

USDA-ARS Southeast Area SOUTHERN INSECT MANAGEMENT RESEARCH UNIT

Mission

- ▶ *The mission of the Southern Insect Management Research Unit (SIMRU) is to generate new knowledge of arthropod pest biology, ecology and management and integrate this knowledge into contemporary farming systems that will promote economical and environmentally stable pest management practices for the southern U.S.*
- ▶ *The vision of SIMRU is to be a recognized center of innovation for negating agricultural pest problem through deployed scientific knowledge of pest biology, ecology and management options.*

CRIS PROJECT

Integrated Insect Pest and Resistance Management on Corn, Cotton, Sorghum, Soybean, and Sweet Potato

PROJECT INVESTIGATORS

- ▶ Clint Allen (Project Leader)
- ▶ Nathan Little
- ▶ Randall Luttrell
- ▶ Katherine Parys
- ▶ Maribel Portilla
- ▶ OP Perera
- ▶ Yu Cheng Zhu

CRIS PROJECT

Control of Tarnished Plant Bugs by Biocontrol and Other Methods

PROJECT INVESTIGATORS

- ▶ Randall Luttrell
- ▶ Maribel Portilla (Project Leader)

CRIS PROJECT

Innovative Strategies for Insect Resistance Management in Bt Cotton

PROJECT INVESTIGATORS

- ▶ Clint Allen
- ▶ Nathan Little
- ▶ Randall Luttrell
- ▶ **OP Perera (Project Leader)**

NEW PUBLICATION CONGRATULATION Dr. O.P. Perera

Rapid Identification of *Helicoverpa armigera* and *Helicoverpa zea* (Lepidoptera: Noctuidae) Using Ribosomal RNA Internal Transcribed Spacer 1
Onathirage P. Perera, Kerry C. Allen, Devendra Jain, Matthew Purcell, Nathan S. Little, and Randall G. Luttrell

J. Insect Sci. (2015) 15(1): 155. DOI: 10.1093/jisesa/iev137

ABSTRACT: Rapid identification of invasive species is crucial for deploying management strategies to prevent establishment. Recent *Helicoverpa armigera* (Ht/btcr) invasions and subsequent establishment in South America has increased the risk of this species invading North America. Morphological similarities make differentiation of *H. armigera* from the native *Helicoverpa zea* (Boddie) difficult. Characteristics of adult male genitalia and nucleotide sequence differences in mitochondrial DNA are two of the currently available methods to differentiate these two species. However, current methods are likely too slow to be employed as rapid detection methods. In this study, conserved differences in the internal transcribed spacer 1 (ITS1) of the ribosomal RNA genes were used to develop species-specific oligonucleotide primers that amplified ITS1 fragments of 147 and 334 bp from *H. armigera* and *H. zea*, respectively. An amplicon (85 bp) from a conserved region of 18S ribosomal RNA subunit served as a positive control. Melting temperature differences in ITS1 amplicons yielded species-specific dissociation curves that could be used in high resolution melt analysis to differentiate the two *Helicoverpa* species. In addition, a rapid and inexpensive procedure for obtaining amplifiable genomic DNA from a small amount of tissue was identified. Under optimal conditions, the process was able to detect DNA from one *H. armigera* leg in a pool of 25 legs. The high resolution melt analysis combined with rapid DNA extraction could be used as an inexpensive method to genetically differentiate large numbers of *H. armigera* and *H. zea* using readily available reagents.

Key Words: *Helicoverpa*, bollworm, early detection, invasive species, melt curve

Welcome
Dr. Bryce Blackman
to SIMRU
November 4-5, 2015



SPECIAL THANKS

Special thanks to SIMRU's employees for their hard work in cleaning the Greenhouse on Wednesday, October 28, 2015 and Thursday, October 29, 2015.



OUTREACH



Maribel and Henry assisting a Saint Joseph student with her Science project

Outreach



Tabatha Nelson and Yolanda Harvey attended a Youth Motivation Task Force Conference at Mississippi Valley State University on November 8-10, 2015.

SIMRU Thanksgiving Dinner

Thursday, November 12, 2015
1st Floor Conference Room
11:30 a.m.



SIMRU Thanksgiving Dinner



Congratulations
to
Mr. & Mrs. Gregory Chad Roberts

It's a  Boy!

Little Mr. Gregory Chad Roberts II born
Tuesday, October 27, 2015 weighing 8lbs, 6oz, 21"long.

NOVEMBER
BIRTHDAYS CELEBRATION

Randall (Nov. 5th)
Cathy (Nov. 6th)
Yolanda (Nov. 8th)
Henry (Nov. 23rd)

