54th ANNUAL MEETING
of the
SOUTHWESTERN BRANCH
of the
ENTOMOLOGICAL SOCIETY OF AMERICA

http://swbesa.tamu.edu

and the

ANNUAL MEETING of the
SOCIETY OF SOUTHWESTERN ENTOMOLOGISTS

27 FEBRUARY – 2 MARCH 2006
Omni Austin Hotel at Southpark
4140 Governor's Row
Austin, TX 78744
(512)-383-2602; www.omnihotels.com

TABLE OF CONTENTS **PAGE**

SPONSORS

We thank the following people and organizations for their generous donations in support of the SWB-ESA meeting:

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MEETING INFORMATION

REGISTRATION:

All persons attending the meetings or participating in the program must register. On-site registration fees for the SWB-ESA meeting are:

	Full meeting	One day only	Banquet only
Active SWB or SSWE member	$130	$50	$25
Student SWB or SSWE member*	45	25	25
Non-member	150	65	25
Youth member	10	10	10
Spouse/Guest	35	20	25
Honorary/Emeritus	Gratis**	Gratis	Gratis

*Student SWB or SSWE members: the fee is waived if you are a volunteer helper at the meeting.
**Gratis, but please register

Natural Science Tour: Brackenridge Field Laboratory
Texas Memorial Museum (time permitting)

ESA CERTIFICATION BOARD INFORMATION:

Information regarding the Certification Board of ESA is available at the Registration Desk.

SPONSORS:

We thank our sponsors for their generous support of activities such as the student mixer, Linnaean Games, continental breakfast and breaks, spouses, guests, and retirees' functionsn.

AUDIOVISUAL:

ONLY digital projectors with computers will be provided for oral presentations. If you uploaded your presentation through the SWBESA Web Site, you may confirm that it has been loaded into the correct time slot for presentation. If you did not upload your presentation, bring your Power Point files on CD or "jump drive" to the Presentation Preview-Presentation Collection Desk **one day before** your scheduled presentation. However, to be safe, bring a copy of your presentation with you to the meeting.

PROGRAM SCHEDULE AND MODERATORS:

Speakers are limited to the time indicated in the schedule. Moderators have the responsibility and authority to enforce the time limits indicated in the schedule. **Timers and laser pointers** will be available to Moderators before their sessions begin; go to the Presentation Preview- Presentation Collection Desk in Foyer B. Please return timers and laser pointers promptly to this desk when your session concludes.

RETIREE AND SPOUSE/GUEST HOSPITALITY:

Retiree and spouse/guest information is available at the Registration Desk.

JOB OPPORTUNITY AREA:
The Student Affairs Committee of the SWB-ESA has a list of Job Opportunities (Lower Foyer) during the meetings. Employers should provide copies of available opportunities to post. Potential employees/students should bring multiple copies of resumes to leave during the meeting. Volunteers operating the Opportunity Area will serve as liaisons to arrange interviews if needed.

LOST AND FOUND:
Articles should be turned in or reported to the Registration Desk or hotel main desk.

MESSAGES:
A message board is at the Registration Desk.

BANQUET:

The banquet will be in Omni D, E and F. **Extra tickets** may be purchased for **$25** at the Registration Desk.

BANQUET MENU:

Grilled Barbeque Chicken Breast

Corn O'Brien

Garlic Mashed Potatoes

Served With A Dinner Salad Including Choice of Ranch and Italian Dressing

Fresh Dinner Rolls

Homemade Apple Pie

Iced Tea and Coffee

PROGRAM SUMMARY

SUNDAY, FEBRUARY 26, 2006

Southwestern Branch-ESA Executive Committee Meeting 1:00PM – 3:00PM
Location: Boardroom

MONDAY, FEBRUARY 27, 2006

Natural Science Tour: Brackenridge Field Laboratory
Texas Memorial Museum (time permitting)

MEETINGS and ACTIVITIES

Southwestern Branch-ESA Registration
Location: Skylight Foyer 3:00PM – 7:00PM

Society for Southwestern Entomologists

Executive Committee Meeting
Location: Omni B 3:30PM – 4:00PM

General Membership Business Meeting
Location: Omni B 4: 00PM – 5:00PM

Student Mixer
Location: The Oaks
Students 7:00PM – 8:00PM
General Membership Mixer 8:00PM- 10:00PM

TUESDAY, FEBRUARY 28, 2006

Registration for SWBESA meeting
Location: Skylight Foyer 7:00AM – 6:30PM

Poster Set-Up---**NOTE**: All Student Posters and 7:00AM – 8:00AM
All Regular Member Posters will be on display
Tuesday AND Wednesday
Location: Omni A

Poster Viewing
Location: Omni A 8:00AM – 5:00PM

TUESDAY, FEBRUARY 28, 2006

Job Opportunity Area Location: Lower Foyer		8:00AM – 5:00PM
Presentation Preview- Presentation Collection Area Location: Skylight Foyer		8:00AM – 5:00PM
Students---Stand by Your Posters to Answer Questions **Location: Omni A**		**During Breaks**

Omni C

Plenary Session		8:00AM – 10:00AM
	Break (Omni A)	10:00AM- 10:24AM
Student Competition---Oral Presentations Location: Omni C		10:24AM – 12:00 Noon
	LUNCH---on your own	12:00 Noon – 1:00PM
Student Competition---Oral Presentations Location: Omni C	Continued	1:00PM – 2:12PM
	Break (Omni A)	2:24PM- 3:00PM
SYMPOSIUM: Forensic Entomology Location: Omni C		3:00PM – 4:40PM
Submitted Papers: Crop Protection Entomology Location: Conference Center/Amphitheater		3:00PM – 4:36PM
Linnaean Games-Preliminary Rounds Location: Omni C		5:00PM – 6:30PM
Banquet and Awards Program Location: Omni D, E and F		
Social Time, Cash Bar		6:30PM – 7:00PM
Dinner and Awards Program Musical Entertainment Provided by Jade Day		7:00PM – 9:00PM

WEDNESDAY, MARCH 1, 2006

Registration for SWBESA meeting Location: Skylight Foyer	7:30 AM – 5:00 PM
Job Opportunity Area Location: Lower Foyer	8:00 AM – 5:00 PM
Presentation Preview- Presentation Collection Area Location: Skylight Foyer	8:00AM – 5:00PM
Poster Viewing **Location: Omni A**	**8:00AM – 5:00PM**

	Omni C	
Symposium: Plant Bugs in Cotton		8:00AM –10:05 AM
	Break (Omni A)	9:55AM – 10:15AM
		10:20AM – 11:35AM
	LUNCH---on your own	11:35AM – 1:00 PM
Submitted Papers: Physiology/Biochemical/Toxicology/ Molecular Entomology		1:00PM-1:48PM
Urban Entomology		2:02PM –2:38PM
	Break (Omni A)	2:38PM – 3:10PM
Symposium: Texas Entomology Programs		3:10PM – 4:30PM

	Omni B	
Submitted Papers: Biology/Ecology/Behavioral Entomology		8:12AM – 10:00AM
	Break (Omni A)	10:00AM - 10:30AM
		10:30AM – 11:06AM
Submitted Papers: Veterinary/Medical Entomology		11:18AM – 11:30AM
	LUNCH---on your own	11:30AM – 12:45PM
Regulatory and Extension Entomology		12:45PM – 2:30PM
	Break (Omni A)	2:30PM – 2:45PM
		2:45PM – 5:00PM

Conference Center/Amphitheater

Symposium: Fire Ant		8:00AM –10:10AM
	Break (Omni A)	10:10AM – 10:30AM
		10:30AM – 11:40AM
	LUNCH---on your own	11:40AM – 1:10PM
		1:10PM - Until
Linnaean Games-Finals and Awards Location: Omni C		5:00PM – 7:00PM
Remove Posters		5:00PM – 8:00PM
Dinner on Your Own		

THURSDAY, MARCH 2, 2006

Final Business meeting - SW Branch ESA Location: Conference Center	8:00AM – 11:00AM
Southwestern Branch-ESA New Executive Board (2006-2007) Location: Conference Center	11:00AM - Noon

2005 - 2006 OFFICERS AND COMMITTEES

Bastiaan "Bart" M. Drees, President
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John Burd
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Noel Troxclair, Chair
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Drew Palrang (05)
Pat Porter (05)
Glene' Mynhardt (05)

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Charles Chilcutt (07)
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Carol Sutherland (08)

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Allen Knutson
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Student Research Paper
And Poster Awards Committee

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Richard Berberet
Robert Bowling
Roxanne Bowling
Jane Breen Pierce
Scott Bundy
Jack Dillwith
Miles Karner
Jerry Michels
Megha Parajulee
Jeff Tomberlin

Youth Science Committee

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M.O. Way
Phil Mulder

FULL PROGRAM

SUNDAY, FEBRUARY 26, 2006

Southwestern Branch, Entomological Society of America---Executive Committee Meeting
Location: Boardroom 1:00PM – 3:00PM

MONDAY, FEBRUARY 27, 2006

Natural Science Tour:

Tour will leave the Omni Southpark at 12:30 p.m. on Monday, February 27th to tour the Brakenridge Field Laboratory. If time allows, from Brackenridge, tour participants will travel to the Texas Memorial Museum for a self-guided tour.

This tour is free of charge

Tour the **Brackenridge Field Laboratory** at the University of Texas at Austin. In the Phorid Fly and Fire Ant Laboratory observe the behavioral and community interactions of phorid flies and fire ants. See the U.T. Entomology Collection, best representing the insects of Austin and Travis County, with major orders in the collection including Odonata, Hymenoptera, and Lepidoptera. Tour the facility to see the quarantine room and the grounds to see greenhouses with longwing butterflies and passiflora.

Then visit the **Texas Memorial Museum**, home to more than 4,000 rare scientific specimens all discovered in Texas. Encounter dinosaur and fossil displays, live animal exhibits of Texas fish, reptiles and insects, plus specimens of gems, minerals and meteorites.

MEETINGS and ACTIVITIES

Southwestern Branch-ESA Registration
Location: Upper Foyer 3:00PM – 7:00PM

Society for Southwestern Entomologists

Executive Committee Meeting
Location: Boardroom 3:30PM – 4:00PM

General Membership Business Meeting
Location: Omni C 4: 00PM – 5:00PM

Student Mixer (General Membership can join at 8:00PM)
Location: Oaks 7:00PM – 10:00PM

TUESDAY, FEBRUARY 28, 2006

Registration for SWBESA meeting
Location: Upper Foyer 7:00AM – 6:30PM

Poster Set Up-**NOTE**: All Student Posters and all Regular Member Posters will be on display Tuesday AND Wednesday
Location: Omni A 7:00AM – 8:00AM

TUESDAY, FEBRUARY 28, 2006

Poster Viewing
Location: Omni A — 10:00AM Tuesday and continue through Wednesday

Job Opportunity Area
Location: Lower Foyer — 10:00AM – 5:00PM

Presentation Preview- Presentation Collection Area
Location: Skylight Foyer — 10:00AM – 5:00PM

Plenary Session
Location: Omni C — 8:00AM – 10:00AM

Call to Order - **Bastiaan "Bart" M. Drees**, President, Southwestern Branch of the ESA

Welcome - **David Kostroun**, Assistant Commissioner for Regulatory Programs - Texas Department of Agriculture

Remarks from ESA President - **Frank E. Gilstrap**, President, Entomological Society of America

ESA Foundation Report - **Frank E. Gilstrap**

ESA Governing Board Report - **Marvin Harris**, ESA Governing Board Representative

Messages from Executive Director - **Paula G. Lettice**, Executive Director, Entomological Society of America

Necrology Report - **James Reinert**, Chair, Necrology Committee

Greetings from the Society of Southwestern Entomologists - **Tom Royer**, President

Board Certified Entomologists - **Greg Cronholm**, BCE Branch Representative

Special recognition and awards - **Phil Mulder and Bart Drees**

Presidential Address: "Entomology: Video Clips and Animated Graphics" - **Bart M. Drees**

Keynote Speech: "Forensics and Entomology Involving Entomophobia, Delusionary Parasitosis, Bed Bugs, Fire Ants and the Courts" - **Roger E. Gold**, Professor & Endowed Chair, Department of Entomology, Texas A&M University

Final Announcements - Final business meeting topics: Constitution and By-Laws, SOP documents
Noel Troxclair, Chair, Program Committee, and **Elizabeth "Wizzie" Brown**, Chair, Local Arrangements Committee

TUESDAY, FEBRUARY 28, 2006

Break Location: Foyer and Omni A 10:00AM - 10:24AM

THANK YOU, SPONSORS!

Students---Stand by Your Posters, Answer Questions
Location: Omni A During Breaks

STUDENT COMPETITION, ORAL PRESENTATIONS
LOCATION: Omni C
Moderator: Bonnie Pendleton, West Texas A&M University

10:24AM SO-01 Population genetics of the pecan weevil, *Curculio caryae* Horn, based on mitochondrial DNA data. **Glene Mynhardt**, Texas A&M University; Anthony Cognato, Texas A&M University; Marvin Harris, Texas A&M University.

10:36AM SO-02 Monitoring population dynamics in field cages between mixed populations of saltcedar leaf beetle ecotypes. **Beth Petersen**, New Mexico State University; David Thompson, New Mexico State University.

10:48AM SO-03 Progress in evaluating converted cotton race stocks for resistance to whiteflies and aphids. **Maggie Toothaker**, Texas A&M University; C. Wayne Smith, Texas A&M University; Marvin K. Harris, Texas A&M University.

11:00AM SO-04 Comparative structural characterization of help in ixodid tick species. **W. Justin Cordill**, Oklahoma State University; Robin Madden, Oklahoma State University; Jack Dillwith, Oklahoma State University.

11:12AM SO-05 The biological control of saltcedar (*Tamarix* spp.) in Texas by introductions of the leaf beetle *Diorhabda elongata* (Coleoptera: Chrysomelidae). **Jeremy Hudgeons**, Texas A&M University; Allen Knutson, Texas Cooperative Extension; Kevin Heinz, Texas A&M University; C J. DeLoach, USDA-ARS; Allan McGinty, Texas Cooperative Extension

11:24AM SO-06 Influence of honeydew production by blackmargined aphid (*Monellia caryella*) on natural enemies in pecan (*Carya illinoinensis*). **Jessica Honaker**, Texas A&M University.

11:36AM SO-07 Characterization of *Reticulitermes flavipes* colonies on a native tallgrass prairie/cross-timbers habitat. **Matthew Smith**, Oklahoma State University; Kenneth Brown, City of New Orleans Mosquito and Termite Control Board; Greg Broussard, Oklahoma State University; Anita Smith, Oklahoma State University; Bradford Kard, Oklahoma State University.

TUESDAY, FEBRUARY 28, 2006

11:48AM SO-08 Insect communities on saltcedar compared to native vegetation on the Rio Grande river. **Howard Beuhler**, University of New Mexico; David Thompson, New Mexico State University

12:00 NOON- 1:00PM Lunch---on your own

1:00PM SO-09 Molecular quantification of *Xylella fastidiosa* cells transmitted by *Homalodisca coagulata*. **Brian Jackson**, University of Texas; Blake Bextine, University of Texas.

1:12PM SO-10. Efficiency of using black soldier flies to biologically manage dairy waste in Texas. **Heidi Myers**, Tarleton State University; Jeff Tomberlin, Texas Agricultural Experiment Station; Barry Lambert, Tarleton State University.

1:24PM SO-11 Black soldier fly reduced manure as a novel growing media. **Jamie McGee**, Texas Agricultural Experiment Station; Jeffery Tomberlin, Texas Agricultural Experiment Station.

1:36PM SO-12 Effect of contact stimuli on Indianmeal moth oviposition. **Kishan Sambaraju**, Oklahoma State University; Thomas W. Phillips, Oklahoma State University.

1:48PM SO-13 Preliminary proteome comparison between worker and soldier castes of *Reticulitermes flavipes*. **C J. Bowen**, Oklahoma State University; Robin D. Madden, Oklahoma State University; Brad Kard, Oklahoma State University; Jack W. Dillwith, Oklahoma State University.

2:00PM SO-14 Effects of soybean trypsin inhibitor on physiology and foraging behavior of the honey bee (*Apis mellifera* L.). **Ramesh Sagili**, Texas A&M University; Tanya Pankiw, Texas A&M University; Keyan Zhu-Salzman, Texas A&M University.

Break Location: Foyer and Omni A 2:12PM – 3:00PM

THANK YOU, SPONSORS!

TUESDAY, FEBRUARY 28, 2006

Concurrent Sessions: Omni C

Symposium: The Past, Present and Future of Forensic Entomology
Moderator: Jeff Tomberlin

3:00PM F-01 Forensic entomology in the 21st Century. **Jeffery K. Tomberlin**, Texas Cooperative Extension

3:20PM F-02 Law enforcement and the forensic entomologist, **F. Mariana Tenorio-Griggs**, Forensic Science, Baylor University

3:40PM F-03 Sip carefully: Field preservation of maggots, **Heather R. Ketchum**, University of Oklahoma

4:00PM F-04 The need for collection of blow flies species from specific geographical areas. **Amanda Marie Saldana**, Baylor University

4:20PM F-05 Why teach a class in forensic entomology? **Jimmy K. Olson**, Texas A&M University

4:40PM END

Concurrent Sessions: Conference Center/Amphitheater

Submitted Papers: Crop Protection Entomology
Moderator: Edmond Bonjour

3:00PM CP-01 Field efficacy of microbial agents for control of pecan weevil, *Curculio caryae* (Coleoptera: Curculionidae). **David Shapiro-Ilan**, USDA-ARS; Ted Cottrell, USDA-ARS; Wayne Gardner, Georgia Agricultural Experiment Station; Robert Behle, USDA-ARS; Bruce Wood, USDA-ARS.

3:12PM CP-02 Evaluation of pecan IPM in Texas. **Marvin Harris**, Texas A&M University; Alexandra Gomezplata, Texas A&M University; William Ree, Texas Cooperative Extension.

3:24PM CP-03 Can stored wheat be effectively protected with layered applications of diatomaceous earth? **Edmond Bonjour**, Oklahoma State University; Siwei Liu, Oklahoma State University; Thomas Phillips, Oklahoma State University; Frank Arthur, USDA-ARS GMPRC.

TUESDAY, FEBRUARY 28, 2006

3:36PM CP-04 Relationship between spectral data and Russian wheat aphid (Hemiptera: Aphididae) abundance in winter wheat. **Mustafa Mirik**, Texas Agricultural Experiment Station; Gerald Michels, Texas Agricultural Experiment Station; Sabina Kassymzhanova-Mirik, Texas Agricultural Experiment Station; Norman Elliott, USDA-ARS.

3:48PM CP-05 Host plant resistance to cotton fleahopper. **Allen Knutson**, Texas Cooperative Extension.

4:00PM CP-06 Texas IPM internship program. **Tom Fuchs**, Texas Cooperative Extension.

4:12PM CP-07 Utilization of nuclear markers for identification of alfalfa weevil strains and detection of hybrids. **Paul Smith**, Scott Bundy, and Steve Hanson, New Mexico State University.

4:24PM CP-08 Sampling and extraction of the apterous *Pemphigus* populitransversus (Homoptera: Pemphigidae) feeding on cruciferous vegetable roots. **T.-X Liu**. Texas Agricultural Experiment Station.

4:36PM CP-09 Biological control based IPM of spider mites in greenhouse crops. **Carlos E. Bogran** and Camilo Garzon, Department of Entomology, Texas A&M University,

4:48PM END

STUDENT POSTER COMPETITION
LOCATION: Omni A

SP-01 Observations on the distribution and abundance of *Chironomus calligraphus* Goeldi (Diptera: Chironomidae) in an activated sludge sewage treatment plant. **Michelle Sanford**, Texas A&M University; William Walton, University of California, Riverside.

SP-02 Influence of monitoring station diameter and food source volume on the frequency of subterranean termite activity. **Greg H. Broussard**, Oklahoma State University; Anita L. Smith, Oklahoma State University; Matthew P. Smith, Oklahoma State University; Kenneth S. Brown, City of New Orleans Mosquito and Termite Control Board; Brad Kard, Oklahoma State University.

SP-03 Economic benefit of using a resistant sorghum hybrid to manage sorghum midge (Diptera: Cecidomyiidae). **Tebkew Damte Belete**, West Texas A&M University; Bonnie B. Pendleton, West Texas A&M University; Lal K. Almas, West Texas A&M University.

SP-04 Effects of spinosad and λ-cyhalothrin on their targets, cabbage looper and diamondback moth, and on their non-targets, spiders, on cabbage. **Rose Irungu**, Texas A&M University; Tong-Xian Liu, Texas Agricultural Experiment Station; Marvin Harris, Texas A&M University; Allen Dean, Texas A&M University.

SP-05 Control of *Plodia interpunctella* Hübner (Lepidoptera: Pyralidae) with an attract-and-kill formulation in commercial establishments. **Manuel Campos**, Oklahoma State University; Tom Phillips, Oklahoma State University.

SP-06 Host suitability of pecans for insect storage pests. **Andrine Morrison**, Oklahoma State University; Mulder, Phillip G., Jr., Oklahoma State University; Ree, William, Texas Cooperative Extension, Texas A&M University; Phillips, Thomas, W., Oklahoma State University.

SP-07 Mass rearing and augmentative releases of *Bracon hebetor* (Hymenoptera: Braconidae) to suppress Indianmeal moth, *Plodia interpunctella,* (Lepidoptera: Pyralidae) populations in stored wheat. **Mukti Ghimire**, Oklahoma State University; Thomas Phillips, Oklahoma State University.

SP-08 Effects of the rice root aphid, *Rhopalosiphum rufiabdominalis* (Sasaki) (Homoptera: Aphididae), on foraged wheat in Oklahoma. **Matthew Rawlings**, Oklahoma State University; Kristopher Giles, Oklahoma State University.

SP-09 Soil Arthropod diversity on the nature conservancy's tallgrass prairie preserve. **Douglas Kuehl**, Oklahoma State University; Brad Kard, Oklahoma State University.

SP-10 A survey of Phyllophaga species associated with Oklahoma golf courses. **Jake Doskocil**, Oklahoma State University; Tom Royer, Oklahoma State University; Nathan Walker, Oklahoma State University; Jim Reinert, Texas Agricultural Experiment Station; Greg Bell, Oklahoma State University.

SP-11 Assessment of *Lygus* feeding damage to Bt cotton in New Mexico. **Stacey Bealmear**, New Mexico State University; Scott Bundy, New Mexico State University; Dawn VanLeeuwen, New Mexico State University.

SP-12 Oklahoma *Coptotermes formosanus* (Shiraki) surveillance program. **Anita Smith**, Oklahoma State University; Matthew Smith, Oklahoma State University; Bradford Kard, Oklahoma State University.

SP-13 Ground spider diversity, distribution, and abundance at Lick Creek Park in Texas. **Takesha Henderson**, Texas A&M University; Marvin Harris, Texas A&M University Allen Dean, Texas A&M Univsrsity.

SP-14 Statewide distribution and abundance of putative insect vectors of Pierce's disease of grape. **Danny McDonald**, Texas Agricultural Experiment Station; Isabelle Lauziere, Texas Agricultural Experiment Station; Forrest Mitchell, Texas Agricultural Experiment Station.

SP-15 Arthropod succession on pig carrion in Southern New Mexico. **Sean M. O'Donnell**, New Mexico State University; C. Scott Bundy, New Mexico State University; Ron Byford, New Mexico State University; Matthew Lee, New Mexico State University.

TUESDAY, FEBRUARY 28, 2006

SP-16 Efficacies of five mosquito repellents compared to 25% DEET in masking humans from *Aedes* (*Stegomyia*) *albopictus* (Diptera: Culicidae) (Skuse, 1895). **Donald Beasley**, Texas A&M University.

SP-17 Factors that affect the responses of Indianmeal moths (Lepidoptera: Pyralidae) to oviposition attractants. **Charles Konemann**, Oklahoma State University; Thomas Phillips, Oklahoma State University.

SUBMITTED POSTERS
LOCATION: Omni A

P-01 Evaluation of the LepTrap for monitoring the spring flight of the pecan nut casebearer, *Acrobasis nuxvorella* Neunzig. **Timothy Johnson**, Baylor University; Mark Muegge, Texas Cooperative Extension Service.

P-02 Exploration for leafhoppers yields a broad array of parasitoid species in Central Texas. **Isabelle Lauziere**, Texas Agricultural Experiment Station; Aaron Hassell, Texas Agricultural Experiment Station.

P-03 Predation by *Neoseiulus californicus* (Mcgregor) on *Tetranychus urticae* Koch on apple leaves under laboratory conditions. **Jeronimo Landeros-Flores**, Universidad Autónoma Agraria Antonio Narro.

P-04 Biological control of saltcedar in Northwestern U.S. and in Texas and New Mexico. **C J. DeLoach**, USDA-ARS; Allen Knutson, Texas Cooperative Extension; Patrick Moran, USDA-ARS; David Thompson, New Mexico State University; Jerry Michels, Texas Agricultural Experiment Station; J Everitt, USDA-ARS.

P-05 Corn earworm behavior on refuge ears with mosaics of Bt/non-Bt kernels. **Charles Chilcutt**, Texas Agricultural Experiment Station.

P-06 Seasonal abundance of bollworm, tobacco budworm, and beet armyworm moths across the Texas Southern High Plains. **Stanley Carroll**, Texas Agricultural Experiment Station; Megha Parajulee, Texas Agricultural Experiment Station.

P-07 Trapping adjacent to and away from cotton for monitoring the boll weevil. **Dale Spurgeon**, USDA-ARS APMRU; Manda Cattaneo, Texas Cooperative Extension.

P-08 Does aphid-resistant wheat affect the ability of convergent lady beetle larvae to control aphids? **Roxanne Bowling**, West Texas A&M University; Bonnie B. Pendleton, West Texas A&M University; Gerald Michels, Texas Agricultural Experiment Station.

P-09 Effect of photoperiod on fitness of greenbug (Hemiptera: Aphididae) biotypes E and I on sorghum. **Tiecoura Traore**, West Texas A&M University; Bonnie B. Pendleton, West Texas A&M University; G. J. Michels, Jr., Texas Agricultural Experiment Station.

P-10 Winter canola insects and their natural enemies. **Jennifer Chown**, Oklahoma State University; Kristopher Giles, Oklahoma State University.

P-11 Yield response and compensation for simulated bollworm injury to Acala 1517 cotton. **Jane Pierce**, New Mexico State University.

P-12 Effect of relay intercropping on aphid natural enemy communities in sorghum. **Mpho Phoofolo**, Oklahoma State University; Kristopher Giles, Oklahoma State University; Norman Elliott, USDA-ARS.

P-13 Identification of thrips from the Texas Plains. **Walter Albeldano**, Texas Agricultural Experiment Station; Megha Parajulee, Texas Agricultural Experiment Station; Jeffrey Slosser, Texas Agricultural Experiment Station.

P-14 Response of resistant and susceptible barley to five biotypes of Russian wheat aphid. **Gary Puterka**, USDA-ARS; John Burd, USDA-ARS; Do Mornhinweg, USDA-ARS.

P-15 Ovarian development and ecdysteroid titers in the migratory grasshopper, *Melanoplus sanguinipes*. **Zhaorigetu Chen**, University of Texas; Tina Taub-montemayor, University of Texas; Mary A. Rankin, University of Texas.

P-16 Construction of microsatellite-enriched genomic DNA library of *Lygus hesperus*. **Ram Shrestha**, Texas Agricultural Experiment Station; Megha Parajulee, Texas Tech University; Omaththage Perera, USDA-ARS SIMRU.

P-17 The *Melittobia* species (Hymenoptera: Eulophidae) of México. **Jorge M. González**, Texas A&M University.

P-18 The soapberry borer, *Agrilus prionurus* Chevrolat (Coleoptera: Buprestidae) a new North Texas pest of western soapberry, *Sapindus drummondii*. **Michael Merchant**, Texas Cooperative Extension; Jim Reinert, Texas Agricultural Experiment Station.

P-19 Using kite aerial photography in agricultural research. **Kevin Gardner**, New Mexico State University; David. Thompson, New Mexico State University.

TUESDAY, FEBRUARY 28, 2006

Linnaean Games - Preliminary Rounds
Location: Omni C 5:00PM – 6:30PM

Banquet and Awards Presentations
Location: Omni D, E and F

Social Time, Cash Bar 6:30PM – 7:00PM

Dinner and Program
Presentation of Student Competition Awards - President Bart Drees and Bonnie Pendleton, Chair, Student Research Paper and Poster Awards Committee 7:00PM – 9:00PM

WEDNESDAY, MARCH 1, 2006

Concurrent Sessions and Symposia: Omni C

Symposium: Plant bugs in Texas cotton: Current knowledge and management challenges
Moderator: Megha Parajulee

8:00AM PB-01 Introduction and scope of the symposium. **Megha N. Parajulee**, Texas Agricultural Experiment Station.

8:05AM PB-02 *Creontiades* plant bugs: Overview of biology with particular emphasis on non-cotton host plants. **Randy Coleman**, USDA-ARS.

8:25AM PB-03 Evaluating *Creontiades dilutus* (Stål) feeding injury to cotton via a simulation technique. **Scott Armstrong**, USDA-ARS; Randy Coleman, USDA-ARS; Brian Duggan, CSIRO Plant Industry, Narrabri Australia.

8:40AM PB-04 Distinguishing characteristics of nymphal instars of the cotton fleahopper: Implications in the management of plant bug complex in cotton. **Charles Suh**, USDA-ARS.

9:00AM PB-05 Early-season dispersal of cotton fleahoppers relative to weather factors. **John Westbrook**, USDA-ARS; J. F. Esquivel, USDA-ARS; C. P. Suh, USDA-ARS.

9:20AM PB-06 Cotton compensation of *Lygus* induced fruit loss: Are we too aggressive in plant bug management? **Megha N. Parajulee**, Texas Agricultural Experiment Station; Apurba K. Barman, Texas Agricultural Experiment Station.

9:40AM PB-07 Southern green stink bugs as potential vectors of opportunistic pathogens. **Jesus Esquivel**, USDA-ARS; E. Medrano, USDA-ARS; A. Bell, USDA-ARS.

WEDNESDAY, MARCH 1, 2006

Break Location: Foyer and Omni A 9:55AM – 10:15AM

THANK YOU, SPONSORS!

10:15AM PB-08 Update on insecticide toxicity evaluations for stink bugs and cotton fleahoppers. **Juan Lopez**, USDA-ARS; M. A. Latheef, USDA-ARS; W. Ree, Texas Cooperative Extension.

10:30AM PB-09 Mirid predation on lepidopteran eggs in cotton: Field observations. **Robert Pfannensteil**. USDA-ARS.

10:45AM PB-10 Sampling plans for stink bugs and plant bugs. **Mark Muegge**, Texas Cooperative Extension.

11:00AM PB-11 Host plant resistance in cotton for plant bugs. **Allen Knutson**, Texas Cooperative Extension; S. Isaccs, Texas A&M University; C.W. Smith, Texas A&M University.

11:20AM PB-12 Current projects and research priorities in plant bug management. **Megha N. Parajulee**, Texas Agricultural Experiment Station; Charles P. Suh, USDA-ARS; Allen E. Knutson, Texas Cooperative Extension.

11:35AM END

11:35AM – 1:00PM Lunch---on your own

Concurrent Sessions: Omni B

Submitted Papers: Biology / Ecology / Behavior
Moderator: Noel Troxclair

8:12AM BE-01 Predation by adult and larval lady beetles (Coleoptera: Coccinellidae) on initial contact with Lady beetle eggs. **Ted Cottrell**, USDA-ARS.

8:24AM BE-02 Behavioral response of the cigarette beetle, *Lasioderma serricorne* (Coleoptera: Anobiidae) to different host-derived volatiles. **Rizana Mahroof**, Oklahoma State University; Thomas Phillips, Oklahoma State University.

8:36AM BE-03 A Survey of Ambrosia beetles in East Texas nurseries. **Scott Ludwig**, Texas Cooperative Extension.

8:48AM BE-04 Effects of host plant and beetle size on pheromone release by male *Rhyzopertha dominica* (Coleoptera: Bostrichidae). **Peter Edde**, Oklahoma State University.

9:00AM BE-05 Food choice and survival of different instars *Trichoplusia ni* exposed to Bollgard II and conventional cotton leaves. **Yuanxi Li**, Texas Agricultural Experiment Station; Tongxian Liu, Texas Agricultural Experiment Station; Greenberg Shoil, USDA-ARS.

9:12AM BE-06 Alternate host plants of *Creontiades*. **Randy Coleman**, USDA-ARS.

9:24AM BE-07 Courtship songs of the *Cotesia flavipes* complex. **Andrea Joyce**, Texas A&M University; Brad Vinson, Texas A&M University; Julio Bernal, Texas A&M University.

9:36AM BE-08 Initial success in biological control of saltcedars in Texas/New Mexico. **C J. DeLoach**, USDA-ARS; Allen Knutson, Texas Cooperative Extension; David Thompson, New Mexico State University; Patrick Moran, USDA-ARS; Jerry Michels, Texas A&M University.

9:48AM BE-09 Photoperiod effects on boll weevil (Coleoptera: Curculionidae) development, survival, and reproduction. **Shoil Greenberg**, USDA-ARS APMRU; Mamoudou Setamou, USDA-ARS; Tong-Xian Liu, Texas Agricultural Experiment Station; Randy Coleman, USDA-ARS.

Break Location: Foyer and Omni A 10:00AM – 10:30AM

THANK YOU, SPONSORS!

10:30AM BE-10 Optimization of ELISA procedure for *Lygus* marking and its application in *Lygus* movement study. **Ram Shrestha**, Texas Agricultural Experiment Station; Megha Parajulee, Texas Agricultural Experiment Station; Stanley Carroll, Texas Agricultural Experiment Station.

10:42AM BE-11 IT systems development in area wide pest management project. **Vasile Catana**, Oklahoma State University; Norman Elliott, USDA-ARS PSRL; Kris Giles, Oklahoma State University; Mustafa Mirik, Texas A&M University; David Porter, Texas Agricultural Experiment Station.

Concurrent Sessions: Omni B

10:54AM BE-12 Spatial distribution of entomopathogenic nematodes at a desert agricultural location in Coahuila, Mexico. **Sergio Rene Sanchez-Peña** and Aron Vasquez-Lopez, Universidad Autónoma Agraria Antonio Narro.

11:06AM **END**

Submitted Papers: Medical/Veterinary Entomology

11:18AM MV-01 First report of permethrin-resistant *Boophilus microplus* (Acari: Ixodidae) collected within the United States of America. **Robert J. Miller**, Cattle Fever Tick Research Laboratory, USDA-ARS; Ronald B. Davey, USDA-ARS; John E. George, USDA-ARS.

11:36AM END

11:36AM-12:45PM Lunch---on your own

Concurrent Sessions and Symposia: Conference Center/Amphitheater

Symposium: Biological control of red imported fire ants: Impact or promise?
Moderator: Charles Barr

Keynote Address:

8:30AM FA-01 Fire ant biocontrol: recent progress and future prospects. **Sanford D. Porter**, David H. Oi, Roberto M. Pereira, and Steven M. Valles. USDA-ARS, CMAVE, Gainesville, FL

Phorid Flies.

9:00AM FA-02 Phorids and imported fire ants in Texas: status of introduced populations and future prospects. **Edward G. LeBrun** and Lawrence E. Gilbert Jr. University of Texas at Austin.

9:20AM FA-03 Compensatory foraging strategy in red imported fire ant *Solenopsis invicta* (Hymenoptera: Formicidae) colonies after exposure to Dipteran parasitoids *Pseudacteon tricuspis*. **Robert Puckett**, Marvin Harris and Charles Barr, Texas A&M University.

WEDNESDAY, MARCH 1, 2006

Native Ants.

9:40AM FA-04 Native ants and their potential role in fire ant management. **Asha Rao** and S.B Vinson, Texas A&M University

10:00AM FA-05 Influence of fire ants and their control on native ant diversity. Texas Cooperative Extension. **Alejandro Calixto**, Marvin Harris, Allen Knutson and William Ree. Texas A&M University

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Break Location: Foyer and Omni A 10:20AM – 10:35AM

THANK YOU, SPONSORS!

***Thelohania*.**

10:35AM FA-06 Statewide survey for *Thelohania solenopsae* infecting red imported fire ant by **Forrest Mitchell**, Texas Agricultural Experiment Station; K. Snowden, Texas A&M University; J. Fuxa, Louisiana State University and S. B. Vinson, Texas A&M University

10:55AM FA-07 Effects of *Thelohania* on fire ant colonies. **Walker Hale**. Texas A&M University

11:10AM FA-08 *Thelohania solenopsae* distribution in the RIFA population in Oklahoma: status in the southeastern counties of Oklahoma. **Vedham Karpakakunjaram** Alexander Chan and Russell Wright. Oklahoma State University

USDA-ARS Multi-state Area-wide Project in Southwest Branch.

11:25AM FA-09 Area-wide fire ant project in Texas. **Charles L. Barr**, Alejandro A. Calixto and Bastiaan M. Drees. Texas Cooperative Extension

11:45AM FA-10 Status of *Thelohania solenopsae* and *Pseudacteon* sp. in Oklahoma fire ant populations. **Russell Wright**, Wayne Smith and Vedham Karpakakunjaram. Oklahoma State University. Oklahoma Cooperative Extension

12:00-1:20 Lunch

1:20PM FA-11 Fire ants in row crops: Pests or candidates for conservation biological control? **Allen E. Knutson**, Texas Cooperative Extension, J. Bernal, Texas A&M University, R. Diaz, M. Campos, Oklahoma State University, and F. Mitchell, Texas Agricultural Experiment Station

Fire Ant Management Considerations.

1:40PM FA-12 Aerial and ground insecticide application technology for large imported fire ant suppression programs. **Paul Nester**, and Bastiaan M. Drees, Texas Cooperative Extension.

2:00PM FA-13 Legal implications of fire ants invading sensitive accounts. **Roger E. Gold**, Texas A&M University

2:20PM FA-14 Consideration of product characteristics and efficacy in tailoring fire ant management to specific sites. **Charles L. Barr**, Texas Cooperative Extension

2:40PM-? FA-15 Discussion Forum moderated by **Russell Wright**, Oklahoma State University

Concurrent Sessions and Symposia: Omni C

Submitted Papers: Physiology / Biochemistry / Toxicology / Molecular
Moderator: Spencer Behmer

1:00PM PH-01 Changes of arachidonic acid metabolites during long flight in the migratory grasshopper, *Melanoplus sanguinipes*. **Zhaorigetu Chen**, University of Texas; Tina Taub-montemayor, University of Texas; Mary A. Rankin, University of Texas; Klaus Linse, University of Texas.

1:12PM PH-02 LC/MS/MS analysis of juvenile hormone in the migratory grasshopper, *Melanoplus sanguinipes*. **Zhaorigetu Chen**, University of Texas; Klaus Linse, University of Texas; Tina Taub-montemayor, University of Texas; Mary A. Rankin, University of Texas.

1:24PM PH-03 Comparing life history traits of two populations of the migratory grasshopper, *Melanoplus sanguinipes*. **Nathan Jones**, University of Texas.

1:36PM PH-04 Occurrence of *Xylella fastidiosa* in sharpshooter populations in Texas. **Blake Bextine**, University of Texas; Forrest Mitchell, Texas A&M University.

1:48PM PH-05 Why and how insects watch their cholesterol. **Spencer T. Behmer**, Texas A&M University.

Submitted Papers: Urban Entomology
Moderator: Mike Merchant

2:02PM U-01 The performance of Termidor (fipronil) applied as exterior perimeter treatments for subterranean termite control. **Robert Davis**, BASF Specialty Products; Mark Coffelt, BASF Specialty Products.

2:14PM U-02 Consumer survey to assess fire ant impact and common control measures: 2001-2003. **Michael Merchant**, Texas Cooperative Extension; Bart Drees, Texas Cooperative Extension.

2:26PM U-03 Evaluation of metaflumizone for red imported fire ant control. **Paul Nester**, Texas Cooperative Extension; Bart Drees, Texas Cooperative Extension.

Break Location: Foyer and Omni A 2:38PM - 3:10PM

THANK YOU, SPONSORS!

Symposium: Highlights of Some Entomological Programs in Texas
Moderator: Bart Drees

3:10PM TE-01 Introductory Remarks, **B.M. Drees**, Texas Cooperative Extension

3:15PM TE-02 Entomology at the University of Texas at Austin: Past and Present. **John C. Abbott**, University of Texas

3:30PM TE-03 Entomology at Sam Houston State University, from grasshoppers and mosquitoes to ants, butterflies, and aquatic insects. **Jerry Cook**, Sam Houston State University

3:45PM TE-04 Entomology at Stephen F. Austin University and the invertebrate collection past and present. **Will Godwin**, Stephen F. Austin University

4:00PM TE-05 Pest management, Entomology, and Arachnology Education and Research Partners at West Texas. **Bonnie Pendleton**, West Texas A&M University

4:15PM TE-06 Past and present Entomological Education Programs at Texas Tech University, **Harlan Thorvilson**, Texas Tech University

Submitted Papers: Regulatory and Extension Entomology
Moderator: Awinash Bhatkar

12:45PM RE-01 Pecan weevil quarantine and eradication programs in New Mexico. **Brad Lewis**, New Mexico Department of Agriculture; Greg Watson, New Mexico Department of Agriculture.

1:00PM RE-02 Facilitating pecan trade under the pecan weevil quarantine in Texas. **William Ree,** Texas Cooperative Extension; Marvin Harris, Texas Agricultural Experiment Station

1:15PM RE-03 Arthropod pests of quarantine concern to Oklahoma **Sancho M. Dickenson**, Oklahoma Department of Agriculture, Food, and Forestry

1:30PM RE-04 What is involved in regulating honeybees in Texas for export? **Paul Jackson**, Texas Apiary Inspection Service, Texas A&M University,

1:45PM RE-05 Process involved in the import and release of exotic biocontrol agents to control salt cedar **Jack DeLoach**, Grassland, Soil and Water Research Lab, USDA-ARS**.**

2:00PM RE-06 How to obtain a pesticide special registration for emergency pest infestations? **Ed Gage**, Pesticide Programs, Texas Department of Agriculture

2:15PM RE-07 Fruit flies: Why won't humans leave us alone? **Shashank Nilakhe**, Texas Department of Agriculture.

Break Location: Foyer and Omni A 2:30PM – 2:45PM

THANK YOU, SPONSORS!

2:45PM RE-08 Monitoring Mexican rice borer in rice and sugarcane. **M. O. Way**, Texas Experiment Station.

3:00PM RE-09 A progress report on boll weevil and pink bollworm eradication programs in Texas. **Charles Allen**, Texas Boll Weevil Eradication Foundation Inc.

3:15PM RE-10 *Diaprepes* root weevil quarantine and eradication in Texas. **Robert Crocker**, Regulatory Programs, Texas Department of Agriculture.

WEDNESDAY, MARCH 1, 2006

Concurrent Sessions and Symposia: Omni B

3:30PM RE-11 Is spatial information essential to regulatory entomology? **Maria D. Tchakerian**, Texas A&M University and Robert N. Coulson, Texas A&M University.

3:45PM RE-12 Monitoring imported fire ant in Lubbock. **Harlan Thorvilson**, Plant & Soil Science Department, Texas Tech University.

4:00PM RE-13 Strategies for monitoring quarantine pests in Texas. **Awinash P. Bhatkar**, Regulatory Programs, Texas Department of Agriculture.

4:15PM RE-14 Exotic insect, mite and mollusk pest interceptions at the Port of Houston. **Eric M. McDonald**, Plant Inspection Facility, USDA-APHIS-PPQ.

4:30PM RE-15 Pests of biosecurity concern under Cooperative Agricultural Pest Survey (CAPS) projects. **John Jackman**, Texas Cooperative Extension.

4:45PM RE-16 Cooperative regulatory pest programs in Texas. **George. H. Nash**, USDA-APHIS-PPQ.

5:00PM **END**

WEDNESDAY, MARCH 1, 2006

Linnaean Games-Finals
Location: Omni C 4:30PM – 6:00PM

Remove Posters 5:00PM – 8:00PM

Dinner on Your Own

THURSDAY, MARCH 2, 2006

Final Business Meeting - SW Branch ESA 8:00AM – 11:00AM
Location: Conference Center

Southwestern Branch-ESA New Executive Board (2006-2007) 11:00AM - Noon
Location: Conference Center

Southwestern Branch, Entomological Society of America Presenter Index

O – Submitted Oral Presentation
P – Submitted Poster Presentation
SO – Student Oral Presentation Competition
SP – Student Poster Presentation Competition
PB – Plant Bugs Symposium
F – Forensics Symposium
FA – Fire Ant Symposium
TE - Texas Entomology Symposium
BE – Biology/Ecology/Behavior
RE – Regulatory and Extension
PH – Physiology/Biochem./Tox./Molecular
CP – Crop Protection
U – Urban
VM – Veterinary/Medical

Presenter and Presentation Number(s)

PRESIDENTS AND CHAIRMEN OF SWB-ESA

President or Chairman	Year	Location
Pres. David Thompson	2006-07	Corpus Christi, TX
Pres. Bart Drees	2005-06	Austin, TX
Pres. Phil Mulder	2004-05	Albuquerque, NM
Pres. John D. Burd	2003-04	Lubbock, TX
Pres. Terry Mize	2002-03	Oklahoma City, OK
Pres. W. Pat Morrison	2001-02	Guanajuato, Mexico
Pres. Jim Reinert	2000-01	San Antonio, TX
Pres. James A. Webster	1999-00	Ft. Worth, TX
Pres. Carol Sutherland	1998-99	Las Cruces, NM
Pres. Ann Weise	1997-98	Corpus Christi, TX
Pres. Pete Lingren	1996-97	Oklahoma City, OK
Pres. Charles L. Cole	1995-96	Austin, TX
Pres. J. Terry Pitts	1994-95	Dallas, TX (National)
Pres. Sidney E. Kunz	1993-94	Monterrey, Mexico
Pres. John G. Thomas	1992-93	Albuquerque, NM
Pres. Don Bull	1991-92	Tulsa, OK
Pres. Aithel McMahon	1990-91	College Station, TX
Pres. Russell E. Wright	1989-90	San Antonio, TX (National)
Pres. Joyce Devaney	1988-89	El Paso, TX
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Pres. John E. George	1985-86	Monterrey, Mexico
Pres. Paul D. Sterling	1984-85	San Antonio, TX
Pres. H. Grant Kinzer	1983-84	Oklahoma City, OK
Pres. James R. Coppedge	1982-83	Corpus Christi, TX
Pres. Bill C. Clymer	1981-82	El Paso, TX
Pres. Horace W. VanCleave	1980-81	San Antonio, TX
Pres. Robert L. Harris	1979-80	Brownsville, TX
Pres. Jimmy K. Olson	1978-79	Houston, TX
Pres. J. Pat Boyd	1977-78	Lubbock, TX
Pres. Robert A. Hoffman	1976-77	Guadalajara, Mexico
Pres. Weldon H. Newton	1975-76	Oklahoma City, OK
Pres. Harry L. McMenemy	1974-75	El Paso, TX
Pres. Roger O. Drummond	1973-74	Dallas, TX
Pres. Dieter S. Enkerlin	1972-73	San Antonio, TX
Pres. Stanley Coppock	1971-72	Mexico City, Mexico
Chm. C.A. King, Jr.	1970-71	El Paso, TX
Chm. Ted McGregor	1969-70	Brownsville, TX
Chm. Neal M. Randolph	1968-69	Dallas, TX
Chm. Walter McGregor	1967-68	Oklahoma City, OK
Chm. Harvey L. Chada	1966-67	San Antonio, TX
Chm. R.L. Hanna	1965-66	El Paso, TX
Chm. H.E. Meadows	1964-65	Austin, TX
Chm. Dial E. Martin	1963-64	Monterrey, Mexico
Chm. Manning A. Price	1962-63	Houston, TX
Chm. Sherman W. Clark	1961-62	Oklahoma City, OK
Chm. O.H. Graham	1960-61	San Antonio, TX
Chm. Clyde A. Bower	1959-60	El Paso, TX
Chm. Paul Gregg	1958-59	Dallas, TX

Chm. C.R. Parencia	1957-58	Houston, TX
Chm. J.C. Gaines	1956-57	San Antonio, TX
Chm. D.C. Earley	1955-56	Ft. Worth, TX
Chm. John M. Landrum	1954-55	Houston, TX
Chm. D.E. Howell	1953-54	Dallas, TX
Chm. P.J. Reno	1952-53	Galveston, TX
Chm. R.C. Bushland	1951-52	San Antonio, TX
Chm. H.G. Johnston*	1950-51	Dallas, TX

* Southwestern Branch, American Association of Economic Entomologists

ADDENDA AND NOTES

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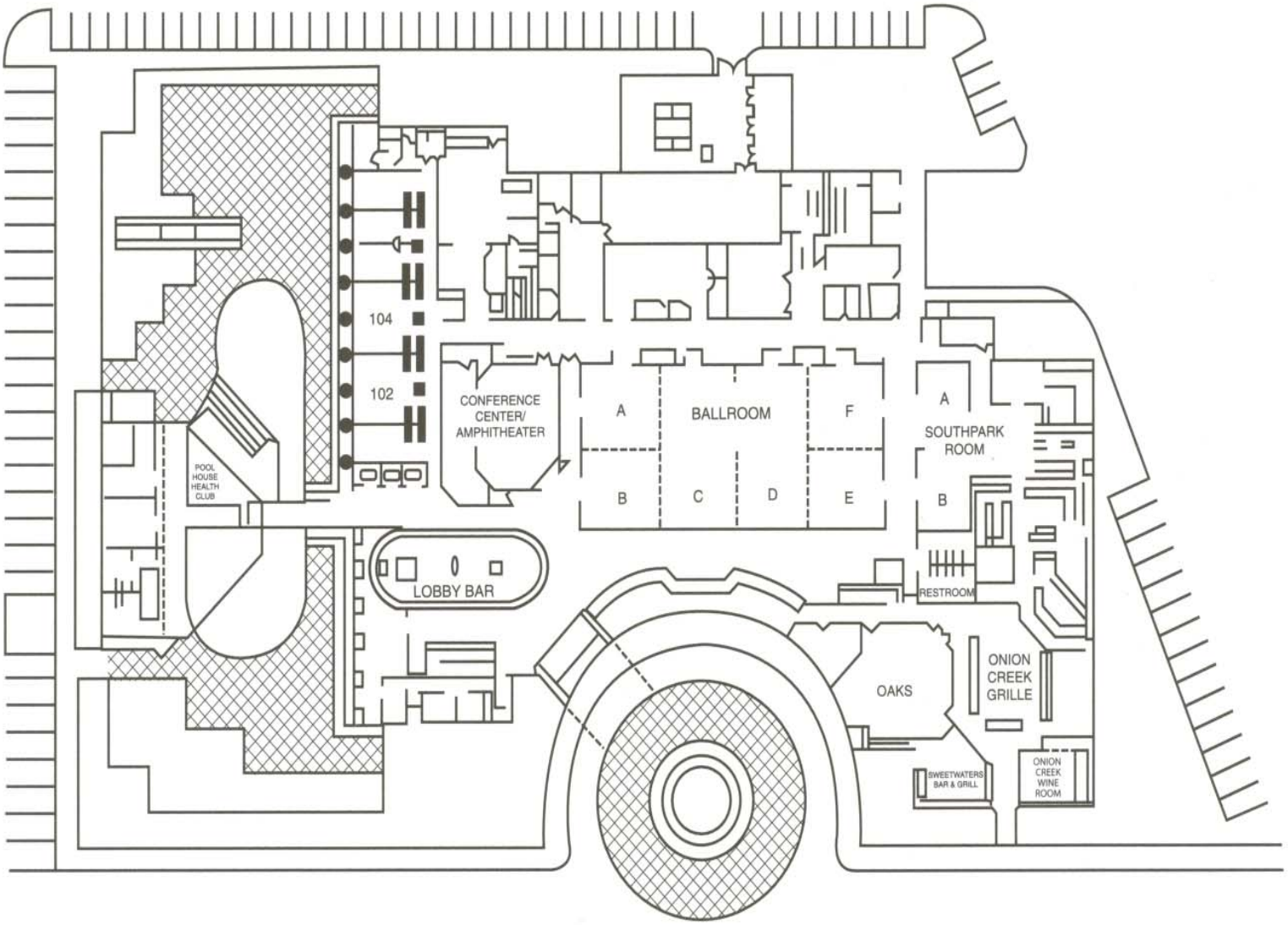

Floor plan of Omni Hotel Southpark Convention Rooms
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54th ANNUAL MEETING
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ABSTRACTS

27 FEBRUARY – 2 MARCH 2006
Omni Austin Hotel at Southpark
4140 Governor's Row
Austin, TX 78744
(512)-383-2602; www.omnihotels.com

Abstracts Submitted for the 54th Annual Meeting of the Southwestern Branch of the Entomological Society of America, and the Annual Meeting of the Society of Southwestern Entomologists

27 February – 2 March 2006, Omni Austin Hotel at Southpark, 4140 Governor's Row, Austin, Texas

Table of Contents

Abbreviations Used:
SO = Student Oral Presentations
O = Submitted Oral Presentations
SP = Student Poster
P = Submitted Poster

Student Oral Presentations

SO-01 Glene Mynhardt, Anthony Cognato and Marvin Harris, Texas A&M University.

Population genetics of the pecan weevil, *Curculio caryae* Horn, based on mitochondrial DNA data.

The pecan weevil, *Curculio caryae* Horn, is an economically important pest that causes millions of dollars of damage to pecans and other hickory (*Carya* sp.) annually. Due to its pest status it is important to know the weevil's historical and potential distribution, rates of dispersal, and population structure across its range. Using the mitochondrial gene, COI, we performed a parsimony-based analysis to determine relationships among individuals within and among populations. Mitochondrial DNA analysis shows that there are at least three clades of pecan weevil that occur within its range. Nested clade analysis, which measures the concordance of genetic data and geography, shows some relationship between geography and haplotypes, but further analyses are necessary to confirm our results.

SO-02 Beth Petersen and David Thompson, New Mexico State University.

Monitoring population dynamics in field cages between mixed populations of saltcedar leaf beetle ecotypes.

Saltcedar (*Tamarix* spp.) is an invasive riparian shrub/tree in the western United States. *Diorhabda* elongata (Coleoptera: Chrysomelidae) feeds exclusively on saltcedar in Europe and Asia. Ecotypes

from Fukang, China and Crete, Greece have been released in the western United States. Fukang has established in northern locations and Crete is establishing in southern locations. It is likely distributions of these ecotypes will overlap in the future. The objective of this experiment is to determine the effects of mixing populations of Fukang and Crete ecotypes. Fukang and Crete ecotypes will mate and produce viable eggs when confined; however, all of the F1 offspring are sterile. The consequences of hybrid matings could disrupt long-term population dynamics in a mixed field population, slowing population growth or causing localized extinction of one ecotype. While it is still unknown whether Fukang or Crete distributions will overlap, we know in a no-choice controlled environment the two ecotypes will readily mate with each other. Population and mating experiments were carried out in six field cages which consisted of three different treatments; pure Crete, pure Fukang, and mixed Crete and Fukang. Each cage was monitored for the number of adults, eggs and larvae. Saltcedar was monitored for growth and defoliation. Crete population peaked at 500 adults and defoliated 100% of the saltcedar in one cage. Fukang population reached 120 adults and 60% of the saltcedar was defoliated. While the mixed Crete and Fukang cages had no population growth and no defoliation.

SO-03 Maggie Toothaker, C. Wayne Smith and Marvin K. Harris, Texas A&M University.

Progress in evaluating converted cotton race stocks for resistance to whiteflies and aphids.

Previous research indicated six of 116 cotton race stocks as showing some resistance to sucking insects, specifically whitefly (*Bemisia tabaci*), using an excised leaf technique as described by Ripple. Current research focusing on these six race stocks indicates intrastock variation in resistance to whitefly is present using two criteria, percent mortality and days to adulthood. Mortality appears to be the better selection criteria as more variability occurs in percent mortality. Current focus is on demonstrating resistance is also expressed in whole plants, determining the best individual plants within each race stock and making individual plant selections for further breeding and extension of work from the laboratory into the field.

SO-04 W. Justin Cordill, Robin Madden, and Jack Dillwith, Oklahoma State University.

Comparative structural characterization of HeLp in Ixodid tick species.

Ticks are hematophagous ectoparasites whose negative impact on human health and livestock cost the world billions of dollars. In light of this, it is vital that we understand tick feeding mechanisms and biology for the continued development of tick control. Recently, an abundant heme-glycolipoprotein in *Boophilus microplus* (HeLp) and *Dermacentor variabilis* (CP) hemolymph was partially characterized (Mayamonteiro et al. 2000, 2004, Gudderra et al. 2001, 2002). A protein with a similar molecular weight (90 kDa) is observed by SDS-PAGE in numerous other Ixodid species. The saliva of these species also contains a highly abundant protein of about 90 kDa in weight. Higher resolution gels confirm that these proteins, like HeLp and CP, are composed of two subunits of about 110 and 95 kDa. A combination of Edman degradation N-terminal sequencing and MALDI-TOF mass spectrometry were used to compare these peptides between species and between sources (i.e., the hemolymph and the saliva). Presently we are seeking to clone the cDNA of this protein that is most likely crucial to tick feeding and biology.

SO-05 Jeremy Hudgeons, Texas A&M University; Allen Knutson, Texas Cooperative Extension; Kevin Heinz, Texas A&M University; C J. DeLoach, USDA-ARS; Allan McGinty, Texas Cooperative Extension.

The biological control of saltcedar (*Tamarix* spp.) in Texas by introductions of the leaf beetle *Diorhabda elongata* (Coleoptera: Chrysomelidae).

Many riparian systems of the western United States are severely infested with saltcedar (*Tamarix* spp.), an invasive species from the Old World. Saltcedar infestations degrade habitat by increasing soil salinity, displacing native plant communities, altering the composition of native wildlife communities, and by consuming significant quantities of groundwater. Biological control through the introduction of exotic insect herbivores is proposed as a highly specific and inexpensive tactic to reduce saltcedar infestations. Beginning in 2003, the leaf beetle *Diorhabda elongata* (Coleoptera: Chrysomelidae) was introduced for the biological control of saltcedar at several locations in the Upper Colorado River watershed in Texas. For D. elongata to be effective in the biological control program, the beetle must be able to establish in and disperse from original points of introduction and adversely affect the target trees. To date, D. elongata appears to have successfully established at one site in the Upper Colorado River watershed. Transects were created and a geographic information system is being employed to document beetle dispersal at this site. To measure the impact of beetle feeding on saltcedar, total nonstructural carbohydrates and tree regrowth are being quantified. Results from field cage studies and field release sites indicate tree defoliation from beetle feeding leads to a significant reduction in starch reserves in the tree crown which may, in turn, lead to reduced tree growth.

SO-06 Jessica Honaker, Texas A&M University.

Influence of honeydew production by blackmargined aphid (*Monellia caryella*) on natural enemies in pecan (*Carya illinoinensis*).

This study focused on the effect of aphid honeydew on natural enemy densities in three varieties of pecan: Pawnee, Cheyenne, and Kiowa. Counts of blackmargined aphids, lacewings, lady beetles, and spiders were taken on four trees of each variety. Honeydew was measured using water-sensitive cards and analyzed with DropletScan® software. Preliminary data suggests an increase in natural enemy density with an increase in amount of honeydew, however further analysis is required to confirm these findings.

SO-07 Matthew Smith, Oklahoma State University; Kenneth Brown, City of New Orleans Mosquito and Termite Control Board; Greg Broussard, Anita Smith and Bradford Kard, Oklahoma State University.

Characterization of *Reticulitermes flavipes* colonies on a native tallgrass prairie/cross-timbers habitat.

During the past 20 years, termite management strategies have become more diversified with the introduction of baiting systems, non-repellent termiticides, and physical exclusion barriers. An increased knowledge of termite basic ecology and biology will aid in implementing the most effective use of these new strategies. Currently, knowledge of termite ecology in native tallgrass prairie habitats is limited. The objective of this study is to characterize termite colonies on the Nature Conservancy's Tallgrass Prairie Preserve in northeastern Oklahoma. During spring of 2003, 41 monitoring devices

consisting of 24 in-ground stations and 16 soil surface ground-boards were installed in a 12m by 12m grid. Additional monitoring devices were installed wherever termite activity occurred near the grid perimeter, expanding the initial grid to 30m by 30m. Triple-mark-release-recapture methods with dyed termites were used to delineate foraging territories. Lincoln Index and Weighted Means Model calculations were used to estimate numbers of foraging termites. Caste ratios were recorded during each recapture cycle. Estimates of foraging populations and territory sizes were compared with those from previous studies in different habitats.

SO-08 Howard Beuhler and David Thompson, New Mexico State University

Insect communities on saltcedar compared to native vegetation on the Rio Grande River in New Mexico, and its implications to the Southwestern Willow Flycatcher diet.

Many studies have been done to assess the impact of saltcedar (*Tamarix* spp.) invasion into western riparian habitats. These studies have shown that saltcedar generally degrades the biodiversity of these habitats giving support to programs to control saltcedar. However, the Southwestern Willow Flycatcher (*Empidonax traillii extimus*), placed on the endangered species list in 1995, uses saltcedar for nesting sites. This has slowed saltcedar control programs, particularly those focusing on releasing the leaf beetle *Diorhabda elongata.* Since the flycatcher feeds primarily on insects, it is necessary to determine the impact of saltcedar on the insect communities to better assess the impact of saltcedar removal on the flycatcher. This paper presents data about the insect communities from two sites along the Rio Grande River: one about 20 miles north of Las Cruces, New Mexico, and the other at the Bosque del Apache National Wildlife Reserve south of Socorro, New Mexico. The sites contained saltcedar (*Tamarix ramosissima*) and Coyote Willow (*Salix exigua*). The Bosque del Apache site also contained Fremont Cottonwood (*Populus fremontii*). Insects were collected by various methods, but only sweep net collection and visual observation data will be presented here.

SO-09 Brian Jackson and Blake Bextine, University of Texas.

Molecular quantification of *Xylella fastidiosa* cells transmitted by *Homalodisca coagulata.*

Transmission of Pierce's disease (PD) between plant hosts involves three main steps, acquisition of *Xylella fastidiosa* (Xf) by a vector, inoculation of a host plant by the vector, and establishment of sufficient titers of Xf in the host to cause disease. Understanding the basic biology of the transmission process may be key to limiting the spread of PD. Glassy-winged sharpshooters, *Homalodisca coagulata* (Hemiptera, cicadellidae), with various titers of Xf were allowed access to chrysanthemum plants for various periods of time and the number of Xf cells present in the insect and transmitted to the plant were determined using quantitative real-time PCR. In these preliminary studies, neither higher titers of Xf or longer access periods resulted in a greater number of cells being transmitted.

SO-10. Heidi Myers, Tarleton State University, Jeff Tomberlin, Texas Cooperative Extension and Barry Lambert, Tarleton State University.

Efficiency of using black soldier flies to biologically manage dairy waste in Texas.

Manure accumulation on dairies is a major environmental concern in the North Bosque River watershed in Texas where approximately 100,000 dairy cows are concentrated in a three county area. Resulting manure has been implicated in possible pollution of surface and ground water in this region.

Consequently, research for an alternative method for reducing manure on dairies is being investigated. Black soldier flies, *Hermetia illucens* (L.), are a naturally occurring non-pest insect on decomposing materials and have been utilized in poultry and swine facilities to reduce associated animal waste. However, no information is available on the ability of this fly to reduce dairy manure. For this study, black soldier fly larvae were reared on four daily-feeding regimens of either 27, 40, 54, or 70 g of dairy manure at the Texas A&M Research and Extension Center in Stephenville, Texas. Immature and adult life history traits were examined for each regimen to determine which feeding regimen achieves maximum dry matter reduction and most efficient management of nitrogen and phosphorus.

SO-11 Jamie McGee, Texas Agricultural Experiment Station; Jeffery Tomberlin, Texas Cooperative Extension.

Black soldier fly reduced manure as a novel growing media.

In most nursery operations, growing-media and nutrient management systems for container grown plant production serve as an important and permanent factor for profitable nursery crops. Certain functions and criteria are required by all growing media, such as providing anchorage and support for plants, sustaining porosity, and maintaining water holding capacity, while implementing an optimum pH for nutrient release. A recent study using black solider fly reduced manure supplemented with a slow release fertilizer presented desirable traits as growing-media when compared with traditional commercial growing-media also supplemented with a slow release fertilizer. The study included a four factor media comparison using reduce manure, reduced manure with fertilizer, commercial soil, and commercial with fertilizer. Tomato and Okra varieties suited for container production were propagated from seeds in the selected media. Results were measured by seedling viability, plant growth rate, shoot-to-root ratio, blossom set and fruit production, watering regimen, and temperature. Data particular indicates the reduced manure supplemented with a slow release fertilizer could be an accepted growing-media for container grown nursery crops.

SO-12 Kishan Sambaraju and Thomas W. Phillips, Oklahoma State University.

Effect of contact stimuli on Indianmeal moth oviposition.

Suitability and final acceptance of a food resource for oviposition by a gravid female is believed to be mainly determined by the physical and chemical stimuli it perceives on the substrate surface. In this study, we evaluated the effect of different physical characteristics of substrates in presence of chemical stimuli on oviposition by the Indianmeal moth, *Plodia interpunctella* (Hübner), a worldwide pest of raw and processed food commodities. The experimental arenas were 5.7 L plastic boxes that contained a single 5-cm diameter glass Petri dish with glass beads applied with 0.1 gram equivalent wheat extract, as ‘surrogates’ for natural foods. In separate experiments, the effect of different numbers (5, 10, 25, 50, 100, 150, 200, 250, 300, and 500), sizes and total surface area (2 mm, 3 mm, 4 mm, 5 mm, and 6 mm), and shapes (spherical, ovoid, heart-shaped, and cylindrical) of glass substrates were tested. Increasing the numbers of spherical glass substrates (3 mm diameter) increased oviposition until a certain level of substrates (150 glass substrates) was reached after which increase in numbers of glass substrates did not significantly enhance oviposition by *P. interpunctella*. Size of glass substrates than their total surface area influenced oviposition with 5 mm-diameter glass substrates receiving most eggs. *P. interpunctella* oviposition was enhanced when substrates with smooth, round edges were offered as oviposition substrates. Our results suggest that contact stimuli are very important in determining oviposition by *P. interpunctella*.

SO-13 C J. Bowen, Robin D. Madden, Brad Kard and Jack W. Dillwith, Oklahoma State University.

Preliminary proteome comparison between worker and soldier castes of *Reticulitermes flavipes*.

To comprehend applied termite research, advancing our knowledge of fundamental termite biology is required. An earlier study was conducted to establish methods for characterizing the *Reticulitermes flavipes* proteome and provide a basis for future *R. flavipes* protein research. Termites were collected from Stillwater, OK. and maintained in the laboratory for a minimum of 30 days. Termites were harvested from worker and soldier castes and converted to whole-body termite protein extracts. Each sample was processed using two-dimensional polyacrylamide gel electrophoresis (2D-PAGE) to separate the proteins. The gels were visualized using Coomassie brilliant blue staining. A worker caste protein map of the resulting protein spot pattern was generated by numbering each spot and assigning Cartesian coordinate measurements correlating to isoelectric point (pI) and molecular weight (MW). The soldier caste gel was compared to the worker caste protein map. After mapping, *R. flavipes* protein characterization was initiated using matrix assisted laser desorption/ionization – time of flight (MALDI-TOF) mass spectrometry to generate peptide mass fingerprints (PMFs). Protein identification was initiated by comparing the PMF against various databases for a putative identification. This comparative study of the proteome will facilitate future research among *R. flavipes* as well as with other termite species.

SO-14 Ramesh Sagili, Tanya Pankiw and Keyan Zhu-Salzman, Texas A&M University

Effects of soybean trypsin inhibitor on physiology and foraging behavior of the honey bee (*Apis mellifera* L.).

Insecticidal properties of protease inhibitors have been established in transgenic plants. In the wake of continuous research and rapid development of protease inhibitors it is important to assess possible effects on beneficial insects like the honey bee (*Apis mellifera* L.). In this study newly emerged caged bees were fed pollen diets containing three different concentrations (0.1%, 0.5% and 1% w: w) of soybean trypsin inhibitor (SBTI). Hypopharyngeal gland protein content, total midgut proteolytic enzyme activity of these bees, and survival were measured. Bees fed 1% SBTI had significantly reduced hypopharyngeal gland protein content and midgut proteolytic enzyme activity. There were no significant differences between control, 0.1% and 0.5% SBTI treatments. Bees fed a diet containing 1% SBTI had the lowest survival, followed by 0.5% and 0.1%, over a 30 day period. We concluded that nurse bees fed a pollen diet containing at least 1% SBTI would be poor producers of larval food, potentially threatening colony growth and maintenance. We also conducted further study in the field with similar objectives using micro nuc colonies. Results obtained were similar to the results that were obtained in the lab. In the field study, we measured some additional parameters like effects of SBTI on foraging behavior and larval development. There was significant difference in mean age of foraging between control and 1% SBTI treatment.

Student Posters

SP-01 Michelle Sanford, Texas A&M University and William Walton, University of California, Riverside.

Observations on the distribution and abundance of *Chironomus calligraphus* Goeldi (Diptera: Chironomidae) in an activated sludge sewage treatment plant.

The basic operation of an activated sludge sewage treatment plant offers optimal habitat for the production of large numbers of Chironomidae (Diptera). Larval midges can become so numerous that they make working conditions slick and egg masses have been suggested in the maintenance of *Vibrio cholerae*. Mass emergence of adult midges can cover windows and buildings causing physical damage. This study examined the distribution and abundance of larval and adult *Chironomus calligraphus* Goeldi in treatment tanks at the Valley Sanitary District in Indio, California and offers suggestions for control with respect to the needs of activated sludge sewage treatment.

SP-02 Greg H. Broussard, Anita L. Smith and Matthew P. Smith, Oklahoma State University; Kenneth S. Brown, City of New Orleans Mosquito and Termite Control Board; and Brad Kard, Oklahoma State University.

Influence of monitoring station diameter and food source volume on the frequency of subterranean termite activity.

Termites are damaging structural pests in the United States and are an important component in many ecosystems. Recent increases in the use of more directed termite control techniques has helped to renew an interest in basic termite ecology. A study was conducted on an Oklahoma native tallgrass prairie to investigate termite foraging behavior relative to monitoring station diameter, and food source volumes. This study was installed in a split-block design, and evaluated weekly. This is an ongoing study, but initial data indicate that more of the larger diameter stations become active with termites compared with smaller diameter stations.

SP-03 Belete Tebkew Damte, Bonnie B. Pendleton and Lal K. Almas, West Texas A&M University.

Economic benefit of using a resistant sorghum hybrid to manage sorghum midge (Diptera: Cecidomyiidae).

Sorghum midge, *Stenodiplosis sorghicola* (Coquillett), is a major insect pest of sorghum, *Sorghum bicolor* (L.) Moench, worldwide. Although selection and breeding for sorghum resistance to sorghum midge in Texas began in the 1970s, sorghum hybrids with adequate resistance to sorghum midge are not yet available commercially. The objective of this study was to estimate the benefit that would accrue at farm (private) and state (social) levels if sorghum midge-resistant hybrids were grown commercially. Six sorghum midge management alternatives were chosen based on previously published data, and a partial budget analysis method was used to assess the benefits from these alternatives. Based on the assumptions made, the estimated farm-level benefit would be $172.06, -137.05, and 9.72 per hectare, if a susceptible hybrid was grown in the absence of sorghum midge, in the presence of sorghum midge, and protected by insecticide, respectively. If a sorghum midge-resistant hybrid was grown, the corresponding estimated benefits would be $197.96, 68.57, and 95.85.

The total state-level benefit from growing sorghum midge susceptible hybrids in regions of Texas infested by sorghum midge was estimated to be $84.91, -100.66, and -7.36 million for a susceptible hybrid in the absence of sorghum midge, in the presence of sorghum midge, and protected by insecticide, respectively. For a sorghum midge-resistant hybrid, the corresponding values were estimated to be $100.96, 25.53, and 45.60 million.

SP-04 Rose Irungu, Texas A&M University; Tong-Xian Liu, Texas Agricultural Experiment Station; Marvin Harris and Allen Dean, Texas A&M University.

Effects of Spinosad and λ-cyhalothrin on their targets, cabbage looper and diamondback moth, and on their non-targets, spiders, on cabbage.
A randomized block experiment was conducted in cabbage fields at Texas Agriculture Experiment Station at Weslaco in the spring and fall, 2005. There were four blocks and three pesticide treatments, spinosad (SpinTor®), ë-cyhalothrin (Warrior®), and an untreated control. Field data show that the effect of two insecticide treatments on height, width and weight of cabbages was highly significant. The treatments of spinosad and ë-cyhalothrin showed greater height, width and weight than the untreated control but were not different from each other. However in the larval damage score, the treatment spinosad showed better control of diamondback moth and cabbage looper than ë-cyhalothrin. Pitfall traps caught eight families of spiders. The most abundant family was Lycosidae (77% of all collected spiders) with the *Pardosa delicatula* being the most abundant while *Pardosa pauxilla* and *Hogna helluo* were fewer in number. Family Salticidae was represented by *Habronattus* spp. Other families collected include Gnaphosidae, Linyphiidae, Dictynidae, Corinnidae, Philodromidae and Theridiidae. There was no significant difference between the treatments in numbers of spiders or the diversity.

SP-05 Manuel Campos and Tom Phillips, Oklahoma State University.

Control of *Plodia interpunctella* Hübner (Lepidoptera: Pyralidae) with an attract-and-kill formulation in commercial establishments.

The Indianmeal moth (IMM) *Plodia interpunctella* Hübner is one of the main pests in stored products, whereby the larval stages cause the main damage, eating any source of food. Contamination by IMM causes losses of product, costs of pest control, and is deterrent to costumers, resulting in millions of dollars in loss in the U.S. Alternative solutions are the fumigation, fogging and application of residual insecticides that are an issue in the public health concern by direct contamination of packages or retarding the consumption of the foods. This research has the objective of combining the synthetic female sex pheromone with a small amount of insecticide (attracticide) to control IMM in commercial establishments. Five Pet food and three grocery stores were used in this experiment located in the area of North Dallas, TX. The first adult male sampling of IMM density consisted of ten sticky traps per store left over weekend (Jun 10, 2005). On Jun 13, Four stores were treated with wax panels (6 x 4 in) containing Permethrin 6% [AI] and deployed in the center with a lure containing synthetic female sex pheromone (Z,E)-9,12-tetradecadienyl acetate (ZETA) (Suterra, Bend, OR.), at a rate of 1 panel per 2000 cubic feet. The other four stores were used as untreated. The adult male sampling was continued by leaving ten sticky traps over a weekend, every two weeks for three months (longevity of the lures). The larval sampling was done by ten food bait (cornmeal, chick starter mash, chick laying mash and glycerol 4:2:2:1) cups per store and deployed and replaced every two weeks during the three months. The density of adults was significantly suppressed after one month in stored treated with wax panels ($P = 0.0071$). Additionally, the presence of larvae was lower in treated stores ($P = 0.0291$) a month and

half after the wax panels were set up. We can conclude that Suterra wax panel containing Permethrin 6% [AI] deployed with synthetic female sex pheromone lure suppressed the IMM population for most of three months and that such attract-and-kill devices represent a safe alternative for control.

SP-06 Andrine Morrison and Phillip G. Mulder, Jr., Oklahoma State University; William Ree, Texas Cooperative Extension and Thomas W. Phillips, Oklahoma State University.

Host suitability of pecans for insect storage pests.

While much is known about field pests of pecan [*Carya illinoinensis* (Wang.) Koch.], little is known about post-harvest insect pests attacking pecans. This study examines the suitability of pecans for progeny survival of six species of storage pests: Indianmeal moth, *Plodia interpunctella* (Hübner), sawtoothed grain beetle, *Oryzaephilus surinamensis* L., red flour beetle, *Tribolium castaneum* (Herbst), lesser grain borer, *Rhyzopertha dominica* (Fabricius), rusty grain beetle, *Cryptolestes ferrugineus* (Stephens), and maize weevil, *Sitophilus zeamaise* Motschulsky. Using "Cherokee" pecans, survivability of the above listed species of storage pests was tested in 0.5 L glass containers filled with either 100 g whole in-shell pecans, 100 g cracked pecans, 53 g pecan nutmeats, or 53 g cracked wheat. Fifty adults of each beetle species and 10 pairs of *P. interpunctella* were released separately into the glass jars and placed in a growth chamber maintained at 28°C, 60-70% RH, and 16:8 photoperiod for four to six weeks. Four replications were performed. At the conclusion of the experiment, counts of immature and adult insects were made and analyzed. In the 6 week experiment, sawtoothed grain beetle, red flour beetle, and Indianmeal moth were able to successfully reproduce on cracked and nutmeat pecans, while lesser grain borer and sawtoothed grain beetle were able to produce larvae on whole pecans. In the 4 week experiment, sawtoothed grain beetle, red flour beetle, rusty grain beetle, and Indianmeal moth were able to successfully reproduce on cracked and nutmeat pecans and no insects were able to reproduce on whole pecans.

SP-07 Mukti Ghimire and Thomas Phillips, Oklahoma State University.

Mass rearing and augmentative releases of *Bracon hebetor* (Hymenoptera: Braconidae) to suppress Indianmeal moth, *Plodia interpunctella,* (Lepidoptera: Pyralidae) populations in stored wheat.

Bracon hebetor (Say) (Hymenoptera: Braconidae) is a synovegenic, idiobiont, gregarious, ecto-parasitoid that attacks larvae of several species of Lepidoptera, mainly Pyralid moths infesting stored products including the Indianmeal moth (IMM), *Plodia interpunctella* (Hübner) (Lepidoptera: Pyralidae), a destructive pest of stored commodities. In this study, we explore the potential of *B. hebetor* for the management of IMM in a series of laboratory and field experiments. In a laboratory experiments, we investigated the effect of parasitoid and host density on progeny production and sex ratio of *B. hebetor*. Whereas in a field study, the effect of *B. hebetor* releases on the suppression of IMM populations in stored wheat were evaluated in stored wheat. A density of eight pairs of *B. hebetor* produced a higher number of progeny (188 adults) than density of one and two females. A slightly female biased sex ratio was observed across the experiment . A host density of 50 IMM larvae produced a significantly higher number of parasitoid progeny (160 adults) among the tested host densities. In the augmentative release experiment, the numbers of IMM adults and larvae did not differ significantly for IMM adults and larval populations among the treatments. However, the number of *B.*

hebetor adults on sticky traps did differ significantly among the treatments. *B. hebetor* numbers were highest in the early released bins.

SP-08 Matthew Rawlings and Kristopher Giles, Oklahoma State University.

Effects of the rice root aphid, *Rhopalosiphum rufiabdominalis* (Sasaki) (Homoptera: Aphididae), on foraged wheat in Oklahoma.

The rice root aphid, *Rhopalosiphum rufiabdominalis* (Sasaki), has recently been found feeding on wheat in Oklahoma. This aphid has frequently been misidentified as the bird cherry-oat aphid (*R. padi* L.) and subsequent observations suggest it may be a more serious pest than previously believed. This study was conducted to determine the effects of rice root aphid on OK 101, a wheat cultivar commonly grown in Oklahoma, in field plots over a two year period. Impacts of RRA on wheat forage and cattle production systems are discussed.

SP-09 Douglas Kuehl and Brad Kard, Oklahoma State University.

Soil arthropod diversity on the Nature Conservancy's Tallgrass Prairie Preserve.

This study will investigate soil arthropod the diversity within the Nature Conservancy's Tallgrass Prairie Preserve, located in Osage County, 10 miles north of Pawhuska, OK. This study will subsequently be used to demonstrate effects of eastern subterranean termites, *Reticulatermes flavipes* (Kollar), on soil arthropod diversity. Arthropods will be sampled from roots of prairie grasses as well as from bare mineral soils. Berlese funnels will be used to collect soil arthropods. Numerous arthropods are expected to be found including psuedoscorpions, spiders, centipedes, and insects.

SP-10 Jake Doskocil , Tom Royer, and Nathan Walker, Oklahoma State University; Jim Reinert, Texas Agricultural Experiment Station and Greg Bell, Oklahoma State University.

A Survey of *Phyllophaga* species associated with Oklahoma golf courses.

In many regions of the United States, the species of Phyllophaga important to turf quality have not been identified. Relatively few studies have been conducted on the biology and damage potential of the known Phyllophaga turf pests. At present, we do not know those species that are most likely to be economic pest of turfgrasses in Oklahoma. This study will determine the species composition and seasonal occurrence of Phyllophaga species associated with turf grasses in Oklahoma. The use of black light trapping during the twilight and night time hours was facilitated to meet these goals. A single black light trap was placed at seven different locations through out the state of Oklahoma. Each location provided a look at the species present in each region of the state. Data suggest that the adult of

a few species of Phyllophaga fly early in the spring in mid April, while others fly late spring into early summer through the end of June. Twelve different species of Phyllophaga were collected and identified.

SP-11 Stacey Bealmear, Scott Bundy and Dawn VanLeeuwen, New Mexico State University.

Assessment of *Lygus* feeding damage to Bt Cotton in New Mexico.

A study done during the summer of 2005 examined the injury to two age classes of squares and bolls by *Lygus hesperus* in New Mexico. Feeding of 4th instar, 5th instar, and adult *Lygus* were evaluated for Bt cotton (DP 499 BR). No external feeding lesions were observed for any cotton squares exposed to *Lygus* this season. Internal injury was significantly greater for 5th instars than adults. External feeding lesions were observed on bolls exposed to all three bug stadia. The greatest number of lesions was produced by 4th instars in young bolls and 5th instars in older bolls. Inner carpel wall injury or "warts" and lint injury were produced by all three age classes of *Lygus*, with 5th instars producing the greatest amount of damage.

SP-12 Anita Smith, Matthew Smith and Bradford Kard, Oklahoma State University.

Oklahoma *Coptotermes formosanus* (Shiraki) surveillance program.

The formosan subterranean termite, *Coptotermes formosanus*, is an exotic structural pest that is steadily spreading in the United States, causing extensive damage to wooden structures and products. Since its introduction into the U. S. around 1957, it has been reported as far north as Denton County, Texas, two counties south of the Red River, Oklahoma-Texas border. The potential economic impact of this termite to Oklahoma home and business owners, and the forest products industry necessitated initiation of a statewide surveillance program in 2005. Monitoring devices consisting of soil-surface ground boards, in-ground detection stations, and elevated light traps are currently installed throughout southern Oklahoma. County extension agents and pest management professionals are cooperating in this effort. Additionally, inspections of landscaping timbers and RR crossties are being conducted at commercial outlets because these imported products may contain Formosan termites. *Gnathamitermes tubiformans* and several, *Reticulitermes* spp. have been collected. However, to date, *C. formosanus* has not been found although its eventual spread into Oklahoma appears certain.

SP-13 Takesha Henderson, Marvin Harris and Allen Dean, Texas A&M University.

Ground spider diversity, distribution, and abundance at Lick Creek Park in Texas.

Lick Creek is a local nature park acquired in 1987 by the City of College Station, Texas. It is comprised of 515 acres. The site has a variety of indigenous plant and animal species and is an important natural resource of citizens of the region. Knowledge of its biodiversity provides enjoyment and education for present and future generations. Annually, Bioblitz takes place here, attracting many hundreds of people that join biologists to learn and share experiences about the fauna and flora of this

particular ecosystem. There is a long-term commitment to inventory this natural park to monitor the changes as our urban community expands to surround the park. My focus is on improving our spider inventory at Lick Creek. There are 965 species of spiders currently recorded from Texas with 213 from Brazos County. Spider collections for the expanded inventory were made using pitfall traps distributed evenly within three different habitats. Reviewing previously collected material and small collections from spring 2004, 138 species are presently known from Lick Creek Park with 25 new records for Brazos County and one new species to Texas. Little was known about the spiders in Lick Creek Park before my preliminary study in the spring of 2004. Many additional species can be expected to be found in these habitats with additional collecting. This inventory of spiders at Lick Creek will provide a basis for further studies on biodiversity and the assessment of human impact on the environment.

SP-14 Danny McDonald, Isabelle Lauziere and Forrest Mitchell, Texas Agricultural Experiment Station.

Statewide distribution and abundance of putative insect vectors of Pierce's disease of grape.

Yellow sticky trap samples have been collected at least twice a month from central and north-central Texas vineyards since 2003. In collaboration with USDA-APHIS, the monitoring area was expanded throughout most of the state in 2005. Xylem sap feeding insects were identified to species and counted on each trap. Results are summarized and the density of *Homalodisca coagulata*, the glassy-winged sharpshooter, is displayed in different geographical regions in Texas. *Graphocephala versuta* and *Clastoptera xanthocephala*, two other common xylem sap feeding Hemiptera, are also identified and population densities plotted. Preliminary evidence indicates consistent increases in the number of *H. coagulata* over a three year period in central and north-central Texas.

SP-15 Sean M. O'Donnell, C. Scott Bundy, Ron Byford and Matthew Lee, New Mexico State University.

Arthropod succession on pig carrion in Southern New Mexico.

Arthropod Succession was evaluated on pig carrion in the spring/summer of 2005 in southern New Mexico. Three domestic pigs, *Sus scrofa* L., were euthanized and placed in steel cages (1.2 x 1.2 x 1.5 m): two in equivalent partial shade habitats (one as control), the third in a full shade enclosure. Ambient, internal and soil temperature and humidity readings were taken hourly from each pig with Hobo units. At each sampling event each carcass was visually observed for 5 min to document arthropod diversity, position and behavior; samples then were taken with a sweep net and forceps on the surface, beneath, and around the carcass; and carcasses were evaluated for stage and rate of decay. Each pig was examined twice a day for eleven days. As arthropod activity noticeably declined, samples were taken three times per week, then once every four days. Adult and larval specimens were taken to the laboratory for later identification. Adults were frozen and later pinned, and larvae were preserved in KAAD and transferred to 80% EtOH. Species composition and succession of the arthropods was evaluated in relation to the stage and rate of decay of the pig carrion. This study provides a much needed baseline information for arthropod succession in southern New Mexico.

SP-16 Donald Beasley, Texas A&M University.

Efficacies of five mosquito repellents compared to 25% DEET in masking humans from *Aedes* (*Stegomyia*) *albopictus* (Diptera: Culicidae) (Skuse, 1895).

The efficacy of five mosquito repellents were compared to 25% DEET in the ability to mask two subjects from *Aedes* (*Stegomyia*) *albopictus* (Diptera: Culicidae) (Skuse, 1895) in a College Station, Texas backyard setting. Test subjects exposed a 6" x 6" thigh region to unrestricted mosquito feeding for eighteen sessions; three separate sessions for each repellent. Each session consisted of five control measurements and five treatment measurements for each subject during the twilight hours. Each feeding mosquito was "on-the-spot" identified and five mosquitoes were collected at each session to verify the presence of *A. albopictus*. Results were averaged and compared. OFF! DEEP WOODS® Insect Repellent V, REPEL® Plant Based Lemon Eucalyptus Insect Repellent Spray Lotion, and Cutter AdvancedTM Insect Repellent each fully prevented mosquito feeding at the treated sites while the other three repellents (Honey Guy® Mosquito Repellent® Spray & Mosquito Repellent® Cream and the Scent Shop® Skeeter Screen™) kept the mosquito bites below the local tolerance of one per minute.

SP-17 Charles Konemann and Thomas Phillips, Oklahoma State University.

Factors that affect the responses of Indianmeal moths (Lepidoptera: Pyralidae) to oviposition attractants.

Understanding the behavior of male and female Indianmeal moths (IMM), *Plodia interpunctella* (Hübner), may aid in research on how they respond to food-based volatiles. The effects of deploying attractants in light versus dark environments, and mated status of moths are two factors that can affect their response to attractants. A two-part study was conducted to determine the effects of trap illumination in experimental rooms on both male and female IMM flight behavior to their respective attractants: z9-e12-tetradecadienyl acetate (ZETA) for males, and Moth Suppression® for females. Traps baited with ZETA and illuminated with light from a 60 watt incandescent bulb caught a mean of 5.08 (±1.4) male IMMs and traps without light caught a mean of 12.25 (±7.0). Female IMMs caught in traps baited with Moth Suppression® lures and located in dark areas had a mean of 3.25 (±1.6) females while illuminated traps caught a mean of 0.25 (±0.25) females. Thus, light reduced the number of male and female IMMs caught in attractant traps. Two experiments, one with mated IMM females and another with unmated IMM females were conducted to determine the role of mating status in response to Moth Suppression®. Females in both experiments responded significantly to baited traps compared to unbaited traps, which indicates that mating status has little effect on response to attractants.

Biology/Ecology/Behavior Oral Presentations

BE-01 Ted Cottrell, USDA-ARS.

Predation by adult and larval lady beetles (Coleoptera: Coccinellidae) on initial contact with lady beetle eggs.

Naïve adults and larvae of the native lady beetles *Coleomegilla maculata* (DeGeer), *Cycloneda munda* (Say), *Hippodamia convergens* Guérin-Méneville, *Olla v-nigrum* (Mulsant) and the exotic lady beetle *Harmonia axyridis* (Pallas) (Coleoptera: Coccinellidae) were tested for their initial response to eggs of each of these five lady beetle species. Additionally, the response of field-collected *O. v-nigrum* and *H. axyridis* adults to eggs of those species was tested. *Coleomegilla maculata, H. axyridis* and *O. v-nigrum* adults responded similarly to all egg species on first contact. Higher numbers of *C. munda* adults did not eat *C. maculata, H. convergens* and *O. v-nigrum* eggs on first contact compared with *C. munda* and *H. axyridis* eggs. *Hippodamia convergens* adults always ate *C. munda* eggs but hardly ate *H. axyridis* eggs on first contact. Native adults only ate 6% of exotic but 59% of native eggs per cluster on first contact. Exotic adults ate 74 and 89% of native and exotic eggs per cluster, respectively, on first contact. The response of *C. maculata* larvae was similar across egg species whereas, a significant difference in response to egg species was detected for *C. munda*, *H. convergens*, *O. v-nigrum* and *H. axyridis*. Native larvae ate 68% of native but only 11% of exotic eggs per cluster on first contact. Exotic larvae ate 82 and 56% of native and exotic eggs per cluster, respectively, on first contact. Adult *O. v-nigrum*, field collected and immediately tested, responded differently to egg species on first contact with adults eating 8% of exotic and 58% of native eggs per cluster when they did feed on first contact. Field-collected *H. axyridis* adults responded similarly to all egg species on first contact. Only 20% of field-collected adult *H. axyridis* fed on egg clusters upon initial contact but those adults consumed 72 and 54% of native and exotic eggs per cluster, respectively.

BE-02 Rizana Mahroof and Thomas Phillips, Oklahoma State University.

Behavioral response of the cigarette beetle, *Lasioderma serricorne* (Coleoptera: Anobiidae) to different host-derived volatiles.

With the aim of developing food odor-borne attractants to increase the effectiveness of trapping, a two-choice, pitfall, walking-bioassay was conducted to study the behavioral responses of adult cigarette beetle, *Lasioderma serricorne* (Coleoptera: Anobiidae), a pest of wide varieties of stored commodities, to volatiles of sixteen different host materials. Seven out of sixteen host materials that displayed significantly higher attractive responses were further studied for (1) respective responses to extracts with hexane, methylene chloride, or a combination of hexane and diethyl ether, and (2) the effect of sex of *L. serricorne* on responses to host-derived volatiles. Behavioral studies with extracts revealed that, responses of *L. serricorne* in two-choice bioassay varied among the type of extract. Volatiles from different peppers extracted by any type of solvent attracted significantly more adult beetles. For tobacco, an extract made with a combination of hexane and diethyl ether was more attractive to adult beetles than hexane or methylene chloride extracts. When virgin males, virgin females and mated females were bioassayed, mated females responded relatively more to host-derived volatiles. Adults of *L. serricorne* are suspected to be non-feeding, or to feed very little, so these differences in responses suggest that gravid females actively seek suitable hosts for oviposition. This study provides the basis for developing effective traps, if food odor-borne attractants can be used alone or combined with existing *L. serricorne* sex pheromone.

BE-05 Yuanxi Li and Tongxian Liu, Texas Agricultural Experiment Station; Greenberg Shoil, USDA-ARS.

Food choice and survival of different instars *Trichoplusia ni* exposed to Bollgard II and conventional cotton leaves.

The food choice and survival of *Trichoplusia ni* (Hübner) larvae were determined in the laboratory after different instars were exposed to Bt (Bollgard II) and non-Bt cotton leaves. The results showed that > 80% larvae located on non-Bt leaves at 48 h after being inoculated, and a higher percentage of larvae located on non-Bt leaves were found when 1st than 3rd or 5th instars were inoculated during first 8 h after inoculation. Furthermore, the percentage (16.7%) of larvae fed Bt leaves was lower when 1st instars were inoculated than when 3rd (54.4%) or 5th (85.9%) instars were used, indicating that the larvae could avoid Bt leaves and prefer non-Bt leaves and that the 1st instars were more susceptible to Bt leaves than 3rd or 5th instars. The pupation rate (35.6%) was significantly lower when 3rd instars were inoculated than when 1st (76.7%) or 5th (90.9%) instars were used, and the mean weight (202.8 mg) of pupae developed from larvae inoculated at 1st instar was significantly heavier than when 3rd (162.6 mg) or 5th (170.1 mg) instars were inoculated. However, there were no significant differences in adult emergence among three treatments.

BE-08 C J. DeLoach, USDA-ARS; Allen Knutson, Texas Cooperative Extension; David Thompson, New Mexico State University; Patrick Moran, USDA-ARS; Jerry Michels, Texas Agricultural Experiment Station; Charles Randall, USDA-APHIS, Joaquin Sanabria, Texas Agricultural Experiment Station; James Everitt, and Mark Muegge.

Initial success in biological control of saltcedars in Texas/New Mexico.

Saltcedars, small trees of the genus *Tamarix* from Asia and the Mediterranean area, have invaded most riparian areas of the western United States where they are causing one of the worst environmental disasters in the recorded history of the region. We are developing biological controls based on the introduction of *Tamarix*-specific leaf beetles, *Diorhabda spp*. from the saltcedar homeland. After 15 years of risk analyses, testing overseas and in U.S. quarantine, and obtaining FWS and NEPA clearances, we released from 1400 to 25,000 beetles (China/Kazakhstan ecotype) at 6 sites north of the 38th parallel in May 2001 which established at 5 sites. Four years later, these beetles had defoliated 40,000 acres of saltcedar at Lovelock, NV, 3000A at 2 sites in NV and UT, and 300 to 800A in CO and WY. After failure of the Chinese ecotype to establish in Texas, we tested and then released an ecotype from Greece at Kingsville, Seymour, Lake Meredith, several sites at Big Spring, TX and near Artesia, NM in 2003-04. At Big Spring (Higgins Ranch), 38 adults released in April and 171 in early July 2004 defoliated 2 small trees and a large tree by September. They overwintered well and by early September 2005 had produced over 200,000 adults, defoliated 210 large trees over a 1.6 acre area of saltcedar, and had dispersed ca. 200 m. The Greek beetles are now established at Lake Meredith, with some feeding damage noted in 2005, and probably near Artesia.

Crop Protection Oral Presentations

CP-02 Marvin Harris and Alexandra Gomezplata, Texas A&M University and William Ree, Texas Cooperative Extension.

Evaluation of pecan IPM in Texas.

Producers have significantly reduced the number of insecticide and fungicide sprays applied to pecans since the inception of a formal IPM Program in 1980. This reduction is largely attributed to research that resulted in improved methodologies for decision making, combined with an aggressive educational program targeting producers. Heavy reliance on "at-risk" organophosphate and carbamate chemistry remains in the program because of deficiencies (i.e., cost and compatibility with IPM objectives) perceived in alternatives. Linkage of research with agricultural production is emphasized.

CP-04 Mustafa Mirik, Gerald Michels, and Sabina Kassymzhanova-Mirik, Texas Agricultural Experiment Station and Norman Elliott, USDA-ARS.

Relationship between spectral data and Russian wheat aphid (Hemiptera: Aphididae) abundance in winter wheat.

The Russian wheat aphid (*Diuraphis noxia* (Mordvilko)) infests wheat (*Triticum aestivum* L), barley (*Hordeum vulgare* L.), and other small grains and grasses. Russian wheat aphid infestations are unpredictable in time and space. In favorable conditions, Russian wheat aphid feeding can result in a heavy damage to wheat and barley in a short period of time. A repetitive monitoring strategy that allows for rapid assessment of aphid infestation and damage over the growing season is critically needed. Tracking the irregular infestation patterns of Russian wheat aphid in order to optimize control efforts is central to the successful management of this aphid. One method that has been shown over a number of years to be useful for monitoring some insect outbreaks is to measure the light reflected by the infested canopy, plant, or leaf. Hence, this research was designed to investigate: 1) the potential use of remotely sensed data to discern and identify differences in spectral reflection patterns (spectral signatures) of winter wheat canopies with and without Russian wheat aphid infestation, and 2) the relationship between vegetation indices and Russian wheat aphid abundance in wheat canopies growing in field conditions. Russian wheat aphid-infested wheat canopies had significantly lower reflectance in the near infrared region and higher in the visible range of the spectrum when compared with noninfested canopies. Linear regression analyses resulted in poor ($R2 = 0.26$) to strong ($R2 = 0.90$) relationships between vegetation indices and Russian wheat aphid abundance. These results indicate that remote sensing data with an appropriate pixel size have the potential to quantify Russian wheat aphid abundance and distinguish its damage to wheat.

CP-05 Allen Knutson, Texas Cooperative Extension.

Host plant resistance to cotton fleahopper.

A wide variety of cotton germplasm was screened for resistance to cotton fleahopper damage to small buds using a no-choice cage technique. Results are presented for germplasm sources representing commercial, wild and converted race stocks of *Gossypium hirsutum*, *G. barbadense* and introgressions of *G. hirsutum* with *G. mustilinum* and *G. tomentosum*.

CP-08 T.X Liu. Texas Agricultural Experiment Station.

Sampling and extraction of the apterous *Pemphigus populitransversus* (Homoptera: Pemphigidae) feeding on cruciferous vegetable roots.

The apterous root-feeding forms of the poplar petiolegall aphid, *Pemphigus populitransversus* Riley, is commonly known as the cabbage root aphid by the local vegetable growers, and is one of the most important pests on their secondary hosts, crucifers, in south Texas. The soil dwelling root-feeding apterous *P. populitransversus* were extracted using the Berlese funnel in which the aphids were driven downwards by the light and the heat. The results show that a majority of apterous aphids (96.9%) were extracted from the soil in 2 h by using a 15 W light bulb in the Berlese funnels, whereas only 18.2% of all aphids extracted by using a 25 W light bulb. The 25 W light bulb in the funnel generated too much heat (40-44C) that dried the soil too soon so that the aphids were not able to crawl downward to the collecting jars or killed the aphids directly. The advantages of using Berlese funnel equipped with a 15 W light bulb as the light and heat source for sampling and extraction of the root feeding aphids include a uniform handling of each sample, less time consuming, extraction of many samples at the same time, and storage of the aphids in containers for later counting in the laboratory with or without the use of a stereo microscope. This technique appears to be also useful for extracting other mobile, small soil-dwelling arthropods.

Physiology/Biochemistry/Toxicology/Molecular Oral Presentations

PH-04 Blake Bextine, University of Texas and Forrest Mitchell, Texas Agricultural Experiment Station.

Occurrence of *Xylella fastidiosa* in sharpshooter populations in Texas.

Several xylem feeding insects which occur in Texas are known vectors of the plant-pathogenic bacterium, *Xylella fastidiosa* (Xf). Multiple strains of Xf have been identified and their affects on host plant can vary greatly. The G strain, which causes Pierce's disease, causes severe symptoms in grapevine, but has no effect on oleander. In contrast, the O strain of Xf causes symptoms in oleander, but not grapevines. For this reason, several insect species were tested for the presence of Xf by QRT PCR and the positive PCR amplicons were sequences to determine pathogen strain.

PH-05 Spencer T. Behmer, Texas A&M University.

Why and how insects watch their cholesterol.

Unlike most animals, insects require a dietary source of sterol since they lack the capacity to synthesize sterols that are needed in lipid biostructures, as precursors to important steroid hormones and as regulators of developmental processes. Cholesterol is the most common insect sterol, but since plants only contain trace levels of cholesterol, plant-feeding insects produce it by converting existing plant sterols. All insects have a species-specific quantitative requirement for sterols, and recent work indicates the requirement for cholesterol in plant-feeding insects is quite high. This talk explores sterol

use in grasshoppers and the diamondback moth, focusing on how sterols affect growth and feeding behavior. The findings from this work are interesting because they raise the possibility of modifying plant phytosteroid profile as a novel form of control against plant-feeding insects.

Urban Entomology Oral Presentations

U-01 Robert Davis and Mark Coffelt, BASF Specialty Products.

The performance of Termidor (fipronil) applied as exterior perimeter treatments for subterranean termite control.

Twenty-two pest control companies from across the United States contributed data on the performance of Termidor (fipronil) when applied as an exterior perimeter treatment for subterranean termite control in commercial situations. Of 1824 structures, 5 were reported as having termite activity post treatment. Activity was based upon pest management professional inspections or property owner communication. This represents a 99.7% success rate in termite control efficacy. Details of the survey and components of the treatments will be described.

U-03 Michael Merchant and Bart Drees, Texas Cooperative Extension.

Consumer survey to assess fire ant impact and common control measures: 2001-2003.

Two statewide consumer phone surveys were conducted in 2000 and 2003 to assess fire ant impact and control measures used by consumers. Among respondents (n=1000), 79% to 81% (± 3%) reported that they or a family member have been stung at some time by fire ants. Only 22%-24% of respondents used broadcast baits to control fire ants. The most common method of control (62%-65%) was application of an insecticide directly to a fire ant mound. Most Texans (84% to 87%) remain unaware of the Texas Two-Step Method for fire ant control. Approximately 3% more respondents were aware of the Two-Step Method in 2003 compared to 2000.

Medical/Veterinary Entomology Oral Presentations

Robert J. Miller, Cattle Fever Tick Research Laboratory, USDA-ARS, Ronald B. Davey and John E. George, USDA-ARS.

MV-01 First report of permethrin-resistant *Boophilus microplus* (Acari: Ixodidae) collected within the United States of America.

Boophilus microplus, collected in Hidalgo County, Texas, were determined to be resistant to permethrin. Discriminating dose (DD) tests at the LC_{99} and 2X the LC_{99} of susceptible ticks produced lower than expected mortalities for permethrin, but not for coumaphos or amitraz acaricides. Initial bioassay results confirmed the pyrethroid resistance detected in the DD assays. Two generations of selection with permethrin at a rate > 60%, increased the measured resistance ratios (RRs) from 9.5 (7.9-11.5) to 263 (217-320). Synergist studies did not implicate that metabolic enzymes were involved in permethrin resistance. Native gel electrophoresis verified that the CZS9 esterase was not involved in resistance to permethrin. PCR examination for the presence of a mutation of the sodium channel (Phe

→ Ile amino acid substitution in the S6 *trans*-membrane segment of domain III), detected this mutation in the B&H population. The frequency of this mutation increased after selection with permethrin and concurrent increase in estimated RRs. The B&H population was eradicated from the United States by the USDA-APHIS, VS, Cattle Fever Tick Eradication Program through the use of the organophosphate acaricide coumaphos.

Fire Ant Symposium

FA-03 Robert Puckett and Marvin Harris, Texas A&M University; Charles Barr, Texas Cooperative Extension.

Compensatory foraging strategy in red imported fire ant *Solenopsis invicta* (Hymenoptera: Formicidae) colonies after exposure to Dipteran parasitoids *Pseudacteon tricuspis*.

The presence of the parasitic flies *Pseudacteon tricuspis* (Diptera: Phoridae) influences the outcome of competitive interactions among red imported fire ants (*Solenopsis invicta*) and other ant species by reducing the foraging effort of *S. invicta*. These flies are diurnal while *S. invicta* are known to forage both diurnally and nocturnally. Nocturnal foraging by *S. invicta* potentially presents a temporal escape from the parasitism pressure of P. tricuspis. This study assessed the effects of P. tricuspis on foraging patterns of *S. invicta* colonies in the absence of resource competition. Ten treatment (flies present) and ten control (flies absent) colonies were maintained in separate greenhouse units under identical conditions. A food source of known mass was offered to both groups and removed and weighed after a 24hr period. Foraging observations were made daily and nightly while food was present. Diurnal foraging intensity was significantly less ($P < 0.05$) in treatment colonies relative to control colonies. However, the mean amount of food consumed over 24 hours was not significantly different ($P = 0.114$). In fact, the average amount of food consumed was greater in the treatment group (0.205g) relative to controls (0.175g). Nocturnal foraging intensity was significantly greater ($P < 0.05$) in the treatment group. The results of this study appear to demonstrate a compensatory nocturnal foraging strategy among colonies that are challenged by this parasitoid.

Submitted Posters

P- 01 Timothy Johnson, Plato Industries and Mark Muegge, Texas Cooperative Extension.

Evaluation of the LepTrap for monitoring the spring flight of the pecan nut casebearer, *Acrobasis nuxvorella* Neunzig.

A new trap, called the LepTrap, was evaluated for capturing adult pecan nut casebearer during the spring flight. Compared to the commercial delta trap and the commercial Intercept A trap, the LepTrap and the delta trap captured significantly more moths during the study period than did the Intercept A trap. The LepTrap captured moths earlier than either the delta trap or Intercept A trap. Extremely windy conditions in the west Texas study area identified several design flaws in the prototype LepTrap that have been changed for commercial production.

P-02 Isabelle Lauziere and Aaron Hassell, Texas Agricultural Experiment Station.

Exploration for leafhoppers yields a broad array of parasitoid species in Central Texas.

Pierce's disease is a serious disorder of grapevines (*Vitis vinifera* L.) caused by a bacterium carried and transmitted by xylem sap feeding insects. This disease inflicted severe economical losses to the California and Texas grape industry. Intensive research has taken place in several states since 2000 to combat Pierce's disease. The glassy-winged sharpshooter is one of three dominant vector species in Central Texas. Observations were carried out during the summer of 2005 on the dynamics of host plant utilization by different leafhoppers and spittlebugs. This study is part of a continuing research effort to assess vector biology, as well as biotic and abiotic factors involved in regulation of vector populations. Leafhopper eggs that were collected then yielded more natural enemies than leafhoppers. Many different parasitoid species were identified: a known species, *Gonatocerus ashmeadi*, was the most common species, some of the other species collected were unexpected. There is great interest in resuming more intensive monitoring at the onset of vector oviposition next spring. Program data is meant to be integrated into the development of a management strategy for Pierce's disease.

P-09 Tiecoura Traore and Bonnie B. Pendleton, West Texas A&M University and G. J. Michels, Jr., Texas Agricultural Experiment Station.

Effect of photoperiod on fitness of greenbug (Hemiptera: Aphididae) Biotypes E and I on sorghum.

Greenbug, *Schizaphis graminum* (Rondani), is a major insect pest of sorghum, Sorghum bicolor (L.) Moench. Greenbug biotypes E and I currently are dominant on sorghum in the United States. Knowing the effect of environmental conditions such as photoperiod on greenbug fitness would aid in development of new genotypes of sorghum resistant to greenbugs. The goal of this study was to assess the effect of photoperiod on biotype E and I greenbugs on sorghum to better understand the biology of the insect and more accurately evaluate sorghum for resistance. Greenbug pre- and post-reproductive periods, fecundity, and longevity were assessed on susceptible 'RTx 430' sorghum at two photoperiods of 12:12 and 10:14 light:dark hours in an incubator at 10-23ºC. Pre-reproductive period and fecundity of biotypes E and I were inversely related to photoperiod. Pre-reproductive period was 10.9 and 12.3 days at 12:12 and 10:14 light:dark hours for biotype E and 11.2 and 13.6 days for biotype I. Biotype E produced 69.9 and 47.9 nymphs at 12:12 and 10:14 light:dark hours, while biotype I produced 66.3 and 38.1 nymphs. Longevity (approximately 51 days) and post-reproductive period (approximately 8 days) were not significantly affected by biotype or photoperiod.

P-10 Jennifer Chown and Kristopher Giles, Oklahoma State University.

Winter canola insects and their natural enemies.

In Oklahoma, winter canola producers have encountered a variety of agronomic problems during the expansion of this crop. Because canola is so new to Oklahoma, the seasonal occurrence of insect pests and their natural enemies is not well known. The goal for this Undergraduate Special Project was to monitor a winter canola field located in central Oklahoma and catalog the species of insect pests and their natural enemies throughout the 2004-2005 growing season.

P-17 . Jorge M. González, Texas A&M University.

The *Melittobia* species (Hymenoptera: Eulophidae) of México.

Despite numerous research and publications on parasitic wasps found in México, the genus *Melittobia* has only recently been reported (Ruiz-Cancino et al. 2004 in: Llorente, Morrone, Yañez & Vargas, Eds. Biodiversidad, taxonomía y biogeografía de artrópodos de México. Vol. IV. México). Here we present a diagnosis to identify the only two species (*M. australica* Girault and *M. digitata* Dahms) thus for found in México and their host associations, as well as some biological information. Possibility of the presence of other *Melittobia* species is also discussed.

P-18 Michael Merchant, Texas Cooperative Extension and Jim Reinert, Texas Agricultural Experiment Station.

The soapberry borer, *Agrilus prionurus* Chevrolat (Coleoptera: Buprestidae) a new North Texas pest of western soapberry, *Sapindus drummondii*.

A new wood boring beetle, *Agrilus prionurus* (Coleoptera: Buprestidae), was discovered in August 2005 damaging western soapberry trees in the Dallas area. The beetle, a native of Mexico, was first discovered attacking native soapberry trees in Bastrop Co., TX in October, 2003. It has subsequently has been identified from Victoria, Webb, and Mason counties, as well as from numerous sites in the Texas hill country.

P-19 Kevin Gardner and David. Thompson, New Mexico State University.

Using kite aerial photography in agricultural research.

Kite aerial photography (KAP) is one of the oldest remote sensing techniques used to view the Earth's surface. Although developed in the late 19th century, its use waned with the advent of powered flight. During the last decade KAP has regained popularity due to increased interest in sport kite flying, development of inexpensive, lightweight and quality cameras, and the need for low cost low altitude observations that manned aircraft can't provide. KAP is proving to be an excellent tool for research uses where frequent and detailed photography can provide accurate documentation. Its use has varied applications in agriculture to capture low altitude, highly detailed imagery of crops, soils, vegetation changes, etc. where conventional aerial photographs are difficult, costly, or dangerous to obtain. With digital technology, near real-time photographs of crops can estimate variability in and quality of yields, assess growing conditions, monitor effectiveness of vegetation management treatments as well as countless other uses. We discuss the history, uses, advantages and disadvantages of kite aerial photography in agricultural related research programs and provide information on obtaining relatively low cost aerial photography equipment.