

# Leonardo D. Salgado

Geneva, NY, USA | +1 (225) 936-7639 | [leonardo.salgadod@gmail.com](mailto:leonardo.salgadod@gmail.com) | [lds223@cornell.edu](mailto:lds223@cornell.edu) | [LinkedIn](#)

## EDUCATION

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### Cornell University, Ithaca, NY, USA

August 2021 – Present

*Doctor of Philosophy in Entomology*

Advisor: Dr. Brian A. Nault

### Louisiana State University (LSU), Baton Rouge, LA, USA

July 2021

*Master's Degree in Entomology*

GPA: 3.94

Minor: Applied Statistics

Thesis title: "Characterization of Resistance to Two Crambid Stem Borers Among Louisiana Sugarcane Cultivars"

Advisor: Dr. Blake E. Wilson – <https://bit.ly/LeoMSThesis>

Related Coursework: Plant Resistance to Arthropods, Insect Taxonomy, Agroecology, Precision Agriculture, Statistical Techniques I, Experimental Statistics II, Experimental Design, and Writing in the Biological Sciences.

### Universidad Nacional de Agricultura (UNAG), Catacamas, Olancho, Honduras

May 2019

*Ingeniero Agrónomo (BS in Agricultural Sciences)*

GPA: 3.05

Related Coursework: General Entomology, Plant Physiology, Botany, Soil Fertility, Plant Pathology, Weed Science, Agricultural Business Administration, and Agricultural Extension.

## WORK EXPERIENCE

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### Graduate Research Assistant

July 2021 – Present

*Cornell AgriTech, Geneva, New York, United States of America*

- Ecology and Management of Vegetable Crops Insects
- Applied insect ecology, insecticide resistance management, population structure, and phylogenetic analysis of onion insects pests from different geographic regions under the supervision of Dr. Brian Nault.

### Graduate Research Assistant

June 2019 – July 2021

*LSU AgCenter, Baton Rouge, Louisiana, United States of America*

- Ecology and Management of Field Crops Insects
- Conducted and coordinated 6 field research trials, 2 diet incorporation assays in the laboratory, and 4 greenhouse experiments to evaluate larval establishment, oviposition preference, and insect development with research team
- Conducted and coordinated 4 field research trials to evaluate the effect of volume, timing, and efficacy of insecticide applications.
- Participated in research site preparation and maintenance: planting, weeding, pesticide mixing and application, and harvesting.
- Present research at scientific and commodity group conferences, publish extension and scientific articles
- Partnered with USDA scientists to conduct trials evaluating insects' effect on yield reduction, nutrient influence, and varietal resistance.
- Supervised five student workers both on campus and at the sugarcane research station.

### Visiting Scholar Internship

September 2018– December 2018

*LSU AgCenter, Baton Rouge, Louisiana, United States of America*

- Conducted field, greenhouse, and laboratory research in integrated pest management, plant-insect interactions, and pesticide efficacy in sugarcane and rice agroecosystems.
- Examined potential chemical controls for invasive apple snails in rice and crawfish systems.
- Collected biological data: insect counts, insect identification, insect damage, yield, insect mortality, insect egg-laying behaviors, behavioral choice.
- Assisted in maintaining laboratory insect colonies in the Department of Entomology LSU.

### Undergraduate Student

January 2015 – May 2019

*Universidad Nacional de Agricultura, Catacamas, Olancho, Honduras*

- Worked in a bioassay for estimation of median lethal doses (LD<sub>50</sub>) of the entomopathogenic fungi *Beauveria bassiana* and *Metarhizium anisopliae* via probit analysis, against the banana root borer (*Cosmopolites sordidus*).

- Supervised and realized all steps of crop production (plantain, tomatoes, bell pepper, cabbage, coffee, and sugarcane), including planting, pest control, fertilizing, harvesting, design of drip irrigation systems, and commercialization.
- Co-organizer of the First International Congress of Plant Physiology, Mineral Nutrition, and Plant Protection. Catacamas, Honduras.
- Organized extension talks to Honduran Farmers on Good Agricultural Practices (GAP).

#### PEER REVIEW PUBLICATIONS (2 Total: 1 Senior Author, 1 Co-author)

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1. Wilson, B. E., **L. D. Salgado**, and J. M. Villegas. 2022. Optimizing chemical control for *Diatraea saccharalis* (Lepidoptera: Crambidae) in sugarcane. *Crop Protection*. 152: 105843. DOI: <https://doi.org/10.1016/j.cropro.2021.105843>. Contribution: Methodology, Investigation, Review, and Editing.
2. **Salgado, L. D.**, B. E. Wilson, J. M. Villegas, R. T. Richard, and H. J. Penn. 2021. Resistance to the sugarcane borer (Lepidoptera: Crambidae) in Louisiana sugarcane cultivars. *Environmental Entomology*. DOI: <https://doi.org/10.1093/ee/nvab118> (In press).

#### MANUSCRIPTS IN REVIEW/PREPARATION

1. **Salgado, L. D.**, B. E. Wilson and M.O. Way. 2022. Characterization of Resistance to the Mexican Rice Borer (Lepidoptera: Crambidae) Among Louisiana Sugarcane Cultivars. *Environmental Entomology*. (Internal revisions).

#### EXTENSION PUBLICATIONS (12 Total; 6 Senior Author, 6 Co-author)

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1. **Salgado, L. D.**, K. D. Rodriguez, F. Huval, and C. E. Carlton. 2021. Bug Biz Pest Management and Identification Series: *Bemisia tabaci* Middle East Asia Minor 1 (MEAM1) species, Silverleaf whitefly (Hemiptera: Aleyrodidae). LSU AgCenter. Publication ID 3806.
2. **Salgado, L. D.**, D. Galo, F. Huval, and C. E. Carlton. 2021. Bug Biz Pest Management and Identification Series: *Frankliniella occidentalis*, Western Flower Thrips (Thysanoptera: Thripidae). LSU AgCenter. Publication ID 3814.
3. **Salgado, L. D.**, K. Deynzer, F. Huval, and C. E. Carlton. 2021. Bug Biz Pest Management and Identification Series: *Spodoptera frugiperda*, Fall armyworm (Lepidoptera: Noctuidae). LSU AgCenter. Publication ID 3786. <https://bit.ly/LSUBugBizFAW>.
4. **Salgado, L. D.**, F. Huval, T.E. Reagan, and C. E. Carlton. Bug Biz Pest Management and Identification Series: *Plutella xylostella*, Diamondback moth (Lepidoptera: Plutellidae). LSU AgCenter. Publication ID 3785. <https://bit.ly/LSUBugBizDBM>.
5. **Salgado, L. D.**, F. Huval, T.E. Reagan, and C. E. Carlton. 2021. Bug Biz Pest Management and Identification Series: Citrus leafminer, *Phyllocnistis citrella* (Lepidoptera: Gracillariidae). LSU AgCenter. Publication ID 3784. <https://bit.ly/LSUBugBizCLM>.
6. **Salgado, L. D.**, F. Huval, T.E. Reagan, and C. E. Carlton. 2021. Bug Biz Pest Management and Identification Series: *Diaphania nitidalis* and *Diaphania hyalinata*, Pickleworm and Melonworm Moths (Lepidoptera: Crambidae). LSU AgCenter. Publication ID 3781. <https://bit.ly/LSUBugBizDiaphania>.
7. Wilson B. E., **L. D. Salgado**, and J. M. Villegas. 2020. Large plot evaluation of insecticidal control of the Mexican Rice Borer in Louisiana. Sugarcane Annual Progress Reports 2020. 139. Louisiana State University Agricultural Center, Baton Rouge, LA. Contribution: Methodology, Data collection, Review, and Editing. [https://bit.ly/LSU\\_SugarcaneAnnualReport2020](https://bit.ly/LSU_SugarcaneAnnualReport2020).
8. Wilson B. E., **L. D. Salgado**, and J. M. Villegas. 2020. Varietal resistance to the Mexican rice borer in plant cane. Sugarcane Annual Progress Reports 2020, 137-138. Louisiana State University Agricultural Center, Baton Rouge, LA. Contribution: Methodology, Investigation, Review, and Editing. [https://bit.ly/LSU\\_SugarcaneAnnualReport2020](https://bit.ly/LSU_SugarcaneAnnualReport2020).
9. Wilson B. E., **L. D. Salgado**, and J. M. Villegas. 2020. Varietal resistance to the sugarcane borer in plant cane. Sugarcane Annual Progress Reports 2020, 133-134. Louisiana State University Agricultural Center, Baton Rouge, LA. Contribution: Methodology and Investigation. [https://bit.ly/LSU\\_SugarcaneAnnualReport2020](https://bit.ly/LSU_SugarcaneAnnualReport2020).
10. Wilson B. E., J. M. Villegas, M. M. Mulcahy, and **L. D. Salgado**. 2019. Evaluation of insecticides, application timing, and water volume for control of sugarcane borer. Sugarcane Annual Reports 2019, 141-142. Louisiana

State University Agricultural Center, Baton Rouge, LA. Contribution: Methodology and Investigation.  
[https://bit.ly/LSU\\_SugarcaneAnnualReport2019](https://bit.ly/LSU_SugarcaneAnnualReport2019).

11. Wilson B. E., **L. D. Salgado**, and J. M. Villegas. 2019. Varietal resistance to the sugarcane borer in first ratoon cane. Sugarcane Annual Progress Reports 2019, 137-138. Louisiana State University Agricultural Center, Baton Rouge, LA. Contribution: co-wrote the manuscript, carried out data collection, and analyzed data.  
[https://bit.ly/LSU\\_SugarcaneAnnualReport2019](https://bit.ly/LSU_SugarcaneAnnualReport2019).
12. Wilson B. E., **L. D. Salgado**, and J. M. Villegas. 2018. Assessment of varietal resistance to the sugarcane borer. Sugarcane Annual Progress Reports 2018, 142-143. Louisiana State University Agricultural Center, Baton Rouge, LA. Contribution: co-wrote the manuscript, carried out data collection, and analyzed data.  
[https://bit.ly/LSU\\_SugarcaneAnnualReport2018](https://bit.ly/LSU_SugarcaneAnnualReport2018).

## PEER-REVIEW ABSTRACTS (1)

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1. **Salgado, L. D.** and B. E. Wilson. 2019. Resistance of Sugarcane Cultivars to the Sugarcane Borer: *Diatraea saccharalis*. Journal American Society of Sugarcane Technologists. 39: 23–24.

## PESTICIDE EVALUATION RESEARCH (1)

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1. Villegas, J.M., B.E. Wilson, and **L. D. Salgado**. 2020. Evaluation of Intrepid Edge® for Control of the Sugarcane Borer in Louisiana Sugarcane, 2019. Arthropod Management Tests 45(1); <https://doi.org/10.1093/amt/tsaa056>. Contribution: co-designed experiment with co-authors, carried out data collection, and analyzed data.

## PRESENTATIONS

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### Professional Meetings (7 Total; 6 Senior Author, 1 Co-author)

1. **Salgado, L. D.** and B. E. Wilson. 2021. Characterization of resistance to the Mexican rice borer (Lepidoptera: Crambidae) among Louisiana sugarcane cultivars. Entomological Society of America Annual Meeting. Virtual Presentation On-Demand.
2. **Salgado, L. D.** and B. E. Wilson. 2020. Measuring oviposition preference and larval establishment of the sugarcane borer *Diatraea saccharalis* (F.) on commercial and experimental sugarcane cultivars in Louisiana. Entomological Society of America Annual Meeting. Virtual Presentation. November 11-25.
3. **Salgado, L. D.** and B. E. Wilson. 2020. Mechanisms of resistance to the sugarcane borer, *Diatraea saccharalis* (F.), among sugarcane cultivars. 94th Annual Joint Meeting of the Eastern and Southeastern Branch Meeting of the Entomological Society of America, Atlanta, Georgia, USA. March 29th-April 1st. Canceled due to COVID-19.
4. Wilson B.E., J. M. Villegas, M. Mulcahy, **L. D. Salgado**, and K. Landry. Optimizing insecticidal seed treatments for Louisiana rice. 94th Annual Joint Meeting of the Eastern and Southeastern Branch Meeting of the Entomological Society of America, Atlanta, Georgia, USA. March 29th-April 1st, 2020. Canceled due to COVID-19. Contribution: carried out data collection and analysis.
5. **Salgado, L. D.** and B. E. Wilson. 2019. Resistance of Sugarcane Cultivars to the Sugarcane Borer: *Diatraea saccharalis*. Entomological Society of America Annual Meeting, St. Louis, Missouri, USA. November 17-20.
6. **Salgado, L. D.** and B. E. Wilson. 2019. Resistance of Sugarcane Cultivars to the Sugarcane Borer: *Diatraea saccharalis*. 49th Annual Joint Meeting of the American Society of Sugarcane Technologists, Point Clear, Alabama, USA. June 26 – 28.
7. **Salgado, L. D.**, R. Muñoz, and B. E. Wilson. 2019. Resistencia de cultivares de caña de azúcar al barrenador *Diatraea saccharalis*. 1<sup>st</sup> Meeting of Research at Universidad Nacional de Agricultura, Catacamas, Olancho, Honduras. April 25 - 26. \*In Spanish.

### Poster Presentations (2)

1. **Salgado, L. D.**, B.E. Wilson, and J.M. Villegas. 2021. Mechanisms of resistance of sugarcane to the sugarcane borer (Lepidoptera: Crambidae) in Louisiana. Entomological Society of America Southeastern Branch Meeting. ePoster. March 29-31.
2. **Salgado, L. D.**, J.M. Villegas, and B.E. Wilson. 2018. Resistance of Sugarcane Cultivars to the Sugarcane Borer (*Diatraea saccharalis*). 5th Annual LSU International Research Fair, Baton Rouge, Louisiana, USA. November 16. \*First Place Poster Visiting Undergraduate Student Category.

### Other Presentations (6)

1. **Salgado, L. D.** 2021. Cultivar Resistance to the Stem Borer Complex (Lepidoptera: Crambidae) in Louisiana. Louisiana State University Entomology Department. Exit Seminar. Baton Rouge, Louisiana, USA. April 23.
2. **Salgado, L. D.** 2020. Manejo Integrado de Barrenadores en Caña de Azúcar. (Sugarcane Stem Borers Integrated Pest Management). Guest Online Lecture. Universidad Nacional de Agricultura. Catacamas, Olancho, Honduras. August 12. \*In Spanish. Attended by 76 people.
3. **Salgado, L. D.** 2020. Resistencia de las Plantas a los Insectos. (Plant Resistance to Insects). Online Symposium UNAs at LSU. Baton Rouge, Louisiana, USA. July 31, 2020. \*In Spanish.
4. **Salgado, L. D.** and K. D. Rodríguez. 2020. Proceso de Aplicación a la Escuela de Posgrado. (Application Process to Graduate School). Online Symposium UNAs at LSU. Baton Rouge, Louisiana, USA. July 30, 2020. \*Both authors presented.
5. **Salgado, L. D.** and B. E. Wilson. 2019. Mechanisms of resistance to the sugarcane borer: *Diatraea saccharalis* (Fab., 1794). 10th Annual LSU Entomology Department Graduate Student Symposium, Baton Rouge, Louisiana, USA. October 25.
6. **Salgado, L. D.,** A. Andino, H. Gómez, E. Fuentes, and N. Larios. 2019. Case Study of Universidad Nacional de Agricultura (UNA), How does UNAG impact Honduran communities? At Southern Institute of Appropriate Technology (SIFAT) Training “World Hunger and Malnutrition: Practical Skills to Make a Difference.” Lineville, Alabama, USA. August 12-16, 2019. Speaker.

### PROFESSIONAL ASSOCIATIONS

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- American Society of Sugarcane Technologists (2019–Present)
- Entomological Society of America (2019–Present)
- Entomology Club at LSU (2019–2021)
  - Treasurer (2020–2021)
- UNAs at LSU, (2019–Present)
  - President (2020–2021)
  - Vice President (2019–2020)
- UNAG Alumni Association in the United States (2020–Present)
  - Vice President (2020–2022)
- Cooperative of Horticulturists and Coffee Growers Siguatepeque (2012–Present)

### HONORS, AWARDS, AND SCHOLARSHIPS

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- Selected to participate at Cornell Graduate School Dean’s Scholars Program
- Cornell University College of Agriculture & Life Sciences Field of Entomology Recruitment Fellowship Fall 2021.
- L.D. Newsom Graduate Student Award in Entomology, Outstanding MS Student (\$1,500). Department of Entomology, Louisiana State University, 2021.
- American Society of Sugarcane Technologists Fellowship Award 2019–2021 – 2 academic years awarded (\$3600).
- David J. Boethel Scholarship Graduate Student Award, Outstanding MS Student working in Integrated Pest Management (\$1,000). Department of Entomology, Louisiana State University, 2020.
- Received full graduate assistantship to support M.S. program at Louisiana State University, (2019-2021).
- First Place Poster, Annual LSU International Research Fair Contest 2018.
- Scholarship to attend to academic exchange course called “World Hunger and Malnutrition: Practical Skills to Make a Difference” at Lineville, Alabama, in August 2017, and August 2019 through the Southern Institute for Appropriate Technology (SIFAT).
- Scholarship of the Honduran Government (Becas 20/20) of \$125 per month for being an excellent student (2017-2019 - 30 months awarded).
- Full Scholarship (tuition, meal, and housing waiver) to study at Universidad Nacional de Agricultura (2015-2019).

## MENTORING EXPERIENCE

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- UNAs at LSU Mentoring Program
  - Mentored three undergraduate student and two alumni from UNAG in the process of how to apply to LSU's graduate school programs.
- EntoMentos of the Entomological Society of America.
  - Mentored one undergraduate student from University of Central Florida in the process of how to apply to entomology graduate school programs. <https://www.entsoc.org/entomentos>

## COMMUNITY OUTREACH

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- “Insects’ Camouflage and Mimicry” a presentation to kids from ages 5-7 at the Baton Rouge Zoo, Louisiana, USA. LSU Entomology Club Outreach. June 29, 2021.
- Organized presentation and activities for kids to learn about what is an insect and insect's life cycle to kids ages 3-13 at St. Alphonsus School Summer Camp. LSU Entomology Club Outreach. June 8, 2021.
- “Insect development” a series of presentations to kids from 5<sup>th</sup> to 6<sup>th</sup> grade at Copper Mill Elementary School of Zachary, Louisiana, USA. LSU Entomology Club Outreach. May 20, 2021.
- “Importance of Pollinators” an online presentation to kids from 4<sup>th</sup> to 5<sup>th</sup> grade at Copper Mill Elementary School of Zachary, Louisiana, USA. LSU Entomology Club Outreach.
- Organized the first online symposium via Zoom and Facebook Live of UNAs at LSU Association titled: *“Discusión de Oportunidades en el Extranjero para Estudiantes Hondureños: retos para esta década”* (Discussing opportunities abroad for Honduran students: challenges for this decade). We had speakers from industry and academia who presented their perspective on how to apply to graduate studies, and their current research.
- “Sixth Grade Days” at LSU, Annual Event, Baton Rouge, LA, US (Entomology Booth – Live Insect Display: January 16, 2020.)
- Importance of Insects as pollinators: A presentation given to kids ages 3-13 at Independence Park Facility Baton Rouge, Louisiana. September 13, 2019.
- Volunteer translator in training “World Hunger and Malnutrition: Practical Skills to Make a Difference” Lineville, AL, USA. August 12-16, 2019.
- Founding member of “UNAs at LSU,” which is a student association that helps to connect an LSU AgCenter faculty member to UNA students and graduates to allow them to gain international experience in agricultural research and to pursue post-graduate education at LSU. During my period as president we connected 10 people from Honduras to LSU AgCenter Faculty and 4 of them have become graduate students at LSU.

## OTHER SKILLS

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- Spanish – Native language
- Statistical Analysis (SAS and R)
- Certificate in Drip Irrigation System Design
- QGIS – Intermediate Level