

NORTH CENTRAL BRANCH

Entomological Society of America

61st Annual Meeting

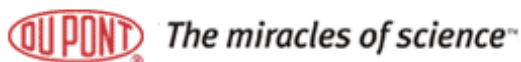
March 26-29, 2006

President Mike Culy



Doubletree Hotel Bloomington
10 Brickyard Drive
Bloomington, IL 61701

Annual Meeting Sponsors



Academic Contributors

- * Illinois Natural History Survey - Center for Ecological Entomology
 - *University of Illinois
 - *Purdue University
 - *University of Missouri
 - *Michigan State University
 - *University of Wisconsin
 - *Ohio State University
 - *Iowa State University
 - *Kansas State University
-

Contents

Meeting logistics	2
2005-06 Officers & Committees, ESA-NCB ..	4
Map of Meeting Facilities	6
Special Events	7
2006 NCB Award Recipients	9
Program	15
Sunday, March 26, 2006	
Afternoon	15
Evening	19
Monday, March 27, 2006	
Morning	20
Afternoon	29
Evening	43
Tuesday, March 28, 2006	
Morning	44
Afternoon	54
Evening	65
Wednesday, March 29, 2006	
Morning	66
Author Index	71
Taxonomic Index	82
Keyword Index	86

Registration

All participants must register for the meeting. Registration badges are required for admission to all sessions, mixers, and other functions. The meeting registration desk is located in the Pre-Function Area. The registration desk will be open for check-in for those that pre-registered and for on-site registration at the following times:

Sunday	Noon -- 6:00 p.m.
Monday	7:30 a.m. -- 3:00 p.m.
Tuesday	7:00 a.m. -- 2:00 p.m.
Wednesday	7:30 a.m. -- 9:30 a.m.

Messages, Program Changes, Lost & Found

A message board and tacks for posting announcements will be available in Brickyard V and VI. Notices concerning program changes should be submitted to Headquarters, in the lobby. Lost and found items may be turned in and retrieved at Headquarters.

Spouses and Guests

No formal spouse/guest program is planned. Information about the Bloomington area is available at Headquarters.

Employment Opportunity Center

Employers are invited to post available positions, and job seekers are encouraged to post their vitae, in folders provided in North Bridge.

Audio/Visual Equipment

An audio/visual preview room is available in North Bridge, for speakers to preview presentations. All meeting rooms will be equipped with an LCD projector and laptop projector. This year we will again exclusively use PowerPoint presentations for the talks. All the computers that will be used at the meeting will be PCs, so presenters who use Macintosh computers are encouraged to test their presentation on a PC prior to the meeting. With the advent of flash drives, we will not be uploading presentations this year. Presenters should bring their PowerPoint file to the meeting on a USB memory stick/flash drive. Presenters are encouraged to contact the moderators of their sessions to arrange for the files to be loaded on a computer in the A/V room or prior to the start of the session. The contact info for the moderators will also be available in the program. The A/V Room will be available the same hours as the registration desk is open (see above). PowerPoint

presentations brought to the meeting must be on USB memory devices. We will not directly connect laptops for the file transfer, because of incompatibility. Timers and pointers are available for moderators at the A/V Room, North Bridge.

Guidelines for Speakers and Moderators

Speakers and moderators will follow standard practices for ESA meetings. Moderators are responsible for maintaining the printed schedule, by not starting any presentation prior to the scheduled time, and by not allowing a speaker to exceed the allotted time.

Poster Presentations

Posters will be displayed in Brickyard V and VI. Posters for all student competition sections are to be set up Sunday, March 26, between 4:00 p.m. and 8:00 p.m. These posters must be removed Monday between 5:00 p.m. and 7:00 p.m. Posters to be displayed Tuesday (remaining sections posters) are to be set up Monday between 8:00 p.m. and 10:00 p.m. These posters are to be removed before 7:00 p.m. Tuesday. Authors are requested to be present at their poster(s) to answer questions between 3:00 p.m. - 4:00 p.m. Monday, and 4:00 p.m. - 5:00 p.m. Tuesday. Poster authors must bring their own pushpins to attach posters to poster setups.

2005-2006 ESA NCB Officers and Committees

President

Mike Culy

President-Elect

Gary Hein

Past President

Gary Brewer

Secretary-Treasurer

Ric Bessin

Governing Board Representative

Larry Charlet

Executive Committee Members-at-Large

Jon Tollefson, Dave Hogg, Mark Boetel

Program Planning Committee

Rick Foster - Chair, Lee Solter, Doug Whitman,
Nick Aliano

Local Arrangements Committee

Marianne Alleyne, Beverly Harvey, Gail Kampmeier,
Susan Ratcliffe, Kevin Black, Lee Solter, Doug Whitman

Public Information/Public Relations Committee

Rick Weinzierl - Chair, Mike Catangui, Mike Mullis

Nominating Committee

Rick Hellmich - Chair, Mike Catangui, Paula Davis

Auditing Committee

John Obrycki - Chair, Mark Boetel, Ed King, Bob Wright

Resolutions Committee

Clinton Pilcher - Chair, Dan Herms, Suresh Prabhakaran

Location and Time Committee

Todd DeGooyer - Chair

Student Awards Committee

Matt O'Neal - Chair, Luis Canas, Lyric Bartholomay,
Catherine Hill, Tom Clark, Jon Babcock, Doug Richmond

C. V. Riley Award Committee

Wilmar Morjan - Chair, Marion Ellis, Marc Linit, Chris
DiFonzo, Kevin Steffey, Jim Bing, Tederson Galvan

NCB Award of Merit Committee

Cathy Eastman - Chair, Blair Siegfried, Mike Gray,
Billy Fuller, Michelle Smith, Nick Aliano

National ESA Awards Committee

David Margolies - Chair, Luis Canas, Ron Seymour, Bruce
Hibbard, Christian Krupke, Erin Hodgson, Neil Spomer

Membership Committee

Larry Olsen - Chair, J. P. Michaud, Eileen M. Cullen, Kent
S. Shelby, Daniel Pavuk, Nicholas Storer, Martha Lutz

Photo Salon Committee

Tom Myers - Chair, Ric Bessin, Jerry DeWitt, Jim Mertins,
Frank Peairs, Phil Sloderbeck, Dave Voegtlin

Student Affairs Committee

Marcus McDonough - Chair, Michal Roberts - Vice-Chair,
Laura A. Campbell, Neil Spomer, Jeff Davis, Tederson
Galvan, Evan Lampert

Linnaean Games

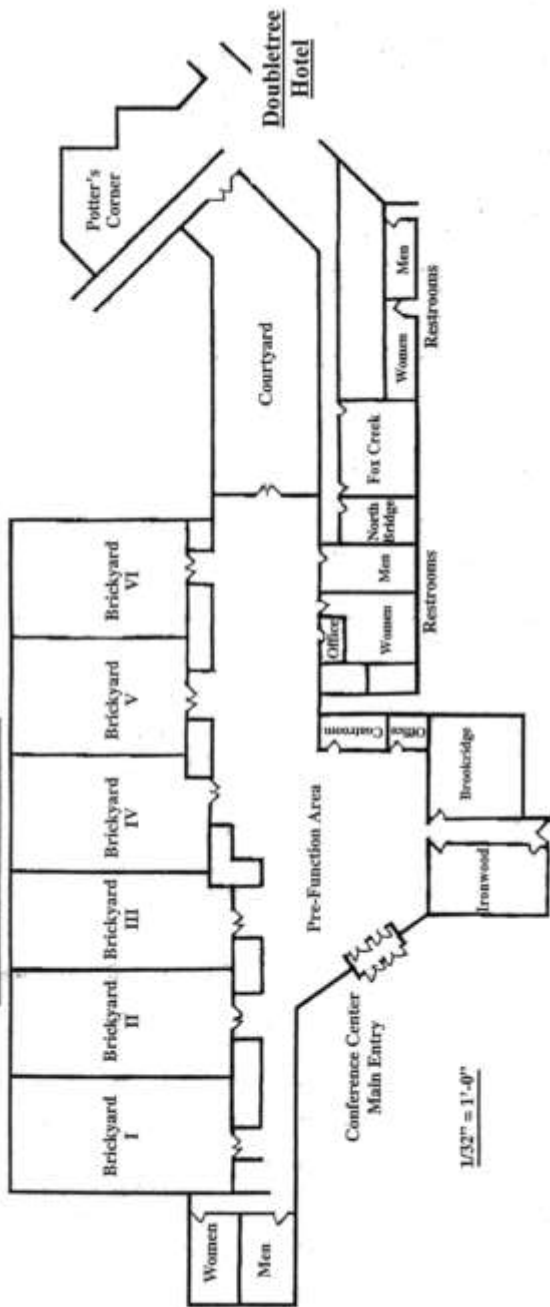
Wyatt Hoback -Chair, Mark Boetel, Joel Coats, Gary Hein,
Russell Jurenka, Blair Siegfried, Joseph Spencer, Rick
Weinzierl, Dan Young, Jeremy J. Heath, Evan Lampert

NCB-ESA Website (<http://esa.ent.iastate.edu>)

John VanDyk - Webmaster

Meeting Facilities

"The Brickyard" Conference Center



Special Events

A Tribute to Our Mentors

Space is provided for everyone to honor their mentors with mentor pages. Similar to the Mentor Wall, introduced at the 2005 ESA Meetings in Ft. Lauderdale, FL, the NCB-ESA will provide opportunity for recognition of mentors at the 2006 meeting. One-page documents that highlight those mentors and heroes (picture optional) that have contributed to our entomological success will be posted for the duration of the NCB-ESA meeting. Participate... recognize your mentors!

A "Town Hall Forum" on Proposed ESA Restructuring Monday, 6:45 p.m. - 7:45 p.m. Brickyard I & II

A case for change in the structure of our ESA was presented in detail at the December 2005 Society Meeting in Ft Lauderdale, FL. President Frank Gilstrap, Vice President Scott Hutchins, and Executive Director Paula Lettice will present an overview of the proposed restructuring plans and will welcome input and questions from Branch membership. Take advantage of this opportunity to understand the advantages of changes being proposed.

Special Events

Awards Mixer and Dinner
Tuesday 6:00 p.m. - 9:00 p.m.
Brickyard I - IV

At our 2006 NCB-ESA Meeting, the traditional Awards Luncheon is being replaced with a Tuesday evening event - combining the NCB Mixer with a Buffet Dinner. The Mixer will begin at 6:00 p.m. with a buffet dinner available soon after. At 7:15, we will seize the opportunity to recognize and celebrate our annual award winners! Please plan to join us for this "new" event in Bloomington, IL!

Brown Bag Lunch-n-Learn
Monday, 12:00 p.m. - 1:15 p.m.
Brickyard III & IV

Everyone is encouraged to attend a "Brown Bag Lunch-n-Learn" on Monday at noon. ***A complimentary meal will be provided for all students.*** Take this opportunity to "energize" about the exciting plans for our 2007 NCB-ESA Meeting in Winnipeg, Manitoba. While you "munch your lunch", our 2007 Program and Local Arrangements Chairs, along with President-Elect Gary Hein, will provide a Canadian entomology "virtual tour". Highlights and plans for 2007 meetings will be presented; including key student functions and a logistics plan (under development) for student transportation to the meetings. The session will finish up with a Q & A session and opportunity to students to provide input and recommendations relative to desired activities and events for 2007!

2006 North Central Branch Award Recipients

2006 North Central Branch C. V. Riley Award

Dr. Leon Higley University of Nebraska-Lincoln

The North Central Branch is honored to award Dr. Leon Higley with the C.V. Riley award based on his outstanding contributions in both teaching and research. Dr. Higley's commitment to the University of Nebraska- Lincoln Entomology Distance Education Program has provided greater opportunities to both traditional and nontraditional entomology students. He is directly responsible for expanding the distance education curriculum by four courses and has been crucial in increasing student enrollment in the program to nearly 100 students.

In addition to his teaching achievements, Dr. Higley is a leading researcher in plant-insect interactions. His research on plant response to insect injury has led to substantial advancements in the development of economic injury levels in crop production and a greater understanding of the factors affecting photosynthesis. Over the past five years, Dr. Higley has diversified his research, delving into new areas such as forensic science and insect conservation. These new endeavors have led to collaborations with local law enforcement agencies on criminal investigations and government officials on endangered species preservation.

Dr. Higley has written four books, 10 book chapters, 88 scientific papers, 16 columns on scientific ethics and professionalism, eight extension publications, and 13 published technical reports. He has also served as Associate Editor for the *Agronomy Journal*, Subject Editor for *Journal of Economic Entomology*, and Contributing Editor for the *American Entomologist*. In 2000, he was also the recipient of the R1EDU Distance Education Award (one of three national awards for promoting distance education at Research 1 universities).

**2006 North Central Branch
Award of Merit**

**Jay McPherson
Southern Illinois University at Carbondale**

Dr. Jay (John E.) McPherson is the 2006 winner of the North Central Branch Award of Merit. A “man for all seasons,” Jay was chosen for his continued superior accomplishments and contributions to the North Central Branch, the Entomological Society America (ESA) as a whole, and the profession of entomology. He has been described as a “fixture in the North Central Branch for nearly four decades, a tireless volunteer, and an ESA leader.”

Jay has demonstrated a long-term commitment to help students and young scientists get involved in the Branch and ESA. While carrying on a heavy teaching load, mentoring numerous graduate students, publishing his research efforts, and serving his home institution (Southern Illinois University), Jay has continued time and time again to volunteer for professional society service. He has been a long time supporter and leader in the North Central Branch, serving almost continuously in a variety of leadership roles and committee service: Governing Board Representative; Linnaean Games Judge (annually); member of Membership, Resolutions, C. V. Riley, and Systematics committees; Student Competition Judge. Jay has participated effectively and consistently in Branch business and programming, providing wise counsel, serving as a role model for young scientists, and providing leadership for the Branch. He has also been a leader in ESA as a whole, culminating in his selection as ESA President. Jay’s skillful leadership during his presidency (serving as President-Elect, President, and Past-President in 2001 – 2003, respectively) was especially valued because it occurred at a particularly critical time for the Society. He has further served entomology at all levels through his long successful tenure as Editor of the American Entomologist, ESA’s flagship publication. Jay continually encouraged other North Central Branch members to serve as contributing editors and write articles for this journal. His dedication and unceasing efforts have done much to keep American Entomologist a highly visible platform for entomological research, history, and public education.

In recognition of this dedication, Jay has been honored previously by the North Central Branch through

receipt of the Distinguished Achievement Award in Teaching and the C. V. Riley Award. He has received a National Service Award and Honorary Membership from the Entomological Society of America. In naming him now as the recipient of the 2006 North Central Branch Award of Merit, we pay tribute to his boundless enthusiasm and tireless efforts on behalf of the Branch and the profession of entomology.

**2006 North Central Branch
Graduate Student Scholarship Award**

**Anna K. Fiedler
Michigan State University**

Anna K. Fiedler is the 2006 winner of the ESA North Central Branch Graduate Student Scholarship Award. Anna is a M.S. candidate at Michigan State University. Her research goal is to maximize the impact of conservation techniques for increasing native biodiversity, improving biological control, and as she hopes resulting in decreased pesticide use in Michigan and beyond.

To reach this goal, she has developed and implemented a novel research project utilizing native prairie and savanna plants to increase biological control of arthropods habitats in agricultural landscapes. To support these studies Anna was a co-author of two competitive grants, both of which have been funded; one for from the MSU Sustainable Agriculture Program and a second from the USDA NC SARE program. Results from her two field seasons indicate that native plant species differ significantly in attractiveness to arthropods that can serve as natural enemies. Through her careful analysis of plant phenology she has determined that floral area alone can account for a large (47%) amount of the variation in natural enemy response to these potential resources. Her research suggests that selecting plants that provide a season long floral resource may be a key to maximizing the success of conservation techniques for improving arthropod biological control.

Before completing her M.S., Anna has already demonstrated a level of professional activity that is truly remarkable. She has presented her research at 4 professional meetings, written 3 funded-proposals and published in a peer-reviewed journal. In addition to these traditional methods of scientific activity, Anna has been very active in sharing her research in more immediate avenues. She has created a unique website for the agriculture and urban community to explore her research: <http://ipm.msu.edu/plants/home.htm>. This site is an excellent resource for anyone interested in using native plants to attract beneficial insects.

The NCB is not the only one to identify Anna as a remarkable graduate student. Anna's potential has been

recognized with awards of two fellowships, one for her M.S. (a Plant Science Fellowship) and one for her future doctoral work (a C.S. Mott Predoctoral Fellowship in Sustainable Agriculture). Anna is also an active member within her department where she volunteers at the “Bug House” an MSU outreach program for K-12 students. She has also given numerous Extension talks about her work to audiences including MSU Extension Field Crops Agents, beekeepers, native plant enthusiasts, garden clubs and groups of visiting international scientists. And finally, Anna has served as Vice President, and Treasurer of our graduate student organization (GUESS).

**2006 North Central Branch
J. H. Comstock Award**

**Hojun Song
The Ohio State University**

The 2006 North Central Branch ESA winner of the J.H. Comstock Graduate Student Award is Hojun Song. Mr. Song will receive his Ph.D. in 2006 for work that centers on one of the most fascinating phenomenon in entomology- the plague locusts. Hojun has tackled this ancient, biblical problem suggesting key components required for the evolution of the genus. His cladistic analysis of the *Schistocerca* species suggests that the African plague locusts may have crossed the Pacific Ocean while on its way to the New World. As noted in his letters of references, his research regarding the changes in the concealed genitalia of Orthoptera will require serious modification of grasshopper classifications. His contributions to Orthoptera taxonomy has been recognized with an associate editor position to *Metaleptea* the newsletter of the Orthopterists' Society.

Hojun received a National Science Foundation Graduate Research Fellowship which has resulted in variety of professional experience that stem from a successful research scientist. He has given eight professional meetings, organized three symposia at the national ESA annual meeting, received funding from over a dozen grants, and taught at the undergraduate and graduate level. To date, Hojun's work has resulted in 7 peer-reviewed publications.

It should be noted that Hojun has already received international recognition. His research excellence helped the Mexican government select him as a scientific advisor to address the ecological impact of *Schistocerca piceifrons*. He helped identify this species which was devastating the Socorro Island, a group of Pacific islands referred to as the 'Mexican Galapagos' for its biodiversity. He currently serves as a consultant to CONABIO (Comisión Nacional para el Conocimiento y Uso de la Biodiversidad) of Mexico. Despite this international reputation, all of Hojuns' letters of reference noted his involvement within the Entomology Department at the Ohio State University and his service to other students.

PROGRAM

**March 26, 2006
Sunday Afternoon**

**Registration
Noon - 6:00 p.m.**

NCB Executive Committee Meeting
1:00 p.m. - 5:00 p.m.
Foxcreek

NCR-46 Meeting
10:00 a.m. - 5:00 p.m.
Ironwood A

**Symposium -- Thinking Outside the Borders:
Entomology and the International Experience**
1:00 p.m. - 5:00 p.m.
Brickyard 1

Organizers and Moderators:

Marlin E. Rice, 103 Insectary, Department of Entomology
Iowa State University, Ames, IA 50011
merice@iastate.edu
and

John E. Foster, Department of Entomology,
University of Nebraska, 312F Plant Industry-East Campus, Lincoln,
NE 68583-0816
JFOSTER1@unl.edu

- | | | |
|------|-----|--|
| 1:00 | 001 | Introduction
Marlin E. Rice , 103 Insectary, Department
of Entomology, Iowa State University,
Ames, IA 50011, merice@iastate.edu |
| 1:05 | 002 | The Sabbatic Experience. Spending a
Sabbatical at an International Research Center:
Opportunities and Challenges
Gerald Wilde , Department of Entomology,
Waters Hall, Kansas State University,
Manhattan, KS 66506-4004
gwilde@ksu.edu |
| 1:25 | 003 | The Research Experience. Questions without
Borders: Conducting Research Overseas
Robert J. O'Neil , Department of Entomology,
Purdue University, Smith Hall, 901 W. State
Street, West Lafayette, IN 47907-2089
rjoneil@purdue.edu |

- 1:45 004 The Teaching Experience. Mluvim Cesky Malo: Teaching Entomology in a Language with Few Vowels
C. Michael Smith, Department of Entomology, Waters Hall, Kansas State University, Manhattan, KS 66506-4004, csmith@ksu.edu
- 2:05 005 The Long-Term Employment Experience. Banaue to Bouake': A Global IPM Experience
E. A. Heinrichs, International Association for the Plant Protection Sciences, Department of Entomology, University of Nebraska, 312F Plant Industry-East Campus, Lincoln, NE 68583-0816
eheinric@unlnotes.unl.edu
- 2:25 006 The International Student Mentoring Experience. Listening with Both Ears
John E. Foster, Department of Entomology, University of Nebraska, 312F Plant Industry-East Campus, Lincoln, NE 68583-0816
JFOSTER1@unl.edu
- 2:45 **BREAK**
- 3:00 007 The Student Experience. Of Ants and Elephants: Integrating Entomology into an African Safari
Jeffrey D. Bradshaw, 4 Insectary, Department of Entomology, Iowa State University, Ames, IA 50011, bradshaw@iastate.edu
- 3:20 008 The Peace Corp Experience. The Toughest Bug Job You'll Ever Love
Matt O'Neal, 117 Insectary, Department of Entomology, Iowa State University, Ames, IA 50011, oneal@iastate.edu
- 3:40 009 The Industry Experience. Learning How to Read the Map
David J. Isenhour, Monsanto Company, 800 N. Lindbergh Blvd. / E2SH, St. Louis, MO 63167, david.isenhour@monsanto.com
- 4:00 010 The Fulbright Experience. I Speak of Africa and Golden Joys: Insects and Teaching at an African University
Marlin E. Rice, 103 Insectary, Department of Entomology, Iowa State University, Ames, IA 50011, merice@iastate.edu

- 4:20 011 The Senior Fulbright Experience. A Gem of an International Opportunity You Should Take Advantage of!
Jon J. Tollefson, 110 Insectary, Department of Entomology, Iowa State University, Ames, IA 50011, tolly@iastate.edu
- 4:40 012 Panel Discussion

Student Symposium
Future of Entomology -
The Young and Promising of NCB-ESA

1:00 p.m. - 5:00 p.m.

Brickyard IV

Organizer and Moderator:

Tony Grace, 123 West Waters Hall,

Department of Entomology,

Kansas State University, Manhattan, KS 66502

tonygrac@ksu.edu

and

Joe Louis, 123 West Waters Hall,

Department of Entomology,

Kansas State University, Manhattan, KS 66502

joelouis@ksu.edu

and

Ginny Antony, Department of Plant Pathology,

Kansas State University, Manhattan, KS 66502

ginns@ksu.edu

- 1:00 013 Introduction
Tony Grace, Kansas State University
- 1:05 014 Mode of Action of Juvenile Hormone and 20-hydroxyecdysone: Basic Research to Applications
S. R. Palli, R. Parthasarathy, D. R. Kethidi, Y. Li, Wu Yu, Z. Zhang and H. Bai, Department of Entomology, University of Kentucky, Lexington, KY 40546, rpalli@uky.edu
- 1:33 015 At the Intersection of Top-down and Bottom-up: Development of Soybean Aphid IPM.
Matthew O'Neal, Department of Entomology, 117 Insectary, Iowa State University, Ames, IA 50011-3140, oneal@iastate.edu

- 2:01 016 Phytoplasmas and Rhabdoviruses, Invasive Microbes of Plants and Insects
Saskia A. Hogenhout, Department of Entomology, 120 Thorne Hall, The Ohio State University-OARDC, 1680 Madison Ave., Wooster, OH 44691, hogenhout.1@osu.edu
- 2:29 017 Development of Crop Protection Programs for Midwest Blueberries: Exploring the Research-Extension Continuum
Rufus Isaacs, Department of Entomology, 243 Natural Science, Michigan State University, E. Lansing, MI 48824, isaacsr@msu.edu
- 2:57 **BREAK**
- 3:07 018 Gastrointestinal Microbial Symbionts of Insects: Implications for Pest Control and Animal and Public Health
Ludek Zurek, 123 West Waters Hall, Department of Entomology, Kansas State University, Manhattan, KS 66506
lzurek@ksu.edu
- 3:35 019 Study of Excretion Systems in the Red Flour Beetle *Tribolium castaneum* (Herbst)
Yoonseong Park, 123 West Waters Hall, Department of Entomology, Kansas State University, Manhattan, KS 66506
ypark@ksu.edu
- 4:03 020 The Biology of Ant Invasions
Andrew V. Suarez, Departments of Entomology & Animal Biology, University of Illinois at Urbana-Champaign, 320 Morrill Hall, 505 S. Goodwin Ave., Urbana, IL 61801
avsuarez@life.uiuc.edu
- 4:31 021 Mechanisms Underlying the Effectiveness of Food Processing IPM Programs
Michael D. Toews, USDA-ARC GMPRC, 1515 College Ave., Manhattan, KS 66502
michael.toews@gmprc.ksu.edu

March 26, 2006
Sunday Evening

Poster Setup

4:00 p.m. - 8:00 p.m.
Brickyard V & VI

President's Reception (by invitation)

5:00 p.m. - 6:00 p.m.
Brookridge

Photo Salon

6:00 p.m. - 7:00 p.m.
Foxcreek

Linnaean Games

7:00 p.m. - 9:00 p.m.

Gamemaster: W. Wyatt Hoback

University of Nebraska at Kearney
Brickyard I & II

**March 27, 2006
Monday Morning**

Registration
7:30 a.m. – 3:00 p.m.

Opening Session
8:00 a.m. – 10:00 a.m.
Brickyard I and II

Welcome

Call to Order
Mike Culy, President
North Central Branch
Entomological Society of America

Local Arrangements Update
Marianne Alleyne

Opening Remarks
Frank E. Gilstrap, President
Entomological Society of America

Message from the Executive Director
Paula Lettice, Executive Director
Entomological Society of America

ESA Governing Board Report
Randy Higgins
NCB Representative to Governing Board

President's Address
Mike Culy

Preliminary Business Meeting

March 27, 2006
Monday Morning
BS/MS Student Competition Papers

Sections A, Ca, Cd, Ce, D, & Ea

10:15 a.m. – 11:27 a.m.

Brickyard III

Moderator:

Jared Schroeder

University of Illinois, Urbana, IL

jbschroe@uiuc.edu

- 10:15 022 Systematics of Tarantulas of the South-central US, as Inferred from Molecular and Morphological Characteristics
Elizabeth A. Murray, 123 W Waters Hall, Kansas State University, Manhattan, KS 66506, Ralph Charlton, One Manhattan Square, Strong Museum, Rochester, NY 14607, Yoonseong Park, 123 W Waters Hall, Kansas State University, Manhattan, KS 66506
- 10:27 023 Does Non-cropped Habitat Near Soybean Fields Affect the Recruitment of Parasitoids to Soybean Aphid (*Aphis glycines*)?
Shaun A. Langley, Takuji Noma and Michael Brewer, B18 Food Safety and Toxicology Bldg., Michigan State University, East Lansing, MI 48912
- 10:39 024 Urban Mosquito Management: Can Professionals Utilize a Residual Insecticide to Manage Peridomestic Mosquitoes?
Rebecca T. Trout and Grayson C. Brown, S 225 Ag North Sci Ctr, University of Kentucky, Lexington, KY
- 10:51 025 Wide Open Spaces: Infestations of Saltcedar, *Tamarix ramosissima*, Increase Capture Rates of Terrestrial Invertebrates in South-central Nebraska
Jessica D. Jurzenski and W. Wyatt Hoback, 905 W. 25th St, University of Nebraska at Kearney, Kearney, NE 68849

- 11:03 026 The Effect of Foliar Fungicides on Fungal Entomopathogens of Soybean Aphid in Minnesota
Karrie A. Koch and David W. Ragsdale, 219 Hodson Hall, 1980 Folwell Avenue, University of Minnesota, St. Paul, MN 55108, Bruce D. Potter, 23669 130th Street, University of Minnesota, Southwest Research and Outreach Center, Lamberton, MN 56152
- 11:15 027 *Culex* Preferences for Gravid Trap Infusions
Abigail C. Michels, 11573 Oakton Rd., Western Illinois University, Macomb, IL 61455

March 27, 2006
Monday Morning
BS/MS Student Competition Papers

Sections F, Fa & Fb
 10:15 a.m. – 11:27 a.m.
 Brickyard IV

Moderator:
Wai-Ki Frankie Lam
 Southwest Purdue Agricultural Center
 Purdue University, Vincennes, IN
wkflam@purdue.edu

- 10:15 029 Feasibility of Applying Insecticides to Soybeans to Reduce Grape Colaspis Population in a Soybean-Seed Corn Rotation
Benjamin C. Kaeb and Jon J. Tollefson, 110 Insectary, Iowa State University, Ames, IA 50011
- 10:27 030 Cultivar Resistance in Nursery-grown Maples to Major Insect Pests with Notes on Biology of the Maple Shoot Borer, *Proteoteras aesculana* (Lepidoptera: Tortricidae)
Bonny L. Seagraves, Daniel A. Potter and Kenneth F. Haynes, S-255 Ag. Sci. Bld. N., Dept. of Entomology, University of Kentucky, Lexington, KY 40546, Dava Hayden, P.O. Box 469, University of Kentucky Research and Education Center, Princeton, KY 42445, Amy Fulcher, N-310C Ag. Sci. Bld. N 0091, Dept. of Horticulture, University of Kentucky, Lexington, KY 40546

- 10:39 031 Feeding Behavior of the Green Peach Aphid, *Myzus persicae* (Sülzer), on Arabidopsis Mutants
Joe Louis, Jyoti Shah, Venkatramana Pegadaraju and John Reese, 125 West Waters Hall, Department of Entomology, Kansas State University, Manhattan, KS 66506
- 10:51 032 Field Trial in 2005 Frontenac Wine Grapes Using Imadacloprid for Management of *Harmonia axyridis* (Pallas) (Coleoptera: Coccinellidae) Adults
Katherine M. Girsch, Rick E. Foster and Bruce P. Bordelon, Purdue University, West Lafayette, IN 47907
- 11:03 033 Western Corn Rootworm (Coleoptera: Chrysomelidae) Larval Injury and Nitrogen Utilization in YeildGard[®] Rootworm Corn.
Darren M. Bakken, Ron Estes, Jaren B. Schroeder, Kevin L. Steffey and Michael E. Gray, 1102 S. Goodwin Ave., MC-046, University of Illinois at Urbana-Champaign, Urbana, IL 61801-4730
- 11:15 034 Speed of Action of Liquid and Dry Spinosad Formulations Applied to Whole Grains Against Stored-product Beetles
Anna I. Getchell and Bhadriraju Subramanyam, 201 Shellenberger, Kansas State University, Manhattan, KS 66506

March 27, 2006
Monday Morning
PhD Student Competition Papers

Sections A, B & C
10:15 a.m. – 11:51 a.m.
Brookridge

Moderator: Richard Winzierl
University of Illinois, Urbana, IL
weinzier@uiuc.edu

- 10:15 035 A Preliminary Classification of the Braconid Subfamily Euphorine Based Upon Molecular Evidence
Charles A. Boring, Department of Entomology, S-225 Ag. Sci. Center North, University of Kentucky, Lexington, KY 40546-0091

- 10:27 036 Cladistic Component Analysis: A New Method for Incorporating Multiple Alignment Parameters in Phylogenetic Reconstruction
Barbara J. Sharanowski and Michael J. Sharkey, S-255 Agriculture Science Centre North, University of Kentucky, Lexington, KY 40546-0091
- 10:39 037 Phylogeny of the Sharpshooter Tribe Proconiini (Hemiptera: Cicadellidae) and Its Implication to Classification
Daniela M. Takiya, Roman A. Rakitov and Christopher H. Dietrich, 1816 S. Oak Street, Illinois Natural History Survey, Center for Biodiversity, Champaign, IL 61820, Gabriel Mejdalani, Quinta da Boa Vista, São Cristóvão, Museu Nacional, Departamento de Zoologia, Rio de Janeiro, RJ, 20940-040, Brazil, Stuart H. McKamey, c/o National Museum of Natural History, MRC-168, 10th and Constitution Ave., USDA/ARS Systematic Entomology Laboratory, Washington, DC 20560, Rodney R. Cavichioli, Caxia Postal 19020, Universidade Federal do Paraná, Departamento de Entomologia, Curitiba, PR, 81531-990, Brazil
- 10:51 038 Genetic Variation of Field Populations of Wheat Curl Mite
Benjawan Siriwetwivat, 202 Plant Industry Building, University of Nebraska-Lincoln, Dept. of Entomology, Lincoln, NE 68583, Gary L. Hein, 4502 Ave I, University of Nebraska-Lincoln, Panhandle Research and Extension Center, Scottsbluff, NE, 69361-4939, Roy C. French, 426 Plant Sciences Hall, USDA-ARS and Department of Plant Pathology, University of Nebraska - Lincoln, Lincoln, NE 68583, John E. Foster, 312F Plant Industry Building, University of Nebraska-Lincoln, Dept. of Entomology, Lincoln, NE 68583-0816

- 11:03 039 A Remarkable Case of Longevity in Sugarbeet Root Maggot Larvae: Is Diapause the Key?
Anitha Chirumamilla and Mark A. Boetel, Hultz Hall, Department of Entomology, North Dakota State University, Fargo, ND 58105, George D. Yocum, Insect Genetics and Biochemistry Research Unit, RRVARC-USDA-ARS, Fargo, ND 58105, Robert J. Dregseth, Hultz Hall, Department of Entomology, North Dakota State University, Fargo, ND 58105
- 11:15 040 Effect of PBAN on Fatty Acid Synthase in *Heliothis virescens*
Hanan S. Eltahlawy, Department of Entomology, North Dakota State University, P.O. Box 5346, Fargo, ND 58105, Department of Entomology, North Dakota State University, Fargo, ND 58105, James S. Buckner, 1605 Albrecht Blvd., Fargo, ND 58105, USDA-ARS-Biosciences Research Laboratory, Fargo, ND 58105, Stephen P. Foster, Department of Entomology, North Dakota State University, P.O. Box 5346, Fargo, ND 58105, Department of Entomology, North Dakota State University, Fargo, ND 58105
- 11:27 041 Regulation of Cytochrome P450 Genes in *Drosophila melanogaster* by Methoprene and the Methoprene Receptor
Cynthia M. McDonnell, Mary A. Schuler and May R. Berenbaum, 320 Morrill Hall, University of Illinois Urbana Champaign, Urbana, IL 61801
- 11:39 042 Prevalence and Pathogenicity of a Native Fungal Pathogen to the Sugarbeet Root Maggot (Diptera: Ulidiidae)
Ayanava Majumdar and Mark A. Boetel, Hultz Hall, Entomology Department, North Dakota State University, Fargo, ND 58105, Stefan T. Jaronski, USDA ARS NPARL, Sidney, MT 59270

March 27, 2006
Monday Morning
PhD Student Competition Papers

Sections Ca, Cc, & D
10:15 a.m. – 11:27 a.m.
Brickyard I

Moderator:

Christian Krupke

Purdue University, W. Lafayette, IN
ckrupke@purdue.edu

- 10:15 044 An Integrated Approach to Leafy Spurge (*Euphorbia esula* L.) Control
Ankush Joshi, Denise L. Olson and Rodney G. Lym, North Dakota State University, Fargo, ND 58105
- 10:39 045 Does Asymmetrical Intraguild Predation Affect Biological Control of the Soybean Aphid?
Jeremy M. Chacon and George E. Heimpel, 219 Hodson Hall, 1980 Folwell Ave, University of Minnesota - Twin Cities St., Paul, MN 55108
- 10:51 046 Impaired Stand Favors PVY Spread in Potato
Jeffrey A. Davis, Edward B. Radcliffe and David W. Ragsdale, 1980 Folwell Ave., University of Minnesota-St. Paul, St. Paul, MN 55108
- 11:03 047 Managing Bean Leaf Beetles and Bean Pod Mottle Virus in Soybean with a Seed-treated Neonicotinoid and a Foliar Pyrethroid
Jeffrey D. Bradshaw, Marlin E. Rice and John H. Hill, Departments of Entomology and Plant Pathology, Iowa State University, Ames, IA 50010
- 11:15 048 Isolation of Intracellular Bacteria *Wolbachia* from *Aedes albopictus* cells
Cynthia C. Khoo and Stephen L. Dobson, S-225 Ag. Science Center North, University of Kentucky, Lexington, KY 40546

March 27, 2006
Monday Morning
PhD Student Competition Papers

Sections Cd, F, Fa, & Fb
10:15 a.m. – 11:51 a.m.
Brickyard II

Moderator:

Douglas W. Johnson

University of Kentucky, UK-REC, Princeton, KY
doug.johnson@uky.edu

- 10:15 051 Predicted Taxonomic Patterns in Pheromone Production by Longhorned Beetles
Ann M. Ray, Emerson S. Lacey and Lawrence M. Hanks, 320 Morrill Hall , 505 S. Goodwin Ave., University of Illinois Urbana Champaign, Urbana, IL 61801
- 10:27 052 Settling Behavior of *Myzus persicae* Sulzer (Hemiptera: Aphididae) on Selected Potato Lines from *Solanum tuberosum*-derived Germplasm
Loida M. Tobias and Denise L. Olson, 202 Hultz Hall, North Dakota State University, Fargo, ND 58105
- 10:39 053 Effect of Age and Mating Status on European Corn Borer Moth (Lepidoptera: Crambidae) Dispersal from Small-Grain Aggregation Plots
Brendon J. Reardon and Thomas W. Sappington, USDA-Genetics Laboratory, Iowa State University, Ames, IA 50011
- 10:51 054 Battle of the Sexes in the Parasitic Wasp *Copidosoma sosares*
Evan C. Lampert and Paul J. Ode, North Dakota State University, Fargo, ND 58105
- 11:03 055 Nebraska Grasshoppers: Where are We Today?
Mathew L. Brust, 1038 A Street Apt. 1, University of Nebraska-Lincoln, Lincoln, NE 68502

- 11:15 056 Enumerative and Binomial Sequential Sampling Plans for the Multicolored Asian Lady Beetle in Wine Grapes
Tederson L. Galvan, Eric C. Burkness and William D. Hutchison, 219 Hodson Hall, 1980 Folwell Ave, University of Minnesota, Saint Paul, MN 55108
- 11:27 057 Canola Growth Response to *Phyllotreta cruciferae* (Coleoptera: Chrysomelidae) Feeding Injury
Frank B. Antwi and Denise L. Olson, North Dakota State University, Entomology Department, Hultz Hall Room 202, Fargo, ND 58105
- 11:39 058 Genetic Variability and Gene Flow Among Indian Mealmoth Populations
Tony Grace, Srinivas Kambhampati, 123 Waters Hall, Department of Entomology, Kansas State University, Manhattan, KS 66506 and Bhadriraju Subramanyam, 202 Shellenberger Hall, Department of Grain Science and Industry, Kansas State University, Manhattan, KS 66506, tonygrac@ksu.edu

Brown Bag Lunch for Students

Mike Culy

President, NCB Entomological Society of America

12:00 p.m. – 1:15 p.m.

Brickyard III & IV

March 27, 2006 Monday Afternoon Student Competition Posters All BS, MS, and PhD Posters

1:00 p.m. - 5:00 p.m.

Brickyard V & VI

(Authors present 3:00 p.m. – 4:00 p.m.)

- D059 PCR-RFLP for Identifying Forensically Important Blowfly Species of Southeastern Nebraska
Sajeewani U. Samarakoon, 202 Plant Industry Building, P.O. Box 830816, University of Nebraska, Lincoln, NE 68583-0816, Steven R. Skoda, UNIT 0945, APO, USDA, ARS, Screwworm Research, Panama City, Panama, AA 34002, Frederick P. Baxendale and John E. Foster, 202 Plant Industry Building, P.O. Box 830816, University of Nebraska, Lincoln, NE 68583-0816
- D060 Genetic Variation Between Different Populations of the Sugarbeet Root Aphid
Rosana H. Serikawa, Gary L. Hein, Steven R. Skoda and John E. Foster, 202 Plant Industry Building, University of Nebraska, Lincoln, NE 68583-0816
- D061 Sex and Temperature Effects on the Antimicrobial Activity in the Oral Secretion of the Carrion Beetle, *Nicrophorus marginatus*
Betty J. Wieck, William W. Hoback and Julie J. Shaffer, 905 West 25th St., University of Nebraska at Kearney, Kearney, NE 68849
- D062 Comparing Microsatellites Genetic Variability in Mass-reared Versus Wild *Anastrepha suspensa*
Shannon A. Tadel and Ann H. Fritz, 600 Lincoln Avenue, Eastern Illinois University, Charleston, IL 61920
- D063 Defensive Response of *Aphis glycines* Matsumura (Hemiptera: Aphididae) to Predation by *Orius insidiosus* (Say) (Hemiptera: Anthocoridae)
Casey D. Butler and Robert J. O'Neil, 901 W. State St., Purdue University, West Lafayette, IN 47907

- D064 Population Growth of Soybean Aphid Under Varying Levels of Predator Exclusion
Lisa Meihls, 1-31 Agriculture Building, University of Missouri, Columbia, MO 65211, Thomas L. Clark, Mail Zone GG3E, 700 Chesterfield PKWY West, Monsanto Company, Chesterfield, MO 63017, Wayne C. Bailey, 1-31 Agriculture Building, University of Missouri, Columbia, MO 65211
- D065 Seasonality and Impacts of *Ceutorhynchus litura* (F.) on Canada Thistle
Susan L. Harvey, Gary L. Hein and Robert G. Wilson, 4502 Avenue I, University of Nebraska, Scottsbluff, NE 69361
- D066 Honey Bee (*Apis mellifera*) Pollen Foraging during Highbush Blueberry (*Vaccinium corymbosum*) Bloom in Western Washington State
Bruce J. Eckholm, University of Nebraska-Lincoln, Department of Entomology, Lincoln, NE 68583-0816
- D067 A Road Less Traveled: Pitfall Sampling Reveals Impacts to Terrestrial Invertebrates in Mangrove Swamps of Vieques Island
Heather R. Tracy, Marc Albrecht and William W. Hoback, 905 W. 25th Street, University of Nebraska at Kearney, Kearney, NE 68845
- D068 Preliminary Data on the Seasonal Occurrence and Oviposition Preferences of the Lesser Chestnut Weevil (LCW) in Mid-Missouri
Ian W. Keeseey and Barrett Bruce, 2102 Arlene Dr., Columbia, MO 65203
- D069 Carrion Beetle Communities of the Nebraska National Forest
Phillip Dobesh, 1928 South 11th St., Lincoln, NE 68502, David Wedin, School of Natural Resource Sciences, 104 Plant Industry Bldg., University of Nebraska-Lincoln, Lincoln, NE 68583-0814, W. W. Hoback, Department of Biology, Bruner Hall of Science, 905 West 25th Street, University of Nebraska at Kearney, Kearney, NE 68849
- D070 The Eastern Lubber Grasshopper: Poison Plant Specialist
Kevin M. Huizenga, Tracy Caliendo, Robert Burries, Pratik Desai and Douglas Whitman, Dept. of Biological Sciences, Illinois State University, Normal, IL 61761

- D071 Geographic and Temporal differences in Body Size in *Romalea microptera*
Jessica S. Brinton, Amanda Solliday, Kevin Huizenga, Matthew Schaidle, Steve Juliano and Doug Whitman, Biology Department, Illinois State University, Normal, IL 61761
- D072 Seasonal Abundance of Pest Aphid Species in Illinois Collected in Suction Traps
Doris M. Lagos, Department of Entomology, 320 Morrill Hall, 501 S Goodwin Avenue, University of Illinois, Urbana, IL 61801, David Voegtlin, 1816 S Oak St, Illinois Natural History Survey, Champaign, IL 61820
- D073 Concentrations and Types of Bacteria Present in the Pupae and Adults of the Caribbean Fruit Fly *Anastrepha suspensa*
Korrin J. Doyle, Valerie L. Norman, Steven L. Daniel and Ann H. Fritz, Biological Sciences, 600 Lincoln Ave. , Eastern Illinois University, Charleston, IL 61920
- D074 The Spatial Ecology of the Ground Beetle *Evarthus alternans* (Casey) in Burned and Unburned Grasslands
Roberta R. Rader, Mark W. McKelvey, Jon Gering and Dean DeCock, 100 E. Normal, Division of Science, Truman State University, Kirksville, MO 63501
- D075 Western Bean Cutworm Flight Potential and Pheromone Trap Preference
David L. Dorhout and Marlin E. Rice, 110 Insectary Building, Iowa State University, Ames, IA 50011
- D076 Efficacy of National Organic Program-compliant Insecticides Against Soybean Aphid Under Controlled Conditions
Heidi J. Kraiss, 1630 Linden Dr., UW Madison, Madison, WI 53706, Eileen M. Cullen, 1630 Linden Dr., Madison, WI 53706
- D077 Economic Threshold for Grasshoppers in Potato Based on Leaf Area Index
Jeffrey J. Hamik, Joe Reilly and W. Wyatt Hoback, 905 W. 25th St., University of Nebraska at Kearney, Kearney, NE 68849

- D078 Potential Use of Green Foxtail as a Bridge by Western Corn Rootworm Larvae to Survive Cry3Bb1 Protein in Transgenic Maize
Kurt J. Olmer and Bruce E. Hibbard, USDA-ARS, 205 Curtis Hall, University of Missouri, Columbia, MO 65211, Thomas L. Clark, 700 Chesterfield PKWY, Monsanto Company, Chesterfield, MO 63017
- D079 Effects of Temperature and Humidity on Grain Mite, *Acarus siro*, Survival
Brian D. Sass and W. Wyatt Hoback, 905 West 25 Street, University of Nebraska at Kearney, Kearney, NE 68849
- D080 The Tiger Beetles of North Dakota
Patrick B. Beauzay, 1300 Albrecht Drive, Box 5346, North Dakota State University, Fargo, ND 58105
- D081 The Cynipoid Genus *Paramblynotus*: Revision, Phylogeny, and Historical Biogeography (Hymenoptera: Liopteridae)
Zhiwei Liu, 600 Lincoln Ave, Eastern Illinois University, Charleston, IL 61920, Fredrik Ronquist, School of Computational Science, Florida State University, Tallahassee, FL 32306-4120, Goeran Nordlander, Department of Entomology, Swedish University of Agricultural Sciences, Uppsala, Sweden, 7044
- D082 Population Variation of *Spodoptera frugiperda* (Lepidoptera: Noctuidae) in the Western Hemisphere
Pete L. Clark, 312F Plant Industry Bldg, University of Nebraska - Lincoln, Lincoln, NE 68583-0816, David J. Isenhour, 800 North Lindbergh Blvd, Monsanto Company, Saint Louis, MO 63167, Steven R. Skoda, USDA-ARS-SPASRU Screwworm Research Unit, Panama City, Panama, John E. Foster, 312F Plant Industry Bldg, University of Nebraska - Lincoln, Lincoln, NE 68583-0816
- D083 Post Establishment Monitoring and Habitat Occurrence of *Aphthona* Flea Beetles
Ankush Joshi, Denise L. Olson and Donald R. Carey, Hulz Hall, North Dakota State University, Fargo, ND 58105
- D084 Influence of Plant Volatiles on Prey Finding by the Predatory Mite, *Phytoseiulus persimilis*
Punya Nachappa, David C. Margolies and James R. Nechols, 124 Waters Hall, Department of Entomology, Kansas State University, Manhattan, KS 66502

- D085 Retail Sourced Diets Influence Development Time, Mass, and Survivorship of Indian Meal Moth, *Plodia interpunctella*
Abigail J. Walter and Stephen Kells, 1980 Folwell Ave, 212 Hodson Hall, University of Minnesota, St. Paul, MN 55108
- D086 Parasitoid Assemblages Associated with Forest Lepidoptera in a Fragmented Landscape
Laura L. Hughes-Williams, Melanie L. Bergolc and Daniel M. Pavuk, Insect Ecology Lab, Department of Biological Sciences, Life Sciences Bldg., Bowling Green State University, Bowling Green, OH 43403

BCE Symposium
Urban Entomology Research and Outreach Programs in the North Central Region

1:00 p.m. – 5:30 p.m.
 Brickyard I

Organizer and Moderator:
Shripat T. Kamble

Department of Entomology, University of Nebraska
 Lincoln, NE 68583-0816
skamble1@unl.edu

- | | | |
|------|-----|--|
| 1:00 | 087 | Introduction
Shripat T. Kamble , Department of Entomology, University of Nebraska, Lincoln, NE 68583 |
| 1:05 | 088 | Status of West Nile Virus in the Midwestern States and Other Insect Borne Diseases
Ralph Williams , Department of Entomology, Purdue University, West Lafayette., IN 47907, rew@purdue.edu |
| 1:25 | 089 | Utility of Forensic Science in Urban Entomology
Marissa Fusco and Ralph Williams, Department of Entomology, Purdue University, West Lafayette, IN 47907, mfusco@purdue.edu |
| 1:45 | 090 | Flies in the Urban Environment: More Than a Nuisance Issue
Ludek Zurek , Department of Entomology, Kansas State University, Manhattan, KS 66506, lzurek@ksu.edu |

- 2:05 091 DNA Markers: Analyses and Applications
Tracie Jenkins, Department of Entomology,
University of Georgia, Griffin, GA 30223,
tjenkin@griffin.uga.edu
- 2:35 092 Survey and Identification of Termites (Isoptera:
Rhinotermitidae) in Indiana
Changlu Wang, Department of Entomology,
Purdue University, West Lafayette, IN 47907,
Xuguo Zhou, Entomology and Nematology
Department, University of Florida, Gainesville,
FL 32611, Shujuan Li, Margaret
Schwinghammer, Gary Bennett, Department of
Entomology, Purdue University, West Lafayette,
IN 47907, wang85@purdue.edu
- 2:55 093 A Molecular Characterization of Nebraskan
Subterranean Termites Utilizing Genotypic
and Morphological Characters
Timothy Husen and Shripat T. Kamble.
Department of Entomology, University of
Nebraska, Lincoln, NE 68583,
timhusen5@yahoo.com
- 3:15 094 Metaflumizone: A New Insecticide for Structural
Pest Control from BASF
Richard Warriner, Albert Everson, Dawn
Calibeo-Hayes and Mark Coffelt, 26 Davis Dr.,
BASF Corp., Research Triangle Park, NC 27709,
warrinr@basf-corp.com
- 3:35 095 Novel Chemistry: Acetamiprid - The Use of
Equipment Augmented Inspections in the
Field Evaluations of F4688 50WP
Allan D. Dufoe and James Ballard, FMC Corp.
Annapolis, MD 21403, and Susan C. Jones,
Department of Entomology, The Ohio State
University, Columbus, OH 43210,
ALLAN_D_DUFOE@fmc.com
- 3:55 096 Advion: New Bait Products for the Professional
Pest Management Industry by DuPont
Professional Products
Clay Scherer, Phil A. Brown and Lionel S.
Sandell, 10980 Elkton Rd., Bldg. S210N-257,
DuPont Professional Products, Newark, DE
19711, Clay.W.Scherer@usa.dupont.com

- 4:15 097 A Preliminary Examination of Sulfuryl Fluoride Fumigation of Flour Mills
Wan-Tien Tsai and Linda Mason, Department of Entomology, 901 W. State St., Purdue University, West Lafayette, IN 47907, wtsai@purdue.edu
- 4:35 098 Vertical Distribution of Three Stored Product Insects in Laboratory Columns of Maize
Linda Mason, 901 W. State St., Purdue University, West Lafayette, IN 47907, Evelyn Canjura, Santa Tecla, El Salvador, lmason@purdue.edu
- 4:55 099 Academic and Corporate/Industry Research Philosophies - Similarities and Differences
Ty T. Vaughn, Monsanto Company, St. Louis, MO 63167, ty.t.vaughn@monsanto.com

Symposium

Advances in Bt Crop Stewardship Management

1:00 p.m. – 4:45 p.m.

Brickyard II

Organizer and Moderator:

John A. Glaser, US EPA, National Risk Management Research Laboratory, 26 W. King Dr., Cincinnati, OH 45268
GLASER.JOHN@EPA.GOV

- 1:00 100 Sustainability, Data Quality and Bt Crop Stewardship Management
John A. Glaser, USEPA, National Risk Management Research Laboratory, 26 W. King Dr., Cincinnati, OH, GLASER.JOHN@EPA.GOV
- 1:20 101 Techniques for Identification of Transgenic Corn using Hyperspectral Imagery
Kenneth L. Copenhaver, 2401 S. Neil St., Ste. 2, Institute for Technology Development, Champaign, IL 61820, John A. Glaser, 26 W. Martin Luther King Jr. Dr., EPA National Risk Management Research Laboratory, Cincinnati, OH 45268, Jon J. Fridgen, 2401 S. Neil St., Ste. 2, Institute for Technology Development, Champaign, IL 61820, Matthew Carroll, 26 W Martin Luther King Jr. Dr., EPA National Risk Management Research Laboratory, Cincinnati, OH 45268
kcopenhaver@ifttd.org

- 1:40 102 Remote Assessment of Chlorophyll Concentration for Bt and Non-Bt Corn Hybrid
Matthew Carroll, National Risk Management Research Laboratory, 26 W. King Dr., Cincinnati, OH 45268, John A. Glaser, USEPA, National Risk Management Research Laboratory, Cincinnati OH, CARROLL.MATTHEW@EPA.GOV
- 2:00 103 Remote Sensing Studies to Detect Damage from *Ostrinia nubilalis* (Lepidoptera: Crambidae) in Bt and Non-Bt corn
Richard L. Hellmich, Corn Insects & Crop Genetics Research Unit, Iowa State University, USDA-ARS, Ames, IA 50011, Dennis D. Calvin, 229C Ag Administration Bldg., Pennsylvania State University, University Park, PA 16802, Thomas E. Hunt, 57905 866 Road, Haskell Agricultural Lab, Concord, NE 68728, Ken Copenhaver, 2401 South Neil Street, Suite 2, Institute for Technology Development, Champagne, IL 61820, Thomas W. Sappington, Corn Insects & Crop Genetics Research Unit, Iowa State University, USDA-ARS, Ames, IA 50011, Joseph M. Russo, 369 Rolling Ridge Drive, ZedX, Inc., Bellefonte, PA 16823, John A. Glaser, 26 W. King Drive, Nation Risk Management Research Laboratory, USEPA, Cincinnati, OH 45268, rlhellmi@iastate.edu
- 2:20 **BREAK**
- 2:35 104 Assessing Genetic Variables and Methods Impacting Monitoring Resistance to Bt Proteins in *Ostrinia nubilalis*
Douglas V. Sumerford, USDA-ARS, Ames, IA, Blair Siegfried, Dept. of Entomology, University of Nebraska, Lincoln, NE, Brad Coates, Richard L. Hellmich and Leslie C. Lewis, USDA-ARS, Ames, IA, sumrford@iastate.edu
- 2:55 105 Ten Years of Monitoring for Bt Resistance in European Corn Borer: What We Know, What We Don't Know, and What We Can Do Better
Blair Siegfried, Department of Entomology, 202 Plant Industry Building, University Nebraska, Lincoln, NE 68583-0812, bsiegfri@unlnotes.unl.edu

- 3 :15 106 Detecting Bt Resistance Frequency in Tobacco Budworm and Bollworm in the Cotton Belt
Carlos A. Blanco, Craig Abel, Douglas Sumerford, Jeff Gore, and Omaththage Perera, 141 Experiment Station Road, USDA-ARS, Stoneville, MS 38776
- 3:35 107 Risk Assessment Techniques for Bt Crops
Michael Caprio, Department of Entomology, Box 9775, Mississippi State University, Mississippi State, MS 39762, mcaprio@entomology.msstate.edu
- 3 :35 108 Using Analytical Models of Evolutionary Theory to Extend the Application of Simulation Models for IRM
Charles A. Guse, University of Illinois, 1101 W. Peabody Dr., Urbana, IL 61801, Steven L. Peck, Brigham Young University, Provo, UT, David W. Onstad, University of Illinois, 1101 W. Peabody Dr., Urbana, IL 61801, cguse@uiuc.edu
- 3:55 109 Using Yield Monitor Data to Locate European Corn Borer Damage in Bt/nonBt Strip-planted Cornfields
Thomas W. Sappington, USDA-ARS, Corn Insects & Crop Genetics Research Unit, 109 Genetics Laboratory, c/o Insectary, Iowa State University, Ames, IA 50011 tsapping@iastate.edu
- 4:15 110 Calculation of Selection Intensity of Corn Rootworm Products: The Role of Environment and Density-dependent Mortality
Bruce Hibbert, USDA-ARS, 205 Curtis Hall, University of Missouri, Columbia, MO 65211-7020, Tom Clark, University of Missouri, and David Onstad, University of Illinois at Urbana-Champaign, IL, hibbardb@missouri.edu
- 4:35 111 Grower Implementation of IRM Requirements for Corn Borer Bt Corn in the United States
John Headrick, 800 N. Lindbergh Blvd., Monsanto Co., St Louis, MO 63167

Symposium
Another Series of Unfortunate Events?
Increasing Concerns about *Helicoverpa zea* Susceptibility
to Pyrethroids in the Midwestern U.S.

1:30 p.m. – 5:30 p.m.

Brickyard IV

Organizers and Moderators:

Bill Hutchison, Dept. of Entomology, 1980 Folwell Ave.,
University of Minnesota, St. Paul, MN 55108,
hutch002@umn.edu

and

Rick Weinzierl, Department of Crop Sciences,
AW-101 Turner Hall, University of Illinois, Urbana, IL 61801,
weinzier@uiuc.edu

- | | | |
|------|-----|--|
| 1:30 | 112 | Welcome and Introduction
Rick Weinzierl , University of Illinois |
| 1:35 | 113 | Evidence for Decreasing <i>H. zea</i> Susceptibility to Pyrethroid Insecticides in the Midwestern U.S
William D. Hutchison and Eric Burkness, 1980 Folwell Ave., University of Minnesota, St. Paul, MN 55108, Roger Leonard, LSU Ag Center, Louisiana State University, Winnsboro, LA 71295, Bryan Jensen, Dept. of Entomology, University of Wisconsin-Madison, Madison, WI 53706, Rick Weinzierl, Dept. of Crop Sciences, University of Illinois, Champaign, IL 61801, Tom Rabaey, General Mills-Green Giant, Le Sueur, MN 56058, Rick Foster, Dept. of Entomology, Purdue University, W. Lafayette, IN, Brian Flood, Del Monte Foods, Inc., Rochelle, IL, Robert Koch, 1980 Folwell Ave., University of Minnesota, St. Paul, MN 55108
hutch002@umn.edu |
| 2:05 | 114 | Potential Impact of Pyrethroid Resistance in <i>H. zea</i> to the Midwest Processing Sweet Corn and Snap Bean Industry
Brian R. Flood , 600 North 15th Street, Del Monte Foods, Inc, Rochelle, IL 61068-1002, Thomas Rabaey, General Mills, LeSueur, MN,
Brian.R.Flood@delmonte.com |

- 2:35 115 Monitoring for Pyrethroid Resistance in the Bollworm (*H. zea*) in Texas-2005. Suggestions for Resistance Monitoring and Collaborative Research
Patricia Pietrantonio, Terry Junek, and Texas Cooperative Extension Collaborators, Texas A&M University, College Station, TX, p-pietrantonio@tamu.edu
- 3:05 **BREAK**
- 3:15 116 *H. zea* Trends From the Northeastern U.S.: Suggestions Towards Collaborative Mapping of Migration and Pyrethroid Susceptibility
Shelby Fleischer, Doug Miller and Scott Isard, Pennsylvania State University, Greg Payne, University of West Georgia, Ames Herbert and Tom Kuhar, Virginia Tech, Joanne Whalen, University of Delaware, Galen Dively, University of Maryland and Joe Ingersohl Mahar, New Jersey IPM Programs, jf4@psu.edu
- 3:45 117 Alternatives to Pyrethroids for Management of *H. zea* in Sweet Corn, Seed Corn, Tomatoes, and Peppers
Richard A. Weinzierl, 1102 South Goodwin Avenue, University of Illinois, Urbana, IL 61801, weinzier@uiuc.edu
- 4:15 118 Perspectives from the Crop Protection Industry: Suggestions for Collaborative Resistance Management
Caydee Savinelli, Syngenta Crop Protection, Inc., 410 Swing Road Greensboro, NC 27409, caydee.savinelli@syngenta.com
- 4:45 119 Improving our Understanding of *H. zea* Migration in the Midwest: Assessment of Source Populations
David Changnon and Mike A. Sandstrom, 118 Davis Hall, Northern Illinois University, DeKalb, IL 60115, Brian R. Flood, 600 N. 15th Street, Del Monte Foods, Rochelle, IL 61068, t50dxcl@wpo.cso.niu.edu
- 5:15 Open Discussion: Future Resistance Management Research Needs, Recommendations
Speaker Panel with Audience

March 27, 2006
Monday Afternoon

Submitted Papers
Sections A, B, Ca, Cb, Cc, Cd, Cf, & D

1:00 p.m. – 4:27 p.m.
Brookridge

Moderators:

Christopher Pierce, 901 W. State Street,
Purdue University, W. Lafayette, IN 47907
cpierce@purdue.edu
and

Katherine Girsch, 901 W. State Street,
Purdue University, W. Lafayette, IN 47907

- | | | |
|------|-----|--|
| 1:00 | 120 | Making Jumbo Eggs: Confocal Analysis of Grasshopper Oogenesis
Kevin A. Edwards , Eleanor Murray and Doug Whitman, Dept. of Biological Sciences, Campus Box 4120, Illinois State University, Normal, IL 61790 |
| 1:12 | 121 | Identifying and Quantifying Crude Protein and Mineral Composition of Four Insect Species
Mark E. Headings and Shah Rahnema, 1328 Dover Road, The Ohio State University Agric. Tech. Institute, Wooster, OH 44691 |
| 1:24 | 122 | Impact of <i>Harmonia axyridis</i> and <i>Orius</i> spp. on Soybean Aphids in a Field Cage Experiment
Kelley J. Tilmon and Deirdre Prischmann, Plant Science Department, NPB 247, Box 2140-C, South Dakota State University, Brookings, SD 57006, Louis Hessler and Jonathan Lundgren, 2923 Medary Ave, USDA-ARS North Central Agricultural Research Laboratory, Brookings, SD 57006 |
| 1:36 | 123 | Predicting Risk and Benefit Prior to Release of Biological Control Agents for Invasive Plant Species: A Systems Modelling Approach
S. Raghu , 1816 S. Oak St., Illinois Natural History Survey, Champaign, IL 61820, K. Dhileepan and J. Scanlan, Queensland Department of Natural Resources, Queensland, Australia |

- 1:48 124 Prevalence of Psocids in Stored Wheat and Biology of *Lepinotus reticulatus* Enderlein (Psocoptera: Trogiidae)
George P. Opit and James E. Throne, USDA-ARS Grain Marketing and Production Research Center, 1515 College Avenue, Manhattan, KS 66502-2736
- 2:00 125 Correlations Between Plant Nutrients and Insect Herbivore Community Composition: Implications for Biological Control of Leafy Spurge (*Euphorbia esula*) in Illinois
Lori Kae Schwab, 1816 South Oak St., MC-652, University of Illinois at Urbana-Champaign, Champaign, IL 61820, Robert N. Wiedenmann, 319 Agricultural Building, University of Arkansas, Fayetteville, AR 72701, S. Raghu, 1816 South Oak St., MC-652, Illinois Natural History Survey, Champaign, IL 61820
- 2:12 126 Seasonal Phenology and Natural Enemies of the Squash Bug, *Anasa tristis* (DeGeer) on Summer Squash in Kentucky
Kimberly B. Decker and Kenneth V. Yeargan, S225 Ag Science Center North, University of Kentucky, Lexington, KY 40546
- 2:24 127 Where Do Drone Congregation Areas Form in the North Central Region of the U.S. in Areas of Intensive Agriculture?
Sarah Mack, Jeremy Wagnitz and Marion Ellis, 202 PI Building, Department of Entomology, Univ. of Nebraska, Lincoln, NE 68583-0816
- 2:36 128 The Role of PVYN:O in Sustaining the Current Potato Virus Epidemic in Minnesota Seed Potatoes
Jeffrey A. Davis, Edward B. Radcliffe and David W. Ragsdale, 1980 Folwell Ave., University of Minnesota-St. Paul, St. Paul, MN 55108
- 2:48 129 Exclusion or Coexistence of Competing Mosquitoes: The Role of Type of Detritus in Determining Distributions of Invasive Container Dwelling *Aedes*
Ebony G. Murrell and Steven A. Juliano, Campus Box 4120, Illinois State University, Normal, IL 61790-4120
- 3:00 **BREAK**

- 3:15 130 Triterpenoid Saponins Synergize Insecticidal Pea Peptides: Effect on Feeding and Survival of the Rice Weevil
Paul G. Fields, 195 Dafoe Rd., Agriculture and Agri-Food Canada, Winnipeg, MB, R3T 2M9, Wes G. Taylor, 107 Science Pl, Saskatoon Research Centre, Saskatoon, SK, S7N 0X2, Sheila Woods, Agriculture and Agri-Food Canada, 195 Dafoe Rd., Agriculture and Agri-Food Canada, Winnipeg, MB, R3T 2M9
- 3:27 131 Phylogenetic Structure of Katydid (Orthoptera: Tettigoniidae) Communities in Northeast Missouri Grasslands: A Macroevolutionary Approach
Katy H. Frederick and Jon C. Gering, 100 E. Normal, Truman State University, Kirksville, MO 63501
- 3:39 132 Do Black Flies Play Golf?
Kenneth P. Pruess, Department of Entomology, University of Nebraska, Lincoln, NE 68583-0816
- 3:51 133 Eastern Red Cedar Effects on American Burying Beetles (*Nicrophorus americanus*)
Thomas L. Walker and William W. Hoback, 905 W 25th Street, University of Nebraska at Kearney, Kearney, NE 68849
- 4:03 134 Efficacy of Elector (spinosid), Permethrin, and Pressurized Pyrethrum Plus Piperonyl Butoxide for Control of Cattle Lice
John B. Campbell, David J. Boxler, Rick N. Funston, Rex Davis and Jim R. Teichert, 461 West Univ. Dr. North Platte Ne. 69101, Univ. Nebraska, North Platte, NE 69101
- 4:15 135 Stable Fly Movement and Evaluation of Stable Fly Traps in Native Range Pastures in Nebraska
David J. Boxler and John B. Campbell, 461 West University Dr., University of Nebraska, WCREC, North Platte, NE 69101

March 27, 2006
Monday Evening

Poster Removal

5:00 p.m. – 7:00 p.m.
Brickyard V & VI

**A “Town Hall Forum” on Proposed ESA
Restructuring**

6:45 p.m. - 7:45 p.m.

Photo Salon

7:00 p.m. – 8:00 p.m.
Foxcreek

Poster Setup

8:00 p.m. – 10:00 p.m.
Brickyard V & VI

Linnean Games – Semi-Finals & Finals

8:00 p.m. – 10:00 p.m.

Gamesmaster: W. Wyatt, Hoback

University of Nebraska at Kearney
Brickyard 1 & II

March 28, 2006
Tuesday Morning

Registration
7:30 a.m. – 2:00 p.m.

Symposium
**Invasive Insect Pests of Woody Plant in the North Central
Branch: What You Need to Know and How to Prepare
for These New Invaders of Woody Landscape Plants and
Natural Resources in North America**

8:00 a.m. – 5:00 p.m.
Brickyard III

Organizers and Moderators:
Fredric Miller, Ph.D.

Department of Horticulture, Joliet Junior College
1215 Houbolt Road, Joliet, Illinois 60431
fmiller@jjc.edu
and

Christopher Pierce, Ph.D.

Department of Entomology, Purdue University
901 West State Street, West Lafayette, Indiana 47907
cpierce@purdue.edu

- | | | |
|------|-----|--|
| 8:00 | 137 | Introduction
Christopher Pierce , 901 W. State Street,
Purdue University, W. Lafayette, IN 47907 |
| 8:10 | 138 | Slow But Steady Wins the Race? European and
Asian Gypsy Moths in North America
Jodie A. Ellis , 901 W. State Street, Purdue
University, W. Lafayette, IN 47907
ellisj@purdue.edu |
| 8:40 | 139 | The War on the Asian Longhorned Beetle - Are
We Winning?
Gwen A. Servies , 3920 North Rockwell, USDA,
APHIS, PPQ, Chicago, IL 60618
Gwen.Servies@aphis.usda.gov |
| 9:10 | 140 | Hot Zone Strategies in Illinois
Jeffrey T. Coath , 2300 E Devon Ave, Suite 222,
USDA/APHIS/PPQ, Des Plaines, IL 60018
Jeffrey.T.Coath@aphis.usda.gov |

- 9:40 141 Future Invasive Forest Insects of Concern for the North Central Branch
Robert C. Venette, North Central Research Station (Annex), 1561 Lindig Street, United States Forest Service, St. Paul, MN 55108, Christopher M. Pierce, 901 West State Street, Room 131, Purdue University, West Lafayette, IN 47906, rvenette@fs.fed.us
- 10:10 **BREAK**
- 10:30 142 The Emerald Ash Borer: A Brief History and How Illinois is Monitoring for this New Threat to Ash Trees
Fredric Miller, Department of Horticulture, 1215 Houbolt Road, Joliet Junior College, Joliet, IL 60431, fmiller@jjc.edu
- 11:00 143 The Illinois EAB Readiness Plan
Edith Makra, The Morton Arboretum, Lisle, IL 60352, emakra@mortonarb.org
- 11:30 144 The Green Half Mile: Status and Story of Emerald Ash Borer in Indiana
Robert D. Waltz, 402 West Washington, Room W-290, IN Department of Natural Resources, Indianapolis, IN 46204, bwaltz@dnr.IN.gov
- 12:00 **LUNCH BREAK**
- 1:00 145 The Host with the Most: EAB Host Range and Preference Studies
Andrea C. Anulewicz, Deborah G. McCullough and David A. Cappaert, 243 Natural Science Building, Michigan State University, E. Lansing, MI 48824, agiusand@msu.edu
- 1:25 146 Interspecific Variation in Ash Resistance to Emerald Ash Borer
Eric J. Rebek, 243 Nat. Sci. Bldg., Michigan State University, East Lansing, MI 48864, Daniel A. Herms, 204 Thorne, Ohio Agricultural and Research Development Center, Ohio State University, Wooster, OH 44691, David R. Smitley, 243 Nat. Sci. Bldg., Michigan State University, East Lansing, MI 48864, Pierluigi Bonello, 483C Kottman, 2021 Coffey Rd., Ohio State University, Columbus, OH 43210, Donald F. Cipollini, 208 Biological Sciences Bldg., Wright State University, Dayton, OH 45435, rebek@msu.edu

- 1:50 147 Modeling Dispersal and Spread of Emerald Ash Borer Populations Beyond the Core Infestation
Nathan W. Siebert and Deborah G. McCullough, 243 Natural Science Building, Michigan State University, East Lansing, MI 48824-1115, Andrew M. Liebhold, 180 Canfield Street, USDA Forest Service, Northeastern Research Station, Morgantown, WV 26505, Frank W. Telewski, 166 Plant Biology Building, Michigan State University, East Lansing, MI 48824-1312, siebert1@msu.edu
- 2:15 148 Emerald Ash Borer and Trap Trees
Deborah G. McCullough, 243 Natural Science Building, Michigan State University, East Lansing, MI 48824, Therese M. Poland, 220 Nisbet Building, USDA Forest Service, East Lansing, MI 48824, David Cappaert, 243 Natural Science Building, Michigan State University, East Lansing, MI 48824, mccullo6@msu.edu
- 2:40 **BREAK**
- 3:00 149 Trapping and Detection of Emerald Ash Borer: Identification of Stress-induced Volatiles and Tests of Attraction in the Lab and Field
Therese M. Poland, 1407 S. Harrison Rd., Rm. 220, USDA Forest Service, E. Lansing, MI 48823, Cesar Rodriguez-Saona, Michigan State University, Department of Entomology, East Lansing, MI 48824, Gary Grant, Linda Buchan and Peter de Groot, Canadian Forest Service, Sault Ste. Marie, ONT, James Miller and Lukasz Stelinski, Michigan State University, Department of Entomology, East Lansing, MI 48824, Deborah G. McCullough, Michigan State University, Departments of Entomology and Forestry, East Lansing, MI 48824, tpoland@fs.fed.us

- 3:25 150 Management Options for the Emerald Ash Borer in Forested Ecosystems: Biological and Microbial Control
Leah S. Bauer, 220 Nisbet Bldg, 1407 S. Harrison Rd. , USDA Forest Service, East Lansing, MI 48823, Houping Liu, Michigan State University, 220 Nisbet Bldg, 1407 S. Harrison Rd. Department of Entomology, East Lansing, MI 48823, LSBAUER@msu.edu
- 3:50 151 The Impact of Emerald Ash Borer in Forests of the Huron Rivers Watershed
Annemarie Smith, Environmental Science Graduate Program, The Ohio State University, 318 W. 12th Street, 400 Aronoff Lab, Columbus, OH 43214, Daniel A. Herms, Department of Entomology, Ohio Agricultural Research and Development Center, The Ohio State University, 1680 Madison Avenue, Wooster, OH 44691, Robert P. Long, USDA Forest Service, Northeastern Research Station, 359 Main Road, Delaware, OH 43015, smith.3746@osu.edu
- 4:15 152 Tribal and First Nation Participation in Invasive Species Science and Management
Nick J. Reo, 11 Agriculture Hall, Michigan State University, East Lansing, MI 48824-1039, reo@msu.edu
- 4:40 **Wrapup**

Symposium
Tick-borne Disease: Ecology and Prevention

Brickyard IV
8:00 a.m. – 5:00 p.m.

Organizer and Moderator:
Gabrielle Dietrich

Centers for Disease Control and Prevention
Division of Vector-Borne Infectious Diseases
Vector Ecology and Control Laboratory
P.O. Box 2087, Fort Collins, CO 80521
eid7@cdc.gov

- 8:00 153 Repellent Activity of Fractioned Compounds from Alaska Yellow Cedar (*Chamaecyparis nootkatensis*) Essential Oil against Nymphal *Ixodes scapularis*

Gabrielle Dietrich and Marc C. Dolan, Division of Vector-Borne Infectious Diseases, PO Box 2087, Centers for Disease Control and Prevention, Fort Collins, CO 80522, Javier Peralta-Cruz, National School of Biological Sciences, Department of Organic Chemistry, Instituto Politecnico Nacional, Mexico, Mexico, 11340 D. F., Jason Schmidt, Joseph Piesman and Rebecca J. Eisen, Division of Vector-Borne Infectious Diseases, PO Box 2087, Centers for Disease Control and Prevention, Fort Collins, CO 80522, Joseph J. Karchesy, Department of Forest Products, 119 Richardson Hall, Oregon State University, Corvallis, OR 97331-5751 eid7@cdc.gov

- 8:20 154 *Beauveria bassiana*: Acaricidal Activity of a Fungus Against an Ixodid Tick in the Laboratory and Field
Glen R. Needham, Aronoff Research Lab, Acarology Laboratory, Department of Entomology, 318 W. 12th Avenue, The Ohio State University, Columbus, OH 43210, Ken R. Craddock, Eastern New Mexico University, 1500 S. Ave. K, Station 33, Department of Biological Sciences, Portales, NM 88130, needham.1@osu.edu
- 8:40 155 Origins and Expansion of *Lyme borreliosis* in the American Upper Midwest
Jean I. Tsao and Sarah A. Yaremych-Hamer, 13 Natural Resources Bldg., Michigan State University, E. Lansing, MI 48824, Graham J. Hickling, Department of Forestry, Wildlife, and Fisheries, 274 Ellington Plant Science Bldg., University of Tennessee, Knoxville, TN 37996-4563, tsao@msu.edu
- 9:00 156 Creeping Along: Increased Distribution of *Ixodes scapularis* in Illinois
Curt Colwell and Linn D. Haramis, 525 W. Jefferson, IDPH Environmental Health Division, Springfield, IL 62761, CCOLWELL@IDPH.STATE.IL.US

- 9:20 157 Towards a National Lyme Disease Risk Map
Graham J. Hickling, 274 Ellington Plant Sciences Bldg, University of Tennessee, Knoxville, TN 37996-6173, Jean I. Tsao and Sarah I. Yaremych, 13 Natural Resources Bldg, Michigan State University, East Lansing, MI 48824-1222, hicklin3@msu.edu
- 9:40 **Questions**
- 9:50 **BREAK**
- 10:10 158 Regulated Expression of *Borrelia burgdorferi* Proteins During Infection of Ticks and Mammals
Tomasz Bykowski and Brian Stevenson, 800 Rose St. MS-415, University of Kentucky College of Medicine, Lexington, KY 40536-0298, bstev0@uky.edu
- 10:30 159 *Anaplasma phagocytophilum* and *Babesia odocoilei* in *Ixodes scapularis* Ticks in Indiana
Robert R. Pinger, Fresia E. Steiner, Dept. of Physiology & Health Science, 2000 University Avenue, Ball State University, Muncie, IN 47306-0510, Keith Clay and Clay Fuqua, Department of Biology, Indiana University, Jordan Hall 142, Third and Hawthorne St., Bloomington, IN 47405-6801, rpinger@bsu.edu
- 10:50 160 Analysis of *Anaplasma phagocytophilum* Adhesins that Mediate Attachment to Neutrophil Surfaces
Jason A. Carlyon, Dexter V. Reneer, Sarah A. Kearns and Jonathan Sims, Dept. Microbiology, Immunology, MN458A Medical Center, University of Kentucky College of Medicine, Lexington, KY 40536-0298, Tadayuki Yago and Rodger P. McEver, Cardiovascular Biology Research Program, Oklahoma Medical Research Foundation, Oklahoma City, OK jason.carlyon@uky.edu
- 11:10 161 Microbial Communities of *Amblyomma americanum*, the Lone Star Tick
Keith Clay, Clay Fuqua, Michael Wade, Curtis Lively, Nate Grindle, Olga Klyachko and James Ford, Dept. of Biology, Jordan Hall 159, Indiana University, Bloomington, IN 47405 clay@indiana.edu

- 11:30 – 11:45 **Questions**
- 11:45 – 1:00 **LUNCH**
- 1:00 163 An Ecological Study of *Lyme borreliosis* in Southern Michigan: Invading Ticks, Silent Cycles, and Emerging Disease
Sarah A. Yaremych-Hamer, Jean I. Tsao, Department of Fisheries and Wildlife, 13 Natural Resources Bldg., Michigan State University; Edward D. Walker, Department of Microbiology and Molecular Genetics, 6154 Biomedical Physical Science Building, Michigan State University, East Lansing, MI 48824, Graham J. Hickling, Department of Forestry, Wildlife, and Fisheries, 274 Ellington Plant Science Bldg., University of Tennessee, Knoxville, TN 37996, yaremych@msu.edu
- 1:20 164 Quantifying *Borrelia burgdorferi* in Host-seeking *Ixodes scapularis* Ticks Along an Invasion Gradient Using Real-time Quantitative PCR
Pamela L. Roy, 13 Natural Resources, Michigan State University, East Lansing, MI 48823 roypamel@msu.edu
- 1:40 165 Expression of Outer Surface Protein Genes of *Borrelia burgdorferi* in Questing and Fed *Ixodes scapularis* Ticks
Fresia Steiner and Robert R. Pinger, Physiology and Health Science, 2000 University Avenue, Ball State University, Muncie, IN 47306-0510, Keith Clay and Clay Fuqua, Department of Biology, Jordan Hall 142, Third and Hawthorne St., Indiana University, Bloomington, IN 47405 fsteiner@bsu.edu
- 2:00 **BREAK**
- 2:20 166 Spatiotemporal Analysis of *Ixodes scapularis*-infested White-tailed Deer on the Illinois River
Manuel R. Cortinas, 1971 Commonwealth Ave, University of Minnesota, St. Paul, MN 55108 cort0004@umn.edu

- 2:40 167 *Ehrlichia chaffeensis* and *Rickettsia amblyomma* in *Amblyomma americanum* Ticks in Indiana
Stephanie Dearth and Robert R. Pinger, Dept. of Physiology & Health Science, 2000 University Avenue, Ball State University, Muncie, IN 47306-0510, Keith Clay and Clay Fuqua, Department of Biology, Indiana University, Jordan Hall 142, Third and Hawthorne St., Bloomington, IN 47405-6801, sdearth@bsu.edu
- 3:00 168 Experimental Acquisition of *Ehrlichia canis* by *Rhipicephalus sanguineus* Fed on Antibiotic Treated Dogs
John J. Schaefer, William Bremer, Jonathan Kahn, Glen Needham and Yasuko Rikihisa, 318 West 12th Ave., 400 Aronoff Laboratories, The Ohio State University, Columbus, OH 43210, Sidney Ewing, Department of Veterinary Pathobiology, Oklahoma State University, Stillwater, OK 74078, Roger W. Stich, Department of Veterinary Pathobiology, University of Missouri, Columbia, MO 65211, schaefer.168@osu.edu
- 3:20 169 Relationship Between a Common Soil Fungus, *Scopulariopsis brevicaulis*, and the American Dog Tick, *Dermacentor variabilis*
Joshua Benoit, Department of Entomology, 400 Aronoff Laboratory, 318 West 12th Avenue, Ohio State University, Columbus, OH 43210, Jay A. Yoder, Eric J. Rellinger, and Jacob T. Ark, Department of Biology, Wittenberg University, Springfield, OH 45501, and Lawrence W. Zettler, Department of Biology, The Illinois College, Jacksonville, IL, benoit.8@osu.edu
- 3:40 – 5:00 **Open for discussion/business meeting**

Submitted Papers

Sections F & Fa

8:30 a.m. – 11:00 a.m.

Brookridge

Moderator: Ed King,

Dow AgroSciences, Indianapolis, IN

- | | | |
|------|-----|--|
| 8:30 | 180 | Evaluation of Clothianidin as a Seed-applied Insecticide for Sugar Beets
Jeffrey L. Daniels , Raymond P. Knake and Michael R. Schwarz, 2 T. W. Alexander Dr., Bayer Crop Science, Research Triangle Park, NC 27709 |
| 8:42 | 181 | Efficacy of Insecticides for Management of the Multicolored Asian Lady Beetle on Wine Grapes under Field and Laboratory Conditions
Tederson L. Galvan , Eric C. Burkness and William D. Hutchison, 219 Hodson Hall, 1980 Folwell Ave., University of Minnesota, Saint Paul, MN 55108 |
| 8:54 | 182 | Monitoring Cucumber Beetles (Coleoptera: Chrysomelidae) on Muskmelons
Wai-Ki F. Lam , 4369 North Purdue Road, Purdue University, Vincennes, IN 47591 |
| 9:06 | 183 | 2005 Field Performance of Herculex® RW and Herculex® XTRA: Novel Bt Products for Corn
Jeff Edwards , Jon Babcock, Jim Bing, Gary Thompson and Ed King, 9330 Zionsville Road, Dow AgroSciences, Indianapolis, IN 46268 |
| 9:18 | 184 | Differences Between Neonicotinoid Seed Applied Insecticides and Their Effects on Corn Pest Control
Michael R. Schwarz , Ray Knake and Jeff Daniels, 2 T.W. Alexander Drive, Bayer CropScience, Research Triangle Park, NC 27709 |
| 9:30 | 185 | Agronomic Factors Affecting Corn Rootworm Damage
Ray P. Knake and Bill Striegel, Bayer CropScience |

- 9:42 186 Utilizing a “Systems-Based” Approach for Evaluating Transgenic Pest Management Alternatives
Clinton D. Pilcher, Todd A. DeGooyer, Robert J. Starke and Richard M. Cole, 800 N. Lindbergh Blvd, Monsanto Company, St. Louis, MO 63167
- 9:54 187 Identifying the Potential Threat of Corn Rootworm Variants to First Year Corn Fields
Clinton D. Pilcher, Todd A. DeGooyer, John J. Jansen and David J. Rhylander, 800 N. Lindbergh Blvd, Monsanto Company, St. Louis, MO 63167
- 10:06 188 Corn Rootworm IPM Performance Guarantee
Thomas A. Green, 1914 Rowley Ave, IPM Institute of North America Inc., Madison, WI 53726, Stanley Buman and Thomas Buman, 1238 Heires Ave, Agren Inc., Carroll, IA 51401, Brian Brandt, 50 W. Broad St., Suite 3250, American Farmland Trust, Columbus, OH 43215
- 10:18 **Discussion**

Symposium
Mosquitoes in the Midwest:
Distributions, Ecology and Disease.

Brickyard II
1:00 p.m. – 5:00 p.m.

Organizers and Moderators:

Donald A. Yee, Department of Biological Sciences, Illinois State
University, Normal IL 61790-4120, dayee@ilstu.edu
and

Linn D. Haramis, Illinois Department of Public Health Division of
Environmental Health, 525 W. Jefferson St., Springfield, IL 62761,
lharamis@idph.state.il.us

- 1:00 170 The Tiger Has Invaded Peoria, *Aedes albopictus*
in Peoria, IL. 1997-2005
Jack A. Swanson, Illinois Department of Public
Health, Peoria Regional Office, 5415 N.
University, Peoria, IL 61614,
jswanson@idph.state.il.us
- 1:22 171 Settling in for a Stay: West Nile Virus in Illinois,
2005
Linn D. Haramis and Curt E. Colwell, 525 W.
Jefferson St., IL Department of Public Health,
Springfield, IL 62761, lharamis@idph.state.il.us
- 1:44 172 *Wolbachia* Infections in Mosquitoes: The *Culex*
Complex Gets More Complex
Stephen Dobson, Department of Entomology,
S-225 Ag. Science Center North, University of
Kentucky, Lexington, KY 40546,
sdobson@uky.edu
- 2:06 **BREAK**
- 2:16 173 Oviposition Behavior and Interaction of
Ochlerotatus japonica with Native Species
Michael C. Slamecka, 15500 Dixie Highway, PO
Box 1030, South Cook County MAD, Harvey, IL
60426-7030, Richard C. Falco and Thomas J.
Daniels, Vector Ecology Laboratory, Louis Calder
Center, PO Box 887, Fordham University,
Armonk, NY 10504
mosquitomike@hotmail.com

- 2:38 174 Regional Resurgence of West Nile Virus in Illinois, 2005
Richard L. Lampman, Nina M. Krasavin, Michael P. Ward, Weidong Gu and Robert J. Novak, Medical Entomology Program, CEE, 1816 South Oak, Illinois Natural History Survey, Champaign, IL 61820, richlamp@uiuc.edu
- 3:00 175 Extreme Drought Influences Affecting the Resurgence of West Nile Virus Activity in Northwestern Cook County, Illinois
Michael L. Szyska, 147 W Hintz Rd., Northwest Mosquito Abatement District, Wheeling, IL 60090, mszyska@nwmadil.com
- 3:22 176 *Wolbachia* Infection Dynamics and Associated Fitness Costs in *Aedes* Mosquitoes
Corey L. Brelsfoard and Stephen L. Dobson, S225 Ag. Science North, Entomology Department, University of Kentucky, Lexington, KY 40546, coreyb1979@yahoo.com
- 3:44 **BREAK**
- 3:54 177 Effects of Bats on Mosquito Oviposition
Michael H. Reiskind, 200 9th Street, Florida Medical Entomology Laboratory, Vero Beach, FL 32962, Matt A. Wund, Department of Biology, 950 Main Street, Clark University, Worcester, MA 01610, mhayr@ufl.edu
- 4:16 178 Avian and Mosquito West Nile Virus Infection in Greater Chicago Illinois During the 2005 Epizootic
Gabe L. Hamer and Edward D. Walker, Dept. of Microbiology and Molecular Genetics, 6169 Biomedical Physical Sciences, Michigan State University, East Lansing, MI 48824, Jeffrey D. Brawn, Scott R. Loss, Marilyn O. Ruiz, Tony L. Goldberg, Anna M. Schotthoefer, William M. Brown, Robert J. Smith, Emily R. Wheeler and Uriel D. Kitron, Department of Pathobiology, 2001 South Lincoln Avenue, University of Illinois, Urbana, IL 61802, gghamer@msu.edu

- 4:38 179 Detritus Type Affects Intra- and Interspecific Competition of *Ae. albopictus* and *Oc. triseriatus*
Donald A. Yee, Banugopan Kesavaraju and Steven A. Juliano, Department of Biological Sciences, Illinois State University, Normal, IL, 61790-41204, dayee@ilstu.edu

March 28, 2006
Tuesday
Submitted Posters
All Sections

8:00 a.m. – 5:00 p.m.

Brickyard V & VI

(Authors present 4:00 p.m. – 5:00 p.m.)

- D189 A Preliminary Biogeographic Analysis of Noctuoidea in the Northern Great Plains
Gerald M. Fauske, Hultz Hall, 1300 Albrecht Blvd., North Dakota State University, Fargo, ND 58105
- D190 Eicosanoids Influence Plasmotocyte Spreading
Hyeog S. Kwon and Jon S. Miller, Northern Illinois University, DeKalb, IL 60115, David W. Stanley, 1503 S. Providence, Research Park, USDA/ARS Biological Control Research Laboratory, Columbia, MO 65203
- D191 Late-onset Calorie Restriction Can Enhance Longevity Without Reducing Levels of Hemolymph Storage in Grasshoppers
John D. Hatle, Sean M. Wells, Iris C. Allen, Leigh E. Fuller, Stephen Melnyk and John Quattrochi, 4567 St. Johns Bluff Rd. S., Univ of North Florida, Jacksonville, FL 32224
- D192 Inheritance of Candidate Cry1Ab Resistance Genes in *Ostrinia nubilalis*
Brad S. Coates, Douglas V. Sumerford, Richard L. Hellmich, James C. Robbins and Leslie C. Lewis, 106 Genetics Lab, Iowa State University, USDA-ARS, Corn Insects & Crop Genetics Research Unit, Ames, IA 50010
- D193 Best Management Practice for Leafy Spurge on the Spirit Lake Dakota Nation Tribe Reservation
Denise L. Olson, 202 Hultz Hall, Entomology Dept., North Dakota State University, Fargo, ND 58105, Kevin Sedivec, Animal and Range Science, Hultz Hall, North Dakota State University, Fargo, ND 58105, Ankush Joshi, 202 Hultz Hall, Entomology Dept., North Dakota State University, Fargo, ND 58105, Steve Cates, 3521 Highway

1804 South, Cates Earth Science Technologies, Inc.,
Bismarck, ND 58504, Silas Ironheart, P.O. Box 359, Spirit
Lake Dakota Nation Tribe EPA, Fort Totten, ND 58335

- D194 Abundance of Native and Non-Native Coccinellids in
Diverse Michigan Habitats
Alissa M. Berro, Mary M. Gardiner, Alejandro C.
Costamagna, Manuel Colunga-Garcia and Stuart H. Gage,
208 Manly Miles Building, Michigan State University, East
Lansing, MI 48824
- D195 Problems in Manipulating RRD for *Rosa multiflora*
Biological Control
Laura C. Jesse, 4 Insectary, Iowa State university, Ames,
IA 50011, John J. Obrycki, University of Kentucky,
Lexington, KY, Kirk K. Moloney, Iowa State University,
Ames, IA 50011
- D196 Western Corn Rootworm Abundance, Interfield
Movement, and Injury in Rotated Crops
Joseph L. Spencer and Eli Levine, Illinois Natural History
Survey, 1816 S. Oak St., Center for Ecological Entomology,
Champaign, IL 61820-6960, Scott A. Isard, Penn State
University, 0205 Buckhout Laboratory, Department of
Plant Pathology, University Park, PA 16802
- D197 The Impact of Trichogramma, *Beauveria bassiana*,
Transgenic Bt Sprays and Spinosad on the Lepidopteran
(Crambidae) Cereal Stalk Borer (*Ostrinia nubilalis*)
Rostern N. Tembo, Bowling Green State University,
Biological Sciences Department, Bowling Green State
University, Bowling Green, OH 43403
- D198 Do Field Applications of Methoxyfenozide Affect the
Responsiveness of Wild Male Codling Moth to
Pheromone and Female-Baited Traps?
Amanda K. Franklin and Bruce A. Barrett, 1-87
Agricultural Building, University of Missouri,
Columbia, MO 65211
- D199 Sexually Dimorphic Basitarsae in *Diabrotica* and
Cerotoma spp. (Coleoptera: Chrysomelidae)
Bryan W. French, 2923 Medary Ave., USDA, ARS, NCARL,
Brookings, SD 57006, Leslie Hammack, 13786 Thomas
Place, Keystone, SD 57751

- D200 The Vanessa Migration Project: Tracking Vanessa Butterfly Migration and Distribution Through Citizen Scientist Reports and Interactive Mapping
Royce J. Bitzer, Patrick D. Brown and Pipat Reungsang, Department of Entomology, 110 Insectary, Iowa State University, Ames, IA 50011-3140, ISU Geographic Information Systems Facility, 218 Durham Center, Iowa State University, Ames, IA 50011-2251
- D201 Plasticity and Canalization of Life-history Traits in the Chemically Defended Grasshopper, *Romalea microptera*
Benjamin J. Taylor, 546 Russell Labs, 1630 Linden Dr., University of Wisconsin-Madison, Madison, WI 53706, Douglas W. Whitman, Department of Biology, Behavior, Ecology, Evolution and Systematics Group, Illinois State University, Normal, IL 61790-4120
- D202 Host Selection and Pheromone Production Strategies in the Southern Pine Beetle
Deepa S. Pureswaran, Biological Sciences, Dartmouth College, Hanover, NH 03755, Brian T. Sullivan, USDA Forest Service, Southern Station, Pineville, LA 71360, Matthew P. Ayres, Biological Sciences, Dartmouth College, Hanover, NH 03755
- D203 A Comparison of Oviposition in a Desert vs. a Marsh Grasshopper
Timothy W. Stauffer and Douglas W. Whitman, 4120 Biological Sciences, Illinois State University, Normal, IL 61790-4120
- D204 Abundance and Community Structure of Ground Beetles (Coleoptera: Carabidae) in Transgenic Rootworm Bt Corn
Royce J. Bitzer and Marlin E. Rice, Department of Entomology, 103 Insectary, Iowa State University, Ames, IA 50011-3140
- D205 Inheritance of Resistance to a Bt Protein in a Laboratory-selected Colony of *Ostrinia nubilalis*
Douglas V. Sumerford, James Robbins, Kate Reardon and Leslie C. Lewis, USDA-ARS, Ames, IA
- D206 Grasshopper-Tachinid Population Dynamics
Douglas W. Whitman and Fusun Akman, Department of Mathematics, Illinois State University, Normal, IL 61790-4520

- D207 Insect Thermoregulation: Effects of Wind Speed and Body Size
Brian Hernandez, Araceli Paz, Dexter Angeles, Joseph Staples and Douglas W. Whitman, Department of Biological Sciences, Illinois State University, Normal, IL 61790-4120
- D208 Mate Choice in a Male Grasshopper
Matthew Ehrich, Jason Siegler, Peter Keorpes, Ryan Vanesh, Kevin Huizenga, Joseph Staples and Douglas W. Whitman, Department of Biological Sciences, Illinois State University, Normal, IL 61790-4120
- D209 Grasshoppers Orient to Plant Odors in a Wind Tunnel
Jeff Helms, Carrie Booth, Jessica Rivera, Jason Siegler, Shannon Wuellner and Douglas W. Whitman, Department of Biological Sciences, Illinois State University, Normal, IL 61790-4120
- D210 Plasticity in the Length of the Ovulation-Oviposition Interval in a Grasshopper
Carissa Mefferd, William Hatch, Robert Burries and Douglas W. Whitman, Department of Biological Sciences, Illinois State University, Normal, IL 61790-4120
- D211 Molting Inhibits Feeding in a Grasshopper
Cassandra Rackauskas, Jacqueline Koranda, Shawn Allen, Robert Burries, Kristin Demski, Lynetta Gore, Thomas Jung, Kathleen Kane, Candice Subatis, Bryan Urban and Douglas W. Whitman, Department of Biological Sciences, Illinois State University, Normal, IL 61790-4120
- D212 Sex and the Single Grasshopper: Do Males Prefer Virgins?
Michelle Toelle, Gordon Shick, Andrew Jackson, Allison Daniels, Vonique Ford, Stefanie Gagliano, Rochelle Knox, Chris Kummer and Douglas W. Whitman, Department of Biological Sciences, Illinois State University, Normal, IL 61790-4120
- D213 Do Male *Anastrepha suspensa* Copulatory Behaviors Influence Female Sperm Storage Patterns?
Ann H. Fritz, Biological Sciences, 600 Lincoln Ave, Eastern Illinois University, Charleston, IL 61920, Holly J. Wallace, Math & Science Division, 5001 Lake Land Blvd., Lake Land College, Mattoon, IL 61938

- D214 Temperature Thresholds and Effects in a Grasshopper
Adam Weyhrich, Jordan Anglen, Michael Breen, Mindy Brown, Kristin Demski, Joseph Gaziano, Peter Thomas and Douglas W. Whitman, Department of Biological Sciences, Illinois State University, Normal, IL 61790-4120
- D215 Potential Use of SoyScreen in Formulations of *Beauveria bassiana* for UV Protection
Robert W. Behle, David L. Compton and Joseph A. Laszlo, 1815 N. University Ave., USDA-ARS-NCAUR, Peoria, IL 61604, David I. Shapiro-Ilan, 21 Dunbar Road, USDA-ARS, SAA, Byron, GA 31008
- D216 Seed Mixtures and Western Corn Rootworm IRM
David W. Onstad, 1201 S. Dorner Dr., University of Illinois, Urbana, IL 61801
- D217 Genetic Variation and Inheritance of Diapause Induction in Two Distinct Voltine Populations of the European Corn Borer, *Ostrinia nubilalis* (Hubner) (Lepidoptera: Crambidae)
Cengiz Ikten, Dumlupinar Bulvari, Akdeniz Universitesi Ziraat Fakultesi, Bitki Koruma Bolumu, University of Akdeniz, Antalya, NA, 07070, John E. Foster, Department of Entomology, 312F Plant Industry- East Campus, IANR- University of Nebraska-Lincoln, Lincoln, NE 68583-0816, Steven R. Skoda, Department of Entomology, 305 Plant Industry-East Campus, IANR- University of Nebraska-Lincoln, Lincoln, NE
- D218 Biodiversity, Seasonality and Species Dominance of Nocturnal Longhorned Beetles in a Temperate Hardwood Forest
Jeffrey D. Bradshaw and Marlin E. Rice, 103 Insectary, Iowa State University, Ames, IA 50011
- D219 Eleven Microbials Tested per os against Grasshopper – Pathogenic Microsporidian (Protozoa: Microsporidia)
Sajahan Johny, ECIL Road, Centre for DNA Fingerprinting and Diagnostics, Nacharam, Hyderabad, India, Carlos Lange, Center for Parasitological Studies (CEPAVE), La Plata National University, Conicet, La Plata, Argentina, Leellen Solter, 607 E. Peabody Dr., Illinois Natural History Survey, Urbana, IL 61801, Amber Merisko and Douglas W. Whitman, Department of Biological Sciences, Illinois State University, Normal, IL 61790-4120

- D220 Identification, Distribution and Ecology of Malaria Mosquitoes on the Eastern Slopes of the Andes Mountains, Bolivia
Gary N. Fritz, Biological Sciences, 600 Lincoln Ave, Eastern Illinois University, Charleston, IL 61920, Corey L. Brelsfoard, Department of Entomology, University of Kentucky, Lexington, KY 40546-0091, Reema Paudel, Psychiatry, Campus Box 8134, Washington University, St. Louis, MO 63130
- D221 Using Spring Survival Estimates to Predict Southwestern Corn Borer Levels
Ric T. Bessin, S-225 Ag. Sci. North, University of Kentucky, Lexington, KY 40546-0091, Douglas W. Johnson, UK REC Princeton, P.O. Box 469, University of Kentucky, Princeton, KY 42445-0469, Jim Herbek, Department of Plant and Soil Sciences, P.O. Box 469, Princeton, KY 42445-0469, and Patty Lucas, UK REC Princeton, P.O. Box 469, University of Kentucky, Princeton, KY 42445-04
- D222 Flight Activity of Western Bean Cutworms in Central Nebraska
Robert J. Wright, Dept. of Entomology, 202 Plant Industry Bldg., Univ. of Nebraska, Lincoln, NE 68583-0816, Terry A. DeVries, University of Nebraska-Lincoln, South Central Ag Laboratory, Clay Center NE 68933-0066, John B. Campbell, University of Nebraska-Lincoln, West Central Research & Extension Center, North Platte, NE 69101-7756, and Andrew P. Christiansen, University of Nebraska-Lincoln, Cooperative Extension, Aurora NE 68818-0308
- D223 Herculex® Family of Corn Insect Protection Traits: Commercial and Research Updates
Ed King, Jeff Edwards, Jon Babcock, Paul Neese and Gary Thompson, 9330 Zionsville Road, Dow AgroSciences, Indianapolis, IN 46268
- D224 Partial Budget Analysis of Input Trait Systems for Corn Production
Paula Davis, Steven Elmore, Michael DeFelice and Murdick J. McLeod, 3850 N. 100 E., Pioneer Hi-Bred International, Windfall, IN 46076
- D225 Herculex™ RW and Herculex™ XTRA Wide Area Efficacy and Grain Yield Evaluations
Murdick J. McLeod, Paula Davis, Jan Jackson and Steve Paszkiewicz, 7100 NW 70th Avenue, Pioneer Hi-Bred International, Johnston, IA 50131

- D226 Integrated Pest Management in Floriculture: How Important is Sanitation in Reducing Pest Problems?
Brian K. Hogendorp and Raymond A. Cloyd, 1101 West Peabody Drive, 384 National Soybean Research Laboratory, University of Illinois, Urbana, IL 61801
- D227 The Effects of Azadirachtin on Different Developmental Stages of Western Flower Thrips, *Frankliniella occidentalis* Pergande (Thysanoptera:Thripidae)
Huseyin Gocmen, Nurdan Topakci and Cengiz Ikten, Akdeniz Universitesi Ziraat Fakultesi , Bitki Koruma Bolumu, University of Akdeniz, Antalya, NA, 07070
- D228 Seasonality of the Sugar Beet Root Aphid in the Western Great Plains
John A. Thomas and Gary L. Hein, 4502 Ave I, University of Nebraska, Scottsbluff, NE 69361, Sue Blodgett, Johnson Hall, Montana State University, Bozeman, MT 59717, H. R. Lawson, Science 117, 1000 Main Street, Chadron State College, Chadron, NE 69337
- D229 Soybean Aphid in Kansas: Occurrence, Current Status and Educational Efforts
Randall A. Higgins, Phillip E. Sloderbeck, Robert J. Whitworth, John C. Reese, Charles M. Smith, William T. Schapaugh and John Diaz-Montano, 123 West Waters Hall, Department of Entomology, Kansas State University, Manhattan, MD 66506
- D230 You Be the Judge: Are These Refuge Arrangements Appropriate?
Phillip E. Sloderbeck and Lawrent L. Buschman, 4500 E. Mary St., Kansas State University, Garden City, KS 67846
- D231 Neonicotinoid Seed Treatments in Corn: Measuring the Performance Against Black Cutworms and White Grubs
Marlin E. Rice, David L. Dorhout and Jeffrey D. Bradshaw, 103 Insectary, Iowa State University, Ames, IA 50011
- D232 Effects of Second Generation European Corn Borer (Lepidoptera: Crambidae) Injury on Irish Potato Physiology, Yield, and Quality
William W. Hoback, Thomas E. Hunt, Leon G. Higley, Jesse R. Ziems and Adeney Bueno, 202 Plant Industry Building, University of Nebraska Lincoln, Lincoln, NE 68849

- D233 Influence of Neem Derivates on the Development, Survival and Reproduction of *Myzus persicae* (Sulzer)
Frida Tosi, Jeffrey A. Davis and Edward B. Radcliffe, 1980
Folwell Ave., St. Paul, MN 55108
- D234 Phylogenetic Analysis and Molecular Identification of Economically Important Wireworm (Coleoptera: Elateridae) Species from the Midwest
Erica J. Lindroth, 1-31 Agriculture Building, University of Missouri Columbia, Columbia, MO 65211, Thomas L. Clark, Mail Zone GG3E, 700 Chesterfield Pkwy. West, Monsanto Company, Chesterfield, MO 63017
- D235 *Diabrotica barberi* (Coleoptera: Chrysomelidae) Adult
Billy W. Fuller and Bradley L. McManus, NPB Box 2140-C, Rm 111, South Dakota State University, Brookings, SD 57007
- D236 Evaluation of MIR Genetic Events in Maize on the Western Bean Cutworm
Marlin E. Rice, 103 Insectary, Iowa State University, Ames, IA 50011
- D237 Does Aphid-Resistant Wheat Affect the Ability of Convergent Lady Beetle Larvae to Control Aphids
Roxanne A. Bowling and Bonnie B. Pendleton, West Texas A&M University, Canyon, TX 79016, Gerald J. Michels, Texas Agricultural Experiment Station, Bushland, TX, Robert D. Bowling, Texas Cooperative Extension, Dumas, TX 79029
- D238 Evaluation of Selected Commercial and Plant Introduction Soybeans Against the Soybean Stem Borer in Kansas
Terutaka Niide and Randall A. Higgins, Dept. of Entomology, 123 West Waters, Kansas State University, Manhattan, KS 66506-4004, Lawrent L. Buschman, 4500 E. Mary St., KSU Southwest Area Extension Office, Garden City, KS 67846, William T. Schapaugh Jr., Dept. of Agronomy, 2004 Throckmorton Plant Science Center, Kansas State University, Manhattan, KS 66506, Phillip E. Sloderbeck, 4500E. Mary St., KSU Southwest Area Extension Office, Garden City, KS 67846, C. Michael Smith, Dept. of Entomology, 123 West Waters, Kansas State University, Manhattan, KS 66506-4004

- D239 Observations on the Biology and Seasonal Abundance of the Itch Mite, *Pyemotes herfsi* (Oudemans, 1936) in Lincoln, Nebraska in 2005
James A. Kalisch and David L. Keith, Department of Entomology, 202 Plant Industry Building, University of Nebraska, Lincoln, NE 68583-0816, Alberto M. Broce, Department of Entomology, 106 Waters Annex, Kansas State University, Manhattan, KS 66506-4004, Robert M. Roselle and Neil A. Spomer, Department of Entomology, 202 Plant Industry Building, University of Nebraska, Lincoln, NE 68583-0816
- D240 Economic Threshold of Soybean Aphid in North Dakota
Anne C. Mueller and Paul Ode, 202 Hultz Hall, North Dakota State University, Fargo, ND 58105

March 28, 2006
Tuesday Evening

Cash Bar

5:00 p.m. – 6:00 p.m.
Pre-Function Area

Poster Removal

5:00 p.m. – 7:00 p.m.
Brickyard V & VI

Awards Mixer

6:00 p.m. – 9:00 p.m.
Brickyard I - IV

March 29, 2006
Wednesday Morning

NCB Business Meeting

7:30 a.m. – 8:30 a.m.
Brickyard I

**Student Sponsored Symposium:
Selected Student Research**

Brickyard II
8:30 a.m. – 11:20 a.m.

Organizer and Moderator

Marcus McDonough, 901 W. State Street, W. Lafayette, IN 47907,
mcdonoma@purdue.edu

- 8:00 241 Introduction
Marcus McDonough, 901 W. State Street,
Purdue University, W. Lafayette, IN 47907
- 8:35 242 Importance of Groundcover to the
Overwintering Survival of *Aphthona* Flea
Beetles
Ankush Joshi, Denise L. Olson and Donald R.
Carey, Hulz Hall, North Dakota State University,
Fargo, ND 58105, ankushir@hotmail.com
- 9:00 243 Life History Characteristics of *Orius insidiosus*
(Say) Fed Soybean Aphids, *Aphis glycines*
Matsumura, and an Alternative Prey, Soybean
Thrips, *Neohydatothrips variabilis* (Beach)
Casey D. Butler and Robert J. O'Neil, 901 W.
State St., Purdue University, West Lafayette, IN
47907, cdbutler@purdue.edu
- 9:25 244 Development and Characterization of European
Corn Borer Resistance to the Cry1F Toxin from
Bacillus thuringiensis
Eliseu Pereira, Department of Entomology,
University of Nebraska, Lincoln, NE 68583-0816,
Bruce Lang, Meibao Zhuang and Nicholas
Storer, 9330 Zionsville Rd., Dow AgroSciences
LLC, Indianapolis, IN 46268, Blair Siegfried,
Department of Entomology, University of
Nebraska, Lincoln, NE 68583-0816,
eliseu@unlserve.unl.edu
- 9:50 **BREAK**

- 10:05 245 Contribution of Natural Areas to Pest Control in Wisconsin Potatoes
Ben P. Werling and Claudio Gratton, 237 Russell Labs, 1630 Linden Drive, University of Wisconsin, Madison, WI 53706,
werling@wisc.edu
- 10:30 246 A Recipe for Coexistence: Competition between *Ochlerotatus triseriatus* and *Aedes albopictus* Under Different Resource Ratios
Donald A. Yee, Department of Biological Sciences, Illinois State University, Normal, IL 61790-4120, dayee@ilstu.edu
- 10:55 247 Characterization of Resistance in Several Soybean Entries to the Soybean Aphid, *Aphis glycines* Matsumura (Hemiptera: Aphididae)
John Diaz-Montano, John C. Reese, William T. Schapaugh and Leslie R. Campbell, 123 West Waters Hall, Department of Entomology, Kansas State University, Manhattan, KS 66506-4004,
jdm@ksu.edu

Symposium
Ecology and Management of The Soybean Aphid

8:30 a.m. – 12:10 p.m.
 Brickyard III

Organizers and Moderators:

Robert J. O'Neil, Department of Entomology, Purdue University, Smith Hall, 901 W. State Street
 W. Lafayette, IN 47907-2089
rjoneil@purdue.edu
 and

George Heimpel, Department of Entomology, University of Minnesota, 1980 Folwell Ave. St. Paul, MN 55108
heimp001@tc.umn.edu

- 8:30 248 Overview of Progress in Soybean Aphid Research
George E. Heimpel, 1980 Folwell Ave., University of Minnesota, St. Paul, MN 55105,
heimp001@tc.umn.edu

- 8:35 249 Making Itself at Home: The Soybean Aphid Settles In
David J. Voegtlin, 607 E. Peabody, Illinois Natural History Survey, Champaign, IL 61820, Eileen Cullen, Entomology Department, 1630 Linden Drive, University of Wisconsin, Madison, WI 53706, Chris DiFonzo, Field Crops Entomology Lab., B18 Nat'l Food Safety & Technology Bldg., Michigan State University, East Lansing, MI 48824, Matthew E. O'Neal, Department of Entomology, 117 Insectary, Iowa State University, Ames, IA 50011, Robert J. O'Neil, Department of Entomology, Smith Hall, 901 W. State St., Purdue University, West Lafayette, IN 47907, David W. Ragsdale, Department of Entomology, 1980 Folwell Avenue, University of Minnesota, St. Paul, MN 55108, dvoegtli@uiuc.edu
- 8:55 250 Soybean Aphid: A Regional Approach to Management of an Invasive Insect
David W. Ragsdale, Erin W. Hodson, Brian P. McCornack, Robert C. Venette and Lisa M. Behnken, 1980 Folwell Ave., University of Minnesota, St. Paul, MN 55108, Matthew O'Neal and Kevin Johnson, 113A Insectary Building, Iowa State University, Ames, IA 50011, Eileen Cullen and Heidi Kraiss, 1630 Linden Drive, University of Wisconsin-Madison, Madison, WI 53706, Christia D. DiFonzo, B18 Natural Food Safety & Toxicology Building, Michigan State University, East Lansing, MI 48824, Karrie Koch, 1980 Folwell Ave., University of Minnesota, St. Paul, MN 55108, Tom Hunt, Haskell Agricultural Laboratory, 57905 866 Road, University of Nebraska, Concord, NE 68728, Bruce Potter and Phil Glogoza, 1980 Folwell Ave., University of Minnesota, St. Paul, MN 55108, Robert O'Neil, 901 W. State Street, Purdue University, West Lafayette, IN 47907, ragsd001@umn.edu
- 9:15 251 Impact of Endemic Natural Enemies on Soybean Aphid Dynamics
Nicolas G. Desneux, Ho Jung S. Yoo and Robert J. O'Neil, Smith Hall, 901 W State Street, Purdue University, West Lafayette, IN 47907, ndesneux@purdue.edu

- 9:35 252 Intraguild Predation Among Soybean Aphid Natural Enemies: Coccinellids
Annie-Eve Gagnon, Laboratoire d'Entomologie, Pavillon de l'Environnement, Université Laval, Québec, CANADA, G1K 7P4, George E. Heimpel, Department of Entomology, 1980 Folwell Ave., University of Minnesota, St. Paul, MN 55108, Jacques Brodeur, 4101 rue Sherbrooke Est, Institut de recherche en biologie végétale, Montréal, CANADA, H1X 2B2
- 9:55 253 Prospects for Classical Biological Control of the Soybean Aphid
George E. Heimpel, 1980 Folwell Ave., University of Minnesota, St. Paul, MN 55105, Keith R. Hopper, 501 South Chapel St., USDA-ARS, Newark, DE 19713, Zhishan Wu, 1907 Dudley Ave., Minnesota Dept. of Agriculture, St. Paul, MN 55108, Christine Kulhanek, 1980 Folwell Ave., University of Minnesota, St. Paul, MN 55105, Kim Hoelmer, 501 South Chapel St., USDA-ARS, Newark, DE 19713, heimp001@tc.umn.edu
- 10:15 **BREAK**
- 10:30 254 Aphids at Risk? Potential Non-target Impacts of a Classical Biological Control Program
Matt O'Neal, Department of Entomology, 117 Insectary, Iowa State University, Ames, IA 50011, David Voegtlin, Center for Ecological Entomology, 1816 S. Oak Street, Illinois Natural History Survey, Champaign, IL 61820, Robert O'Neal, Department of Entomology, Purdue University, W. Lafayette, IN 47907, Claudio Gratton, Department of Entomology, 237 Russell Lab, 1630 Linden Dr., University of Wisconsin, Madison, WI 53706, oneal@iastate.edu
- 10:50 255 Potential for Non-target Effects
Kris A. Wyckhuys, Robert L. Koch and George E. Heimpel, 219 Hodson Hall, 1980 Folwell Avenue, University of Minnesota, St. Paul, MN 55108, wyckh001@umn.edu

- 11:10 256 Landscape Structure Impacts Soybean Aphid Biological Control.
Mary M. Gardiner, 204 CIPS, Michigan State University, East Lansing, MI 48824, Nick Schmidt, 117 Insectary, Iowa State University, Ames, IA 50011, Emily Mueller, 237 Russell Lab, 1630 Linden Dr, University of Wisconsin, Madison, WI 53706, Jeremy Chacon, 219 Hodson Hall, 1980 Folwell Ave, University of Minnesota, St. Paul, MN 55108, Doug Landis, 204 CIPS, Michigan State University, East Lansing, MI 48824, Matt O'Neal, 117 Insectary, Iowa State University, Ames, IA 50011, Chris DiFonzo, B18 Food Safety & Toxicology, Michigan State University, East Lansing, MI 48824, George Heimpel, 219 Hodson Hall, 1980 Folwell Ave, University of Minnesota, St. Paul, MN 55108, Claudio Gratton, 237 Russell Lab, 1630 Linden Dr, University of Wisconsin, Madison, WI 53706, Mike Brewer, B18 Food Safety & Toxicology, Michigan State University, East Lansing, MI 48824, gardin18@msu.edu
- 11:30 257 Soybean Aphid Biological Control – Extension Outreach Components
Eileen M. Cullen and Dan Mahr, 1630 Linden Drive, University of Wisconsin, Madison, WI 53706, cullen@entomology.wisc.edu
- 11:50 258 Annual Variation in Soybean Aphid Dynamics and Implications for Management
Ho Jung S. Yoo and Robert J. O'Neil, Smith Hall, 901 W. State Street, Purdue University, West Lafayette, IN 47906, hjyoo@purdue.edu

Executive Committee Meeting

12:00 p.m. – 2: 00 p.m.
 Brookridge

Author Index

Abel, Craig	106
Akman, Fusun	D206
Albrecht, Marc	D067
Allen, Iris C.	D191
Allen, Shawn	D211
Angeles, Dexter	D207
Anglen, Jordan	D214
Antwi, Frank B.	057
Anulewicz, Andrea C.	145
Ayres, Matthew P.	D202
Babcock, Jon	183
Bai, H	014
Bailey, Wayne C.	D064
Bakken, Darren M.	033
Ballard, James	095
Barrett, Bruce A.	D198
Bauer, Leah S.	150
Baxendale, Frederick P.	D059
Beauzay, Patrick B.	D080
Behle, Robert W.	D215
Behnken, Lisa M.	250
Bennett, Gary	092
Benoit, Joshua	169
Berenbaum, May R.	054, 041
Bergolc, Melanie L.	D086
Berro, Alissa M.	D194
Bessin, Ric T.	D221
Bing, Jim	183
Bitzer, Royce J.	D200, D204
Blanco, Carlos A.	106
Blodgett, Sue	D228
Boetel, Mark A.	039, 042
Bonello, Pierluigi	146
Booth, Carrie	D209
Bordelon, Bruce P.	032
Boring, Charles A.	035
Bowling, Robert D.	D237
Bowling, Roxanne A.	D237
Boxler, David J.	134, 135
Bradshaw, Jeffrey D.	047, D231, 007, D218
Brandt, Brian	188
Brawn, Jeffrey D.	178
Breen, Michael	D214
Brelsfoard, Corey L.	176, D220
Bremer, William	168
Brewer, Michael	023, 256
Brinton, Jessica s.	D071
Broce, Alberto M.	D239

Brodeur, Jacques	252
Brown, Grayson C.	024
Brown, Mindy	D214
Brown, Patrick D.	D200
Brown, Phil A.	096
Brown, William M.	178
Bruce, Barrett	D068
Brust, Mathew L.	055
Buchan, Linda	149
Buckner, James S.	040
Bueno, Adeney	D232
Buman, Stanley	188
Buman, Thomas	188
Burkness, Eric C.	056, 113, 181
Burries, Robert	D070, D210, D211
Buschman, Lawrent L.	D238, D230
Butler, Casey D.	D063, 243
Bykowski, Tomasz	158
Calibeo-Hayes, Dawn	094
Caliendo, Tracy	D070
Calvin, Dennis D.	103
Campbell, John B.	134, 135, D222
Campbell, Leslie R.	247
Canjura, Evelyn	098
Cappaert, David	145, 148
Caprio, Michael	107
Carey, Donald R.	242, D083
Carlyon, Jason A.	160
Carroll, Matthew	101, 102
Cates, Steve	D193
Cavichioli, Rodney R.	037
Chacon, Jeremy M.	045, 256
Changnon, David	119
Charlton, Ralph	022
Chirumamilla, Anitha	039
Christiansen, Andrew P.	D222
Cipollini, Donald F.	146
Clark, Pete L.	D082
Clark, Thomas L.	D064, D078, 110, D234
Clay, Keith	161, 165
Cloyd, Raymond A.	D226
Coates, Brad S.	104, D192
Coath, Jeffrey T.	140
Coffelt, Mark	094
Cole, Richard M.	186
Colunga-Garcia, Manuel	D194
Colwell, Curt E.	156, 171
Compton, David L.	D215
Copenhaver, Kenneth L.	101, 102, 103
Cortinas, Manuel R.	166

Costamagna, Alejandro C.	D194
Cradock, Ken R.	154
Cullen, Eileen	249, 250, 257, D076
Daniel, Steven L.	D073
Daniels, Allison	D212
Daniels, Jeff	184
Daniels, Jeffrey L.	180
Daniels, Thomas J.	173
Davis, Jeffrey A.	046, 128, D233
Davis, Paula	D224, D225
Davis, Rex	134
de Groot, Peter	149
Dearth, Stephanie	167
Decker, Kimberly B.	126
DeCock, Dean	D074
DeFelice, Michael	D224
DeGooyer, Todd A.	186, 187
Demski, Kristin	D211, D214
Desai, Pratik	D070
Desneux, Nicolas G.	251
DeVries, Terry A.	D222
Dhileepan, K	123
Diaz-Montano, John	247, D229
Dietrich, Christopher H.	037
Dietrich, Gabrielle	153
DiFonzo, Chris	250, 256, 249
Dobesh, Phillip A.	D069
Dobson, Stephen L.	048, 172, 176
Dolan, Marc C.	153
Dorhout, David L.	D075, D231
Doyle, Korrin J.	D073
Dregseth, Robert J.	039
Dufoe, Allan D.	095
Eckholm, Bruce J.	D066
Edwards, Jeff	D223, 183
Edwards, Kevin A.	120
Ehrich, Matthew	D208
Eisen, Rebecca J.	153
Ellis, Jodie A.	138
Ellis, Marion D.	127
Elmore, Steven	D224
Eltahlawy, Hanan S.	040
Estes, Ron	033
Everson, Albert	094
Ewing, Sidney	168
Falco, Richard C.	173
Fauske, Gerald M.	D189
Fields, Paul G.	130
Fleischer, Shelby J.	116
Flood, Brian R.	113, 114, 119

Ford, James	161
Ford, Vonique	D212
Foster, John E.	D217, D082, D060, 038, D059, 006
Foster, Rick	032, 113
Foster, Stephen P.	040
Franklin, Amanda K.	D198
Frederick, Katy H.	131
French, Bryan W.	D199
French, Roy C.	038
Fridgen, Jon J.	101
Fritz, Ann H.	D062, D073, D213
Fritz, Gary N.	D220
Fulcher, Amy	030
Fuller, Billy W.	D235
Fuller, Leigh E.	D191
Funston, Rick N.	134
Fuqua, Clay	161, 165
Fusco, Marissa X.	089
Gage, Stuart H.	D194
Gagliano, Stefanie	D212
Gagnon, Annie-Eve	252
Galvan, Tederson L.	056, 181
Gardiner, Mary M.	256, D194
Gaziano, Joseph	D214
Gering, Jon C.	131, D074
Getchell, Anna I.	034
Girsch, Katherine M.	032
Glaser, John A.	100, 101, 102, 103
Glogoza, Phil	250
Gocmen, Huseyin	D227
Goldberg, Tony L.	178
Gore, Jeff	106
Gore, Lynetta	D211
Grace, Tony	058, 013
Grant, Gary	149
Gratton, Claudio	245, 256, 254
Gray, Michael E.	033
Green, Thomas A.	188
Grindle, Nate	161
Gu, Weidong	174
Guse, Charles A.	108
Hamer, Gabe L.	178
Hamik, Jeffrey J.	D077
Hammack, Leslie	D199
Hanks, Lawrence M.	051
Haramis, Linn D.	171, 156
Harvey, Susan L.	D065
Hatch, William	D210
Hatle, John D.	D191
Hayden, Dava	030

Haynes, Kenneth F.	030
Headings, Mark E.	121
Headrick, John M.	111
Heimpel, George E.	255, 252, 248, 253, 256, 045
Hein, Gary L.	D060, D228, D065, 038
Heinrichs, E. A.	005
Hellmich, Richard L.	104, 103, D192
Helms, Jeff	D209
Herms, Daniel A.	151, 146
Hernandez, Brian	D207
Hessler, Louis	122
Hibbard, Bruce E.	110, D078
Hickling, Graham J.	157, 155, 163
Higgins, Randall A.	D229, D238
Higley, Leon G.	D232
Hill, John H.	047
Hoback, W. Wyatt	025, D077, D079, D067, 133, D061, D232, D069
Hodson, Erin W.	250
Hoelmer, Kim	253
Hogendorp, Brian K.	D226
Hogenhout, Saskia A.	016
Hopper, Keith R.	253
Hughes-Williams, Laura L.	D086
Huizenga, Kevin M.	D070, D071, D208
Hunt, Thomas E.	103, D232
Hunt, Tom	250
Husen, Tim J.	093
Hutchison, William D.	056, 181, 113
Ikten, Cengiz	D217, D227
Ironheart, Silas	D193
Isaacs, Rufus	017
Isard, Scott A.	D196
Isenhour, David J.	D082, 009
Jackson, Andrew	D212
Jackson, Jan	D225
Jansen, John J.	187
Jaronski, Stefan T.	042
Jenkins, Tracie M.	091
Jensen, Bryan	113
Jesse, Laura C.	D195
Johnson, Douglas W.	D221
Johnson, Kevin	250
Johny, Sajahan	D219
Jones, Susan C.	095
Joshi, Ankush	044, 242, D083, D193
Juliano, Steven A.	129, 179, D071
Junek, Terry	115
Jung, Thomas	D211
Jurzenski, Jessica D.	025

Kaeb, Benjamin C.	029
Kahn, Jonathan	168
Kalisch, James A.	D239
Kambhampati, Srinivas	058
Kamble, Shripat T.	093, 087
Kane, Kathleen	D211
Karchesy, Joseph J.	153
Kearns, Sarah A.	160
Keeseey, Ian W.	D068
Keith, David L.	D239
Kells, Stephen	D085
Keorpes, Peter	D208
Kesavaraju, Banugopan	179
Kethidi, D R.	014
Khoo, Cynthia C.	048
King, Ed	D223, 183
Kitron, Uriel D.	178
Klyachko, Olga	161
Knake, Raymond P.	180, 184, 185
Knox, Rochelle	D212
Koch, Karrie A.	026, 256
Koch, Robert L.	113, 255
Koranda, Jacqueline	D211
Kraiss, Heidi J.	250, D076
Krasavin, Nina M.	174
Kulhanek, Christine	253
Kummer, Chris	D212
Kwon, Hyeog S.	D190
Lacey, Emerson S.	051
Lagos, Doris M.	D072
Lam, Wai-Ki F.	182
Lampert, Evan C.	054
Lampman, Richard L.	174
Landis, Doug	256
Lang, Bruce	244
Lange, Carlos	D219
Langley, Shaun A.	023
Laszlo, Joseph A.	D215
Lawson, H. R.	D228
Leonard, Roger	113
Levine, Eli	D196
Lewis, Leslie C.	104, D205, D192
Li, Shujuan	092
Li, Y	014
Liebhold, Andrew M.	147
Lindroth, Erica J.	D234
Liu, Houping	150
Liu, Zhiwei	D081
Lively, Curtis	161
Long, Robert P.	151

Loss, Scott R.	178
Louis, Joe	031
Lundgren, Jonathan	122
Lym, Rodney G.	044
Mack, Sarah	127
Mahr, Dan	257
Majumdar, Ayanava	042
Makra, Edith	143
Margolies, David C.	D084
Mason, Linda J.	097, 098
McCornack, Brian P.	250
McCullough, Deborah G.	145, 148, 147, 149
McDonnell, Cynthia M.	041
McDonough, Marcus	241
McEver, Rodger P.	160
McKamey, Stuart H.	037
McKelvey, Mark W.	D074
McLeod, Murdick J.	D224, D225
McManus, Bradley L.	D235
Mefferd, Carissa	D210
Meihls, Lisa	D064
Mejdalani, Gabriel	037
Melnyk, Stephen	D191
Merisko, Amber	D219
Michels, Abigail C.	027
Michels, Gerald J.	D237
Miller, Fredric	142
Miller, James	149
Miller, Jon S.	D190
Moloney, Kirk K.	D195
Mueller, Anne C.	D240
Mueller, Emily	256
Murray, Eleanor	120
Murray, Elizabeth A.	022
Murrell, Ebony G.	129
Nachappa, Punya	D084
Nechols, James R.	D084
Needham, Glen R.	154, 168
Neese, Paul	D223
Niide, Terutaka	D238
Noma, Takuji	023
Nordlander, Goeran	D081
Norman, Valerie L.	D073
Novak, Robert J.	174
O'Neal, Matthew	015, 250, 256, 008, 254
O'Neil, Robert J.	D063, 243, 003, 251, 249, 250, 254, 258
O,Neal, Matthew E.	249
Obrycki, John J.	D195
Ode, Paul	D240
Ode, Paul J.	054

Olmer, Kurt J.	D078
Olson, Denise L.	044, 242, D083, D193, 052, 057
Onstad, David W.	D216, 110, 108
Opit, George P.	124
Palli, Subba R.	014
Park , Yoonseong	019
Park, Yoonseong	022
Parthasarathy, R	014
Paszkievicz, Steve	D225
Paudel, Reema	D220
Pavuk, Daniel M.	D086
Paz, Araceli	D207
Peck, Steven L.	108
Pegadaraju, Venkatramana	031
Pendleton, Bonnie B.	D237
Peralta-Cruz, Javier	153
Pereira, Eliseu	244
Perera, Omaththage	106
Pierce, Christopher M.	137, 141
Piesman, Joseph	153
Pietrantonio, Patricia	115
Pilcher, Clinton D.	186, 187
Pinger, Robert R.	159, 165, 167
Poland, Therese M.	148, 149
Potter, Bruce D.	026, 250
Potter, Daniel A.	030
Prischmann, Deirdre	122
Pruess, Kenneth P.	132
Pureswaran, Deepa S.	D202
Quattrochi, John	D191
Rabaey, Thomas	113, 114
Rackauskas, Cassandra	D211
Radcliffe, Edward B.	046, 128, D233
Rader, Roberta R.	D074
Raghu, S	123, 125
Ragsdale, David W.	046, 026, 249, 128, 250
Rahnema, Shah	121
Rakitov, Roman A.	037
Ray, Ann M.	051
Reardon, Brendon J.	053
Reardon, Kate	D205
Rebek, Eric J.	146
Reese, John C.	031, 247, D229
Reilly, Joe	D077
Reiskind, Michael H.	177
Reneer, Dexter V.	160
Reo, Nick J.	152
Reungsang, Pipat	D200
Rhylander, David J.	187

Rice, Marlin E.	D075, 010, 001, D204, 047, D231, D218, D236
Rikihisa, Yasuko	168
Rivera, Jessica	D209
Robbins, James C.	D192, D205
Rodriguez-Saona, Cesar	149
Ronquist, Fredrik	D081
Roselle, Robert M.	D239
Roy, Pamela L.	164
Ruiz, Marilyn O.	178
Russo, Joseph M.	103
Samarakoon, Sajeewani U.	D059
Sandell, Lionel S.	096
Sandstrom, Mike A.	119
Sappington, Thomas W.	053, 103, 109
Sass, Brian D.	D079
Savinelli, Catherine E.	118
Scanlan, Joe	123
Schaefer, John J.	168
Schaidle, Matthew	D071
Schapaugh Jr., William	D238
Schapaugh, William T.	247, D229
Scherer, Clay W.	096
Schmidt, Jason	153
Schmidt, Nick	256
Schotthoefer, Anna M.	178
Schroeder, Jared B.	033
Schuler, Mary A.	041
Schwab, Lori Kae	125
Schwarz, Michael R.	184, 180
Schwinghammer, Margaret	092
Seagraves, Bonny L.	030
Sedivec, Kevin	D193
Serikawa, Rosana H.	D060
Servies, Gwen A.	139
Shaffer, Julie J.	D061
Shah, Jyoti	031
Shapiro-Ilan, David I.	D215
Sharanowski, Barbara J.	036
Sharkey, Michael J.	036
Shick, Gordon	D212
Siegert, Nathan W.	147
Siegfried, Blair	244, 104, 105
Siegler, Jason	D208, D209
Sims, Jonathan	160
Siriwetwivat, Benjawan	038
Skoda, Steven R.	D082, D060, D059
Slamecka, Michael C.	173
Sloderbeck, Phillip E.	D229, D238, D230
Smith, Annemarie	151

Smith, C. Michael	D238, 004
Smith, Charles M.	D229
Smith, Robert J.	178
Smitley, David R.	146
Solliday, Amanda	D071
Solter, Leellen	D219
Spencer, Joseph L.	D196
Spomer, Neil A.	D239
Stanley, David W.	D190
Staples, Joseph	D207, D208
Starke, Robert J.	186
Stauffer, Timothy W.	D203
Steffey, Kevin L.	033
Steiner, Fresia E.	159, 165
Stelinski, Lukasz	149
Stevenson, Brian	158
Stich, Roger W.	168
Stone, Julie M.	093
Storer, Nicholas	244
Striegel, Bill	185
Suarez, Andrew V.	020
Subatis, Candice	D211
Subramanyam, Bhadriraju	058, 034
Sullivan, Brian T.	D202
Sumerford, Douglas V.	104, 106, D205, D192
Swanson, Jack A.	170
Szyska, Michael L.	175
Tadel, Shannon A.	D062
Takiya, Daniela M.	037
Taylor, Benjamin J.	D201
Taylor, Wes G.	130
Teichert, Jim R.	134
Telewski, Frank W.	147
Tembo, Rostern N.	D197
Thomas, John A.	D228
Thomas, Peter	D214
Thompson, Gary	D223, 183
Throne, James E.	124
Tilmon, Kelley J.	122
Tobias, Loida M.	052
Toelle, Michelle	D212
Toews, Michael D.	021
Tollefson, Jon J.	029, 011
Topakcý, Nurdan	D227
Tosi, Frida	D233
Tracy, Heather R.	D067
Trout, Rebecca T.	024
Tsai, Wan-Tien	097
Tsao, Jean I.	157, 155, 163
Urban, Bryan	D211

Vanesh, Ryan	D208
Vaughn, Ty T.	099
Venette, Robert C.	141, 250
Voegtlin, David	D072, 249, 254
Wade, Michael	161
Wagnitz, Jeremy	127
Walker, Edward D.	178, 163
Walker, Thomas L.	133
Wallace, Holly J.	D213
Walter, Abigail J.	D085
Waltz, Robert D.	144
Wang, Changlu	092
Ward, Michael P.	174
Warriner, Richard A.	094
Wedin, David	D069
Weinzierl, Richard A.	112, 113, 117
Wells, Sean M.	D191
Werling, Ben P.	245
Weyhrich, Adam	D214
Wheeler, Emily R.	178
Whitman, Doug	120, D071
Whitman, Douglas	D070
Whitman, Douglas W.	D201, D203, D206, D219, D207, D208, D209, D210, D211, D212, D214
Whitworth, Robert J.	D229
Wieck, Betty J.	D061
Wiedenmann, Robert N.	125
Wilde, Gerald E.	002
Williams, Ralph E.	089, 088
Wilson, Robert G.	D065
Woods, Sheila	130
Wright, Robert J.	D222
Wu, Zhishan	253
Wuellner, Shannon	D209
Wund, Matt A.	177
Wyckhuys, Kris A.	255
Yago, Tadayuki	160
Yaremych, Sarah I.	157
Yaremych-Hamer, Sarah A.	155, 163
Yeargan, Kenneth V.	126
Yee, Donald A.	179, 246
Yocum, George D.	039
Yoo, Ho Jung S.	251, 258
Yu, Wu	014
Zangerl, Arthur R.	054
Zhang, Z	014
Zhou, Xuguo	092
Zhuang, Meibao	244
Ziems, Jesse R.	D232
Zurek, Ludek	018, 090

Taxonomic Index

<i>Aphthona</i>	044
<i>Aedes albopictus</i>	048
<i>Amblyomma americanum</i>	154
<i>Ostrinia nubilalis</i>	244
<i>Acalymma</i>	182
Acari	164
Acaridae	D079
<i>Acarus siro</i>	D079
<i>Aceria tosichella</i>	038
Acrididae	055, D201, D070, D077, D206, D219, D207, D208, D209, D210, D211, D212, D214
<i>Aedes aegypti</i>	129
<i>Aedes albopictus</i>	129, 170
<i>Aedes</i>	176
<i>Agrilus planipennis</i>	149
<i>Agrotis ipsilon</i>	D231
<i>Amblyomma americanum</i>	167
<i>Anaplasma phagocytophilum</i>	160
Anaplasmataceae	160
<i>Anasa tristis</i>	126
<i>Anastrepha suspense</i>	D073, D213
<i>Anopheles</i>	D220
<i>Anoplophora glabripennis</i>	139
Anthocoridae	D063, 243
Aphidae	250
Aphididae	122, 257, 052, 248, 046, D237, 026, 031, 247, D060, 256, D076, D064, D228, D229, 258, 253, 249, 045, D240, 023, 128, D233, D072
Aphidiinae	255
<i>Aphis glycines</i>	250, D076
<i>Aphonopelma henzi</i>	022
<i>Aphthona</i>	125, D193
Apidae	D066, 127, 121
<i>Apis mellifera</i>	127
<i>Blatella germanica</i>	096
<i>Bovicola bovis</i>	134
Braconidae	035, 036
Buprestidae	146, 145, 144, 150, 148, 147, 152, 149
Buprestid	151
Carabidae	D080, D074, D204
Cerambycidae	051, 139, D238, D218
<i>Ceratoma trifurcate</i>	047

<i>Ceutorhynchus litura</i>	D065
<i>Charidotis auroguttata</i>	123
Chrysomelidae	044, D216, 242, D083, 183, 182, D193, D196, 123, 125, 057, D199, D078, 110, 047, 186, 187, 188, 029
Cicadellidae	037
<i>Cicindela</i>	D080
Coccinellidae	032, D194, 056, 181
<i>Colaspis brunnea</i>	029
<i>Copidosoma sosares</i>	054
Coreidae	126
Crambidae	D221, 244, 186, D217, D197, 053, 102, 104, D205, 103, D192, D230, D232
<i>Cryptolestes</i>	098
<i>Culex restuans</i>	027, 174
<i>Culex pipiens</i>	024, 027, 174
<i>Culex</i>	175
Culicidae	171, 170, 129, 024, 179, 174, 048, 176, 246, 027, D220
<i>Curculio sayi</i>	D068
Curculionidae	130, D065, D068, D202
<i>Cyclotrachelus</i>	D204
<i>Cydia pomonella</i>	D198
<i>Dectes texanus texanus</i>	D238
<i>Dendroctonus frontalis</i>	D202
<i>Diabrotica virgifera</i>	110, 188, D078
<i>Diabrotica</i>	185, D199
<i>Diatraea grandiosella</i>	D221
<i>Drosophila melanogaster</i>	041
Drosophilidae	041
Elateridae	D234
Encyrtidae	054
Eriophyidae	038, D195
<i>Evarthus alternans</i>	D074
<i>Frankliniella occidentalis</i>	D227
Gryllidae	121
Haematopinidae	034
<i>Harmonia axyridis</i>	181
<i>Harpalus</i>	D204
<i>Helicoverpa zea</i>	113
<i>Heliopsis virescens</i>	106, 165, 220
<i>Ixodes scapularis</i>	163
Ixodidae	156, 159, 167, 165, 168, 153, 157, 154, 155, 166, 163
<i>Lepinotus reticulatus</i>	124
<i>Linognathus vituli</i>	134
Liopteridae	D081
<i>Manduca sexta</i>	D190

<i>Melanoplus femurrubrum</i>	D077
<i>Melanotus</i>	D234
Muscidae	135
<i>Myzus persicae</i>	D233
<i>Nicrophorus americanus</i>	133
<i>Nicrophorus marginatus</i>	D061
Noctuidae	040, D222, D215, D082, D075, 117, 114, 119, 106, 165, 116, D231, 220, 113, D236
Nymphalidae	D200
<i>Ochlerotatus triseriatus</i>	246
<i>Orius insidiosus</i>	243
<i>Ostrinia nubilalis</i>	D230, D232
Otitidae	039
<i>Paramblynotus</i>	D081
Passalidae	121
<i>Passalus</i>	121
<i>Pemphigus betae</i>	D228
<i>Pemphigus betae</i>	D060
<i>Phyllocoptes fructiphilus</i>	D195
<i>Phyllotreta cruciferae</i>	057
Phytoseiidae	D084
<i>Phytoseiulus persimilis</i>	D084
<i>Plodia interpunctella</i>	D085
<i>Poecilus</i>	D204
<i>Pyemotes herfsi</i>	D239
Pyemotidae	D239
Pyrilidae	058, 121, D085
<i>Reticulitermes flavipes</i>	093
<i>Reticulitermes</i>	092
Rhinotermitidae	092, 091, 093
<i>Rhipicephalus sanguineus</i>	168
<i>Richia albicosta</i>	D236
<i>Romalea microptera</i>	D070, D214
<i>Romalea micrioptera</i>	D210, D211
Romaleidae	055, 120, D191, D203
<i>Scarites</i>	D204
<i>Schizaphis graminum</i>	D237
Silphidae	133, D061, D069
Simuliidae	132
<i>Simulium</i>	132
<i>Sitophilus</i>	098
<i>Sitophilus oryzae</i>	130
<i>Solenoptes capillatus</i>	134
<i>Spodoptera frugiperda</i>	D082
<i>Stomoxys calcitrans</i>	135
Tenebrionidae	021
Tephritidae	D062, D073, D213
<i>Tetanops myopaeformis</i>	042

Tettigoniidae	131	
Theraphosidae	022	
Thripidae	D227	
Tortricidae		D198
<i>Tribolium castaneum</i>	021	
<i>Tribolium</i>	098	
<i>Trichoplusia ni</i>	D215	
Tricodectidae	134	
Trogiidae	124	
Ulidiidae	042	
<i>Vanessa</i> spp.	D200, 254	

Keyword Index

<i>Amblyomma</i>	154
<i>Aphthona</i>	242, 125
<i>Aphthona</i> spp.	D083
<i>Aphthona</i> flea beetles	044
Acari	D079
acaricidal	154
<i>Aceria tosichella</i>	038
adulticide	024
advion	096
<i>Aedes</i>	129, 176
<i>Aedes albopictus</i>	170
AFLP	D082, D060
Africa	010
aggregation	D202
aging	D191
<i>Agrilus</i>	145, 144, 150
alignments	036
alternative prey	251
<i>Amblyomma americanum</i>	167
American burying beetle	133
AMOVA	D082
<i>Anaplasma phagocytophilum</i>	159, 160
<i>Anastrepha suspensa</i>	D062, D073
animal detritus	179, 246
antibiosis	247
antimicrobial secretion	D061
antixenosis	247
aphid	D240
aphids	D072
<i>Aphis glycines</i>	026, D064, 023
Aphonopelma	022
<i>Aphthona</i> spp.	D193
arbovirus	171, 027
arrival time	D202
ashborer	144
Asian	139
Asian Tiger mosquito	048
attraction	149
azadirachtin	D227
Aztec	185
<i>Babesia</i>	159
<i>Bacillus thuringiensis</i>	102
bacteria	D073
bacterial wilt	182
<i>Beauveria</i>	154
<i>Beauveria bassiana</i>	D215, D197
beetle	139, D069
behavior	D199

<i>Beta vulgaris</i>	180, D228
biocontrol	122, 003, 150, D195
biodiversity	D218
biogeography	D081, D200, D189
biological control	257, 125, D065, 253, 045, 023, D194, D084
biology	124
biotechnology	D223, 183
black flies	132
black light trapping	D222
blowfly	D059
blueberry	D066
body size	D207
Bolivia	D220
<i>Borrelia</i>	164
<i>Borrelia burgdorferi</i>	165, 158, 163
Braconidae	035
Bt	104, D205
Bt corn	D221, 111
Bt cotton	106
Bt crops	100
Bt maize	244
budget analysis	D224
canalization	D201
canola	057
Carabidae	245, D074
carrion	D069
carrion beetle	D061
cattle lice control	134
Cerambycidae	051
<i>Ceutorhynchus litura</i>	D065
chemical control	047, 181
chestnut	D068
chlorophyll	247
Cicindela	D080
<i>Cirsium arvense</i> (L.)	D065
citizen science	D200
classical biological control	255
clothianidin	184, 180
cluster	166
Coccinellidae	D194
coccinellids	252
cockroaches	096
codling moth	D198
collaborative management	152
collaborative research	152
communities	D069
compensatory	057
competition	129, 054
congregation	127

conservation biological control	245
control	024
copulatory	D199
copulatory courtship	D213
corn	D223, 113
corn Borer	111
corn earworm	114, 116, 113
corn pests	D231
corn rootworm	183, D196, 188
crop rotation	D196, 187
cross-resistance	244
Cry1Ab resistance	D192
cryptic female choice	D213
Culex	171
cytochrome oxidase	D059
Czech Republic	004
Dectes stem borer	D238
dendrochronology	147
desiccation	D079
detection	148
development	D085
development rate	D214
Diabrotica	D216
diapause	039
diapause induction	D217
<i>Dibrotica virgifera virgifera</i>	D078
diet quality	D085
dispersal	053
distribution	055, D220
diversity	161, 025
DNA Markers	091
dogs	168
drone	127
drop zone	119
drought	175
eastern red cedar	133
ECB	102, D232
ecology	D068, 055, D218, D220
economic threshold	250
<i>Ehrlichia chaffeensis</i>	167
ehrlichiosis	168
eicosanoids	D190
Elateridae	D234
Electrical Penetration Graph	031
emerald ash borer	146
emergence	D221
epizootics	026
European corn borer	D197, 053
Extension	257
fall armyworm	D082

feeding	D211
feeding behavior	031, 247
fitness	D202
flight mill	D075
foliar insecticides	047
follicle cells	120
foraging	D209
forest entomology	147
forest insects	141
forest succession	151
forest susceptibility	151
formulation	D215
fragmentation	D086
<i>Frankliniella occidentalis</i>	D227
<i>Fraxinus</i>	145, 150
<i>Fraxinus</i> sp.	148
Fulbright	010
Fulbright Association	004
fumigation	097
Fusarium	042
generalist predators	251
genetic mapping	104
genetic variability	D060
genetic variation	038
genetically modified organism	D236
genetics	D217, D205
genotyping	093
GIS	D200
gram-negative bacteria	048
grape colaspis	029
grasshopper	D203, D206, D219, D207, D208, 055, D209, D210, D211, D212, D214
grasshoppers	D077
green peach aphid	052, 046
greenbug	D237
ground beetles	D204
groundcover	242
habitat occurrence	D083
<i>Harmonia axyridis</i>	256
herbicide resistance	D224
Herculex	D223, 183
Herculex RW	D225
Herculex XTRA	D225
hexamerins	D191
<i>Hippodamia</i>	D237
honey bee	127
honey bees	D066
horticulture	181
host plant resistance	146

host range	145
host volatiles	149
hot zone	140
human granulocytic anaplasmosis	160
hyperspectral	101
hyperspectral image	103
identification	092
Illinois	174, D072
Indian mealmoth	058
Indiana	144
indoxacarb	096
Industry	118
infection rates	174
infestation	D079
inheritance	D192
inheritance of resistance	244
injury	057
insect behavior	052, 021
insect immunity	D190
insect monitoring	021
insect pathology	D219
insect pump	119
Insect resistance	D224
Insect Resistance Management	108
insect-plant interactions	123
insecticide	130, 094
insecticide resistance	117, 041
insecticides	D076
integrated pest management	D193, D226
integrated pest management program	182
interactions	161
international	003, 002
international exchanges	004
international experience	001
intracellular pathogen	160
Intraguild predation	252, 045
invasion	170, 155, 163
invasive	129, D195
invasive insect	151
invasive pest	D229
invasive species	146, 147, 141
IPM	044, 003, D229, 188, 056
IRAC U.S.	118
IRM	111, D230
island	D067
itch mite	D239
itching bites	D239
<i>Ixodes</i>	156, 159, 164
<i>Ixodes scapularis</i>	165, 153, 166, 163

kairomone	D209
land management	133
landscape	256
late-season predation	258
leaf area	D077
leafhopper	037
leafy spurge	044, D083, D193
Lepidoptera	D086, 040
<i>Leptinotarsa decemlineata</i>	245
life-history	D201
long-term stored larvae	039
longhorned	139
Lyme	156, 155
Lyme disease	088, 153
Lyme disease risk	157
maize	186
management practices	D074
mate choice	D208
mate location	051
methoxyfenozide	D198
microbial communities	161
microorganism	179, 246
microsatellite	D062
microsatellites	058
microsporidia	D219
Midwest	155
migration	119, 116
minerals	121
mitochondrial DNA	092
modeling	108
molting	D211
monitoring	188
morphology	D199
mosquito	024, 179, 246, 027
mosquito control	048
mosquitoes	171
movement	D196, 098
multicolored Asian lady beetles	032
<i>Myzus persicae</i>	031, D233
natural enemies	126, 023
natural enemy	122
neonicotinoid	D231
<i>Nicrophorus marginatus</i>	D061
nitrogen	033
Noctuoidea	D189
non-target	D195
non-target organisms	D204
North American Indians	152
North Dakota	D080
northern Great Plains	D189

oocyte	120
organic	D076
<i>Orius insidiosus</i>	D063, 243, 251
OspA	165
<i>Ostrinia nubilalis</i>	D217, D192
over-wintering	249
overwintering	D221, 242, 258
oviposition	170, D203, D210
parameters	036
parasitoid	D206
parasitoids	D086, 253
pasture	135
pathogens	026
PBAN	040
PCR	164
PCR-RFLP	D059, D234
<i>Pemphigus betae</i>	D228
periodicity	258
phenotypic plasticity	D210
pheromone	D198
pheromone biosynthesis	040
pheromone trap	D075
photosynthesis	D232
phylogenetic clustering	131
phylogenetic overdispersion	131
phylogenetics	022
phylogeny	035, D081, 091
pitfall trap	D067
Plant Introduction	D238
plant nutrients	125
plant resistance	D238
plasmatocytes	D190
plasticity	D201
pollination	D066
polyembryony	054
Poncho 1250	185
population dynamics	D206
population ecology	D204
population genetics	058
potato	046, D077, 128, D232
predator	122
predator complex	D064
predator exclusion	D064
prevalence	042
prey defenses	D063
process out	114
Protein	121, 158
Psocids	124
PVY	046, 128
<i>Pyemotes herfsi</i>	D239

pyrethroid resistance	114
randomized block design	D197
refuge	255
refuse	D226
regulation	158
relatedness asymmetry	054
remote sensing	102, 101
residual insecticides	021
resistance	106, 104, D205
Resistance Management	118, 110, D230, 113
respirometry	039
<i>Rhamnus</i>	249
<i>Rickettsia amblyommii</i>	167
risk	140
risk assessment	141
risk-benefit analysis	123
road impacts	D067
<i>Romalea</i>	D203
rootworm	D225, 033
sabbatical	002
saltcedar	025
sampling	056
sanitation	D226
seasonal phenology	126
seed corn	029
seed treatment	D231
seed treatments	047
sewer infrastructure	175
sexual behavior	D208, D212
sexul selection	D212
<i>Solanum etuberosum</i>	052
soyban aphid	248
soybean	D240
soybean aphid	D063, 243, 255, 257, 252, 247, 256, D076, D229, 253, 249, 045, 250
soybean thrips	243
soybean variant	187
SoyScreen	D215
spatial autocorrelation	D074
spatial distribution	D194
species	121
speed of kill	034
speed scouting	250
spinosad	034
squash bug	126
SSLP	093
stability	036
stable fly	135
stewardship	100

storage	130, D191
stored grain	034, 098
stored products insects	D085
stored-products	130
stress	149
structural pest control	094
suction trap	D072
sugarbeet root aphid	D060
sulfuryl fluoride	097
surveillance	027
survey	092, 148
sustainability	100
systematics	035, 037
systems evaluation	186
taxonomy	D081
teaching	010
temperature	124, D214
Tephritidae	D062, D073
termites	091, 093
terrestrial invertebrates	025
<i>Tetanops</i>	042
Tettigoniidae	131
thermoregulation	D207
tick	156
tick repellents	153
ticks	168
tiger beetles	D080
tobacco budworm	106
transcriptional regulation	041
transgenic	186, D236
transgenic Bt corn	187
transgenic corn	D216, 103
transgenic identification	101
trap	135
twospotted spider mite	D084
vector	037
vector efficiency	128
vegetable IPM	117
vitellogenesis	120
weevil	D068
West Nile virus	175, 174, 088
western bean cutworm	D222, D075
western corn rootworm	D078, 110
wheat	D237
wheat curl mite	038
white-tailed deer	166
wine grapes	056, 181
winegrapes	032
wireworm	D234
WNV	088

<i>Wolbachia</i>	176
wood borer	051
xenobiotic	041
yellow sticky trap	182
yield loss	D228



**NCB-ESA Meeting, March 25-28, 2007
Winnipeg, Manitoba, Canada**

I would like to invite all of you to come to the first joint meeting of the NCB-ESA and the Entomological Society of Manitoba, to be held in Winnipeg, Manitoba, Canada, March 25-28, 2007. The Local Arrangement Committee is very excited about being able to host this meeting. Winnipeg has a number of entomological attractions. It has the only remaining Department of Entomology in Canada, it is home to the Canada's National Microbiology Laboratory, the national center that deals with insect-borne diseases, as well as having city, provincial and federal entomologists.

Winnipeg is a vibrant, cosmopolitan city of with a population of 600,000. It is only 60 miles from the US border and is served by an international airport with direct flights to Chicago, Minneapolis and Denver. For more information, see: <http://www.destinationwinnipeg.ca/>.

We are excited to bring together Canadian and U.S. entomologists, and we can assure you that this is a meeting you will not want to miss. I hope to see you all in Winnipeg in 2007.

Sincerely,
Gary L. Hein
NCB-ESA President-Elect