Greenhouse Crop Production & Engineering Design Short Course. Tucson, AZ. March 25 2015.

Light, the Critical and Limiting Factor. The Realities of Growing Plants Indoors Short Course. Tucson, AZ. July 21 2014.

Light in Controlled Environment Agriculture: Current and Emerging Technologies. Universidad Autónoma de San Luis Potosí, San Luis Potosí MX. July 15 2014.

Strategies to increase the production of grafted tomato transplants: Environmental Parameters, Automation, and Cold room storage. International Tomato Congress. Mazatlán, Sinaloa MX. June 18 2014.

Plant Lighting Basics & Applications. Greenhouse Crop Production & Engineering Design Short Course. Tucson, AZ. March 25 2014.

Conference Presentations

- Oral presentation. End-of-Day Far-red Lighting to Mitigate Intumescences on Tomato Seedlings Grown under LEDs. ASHS national conference. August 2015, New Orleans, LA.
- Oral presentation. Blue Light Dose-response of Growth and Morphology of Tomato Seedlings under Different Blue and Red Photon Flux Ratios Using LEDs. ASHS national conference. August 2015 New Orleans, LA.
- Developing LED Lighting Technologies and Practices for Sustainable Specialty-Crop Production. February 20, 2015 Tucson, AZ.
- Oral presentation. Blue:Red photon flux ratios for the production of vegetable transplants. LED symposium- Developing LED Lighting Technologies and Practices for Sustainable Specialty-Crop Production. February 20, 2015 Tucson, AZ.
- Controlled Environment Working Group annual meeting. Controlled Environment Agriculture Center Research update. April 2014. Fairbanks, Alaska.
- Oral presentation. Controlled Environment Working Group annual meeting. Controlled Environment Agriculture Center Research update. April 2014. Fairbanks, Alaska.
- Oral presentation Greensys, LEDs supplemental lighting for vegetable transplants production-spectral. October 2013. Korea.
- Poster presentation Greensys 2013, Pulsing effects of supplemental LED lighting on cucumber seedlings. October 2013. Korea.
- Oral presentation American Society of Horticultural Science, Growth and morphology of greenhouse cucumber seedlings grown under varied solar daily light integrals with different LED red:blue ratio. August 2013. Desert Spring California.
- Oral presentation at the international light symposium. Optimization of light quality environment for vegetable transplant production. LightSym2012, October 2012. Wageningen, The Netherlands.
- Oral presentation American Society of Horticultural Science, Growth and morphology of greenhouse cucumber seedlings grown under varied solar daily light integrals with different LED red:blue ratio. August 2012. Miami Florida.
- Oral Presentation, *Liriomyza* (Diptera: Agromyzidae) leafminer and parasitoid species composition on pepper and effects by selected insecticides in South Texas. ESA Annual meeting November 2008. Reno NV.
- Seminar presentation, *Liriomyza* and parasitoid guilds in South Texas, Colegio de Posgraduados de la ciudad de Texcoco October 2008. Universidad de Chapingo Mexico.
- Oral presentation, Field insecticide evaluation against *Liriomyza* leafminers and associated parasitoids, Southwest Entomological Society of America SWESA 2008 Annual meeting, March 2008, Forth Worth TX.
- Poster Presentation, *Liriomyza* species composition and Parasitoid Guilds in South Texas, Entomological Society of America ESA 2007 Annual meeting, December 2007, San Diego CA.
- Poster Presentation, *Liriomyza* species composition and Parasitoid Guilds in South Texas. Biological Control without borders, International Organization of Biological Control, November 2007, Yucatan, Mexico.
- Seminar presentation, *Liriomyza* species composition and parasitoid guilds in peppers, Texas Pepper Conference, November 2007, Texas Agricultural Experiment Station. Weslaco TX.
- Poster presentation, *Liriomyza* species composition, associated parasitoid complex and effects on parasitoids of commonly used insecticides on vegetables in the lower rio grande valley of Texas. Entomological Society of America Branch Meeting, February 2007. Corpus Christi TX.
- International Hydroponics conference training (60 hours) Mexico Hydroponic Association, 2006, Toluca Mexico.
- Poster Presentation, *Liriomyza* Species composition, associated parasitoid complex and effects on parasitoids of commonly used insecticides on vegetables in the lower rio grande valley of Texas. Texas A&M Agriculture Conference, May 2007. College Station TX.

- Conference moderator and attendee, GrowerTalks, Greenhouse experience, September 2007, Cleveland OH.
- Poster Presentation, Comparative analysis of the molecular response to drought stress in *phaseolus spp.* MANRRS annual meeting, 2005. Pittsburgh PA.

Awarded grants

- Hernández, R. and Jackson, J. Small business development grant. Eller School of Business, 2013, \$ 4,000.
- Hernández R. Howitt, R. CIG Conservation Innovation Grant, Precision Manure application. NRCS, 2010, \$ 60,365.
- Hernández R. Wildman, R. CIG Conservation Innovation Grant, Precision zone tillage, NRCS, 2010, \$ 45,128.
- Hernández R. Klass, M. Sustainable Agriculture Research and Innovation grant, 2010, NRCS, \$ 15,000.
- Hernández, R. Sustainable Agriculture grant, 2009, Sagarpa MX, \$12,000
- Hernández, R. Impulso al campo, Pro Campo MX, \$ 20,000

Professional Organizations

- International Society of Horticultural Sciences
- American Society of Agricultural Sciences
- Committee on Controlled Environment Technology and Use
- Hydroponics Society of Mexico
- Entomological Society of America
- Texas Academy of Science
- Minorities in Agriculture Natural Resources & Related Sciences (MANRRS)
- Society of Biological Control Mexico
- Toastmasters International

Languages

- English - fluent
- Spanish - fluent