



Manhattan, Kansas

70TH ANNUAL MEETING

President: Paula Davis

Manhattan Conference Center
410 South 3rd Street
Manhattan, Kansas 66502

2015 NCB-ESA CORPORATE SPONSORS



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MEETING LOGISTICS

Registration

All participants must register for the 2015 NCB-ESA meeting. Name tags are required for all conference functions. Meeting registration is located in the **Foyer** of the Manhattan Conference Center. Registration, meeting packets, and membership renewal will be available for pre-registered and on-site registration attendees at the following times:

Sunday	11:00am – 7:00pm
Monday	7:30am – 5:00pm
Tuesday.....	7:30am – 5:00pm
Wednesday	7:00am – 10:00am

Guidelines for Speakers and Moderators

Speakers and moderators will follow standard procedures and practices for ESA meetings. Moderators are responsible for 1) maintaining the program schedule by not starting presentations prior to its time, and 2) not allowing a speaker to exceed the allotted time. If a presentation is cancelled, the moderator must wait to begin the next talk until the scheduled time. If there are problems with the computer or projector, please ask IT Support for assistance in the *Little Apple Room*, Hilton Garden Inn.

Student Competition Judge and Moderator Training

A meeting for moderators and student competition judges is scheduled on Sunday at 4:30 to 5:30pm in the **Fort Riley Room**, Hilton Garden Inn. Judging packets will be distributed at that time.

Employment Opportunity Center

Employers are invited to post job announcements and job seekers are encouraged to post their CVs in the **Big Basin**. Please bring copies of your documents for distribution.

Program Updates, Messages, Lost and Found

Please notify Program Chair, Amit Sethi (amit.sethi@pioneer.com) about any program changes. A message board for posting announcements will be displayed near the NCB Meeting Registration Desk (**Foyer**, Manhattan Conference Center). Lost and found items may be turned in and retrieved at the registration table.

IT Support

The IT Support area is located in the **Little Apple Room**, Hilton Garden Inn. Extra supplies will be located there if necessary (e.g., timers, laser pointers, batteries, etc.). The room is available during the following times:

Sunday	11:00am – 7:00pm
Monday	7:30am – 5:00pm
Tuesday.....	7:30am – 5:00pm
Wednesday	7:00am – 12:00pm

Creating Presentations: PowerPoint presentations should be created in a format compatible with Microsoft Office 2010 (.pptx). Presenters should name their file using the following format: PaperNumber_PresenterLastName.pptx (e.g., 12_Smith.pptx). Presenters are encouraged to AVOID using embedded audio and video files in their presentations.

Uploading and Previewing Presentations: Bring a copy of the presentation file on a USB memory stick to the **Little Apple Room** for uploading and previewing. Files should be uploaded the day before they are to be presented. Presenters are encouraged to bring a copy of the file to their session in case there are problems.

Uploading Symposium Presentations: Symposium organizers should coordinate with speakers for uploading presentation files before the session starts. Organizers can use a meeting laptop or provide their own if desired.

Audio/Visual Equipment: All meeting rooms will be equipped with an LCD projector, projection screen, Windows laptop, and laser pointer/slide advancer. All computers used at the 2015 meeting will run Windows 7, so presenters who create their presentation on a Mac computer should ensure that the presentation is compatible with PowerPoint 2010 on Windows. You may preview the file in the **Little Apple Room**.

Please, No Photographs

We request that attendees not take photographs or video during sessions because they are disruptive to the presenters. Please request permission before taking photographs of posters.

Poster Presentations

Posters will be displayed in the **Big Basin Room** of the Manhattan Conference Center. Push pins will be provided for all the posters. Posters should not exceed 48 inches wide x 48 inches long to ensure they fit on the poster stands.

Student competition posters should be set up on Sunday between 6:00pm – 8:00pm and removed on Tuesday between 5:00pm – 6:00pm. Authors of ALL posters are encouraged to stand by their posters from 3:00pm – 4:00pm to network and answer questions.

Regular submitted posters should be set up on Monday between 6:00pm – 8:00pm and removed on Tuesday between 5:00pm – 6:00pm. Authors of ALL posters are encouraged to stand by their posters from 3:00pm – 4:00pm.

SPECIAL EVENTS

Triplehorn Challenge: The Triplehorn Challenge is a friendly competition to showcase entomological collection and presentation skills in one of two divisions: Pinning and Still Art. Each division will have prizes for the top winners. Registration for the Pinning Competition is limited to first 20 sign-ups on site at the Registration Desk on Sunday (31 May) and the competition will take place on the same evening from 8:30pm - 10:00pm on the **second floor** of the Flint Hills Discovery Center. Entries in the Still Art division will be displayed in the **Big Basin Room** of the Manhattan Conference Center on Monday and Tuesday (1 and 2 June) from 7:00am to 5:00pm.

Konza Prairie: The 3- hour tour is offered for Sunday (31 May) at 1:00 or 2:30pm. Preregister online (\$12/person) or sign up on site at the registration desk (\$15/person) on May 31, between 11:00am and 2:30pm. Please meet in the **Foyer**, Manhattan Conference Center to check in. You should expect to be back at the hotel by 4:30pm or 6:30pm.

Insect Zoo / K-State Gardens: No booking is required for this tour which is offered on Monday (1 June) from 12:00 - 6:00pm. Vans will take registered meeting participants (you must have your meeting badge to participate in this tour) from the **Foyer**, Manhattan Conference Center every 1/2 hour.

Firefly Field Trip: Trips will be held on Monday and Tuesday (1 and 2 June) at 8:00pm, weather permitting. Registration will be held on-site and transportation is not provided, but ride sharing will be arranged. The trips will depart from the Foyer, Manhattan Conference Center and will be led by Larry Buschman.

2015 NCB MEETING ORGANIZERS



Paula Davis
President



Amit Sethi
Program Chair



David Margolies
Local Arrangements Chair



Alice Harris
Student Affairs Chair



Gregory Zolnerowich



Jared Ostrem

Triplehorn Challenge Co-Chairs

2015 NCB SPECIAL ACKNOWLEDGEMENTS

Additional Meeting Organizers

Kent Hampton and **Eva Zurek**: A/V Coordinators

Mike Smith and **Yoonseong Park**: Signage and Local Setup

Jim Nechols: Poster Session

Special Thanks

Becky Anthony and **Katherine Mathews** at ESA Central for website, online registration, and support

Amy Coli at Confex for program assistance

Jill Haukos at Konza Prairie

Kiffnie Holt at Insect Zoo

Larry Buschman at Firefly Field Trip

Jonathan Mertz at Flint Hills Discovery Center

Jill Mason at Manhattan Conference Center

Kelsey Hailey at Manhattan Hilton Garden Inn

Morgan Klinkradt at Conference Direct

Kendra Dekat at Manhattan Convention & Visitors Bureau

All of our Moderators, Student Competition Judges,
Student volunteers and Meeting Photographer

All of our meeting sponsors

About the Meeting Logo

This year's meeting logo was developed by
April Battani at DuPont Pioneer and features
Dectes stem borer, ***Dectes texanus texanus***.

NCB-ESA WEBSITE

www.entsoc.org/northcentral

2014-2015 NCB-ESA OFFICERS AND COMMITTEES

President

Paula Davis

President-Elect

Luis Canas

Past President

Sue Blodgett

Secretary-Treasurer

Jeff Bradshaw

Governing Board Representative

Gary Brewer

Executive Committee Members-at-Large

Linda Mason, Robert Wright, Jennifer White
and Alice Harris (student representative)

Program Planning Committee

Amit Sethi (Chair), Matt O'Neal,
Louise Lynch (student representative),
Jared Ostrem, and Greg Zolnerowich

Local Arrangements Committee

David Margolies (Chair), Jim Nechols, Ludek Zurek,
Shelly Wiggam-Ricketts (student representative),
Erin Hodgson, and Alice Harris

Nominating Committee

Susan Moser (Chair), Grayson Brown,
Julie Peterson

Audit Committee

Jonathan Lundgren (Chair), Matt Carroll, Lamar Buckelew

Photo Salon Committee

Tom Myers (Chair), Ric Bessin, Gary Hein, David Voegtlin

Awards Czar

Kelly Tilman

NCB-ESA Student Awards Committee

Jason Harmon (Chair), Robert Koch, Debbie Finke,
Patti Prasifka, Thelma Heidel-Baker, Clint Pilcher,
John Ruberson, and Trisha Leaf (student representative)

NCB-ESA Honorary Awards Committee

Brian McCornack (Chair), Bradley McManus, Louis Hesler, Tom
Clark, and Rachel Sitz (student representative)

NCB-ESA Professional Awards Committee

Deane Jorgenson (Chair), Anitha Chirumamilla,
Jarrad Prasifka, Sean Whipple, and
Aubrey Paolino (student representative)

NCB-ESA Education Project Awards Committee

Chelle Hartzler (Chair), Phillip Sloderbeck,
Jeffery Preece, and Laura Higgins.

Student Affairs Committee

Alice Harris (Chair), Kayla Perry, Rachel Sitz, Kacie Athey,
Aubrey Paolino, Trisha Leaf, Louise Lynch, Joliene Lindholm,
Jaclyn Eichele, Nicole Quinn,
Britani Alexander, Alicia Leroux, Rita Velez

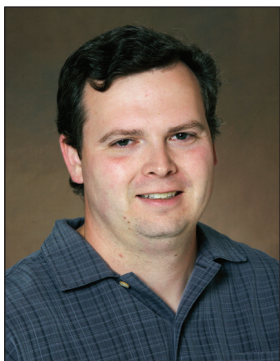
Linnaean Games Committee

Dan Young (Chair), Deane Jorgenson (Games Master),
Marianne Alleyne, David Margolies,
Hannah Penn (student representative)

Meeting Sponsorship Committee

Sue Blodgett

2015 NCB AWARDS COMMITTEE CHAIRS



Jason Harmon
*NCB Student
Awards Chair*



Brian McCornack
*NCB Honorary
Awards Chair*



Deane Jorgenson
*NCB Professional
Awards Chair*



Chelle Hartzler
*NCB Educational
Project Chair*

2015 NORTH CENTRAL BRANCH ESA

C.V. Riley Achievement Award

Dr. David Hogg, University of Wisconsin-Madison



Dr. David Hogg is Professor and Chair in the Department of Entomology at the University of Wisconsin-Madison. Hogg received B.S. (1970) and M.S. (1974) degrees in Entomology from Purdue University, and a Ph.D. (1977) in Entomology and Insect Ecology from the University of California, Berkeley. Hogg was an assistant professor at Mississippi State University from 1977-79. In 1979 Hogg was hired by the University of Wisconsin, with responsibility for research on insects affecting agronomic crops.

Hogg and his students have conducted research on a variety of insects, crops and cropping systems, most notably potato leafhopper and soybean aphid on alfalfa and soybean, respectively. Hogg has taught a variety of classes during his tenure at UW-Madison, and he currently teaches "Insects and Human Culture", a large enrollment class for non-majors. Hogg is completing his second 4-year term as department chair, plus he spent three years as an associate dean and one year as interim dean of the UW College of Agricultural and Life Sciences. Hogg has served as NCB-ESA President (2000) and ESA President (2010).

2015 NORTH CENTRAL BRANCH ESA

Award of Excellence in Integrated Pest Management

Dr. Brian McCornack, Kansas State University

Dr. Brian P. McCornack is an Associate Professor in the Kansas State University (KSU) Department of Entomology where his responsibilities include research, extension and teaching. McCornack received a B.A. in Biology from Luther College, M.S. in Entomology from Michigan State University, and a Ph.D. in Entomology from the University of Minnesota. He joined the faculty at KSU in 2008 and his research program focuses on investigating the spatial distribution and



movement patterns of pest and beneficial organisms in changing agricultural landscapes, improving surveillance practices for invasive species, improving insecticide efficacy, and developing dynamic, economic yield-loss models and associated sampling plans. McCornack has co-authored 25 peer-reviewed journal articles, given more than 30 invited presentations and seminars, and has led or participated in research teams garnering more than \$10 million in extramural funding from local, state, federal, and international agencies. Most recently he has been leading a joint US-Australian detecting invasive pests using modern technology. McCornack has developed a wide range of IPM tools for use on large commercial farms, including widely adopted economic injury levels and thresholds for soybean aphid, binomial sequential sampling plans for panicle caterpillars in sorghum, and improved best management practices for chemical controls and other IPM tactics in general. McCornack is the program director for MyFields.info, a dynamic web-based application that pushes Extension content to subscribed users through mobile technologies. McCornack is an active member of ESA and serves on several regional, IPM-related working groups and co-facilitates the Food Security Interest Group at KSU.

2015 NORTH CENTRAL BRANCH ESA

Distinguished Achievement Award in Extension

Dr. Robert Wright, University of Nebraska - Lincoln



Dr. Robert Wright has been on the faculty of the University of Nebraska - Lincoln's Department of Entomology since 1988, with a joint research and extension program focused on agronomic crop insect management. He has been the Extension Integrated Pest Management Coordinator at the University of Nebraska - Lincoln since 1988. In this role, he coordinates a team of 12 Extension Specialists and Educators who have obtained \$1,174,340 in USDA competitive grant funding since 2009 for

Extension IPM programming in Nebraska. Bob was a founding co-chair of UNL's Integrated Crop Management Extension Action Team, 1993-2000, and is currently the Evaluation Contact for the IPM Signature program for the Crops of the Future team. As statewide Extension Crop Entomology Coordinator, Bob plans and delivers educational programming for Crop Production Clinics held throughout Nebraska, and the Crop Management and Diagnostic Clinics at UNL's Agricultural Research Development Center. He also contributes to the UNL's Pesticide Safety Education Program and is a long-time member of the PSEP Steering Committee.

Dr. Wright has contributed to many other Extension IPM activities, both regionally and nationally. He chaired NCERA 222, the USDA multi-state research and extension committee on IPM, and has participated in the National IPM Coordinating committee for several years. Bob currently co-chairs the North Central Extension Field Crop Entomologists Working Group, which has received \$73,375 in competitive funding from USDA since 2010. Bob served on the Planning Committee, co-chaired the Poster Committee, and co-organized a symposium for the 2012 7th International IPM Symposium, and co-organized a symposium and presented a paper at the 2015 8th International IPM Symposium. He is actively involved with USDA's IPM Centers, having served on the Steering, and Stakeholder Advisory committees

for the North Central IPM Center, and has been a member of the grant review committees for the Western, Northeast, and Southern IPM Centers.

Dr. Wright is an excellent extension communicator. Bob has established a strong publication record with over 150 extension and 62 research publications to his credit. At UNL Bob is a regular contributor to the Nebraska Crop Watch newsletter and the Market Journal television series. He is active in the social media environment where he manages Facebook pages for the Entomology Department and South Central Ag Lab and is active on other social media such as Twitter (@BobWrightUNL). Bob also participated in the development of IPM apps for mobile devices, including sampling and economic threshold calculators for western bean cutworm and European corn borer.

Dr. Wright has established an enviable record of accomplishments and has provided effective extension education, leadership, and service throughout his career.

2015 NORTH CENTRAL BRANCH ESA

Distinguished Achievement Award in Teaching

Dr. Joseph Raczkowski, The Ohio State University



Dr. Joseph Raczkowski has served as a Lecturer in the Department of Entomology at The Ohio State University since 2009. He received his MS and PhD from the Department of Evolution, Ecology, and Organismal Biology at The Ohio State University. His research focus is the evolution of ant behavior, specifically social parasitism.

Joe teaches several entomology courses including Introduction to Insect Science, a 100% online course he developed with other

entomology faculty. In addition to teaching, he serves on several committees and is an undergraduate academic advisor and recruiter.

2015 NORTH CENTRAL BRANCH ESA

Distinguished Achievement Award in Horticultural Entomology

Dr. David Shetlar, The Ohio State University

Dr. David Shetlar is a Professor of Urban Landscape Entomology at The Ohio State University where he performs outreach on turf and ornamental entomology, teaches general entomology and concentrates on turfgrass entomology research.

Dr. Shetlar earned his B.S. and M.S. degrees in Zoology from the University of Oklahoma and his Doctorate in Entomology from Penn State. He was a professor at Penn State from 1977 to 1983 where he had an 80% teaching appointment and performed applied research on greenhouse and Christmas tree pests. He joined Chemlawn Services R&D in Delaware, OH in 1984 where he was a Research Scientist in charge of developing new turfgrass insect control strategies, products and formulations. While based in Ohio, he directed turf insect research in Georgia, Florida, Texas and California.



He joined Ohio State in May, 1990 where he delivered information on insect management to the turfgrass and ornamental plant industries, from homeowners to professional managers and plant producers. He initially performed applied research on pests of ornamental plants and turfgrass, but turned entirely to turfgrass research in the mid-1990s. He currently teaches a variety of courses from: general insect biology for undergraduates; turfgrass, ornamental and greenhouse entomology for upper level undergraduates; and graduate-level courses in morphology and taxonomy.

He has coauthored several books on turfgrass insects, including chapters in the ESA Handbook of Turfgrass Insect Pests, and has a long list of research and industry publications. He also produces the P.E.S.T. Newsletter in association with the Ohio Nursery and Landscape Association.

2015 NORTH CENTRAL BRANCH ESA

Educational Project Awards

Presented by BCEs of Mid-America

Webinar

“Corn Rootworm Management in the Transgenic Era”

Robert Wright, University of Nebraska

Joe Spencer, University of Illinois

Ken Ostlie, University of Minnesota

Aaron Gassman, Iowa State University

Lance Meinke, University of Nebraska

Mike Gray, University of Illinois

Erin Hodgson, Iowa State University

Adrianna Szczepaniec, South Dakota State University

This webinar brought together experienced rootworm entomologists from across the Midwest to provide current research information and management recommendations for western corn rootworms. Over 330 computers accessed the live program. Due to a USDA grant, this program is available open access on the Plant Management Network. Over 4835 people have viewed the webinar through the end of February 2015.

2015 NORTH CENTRAL BRANCH ESA

J.H. Comstock Graduate Student Award

Amy Morey, University of Minnesota

Amy is a PhD candidate in Entomology at the University of Minnesota working with Drs. Rob Venette and Bill Hutchison. Amy's research uses cold hardiness phenotypes of *Epiphyas postvittana* to explore the underlying cold hardiness mechanisms of this invasive insect, which, if understood better, would improve spatially-explicit strategies to predict and prevent its spread. Her research integrates fundamental entomological research with societal factors to improve the scientific basis for pest risk



analysis and policy related to invasive insects. Additionally, Amy was awarded an NSF-IGERT and will receive a minor in the risk analysis of invasive species and genotypes. Amy received a B.A. in biology from Luther College, and a M.S. in entomology from the University of Minnesota where she researched the cold hardiness and integrated pest management of *Helicoverpa zea*.

2015 NORTH CENTRAL BRANCH ESA

Graduate Student Scholarship Award

Jennifer Gordon, University of Kentucky



Dr. Jennifer R. Gordon received her Ph.D. in December 2014 from the University of Kentucky studying in Dr. Kenneth Haynes' laboratory. Her dissertation was entitled Insecticide Resistance in the Bed Bug. She also received a M.S. from Louisiana State University and B.S. from Purdue University in entomology. She has three peer-reviewed research publications, an additional three peer-reviewed articles and five trade journal articles. She co-developed the Pesticide

Efficacy Testing Kit Lights Out™ Lab-in-a-Bag, a commercial product designed to prescribe the most effective insecticide against different populations of bed bugs and other urban pests. Additionally, she has performed 22 oral and poster presentations at professional conferences and extension events, won 17 grants and awards and was the president of the H. Garman Entomology Club at the University of Kentucky. Currently, she is a postdoctoral scholar at the University of Kentucky investigating the toxicity of silica gel against multiple populations of bed bugs.

2015 NORTH CENTRAL BRANCH ESA

Student Travel Scholarships

Tavvs Alves.....	University of Minnesota
Sanjay Basnet.....	University of Nebraska
Austin Bauer	University of Wisconsin
Bridget Blood	Purdue University
Travis Calkins	The Ohio State University
Mariom Carvajal	North Dakota State University
Alexandra Duffy.....	Purdue University
Eduardo Faundez.....	North Dakota State University
Anthony Hanson	University of Minnesota
Gabriel Hughes	Purdue University
Kelly Jackson	University of Kentucky
Todd Johnson.....	University of Illinois
Andrea Kautz.....	The Ohio State University
James Kopco	North Dakota State University
Hannah Penn.....	University of Kentucky
Kayla Perry	The Ohio State University
MaLisa Spring	The Ohio State University
Suzanne Vachula.....	University of Illinois
Aleix Valls	North Dakota State University
Suresh Varsani.....	University of Nebraska
Alice Vossbrinck.....	The Ohio State University
Jessica Warwick.....	University of Missouri

MEETING-AT-A-GLANCE

Sunday | 31 May 2015

Services

11:00 AM - 7:00 PM	Meeting Registration <i>Foyer</i>
11:00 AM - 7:00 PM	IT Support <i>Little Apple Room</i>
4:30 PM - 5:30 PM	Moderator and Competition Judges Training <i>Fort Riley</i>
6:00 PM - 8:00 PM	Poster Setup for Monday <i>Big Basin</i>
6:00 PM - 8:00 PM	Setup for Triplehorn Challenge - Still Art Display <i>Big Basin</i>

Functions

1:00 PM - 4:30 PM	Konza Prairie Tour I [Requires Registration] <i>Depart from Foyer</i>
2:30 PM - 6:00 PM	Konza Prairie Tour II [Requires Registration] <i>Depart from Foyer</i>
5:00 PM - 8:00 PM	Linnaean Games - Preliminary Rounds <i>McDowell + Tuttle</i>
8:00 PM - 10:30 PM	Welcome Reception <i>Flint Hills: Discovery Center 1st & 2nd Floors</i>
8:30 PM - 10:00 PM	Triplehorn Challenge - Pinning Competition <i>Flint Hills: Discovery Center 1st & 2nd Floors</i>

Business

8:00 AM - 4:00 PM	NCAC/SAC Department Heads Meeting <i>Fort Riley</i>
11:30 AM - 2:00 PM	Executive Committee Meeting, Committee Reports <i>Big Blue River</i>

Scientific Program

1:30 PM - 4:35 PM	Symposium: Plant-aphid Interactions in the "Omics" Era: What can We Infer from Different Model Systems? <i>McDowell + Tuttle</i>
1:30 PM - 4:45 PM	Symposium: What are the Costs and Benefits for Neonicotinoid Seed Treatments in Field Crops? <i>Flint Hills + Kings</i>

SCIENTIFIC PROGRAM

SUNDAY AFTERNOON

Symposium: Plant-aphid Interactions in the “Omics” Era: What can We Infer from Different Model Systems?

1:30pm – 4:35pm

McDowell + Tuttle / Manhattan Conference Center

Organizer and Moderator:
Joe Louis, Univ. of Nebraska, Lincoln, NE

- | | | |
|------|---|--|
| 1:30 | | Introductory Remarks |
| 1:33 | 1 | Phosphoinositide mediated signaling mediates expression of a highly virulent aphid biotype. C. Michael Smith, Kansas State Univ., Manhattan, KS |
| 1:56 | 2 | miRNAs regulate phytohormone signaling during Vat mediated aphid resistance. Sampurna Sattar, Charles Addo-Quaye and Gary A Thompson, Pennsylvania State Univ., Univ. Park, PA |
| 2:19 | 3 | Using “omics” to dissect the plant-aphid arms race. Gustavo C. MacIntosh, Iowa State Univ., Ames, IA |
| 2:42 | 4 | Plant defense against aphids: Unraveling complex interactions. Joe Louis, Univ. of Nebraska, Lincoln, NE |
| 3:05 | | Break |
| 3:20 | 5 | The influence of plant fatty acid metabolism on aphids: A comparison of tomato and arabidopsis. Fiona Goggin, Univ. of Arkansas, Fayetteville, AR |
| 3:43 | 6 | Genetic analysis of defense related genes in switchgrass during greenbug aphid (<i>Schizaphis graminum</i> (Rondani)) infestation. Teresa Donze-Reiner ¹ , Nathan Palmer ¹ , Travis J. Prochaska ¹ , Gautam Sarath ² and Tiffany Heng-Moss ¹ , ¹ Univ. of Nebraska, Lincoln, NE, ² USDA - ARS, Lincoln, NE |
| 4:06 | 7 | Maize – corn leaf aphid interaction. Suresh Varsani, Kyle G. Koch, Tiffany Heng-Moss and Joe Louis, Univ. of Nebraska, Lincoln, NE |
| 4:29 | | Concluding Remarks |

Symposium: What are the Costs and Benefits for Neonicotinoid Seed Treatments in Field Crops?

1:30pm – 4:45pm

Flint Hills + Kings / Manhattan Conference Center

Organizers : Erin W. Hodgson, Matt O'Neal,
Iowa State Univ., Ames, IA

Moderator: Erin W. Hodgson,
Iowa State Univ., Ames, IA

- | | | |
|------|----|--|
| 1:30 | | Introduction: How did we get here? Matt O'Neal and Erin W. Hodgson, Iowa State Univ., Ames, IA |
| 1:40 | 8 | Cost-benefit analyses and U.S. pesticide registrations: Options for neonicotinoid seed treatments. Steven Bradbury, Iowa State Univ., Ames, IA |
| 2:00 | 9 | Seed treatments and their role in crop production and IPM. Michael T. McCarville, Bayer Crop-Science, Johnston, IA |
| 2:20 | 10 | Neonicotinoid seed treatments disrupt food chains: A non-target impact from Pennsylvania. John Tooker, Pennsylvania State Univ., Univ. Park, PA |
| 2:40 | | Break |
| 2:50 | 11 | Impact of neonicotinoid seed treatments on Mid-South crops. Fred R. Musser ¹ , Angus Catchot ¹ , John North ¹ , Jeff Gore ² , Don Cook ² , David Kerns ³ , Scott Stewart ⁴ and Gus Lorenz ⁵ , ¹ Mississippi State Univ., Mississippi State, MS, ² Mississippi State Univ., Stoneville, MS, ³ Texas AgriLife Extension Service, TX, ⁴ Univ. of Tennessee, Jackson, TN, ⁵ Univ. of Arkansas, Lonoke, AR |
| 3:10 | 12 | Wheat seed in Kansas: To treat or not to treat? Holly Schwarting and Jeff Whitworth, Kansas State Univ., Manhattan, KS |
| 3:30 | 13 | Do neonicotinoid seed treatments contribute to area-wide suppression of soybean aphids and multicolored Asian lady beetle? Christie Bahlai ¹ , Wopke vander Werf ² , Lia Hemerik ² , Matt O'Neal ³ and Douglas A. Landis ¹ , ¹ Michigan State Univ., East Lansing, MI, ² Wageningen Univ., Wageningen, Netherlands, ³ Iowa State Univ., Ames, IA |

3:50		Break
4:00	14	Collecting credible research data on the farm. Pat Reeg, Iowa Soybean Association, Ankeny, IA
4:20	15	Big data from multistate research on insecticidal seed treatments in soybean. Christian Krupke, Purdue Univ., West Lafayette, IN, Kelley Tilmon, South Dakota State Univ., Brookings, SD, Eileen M. Cullen, Univ. of Wisconsin, Madison, WI, Erin W. Hodgson, Iowa State Univ., Ames, IA, Janet Knodel, North Dakota State Univ., Fargo, ND, Brian McCornack, Kansas State Univ., Manhattan, KS, Paul D. Mitchell, Univ. of Wisconsin-Madison, Madison, WI and Bruce D. Potter, Univ. of Minnesota, Lamber-ton, MN
4:40		Concluding Remarks

MEETING-AT-A-GLANCE

Monday | 1 June 2015

Services

7:30 AM - 5:00 PM	Meeting Registration <i>Foyer</i>
7:30 AM - 5:00 PM	IT Support <i>Little Apple</i>
6:00 PM - 8:00 PM	Poster Setup for Tuesday <i>Big Basin</i>

Functions

7:00 AM - 10:00 AM	Continental Breakfast <i>Big Basin</i>
7:00 AM - 5:00 PM	Triplehorn Challenge - Still Art Display <i>Big Basin</i>
12:00 PM - 6:00 PM	Insect Zoo / K-State Gardens Tours <i>Tours Depart from Foyer every 30 minutes</i>
3:00 PM - 4:00 PM	Refreshment Break <i>Big Basin</i>
5:30 PM - 8:00 PM	Linnaean Games - Final Rounds <i>McDowell + Tuttle</i>
8:30 PM - 11:30 PM	Student Mixer <i>Flint Hills + Kings</i>

Business

8:00 AM - 9:15 AM	Opening Session and Business Meeting <i>McDowell + Tuttle</i>
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MEETING-AT-A-GLANCE

Monday | 1 June 2015

Scientific Program

7:00 AM - 5:00 PM	Student Competition Poster Display [all poster authors present from 3:00-4:00] <i>Big Basin</i>
9:15 AM - 10:50 AM	Undergraduate and M.S. Student TMP* Competition: SysEB, MUVE, P-IE Session <i>Alcove</i>
9:15 AM - 10:50 AM	Undergraduate and M.S. Student TMP* Competition: P-IE Session <i>Konza Prairie</i>
9:15 AM - 10:50 AM	Ph.D. Student TMP* Competition: P-IE Session <i>McDowell + Tuttle</i>
9:15 AM - 11:25 AM	Ph.D. Student TMP* Competition: MUVE Session <i>Flint Hills + Kings</i>
10:55 AM - 12:30 PM	Ph.D. Student TMP* Competition: P-IE, SysEB Session <i>McDowell + Tuttle</i>
1:30 PM - 2:55 PM	Ph.D. Student TMP* Competition: PBT Session <i>Alcove</i>
1:30 PM - 5:15 PM	Symposium: Urban Entomology at the Interface of Basic and Applied Sciences <i>McDowell + Tuttle</i>
2:30 PM - 5:00 PM	Symposium: Forest Entomology <i>Flint Hills + Kings</i>

***TMP = Ten Minute Paper**

SCIENTIFIC PROGRAM

MONDAY MORNING

Student Competition Posters Undergraduate and M.S. - MUVE, P-IE Session

7:00am – 5:00pm

Big Basin / Manhattan Conference Center

- D1 Testing for kairomonal attraction of dipterans to pheromones of cerambycid beetles. Suzanne Vachula, Todd D. Johnson and Lawrence M. Hanks, Univ. of Illinois, Urbana, IL
- D2 Management considerations for the brown recluse spider. Robert Ewing, Holly Schwarting and R. Jeff Whitworth, Kansas State Univ., Manhattan, KS
- D3 Evaluating rapid bioassays to assess phosphine resistance in the red flour beetle, *Tribolium castaneum* (Herbst). Aaron Cato, Edwin Afful and Thomas Phillips, Kansas State Univ., Manhattan, KS
- D4 The effect of temperature and host plant resistance on population growth of soybean aphid (*Aphis glycines*) biotype 1. Ashley Hough and James R. Nechols, Kansas State Univ., Manhattan, KS
- D5 A tale of three cities: Student perspectives on a hybrid live-distance IPM class. Caitlin Stamper¹, Kelly Jackson¹, Timothy McNamara¹, Amanda Skidmore¹, Joshua McCord¹, Beth Ferguson², Alexis Hilario², Jacob Cerenka³, Marissa Layman³ and Mike Bredeson³, ¹Univ. of Kentucky, Lexington, KY, ²Univ. of Arkansas, Fayetteville, AR, ³South Dakota State Univ., Brookings, SD
- D6 Tolerance as a putative mechanism for Hessian fly control in winter wheat. Kirsten Roe and Brandon Schemerhorn, Purdue Univ., West Lafayette, IN
- D7 Global analysis of microRNA species in the gall midge *Mayetiola destructor*. Chen Du, Kansas State Univ., Manhattan, KS

Student Competition Posters Ph.D. - MUVE, P-IE Session

7:00am – 5:00pm

Big Basin / Manhattan Conference Center

- D8 Effect of different wavelengths of light on trap capture of the mold mite, *Tyrophagus putrescentiae* (Schrank) (Acari: Acaridae). Barbara Amoah and Thomas Phillips, Kansas State Univ., Manhattan, KS
- D9 Managing two soybean pests to optimize yield. Eric H. Clifton, Erin W. Hodgson, Gregory L. Tylka and Aaron J. Gassmann, Iowa State Univ., Ames, IA
- D10 Geographic variation in mortality from insecticides among Iowa populations of western corn rootworm (Coleoptera: Chrysomelidae). Kenneth E. Masloski, Joel Coats and Aaron Gassmann, Iowa State Univ., Ames, IA
- D11 Assessment of virulence in the wheat curl mite, *Aceria tosichella* Keifer, to wheat genes for mite and virus resistance in the north central United States. Luaay Khalaf, Wen-Po Chuang, Lina Aguirre-Rojas and C. Michael Smith, Kansas State Univ., Manhattan, KS
- D12 The Dn7 gene confers antibiosis resistance to wheat curl mite and Russian wheat aphid in bread wheat. Lina Aguirre-Rojas¹, Deepak Kumar Sinha², Wen-Po Chuang¹, Luaay Khalaf¹ and C. Michael Smith¹, ¹Kansas State Univ., Manhattan, KS, ²International Centre for Genetic Engineering and Biotechnology, New Delhi, India
- D13 Assessing western corn rootworm resistance to Bt corn in the landscape. Coy St. Clair¹, Graham P. Head² and Aaron Gassmann¹, ¹Iowa State Univ., Ames, IA, ²Monsanto Company, St. Louis, MO
- D14 The effect of tillage on arthropod population dynamics in organic summer squash (*Cucurbita pepo*). Amanda Skidmore and Ric Bessin, Univ. of Kentucky, Lexington, KY
- D15 Evaluation of cowpea storage technologies used by traders in Burkina Faso and Niger. Kabita Kharel and Dieudonne Baributsa, Purdue Univ., West Lafayette, IN

Student Competition Posters Undergraduate and M.S. - PBT, P-IE Session

7:00am – 5:00pm

Big Basin / Manhattan Conference Center

- D16 Understanding spotted wing drosophila (*Drosophila suzukii*) oviposition preferences and host suitability of soft-skinned fruits. Sarah Holle, Theresa M. Cira, Eric C. Burkness and William Hutchison, Univ. of Minnesota, Saint Paul, MN
- D17 Evaluating attractants to the rusty grain beetle, *Cryptolestes ferrugineus* (Stephens) (Coleoptera: Laemophloeidae). Stephen Losey and Thomas Phillips, Kansas State Univ., Manhattan, KS
- D18 Are different bee species attracted to different plant and floral traits in alfalfa (*Medicago sativa*)? Austin Bauer, Univ. of Wisconsin Madison, Madison, WI and Johanne Brunet, USDA - ARS, Madison, WI
- D19 Long-legged fly (Diptera: Dolichopodidae) communities in Ohio agroecosystems and assessing their role as biological control agents in vegetable crops. Andrea Kautz, The Ohio State Univ., Columbus, OH and Mary M. Gardiner, The Ohio State Univ., Wooster, OH
- D20 Toxicological effects of gap junction inhibitors on the yellow fever mosquito, *Aedes aegypti*. Travis Calkins and Peter Piermarini, The Ohio State Univ., Wooster, OH
- D21 Identifying natural enemies of *Halyomorpha halys* using video surveillance in organic systems. Kristin Deroshia and Matthew Grieshop, Michigan State Univ., East Lansing, MI
- D22 Ladies first: The butterfly effect and plasticity of population growth in *Drosophila suzukii*. Grace Sward¹, Eric Burkness¹, William Hutchison¹ and Christopher R. Philips², ¹Univ. of Minnesota, Saint Paul, MN, ²Univ. of Minnesota, Grand Rapids, MN

Student Competition Posters Ph.D. - PBT, SysEB, P-IE Session

7:00am – 5:00pm

Big Basin / Manhattan Conference Center

- D23 Determination and silencing optimization of the main components in the *Reticulitermes flavipes* (Kollar) peritrophic matrix. Andres Sandoval-Mojica and Michael E. Scharf, Purdue Univ., West Lafayette, IN
- D24 Updating the phylogeny of *Rhagoletis*: Focus on relationships of the North American species groups. Daniel Hulbert and James J. Smith, Michigan State Univ., East Lansing, MI
- D25 Quantification of esterases and phosphatases in adults of *Tribolium castaneum* (Herbst) Exposed to Various Plant Extracts. Kazam Ali¹, Muhammad Sagheer², Mansoor ul Hasan³, Abdul Rashid⁴, Muhammad Shahid⁴ and Linda J. Mason⁵, ¹Student, West Lafayette, IN, ²Lecturer, Faisalabad, Pakistan, ³Professor, Faisalabad, Pakistan, ⁴Associate Professor, Faisalabad, Pakistan, ⁵Purdue Univ., West Lafayette, IN
- D26 Effects of forest disturbance on ground-dwelling invertebrate dispersal. Kayla I. Perry¹, Kimberly Wallin² and Daniel A. Herms¹, ¹The Ohio State Univ., Wooster, OH, ²Univ. of Vermont and USDA Forest Service, Burlington, VT
- D27 Macroinvertebrate community compositional dynamics of a Missouri prairie stream. Jessica Warwick, Univ. of Missouri, Columbia, MO
- D28 Evaluation of the potential of establishment of three introduced parasitoids of emerald ash borer (Coleoptera: Buprestidae) in Wisconsin. Todd D. Johnson, Univ. of Illinois, Urbana, IL, Jonathan Lelito, USDA - APHIS - PPQ, Brighton, MI and Kenneth Raffa, Univ. of Wisconsin, Madison, WI
- D29 Effects of heat shock: Before, during, and after a parasitoid attack on pea aphid. Aleix Valls, James Kopco and Jason P. Harmon, North Dakota State Univ., Fargo, ND

- D30 Effect of cutting native prairie for hay on bees. Wayne Ohnesorg¹, Marion Ellis², Robert Wright² and Thomas E. Hunt², ¹Univ. of Nebraska, Norfolk, NE, ²Univ. of Nebraska, Lincoln, NE
- D31 Sub-lethal effects of dsRNA in southern corn rootworm (*Diabrotica undecimpunctata howardi*) larva. Adriano Pereira, Hugo Monteiro and Blair Siegfried, Univ. of Nebraska, Lincoln, NE

***Undergraduate and M.S. Student
Ten-Minute Paper Competition:
SysEB, MUVE, P-IE Session***

9:15am – 10:50am

Alcove / Manhattan Conference Center

Moderator: Sharon Dobesh,
Kansas State Univ., Manhattan, KS

- 9:15 16 *Bebaeus punctipes*, a species or a species complex? Mariom Carvajal, Eduardo Faundez and David Rider, North Dakota State Univ., Fargo, ND
- 9:27 17 Prevalence of non-O157 Shiga-toxigenic *Escherichia coli* (STEC) in muscoid flies from confined cattle environment. Rukmini Puri Giri, Jessica Thomson, Anuradha Ghosh and Ludek Zurek, Kansas State Univ., Manhattan, KS
- 9:39 18 Populations of two-spotted spider mite (*Tetranychus urticae*) and soybean aphid (*Aphis glycines*) increase with soil salinity. Jaclyn Eichele, Jason P. Harmon, Deirdre Prischmann-Voldseth and Abbey Wick, North Dakota State Univ., Fargo, ND
- 9:51 19 Impact of flight timing and duration on fecundity of the navel orangeworm (Lepidoptera: Pyralidae). Angela Rovnyak^{1,2}, Charles Burks³ and Thomas Sappington², ¹Iowa State Univ., Ames, IA, ²USDA - ARS, Ames, IA, ³USDA - ARS, Parlier, CA
- 10:03 Break

- 10:14 20 Morphometric analysis of the Haller's organ, a chemoreception sensor, found in males and females of the hard ticks (Acari: Ixodidae): *Ixodes scapularis*, *Amblyomma americanum*, and *Dermacentor variabilis*. Tanya Josek, Brian F. Allan and Marianne Alleyne, Univ. of Illinois, Urbana, IL
- 10:26 21 Fitness effects of differentially toxic prey on members of the coccinellid community. Kelly Jackson, Joshua McCord and Jennifer White, Univ. of Kentucky, Lexington, KY
- 10:38 22 Can rain garden implementation support multiple ecosystem services in Cleveland, OH? MaLisa Spring¹, Sandra Albro², Rob Darner³, Ahjond Garmestani⁴, William Shuster⁴ and Mary Gardiner¹, ¹The Ohio State Univ., Wooster, OH, ²Cleveland Botanical Garden, Cleveland, OH, ³United States Geological Survey, Columbus, OH, ⁴Environmental Protection Agency, Cincinnati, OH

Undergraduate and M.S. Student Ten-Minute Paper Competition: P-IE Session

9:15am – 10:50am

Konza Prairie / Manhattan Conference Center

Moderator: Julie A. Peterson,

Univ. of Nebraska - Lincoln, North Platte, NE

- 9:15 23 Evidence for a facultative mutualism between the navel orangeworm (*Amyelois transitella*) and *Aspergillus flavus*. Daniel Bush¹, Eline Ampt^{1,2}, Allen V Lawrance¹, Joel Siegel³ and May R. Berenbaum¹, ¹Univ. of Illinois at Urbana-Champaign, Urbana, IL, ²Wageningen Univ., Wageningen, Netherlands, ³USDA - ARS, Parlier, CA
- 9:27 24 Effects of sulfoxaflor on the soybean aphid (Hemiptera: Aphididae) and predators. Anh K. Tran, Univ. of Minnesota, St. Paul, MN and Robert Koch, Univ. of Minnesota, Saint Paul, MN
- 9:39 25 Inheritance and fitness costs of resistance to Cry3Bb1 corn by western corn rootworm (*Diabrotica virgifera virgifera* LeConte). Aubrey Paolino and Aaron Gassmann, Iowa State Univ., Ames, IA

- 9:51 26 Comparative study of eastern and western North American populations of *Hippodamia convergens* (Coleoptera: Coccinellidae). Joshua McCord, Jennifer White and John Obrycki, Univ. of Kentucky, Lexington, KY
- 10:03 Break
- 10:14 27 Thousand cankers disease: Attraction of *Pityophthorus juglandis* to volatiles associated with black walnut and *Geosmithia morbida*. Bridget Blood¹, Matthew A. Paschen¹, William Klingeman² and Matthew Ginzal¹, ¹Purdue Univ., West Lafayette, IN, ²Univ. of Tennessee, Knoxville, TN
- 10:26 28 The spatial and temporal structure of neonicotinoid groundwater contamination in Wisconsin's Central Sands vegetable growing region. Benjamin Bradford and Russell L. Groves, Univ. of Wisconsin, Madison, WI
- 10:38 29 Field evaluation of lepidopteran pest population densities in selected cranberry varieties. Erin McMahan and Christelle Guédot, Univ. of Wisconsin, Madison, WI

Ph.D. Student Ten-Minute Paper Competition: P-IE Session

9:15am – 10:50am

McDowell + Tuttle / Manhattan Conference Center

Moderators: Ram B. Shrestha, Iowa State Univ., Ames, IA and Gary Brewer, Univ. of Nebraska, Lincoln, NE

- 9:15 30 Hyperspectral soybean reflectance affected by soybean aphid (Hemiptera: Aphididae). Tavyv Alves, Robert Koch and Ian MacRae, Univ. of Minnesota, Saint Paul, MN
- 9:27 31 Using spectral response properties to identify and characterize infestations of naturally occurring *Decates texanus* infestations in soybean. Alice Harris and Brian McCornack, Kansas State Univ., Manhattan, KS
- 9:39 32 Interactions between resistant plants and foliar insecticides for soybean aphid management. Anthony Hanson and Robert Koch, Univ. of Minnesota, Saint Paul, MN

- 9:51 33 Exploring factors that may promote the longevity of Rag genes. Adam Varenhorst, Iowa State Univ., Ames, IA
- 10:03 Break
- 10:14 34 Corn rootworm (Chrysomelidae) scouting: Do methods affect results? Trisha Leaf and Ken Ostlie, Univ. of Minnesota, Saint Paul, MN
- 10:26 35 The effects of crop rotation and Bt corn on root injury and adult abundance of western corn rootworm. Mike W. Dunbar, Matt O'Neal and Aaron Gassmann, Iowa State Univ., Ames, IA
- 10:38 36 A Minnesota field population shows varying levels of resistance to both Cry3Bb1 and Cry34/35Ab1-expressing corn. Dalton Ludwick¹, Lisa Meihls², Ken Ostlie³, Bruce D. Potter⁴, Lee French⁵ and Bruce Hibbard², ¹Univ. of Missouri, Columbia, MO, ²USDA - ARS, Columbia, MO, ³Univ. of Minnesota, Saint Paul, MN, ⁴Univ. of Minnesota, Lamberton, MN, ⁵French Agricultural Research, Lamberton, MN

Ph.D. Student Ten-Minute Paper Competition: P-IE, SysEB Session

10:55am – 12:30pm

McDowell + Tuttle / Manhattan Conference Center

Moderators: **Ram B. Shrestha**, Iowa State Univ., Ames, IA and **Gary Brewer**, Univ. of Nebraska, Lincoln, NE

- 10:55 37 Patch-burn grazing promotes pollinator diversity through spatially explicit habitat heterogeneity. Shelly Wiggam, Gregory Zolnerowich and Brian McCornack, Kansas State Univ., Manhattan, KS
- 11:07 38 True bugs (Insecta: Hemiptera: Heteroptera) of quarantine importance, associated with berries, from Chile. Eduardo Faúndez and David Rider, North Dakota State Univ., Fargo, ND
- 11:19 39 Attraction of the Hessian fly, *Mayetiola destructor* (Diptera: Cecidomyiidae), to different wavelengths and intensities of LEDs. Ryan Schmid^{1,2}, Darren Snyder^{1,3}, Lee Cohnstaedt^{1,3} and Brian McCornack^{1,2}, ¹Kansas State Univ., Manhattan, KS, ²Plant Biosecurity Cooperative Research Centre, Bruce, Australia, ³USDA - ARS, Manhattan, KS

- 11:31 40 Reproductive capability of the wheat curl mite (*Aceria tosichella* Keifer) on alternative hosts. Anthony J. McMechan and Gary Hein, Univ. of Nebraska, Lincoln, NE
- 11:43 Break
- 11:54 41 Highs and lows: Does diel temperature variation matter to aphids? James Kopco¹, Aleix Valls¹, Jason P. Harmon¹, Anthony R. Ives² and Brandon Barton², ¹North Dakota State Univ., Fargo, ND, ²Univ. of Wisconsin, Madison, WI
- 12:06 42 Are exotic lady beetles eating our native lady beetles into decline? Alice M. Vossbrinck¹, Mary Gardiner² and Andrew Michel², ¹Univ. of Illinois, Urbana, IL, ²The Ohio State Univ., Wooster, OH
- 12:18 43 Delineating ant food webs: Overcoming PCR inhibition. Hannah J. Penn, Eric G Chapman and James D. Harwood, Univ. of Kentucky, Lexington, KY

Ph.D. Student Ten-Minute Paper Competition: MUVE Session

9:15am – 11:25am

Flint Hills + Kings / Manhattan Conference Center

Moderator: Steve Thompson, Springer Professional Home Services, Des Moines, IA

- 9:15 44 Effect of methoprene impregnated packaging on *Tribolium castaneum* and *Trogoderma variabile* egg-to-adult development. Deanna Scheff¹, Bhadriraju Subramanyam¹, Frank Arthur² and Hulya Dogan¹, ¹Kansas State Univ., Manhattan, KS, ²USDA - ARS, Manhattan, KS
- 9:27 45 Diatomaceous earth efficacy against *Tribolium castaneum* adults is influenced by dosage and exposure temperature. Jennifer Frederick, Bhadriraju Subramanyam and Hulya Dogan, Kansas State Univ., Manhattan, KS
- 9:39 46 Seed infestation of *Rhyzopertha dominica* (F.) (Coleoptera: Bostrichidae) first instars on sound and artificially-damaged hard white winter and soft red winter wheat kernels. Mario Andrada and Bhadriraju Subramanyam, Kansas State Univ., Manhattan, KS

- 9:51 47 Efficacy of a synthetic amorphous zeolite against five species of stored-grain insects on wheat and concrete. Kouame Yao, Subramanyam Bhadriaraju, Kun Yan Zhu and Ambrose Kingsly, Kansas State Univ., Manhattan, KS
- 10:03 Break
- 10:15 48 Efficacy of extreme temperatures and the combination of heat with the fumigant sulfuryl fluoride to control the mold mite. Salehe Abbar, Ozgur Saglam and Thomas Phillips, Kansas State Univ., Manhattan, KS
- 10:27 49 Insecticide incorporated mesh barrier for host-seeking biting midge (*Culicoides sonorensis*) control. Darren Snyder^{1,2} and Lee Cohnstaedt¹, ¹USDA - ARS, Manhattan, KS, ²Kansas State Univ., Manhattan, KS
- 10:39 50 Effects of temperature and diet quality in stable fly (*Stomoxys calcitrans*) development. Melina Florez-Cuadros, Univ. of Nebraska - Lincoln, Lincoln, NE and David Taylor, USDA-ARS, Lincoln, NE
- 10:51 51 The effect of bacterial feeding on the midgut morphology and development of the sand fly *Lutzomyia longipalpis*. Matthew C. Heerman, Ju-Lin Weng and Marcelo Ramalho-Ortigao, Kansas State Univ., Manhattan, KS
- 11:03 52 Persistence of GFP-expressing *E. coli* in house flies exposed to cattle manure. Jessica Thomson¹, Ludek Zurek¹ and Dana Nayduch², ¹Kansas State Univ., Manhattan, KS, ²USDA - ARS, Manhattan, KS

SCIENTIFIC PROGRAM

MONDAY AFTERNOON

Ph.D. Student Ten-Minute Paper Competition: PBT Session

1:30pm – 2:55pm

Alcove / Manhattan Conference Center

Moderator: Ana Velez, Univ. of Nebraska, Lincoln, NE

- 1:30 53 Biological validation of enzyme-linked immunosorbent assays for detection of Cry proteins in the environment. Vurtice Albright¹, Richard Hellmich² and Joel Coats¹, ¹Iowa State Univ., Ames, IA, ²USDA - ARS, Ames, IA
- 1:42 54 Behavioral assays of western corn rootworm larvae to perform RNAi-mediated knockdown of CO₂ receptors expression. Carolina Camargo¹, Natalie Matz¹, Blair Siegfried², Etsuko Moriyama¹ and Hideaki Moriyama³, ¹Univ. of Nebraska - Lincoln, Lincoln, NE, ²Univ. of Nebraska, Lincoln, NE, ³School of Biological Sciences, Univ. of Nebraska - Lincoln, Lincoln, NE
- 1:54 55 Glass-vial bioassay: Improvements towards soybean aphid (*Aphis glycines*) resistance monitoring. Matheus Ribeiro¹, Thomas Hunt² and Blair Siegfried¹, ¹Univ. of Nebraska, Lincoln, NE, ²Univ. of Nebraska, Concord, NE
- 2:06 Break
- 2:19 56 Identification and characterization of juvenile hormone affinity chromatography purified proteins. Joliene Lindholm, Walter G Goodman, Univ. of Wisconsin - Madison, Madison, WI
- 2:31 57 Identifying pheromone biosynthetic genes in *Neoclytus mucronatus* (Coleoptera: Cerambycidae) using a differential gene expression approach. Gabriel Hughes and Matthew Ginzler, Purdue Univ., West Lafayette, IN
- 2:43 58 Osmoregulatory functions of Na/K-ATPase in the salivary glands of the blacklegged tick, *Ixodes scapularis* Say. Donghun Kim and Yoonseong Park, Kansas State Univ., Manhattan, KS

Symposium: Urban Entomology at the Interface of Basic and Applied Sciences

1:30pm – 5:15pm

McDowell + Tuttle / Manhattan Conference Center

Organizer: Ameya D. Gondhalekar,
Purdue Univ., West Lafayette, IN

Moderators: Ameya D. Gondhalekar, and Grzegorz Buczkowski,
Purdue Univ., West Lafayette, IN

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| 1:30 | | Introductory Remarks |
| 1:35 | 59 | Genetic variation in bed bugs from geographically isolated populations. Shripat Kamble and Ralph Narain, Univ. of Nebraska, Lincoln, NE |
| 2:00 | 60 | Trade-offs between insecticide resistance and life history parameters in the bed bug. Jennifer Gordon, Michael F. Potter and Kenneth F. Haynes, Univ. of Kentucky, Lexington, KY |
| 2:25 | 61 | Recent developments in bed bug detection and management strategies. Narinderpal Singh ¹ , Richard Cooper ^{1,2} and Changlu Wang ¹ , ¹ Rutgers, The State Univ. of New Jersey, New Brunswick, NJ, ² Cooper Pest Solutions, Lawrenceville, NJ |
| 2:50 | 62 | Termite baiting - 20 years of learning and innovation. Neil Spomer, Dow AgroSciences, Indianapolis, IN |
| 3:15 | | Break |
| 3:30 | 63 | Molecular analysis of insecticide resistance in bed bugs. Subba Reddy Palli, Univ. of Kentucky, Lexington, KY |
| 3:55 | 64 | Development of cyantraniliprole: A novel anthranilic diamide for house fly (<i>Musca domestica</i> L.) control. Nicola T. Gallagher ¹ , Clay Scherer ² , David L. Cox ³ , Mark Coffelt ¹ and Elray Roper ¹ , ¹ Syngenta, Greensboro, NC, ² Syngenta Plant Protection, Jensen Beach, FL, ³ Syngenta Crop Protection, LLC, Madera, CA |
| 4:20 | 65 | Protozoacidal trojan-horse: Use of a ligand-lytic peptide for selective destruction of symbiotic protozoa within termite guts. Amit Sethi, DuPont Pioneer, Johnston, IA |

- 4:45 66 Cockroach resistance management: What we need to know. Ameya D. Gondhalekar and Michael E. Scharf, Purdue Univ., West Lafayette, IN
- 5:10 Concluding Remarks

Symposium: Forest Entomology

2:30pm – 5:00pm

Flint Hills + Kings / Manhattan Conference Center

Organizers and Moderators: Todd D. Johnson,
Univ. of Illinois, Urbana, IL and **Joseph Wong,**
Univ. of Illinois Urbana-Champaign, Urbana, IL

- 2:30 Introductory Remarks
- 2:35 67 Life history and chemical ecology of the lesser chestnut weevil (*Curculio sayi*) in mid-Missouri. Bruce A. Barrett, Univ. of Missouri, Columbia, MO
- 2:55 68 Chirality and contact chemoreception in the long-horned beetle. Matthew Ginzl¹, Gabriel Hughes¹ and Jocelyn G. Millar², ¹Purdue Univ., West Lafayette, IN, ²Univ. of California, Riverside, CA
- 3:15 69 Managing emerald ash borer in the great white north: Linking population dynamics to effective sampling methods. Chris J K MacQuarrie¹, Jeff Fidgen² and Krista Ryall², ¹Natural Resources Canada, Sault Ste. Marie, ON, Canada, ²Natural Resources Canada, Canadian Forest Service, Sault Ste. Marie, ON, Canada
- 3:35 Break
- 3:55 70 Impacts of an introduced insect pest (emerald ash borer) on the forest plant community. Wendy S. Klooster Bethel¹, Daniel A. Herms², Kathleen S. Knight³, Catherine P. Herms², Deborah G. McCullough⁴, Annemarie Smith², Kamal Gandhi⁵, Diane Hartzler² and John Cardina², ¹The Ohio State Univ., Columbus, OH, ²The Ohio State Univ., Wooster, OH, ³USDA - Forest Service, Delaware, OH, ⁴Michigan State Univ., East Lansing, MI, ⁵Univ. of Georgia, Athens, GA

- 4:15 71 Classical biological control: A long-term management approach to emerald ash borer. Leah S. Bauer, USDA - Forest Service, Lansing, MI, Jian Duan, USDA-ARS, Newark, DE, Juli Gould, USDA - APHIS - PPQ - CPHST, Buzzards Bay, MA and Roy Van Driesche, Univ. of Massachusetts, Amherst, MA
- 4:35 72 Evaluation of the potential use of a systemic insecticide and girdled trees in area wide management of the emerald ash borer. Rodrigo J. Mercader, Washburn Univ., Topeka, KS and Deborah G. McCullough, Michigan State Univ., East Lansing, MI
- 4:55 Concluding Remarks

MEETING-AT-A-GLANCE

Tuesday | 2 June 2015

Services

7:30 AM - 5:00 PM	Meeting Registration <i>Foyer</i>
7:30 AM - 5:00 PM	IT Support <i>Little Apple</i>

Functions

7:00 AM - 10:00 AM	Continental Breakfast <i>Big Basin</i>
7:00 AM - 8:00 AM	K-State Alumni Meeting <i>Big Blue River + Ft. Riley</i>
7:00 AM - 5:00 PM	Triplehorn Challenge - Still Art Display <i>Big Basin</i>
12:00 PM - 1:30 PM	Awards Luncheon <i>Kaw Nation</i>
2:00 PM - 3:00 PM	Student Coffee Hour - Managing Your Data <i>Big Blue River + Ft. Riley</i>
3:00 PM - 4:00 PM	Refreshment Break <i>Big Basin</i>
4:00 PM - 5:00 PM	Photo Salon <i>Alcove</i>

Business

6:00 PM - 10:00 PM	NC507 Monarch Conservation in the Midwest – Planning Group <i>Big Blue River + Ft. Riley</i>
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MEETING-AT-A-GLANCE

Tuesday | 2 June 2015

Scientific Program

7:30 AM - 5:00 PM	Poster Display [all poster authors present from 3:00-4:00] <i>Big Basin</i>
8:00 AM - 11:00 AM	Symposium: How Fundamental Research Contributes to Improving Biological Control programs <i>Konza Prairie</i>
8:00 AM - 11:45 AM	Symposium: Entomology Literacy: Research in the Human Dimensions of Entomology Education, Extension, and Citizen Science, Part I <i>Alcove</i>
8:00 AM - 12:00 PM	Symposium: The Emerging Stink Bug Problem in the North Central Region <i>McDowell + Tuttle</i>
2:00 PM - 4:00 PM	Symposium: Entomology Literacy: Research in the Human Dimensions of Entomology Education, Extension, and Citizen Science, Part II <i>Alcove</i>
2:00 PM - 4:15 PM	Submitted Ten-Minute Papers - Session I <i>Konza Prairie</i>
2:00 PM - 4:55 PM	Symposium: Little Microbes Big World: Demonstrating The Role That Insect Symbionts Play In Nature <i>Flint Hills + Kings</i>
2:00 PM - 5:25 PM	Symposium: Potential of RNAi Technology in Entomology <i>McDowell + Tuttle</i>

SCIENTIFIC PROGRAM TUESDAY MORNING

Regular Submitted Posters

7:00AM – 5:00PM

Big Basin / Manhattan Conference Center

- D32 Potential application of CRISPR/Cas9 to control insect pests. Sanjay Basnet, Univ. of Nebraska - Lincoln, Lincoln, NE and Shripat Kamble, Univ. of Nebraska, Lincoln, NE
- D33 Female mate choice and fitness components in western corn rootworm in relation to Cry3Bb1 susceptible and resistant genotypes. Wade French, USDA, ARS, NCARL, Brookings, SD, Leslie Hammack, USDA, ARS, NCARL, Keystone, SD and Douglas W. Tallamy, Univ. of Delaware, Newark, DE
- D34 Response of a problematic Minnesota population of western corn rootworm (*Diabrotica virgifera virgifera*) population to transgenic hybrids and insecticides. Bruce D. Potter¹, Ken Ostlie² and Travis Vollmer¹, ¹Univ. of Minnesota, Lamberton, MN, ²Univ. of Minnesota, Saint Paul, MN
- D35 Modeling corn rootworm (*Diabrotica* spp.) emergence in light of Bt-RW traits and resistance. Edwin Benkert III and Ken Ostlie, Univ. of Minnesota, Saint Paul, MN
- D36 Antibiosis of Brazilian maize landraces to *Diabrotica speciosa* (Coleoptera: Chrysomelidae). Eduardo Costa¹, Sarah Zukoff², C. Michael Smith³, Bruno Sardinha de Souza⁴, Luciano Nogueira⁵, Zulene Ribeiro⁴ and Arlindo Boiça Junior⁴, ¹Univ. of Sao Paulo State/Kansas State Univ., Garden City, KS, ²Univ. of Missouri, Columbia, MO, ³Kansas State Univ., Manhattan, KS, ⁴FCAV/UNESP, Jaboticabal, Brazil, ⁵Univ. of Sao Paulo State, NA, Brazil
- D37 Effect of internal nutrient state foraging behavior of the termite (*Reticulitermes flavipes*). Mohsen Khormi, Arab, Cape Girardeau, MO
- D38 Genetic diversity of honey bees (*Apis mellifera*) in Hawaii. Allen L. Szalanski¹, Amber D. Tripodi², Clinton E. Trammel¹ and Danielle Downey³, ¹Univ. of Arkansas, Fayetteville, AR, ²USDA ARS, Logan, UT, ³Hawaii Dept. of Agriculture, Hilo, HI

- D39 Diversity of orchid bees (Hymenoptera: Apidae: *Euglossini*) at Cusuco National Park, Honduras. Kenneth W. McCravy, Western Illinois Univ., Macomb, IL, Joseph Van Dyke, West Virginia Univ., Morgantown, WV, Thomas Creedy, Operation Wallacea, Spilsby, Lincolnshire, United Kingdom and David Roubik, Smithsonian Tropical Research Institute, Washington, DC
- D40 Effects of cover crops and pollinator habitat on beneficial arthropods in West Central Nebraska wheat. Kayla A. Mollet and Julie A. Peterson, Univ. of Nebraska - Lincoln, North Platte, NE
- D41 Automated evaluation of cattle behavior under stable fly infestations. Melina Florez-Cuadros¹, David Taylor², Kristina Friesen³, Gary Brewer⁴, Ty Schmidt¹, Kathy Hanford¹ and Mehmet Vuran¹, ¹Univ. of Nebraska-Lincoln, Lincoln, NE, ²USDA-ARS, Lincoln, NE, ³USDA, Agricultural Research Service, Lincoln, NE, ⁴Univ. of Nebraska, Lincoln, NE
- D42 The effect of stress on mosquito (*Culex pipiens*) immunity and development. Samantha Debosik, Afua Amoabin and Kanwal Alvarez, Univ. of IL Springfield, Springfield, IL
- D43 Behavioral response of psocids to air currents of volatiles from different potential attractants. John Diaz-Montano and James Campbell, USDA-ARS, Manhattan, KS
- D44 The effect of humidity and bean type on the lifespan and egg production of the seed beetle, *Callosobruchus maculatus*. Jordan Burns, Avila Univ., Kansas City, MO and Greg Fitch, Avila Univ., Kansas C, MO
- D45 Electrical penetration graph monitored feeding behavior of cowpea aphid, *Aphis craccivora* (Hemiptera: Aphididae), on faba bean, *Vicia faba*, cultivars. Abdulrahman Aldawood and Alan Soffan, King Saud Univ., Riyadh, Saudi Arabia
- D46 Monitoring barley yellow dwarf virus BYDV (BYDV) presence across Kansas using bird cherry oat aphid (*Rhopalosiphum padi*). John Girvin, Kansas State university, Manhattan, KS and Wenpo Chaung, National Taiwan Univ., Taipei, Taiwan
- D47 Effect of aphid-resistant soybean on brown marmorated stink bug (*Halyomorpha halys*) survival, development and preference. Walter Rich and Robert Koch, Univ. of Minnesota, Saint Paul, MN

- D48 Differential expression of candidate salivary effector proteins in field collections of Hessian fly, *Mayetiola destructor*. Alisha Johnson¹, Richard Shukle¹, Ming-Shun Chen², Sanvesh Srivastava³, Subhashree Subramanyam⁴, Brandon Schemerhorn⁴ and Christie E. Williams⁵, ¹USDA-ARS, Purdue Univ., West Lafayette, IN, ²USDA - ARS, Manhattan, KS, ³Duke Univ., Durham, NC, ⁴Purdue Univ., West Lafayette, IN, ⁵USDA, Agricultural Research Service, West Lafayette, IN
- D49 Tolerance as a mechanism of Hessian fly control in wheat. Kirsten Roe and Brandon Schemerhorn, Purdue Univ., West Lafayette, IN
- D50 Plume reach and trapping radius for codling moth (*Cydia pomonella*). Christopher Adams and James R. Miller, Michigan State Univ., East Lansing, MI
- D51 Hunting billbug (*Sphenophorus venatus vestitus*) adult feeding preference and host volatile recognition. Alexandra Duffy and Douglas S. Richmond, Purdue Univ., West Lafayette, IN
- D52 Integrating predatory arthropods, scouting, and selective organic insecticides to control the pest caterpillar *Pieris rapae*. Christopher R. Philips¹, Helen Atthowe², Jacob Asplund³, Sue Blodgett⁴, Alexandra Stone² and William E. Snyder³, ¹Univ. of Minnesota, Grand Rapids, MN, ²Oregon State Univ., Corvallis, OR, ³Washington State Univ., Pullman, WA, ⁴Iowa State Univ., Ames, IA

Symposium: How Fundamental Research Contributes to Improving Biological Control Programs

8:00AM – 11:00AM

Konza Prairie / Manhattan Conference Center

Organizers and Moderators: **Jim Nechols**, Kansas State Univ., Manhattan, KS and **Debbie Finke**, Univ. of Missouri, Columbia, MO

- 8:00 Opening remarks. Jim Nechols, Kansas State Univ., Manhattan, KS
- 8:10 73 Predator attraction to induced plant volatiles: From ecological curiosity to agricultural application. Ian Kaplan, Purdue Univ., West Lafayette, IN

- 8:30 74 Responses of beneficial insects to volatile chemicals in agricultural plots. Louis Hesler, USDA - ARS, Brookings, SD
- 8:50 75 Use of plant-mediated indirect herbivore interactions to evaluate and predict enemy releases for weed biological control. Jim Nechols, Kansas State Univ., Manhattan, KS and Lindsey Milbrath, USDA - ARS, Ithaca, NY
- 9:10 76 Beyond consumption: The unexpected benefits of predators in agroecosystems. Debbie Finke, Univ. of Missouri, Columbia, MO
- 9:30 Break
- 9:40 77 Using the intermediate disturbance hypothesis to inform conservation biological control: Where is the middle ground? Matt O'Neal and Thelma Heidel-Baker, Iowa State Univ., Ames, IA
- 10:00 78 A population genetic signature of human releases in introduced seven-spotted ladybird beetles, *Coccinella septempunctata*, in the USA. Yukie Kajita¹, Eric O'Neill¹, Yanbing Zheng², John Obrycki² and David Weisrock², ¹Univ. of Tennessee, Chattanooga, TN, ²Univ. of Kentucky, Lexington, KY
- 10:20 79 How basic research on bacterial endosymbionts can inform biological control. Jennifer White, Univ. of Kentucky, Lexington, KY
- 10:40 80 Summary comments and group discussion. Debbie Finke, Univ. of Missouri, Columbia, MO

Symposium: The Emerging Stink Bug Problem in the North Central Region

8:00AM – 11:05AM

McDowell + Tuttle / Manhattan Conference Center

Organizers and Moderators: Andrew Michel, and Raman Bansal, The Ohio State Univ., Wooster, OH

- 8:00 Introductory Remarks
- 8:05 81 Ecology and impact of the invasive brown marmorated stink bug, *Halyomorpha halys* (Stål) in Mid-Atlantic states. Sanjay Basnet¹, Thomas P. Kuhar² and Douglas G. Pfeiffer², ¹Univ. of Nebraska - Lincoln, Lincoln, NE, ²Virginia Tech, Blacksburg, VA

8:25	82	Stink bug diversity, abundance and feeding in Minnesota soybean. Robert Koch, Univ. of Minnesota, Saint Paul, MN
8:45	83	Cold hardiness and diapause of brown marmorated stink bug (<i>Halyomorpha halys</i>): Implications for the North Central region. Theresa M. Cira ¹ , Robert Venette ² , Robert Koch ¹ , Eric C. Burkness ¹ and William Hutchison ¹ , ¹ Univ. of Minnesota, Saint Paul, MN, ² USDA - Forest Service, St. Paul, MN
9:05	84	Characterizing digestive and detoxification genes and RNAi in the brown marmorated stink bug (<i>Halyomorpha halys</i>). Raman Bansal, Priyanka Mitapelly and Andrew Michel, The Ohio State Univ., Wooster, OH
9:25		Break
9:40	85	Functional potentiality and habitat visualization of the <i>Halyomorpha halys</i> bacterial mutualist. Zakee Sabree ¹ , Laura Kenyon ¹ and Tea Meulia ² , ¹ The Ohio State Univ., Columbus, OH, ² The Ohio State Univ., Wooster, OH
10:00	86	Applied and basic research for stink bugs in soybean, a Mid-South perspective. Jeffrey A. Davis, Louisiana State Univ., Baton Rouge, LA
10:20	87	Industry perspective on developing new solutions for managing stink bugs. Melissa Siebert, Dow AgroSciences, Greenville, MS, Murugesan Rangasamy, Dow AgroSciences, Indianapolis, IN and Carlos Vassallo, Dow AgroSciences, LLC, Buenos Aires, Argentina
10:40	88	Stinkbugs: Exploring techniques in screening soybean germplasm. Susannah Cooper, Aaron Coburn, Dan Lehmann and Jennifer Yates, Monsanto Company, Chesterfield, MO
11:00		Concluding Remarks

***Symposium: Entomology Literacy:
Research in the Human Dimensions of
Entomology Education, Extension,
and Citizen Science, Part I***

8:00AM – 11:45AM

Alcove / Manhattan Conference Center

Organizers and Moderators: Douglas Golick, Louise Lynch, Univ. of Nebraska - Lincoln, Lincoln, NE

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|-------|----|---|
| 8:00 | | Introductory Remarks |
| 8:05 | 89 | Bees of Nebraska: Getting six feet on the ground. Natalia Bjorklund, Univ. of Nebraska - Lincoln, Lincoln, NE |
| 8:25 | 90 | Bee Corps: Pollinator education for classrooms and extension audiences. Natalia Bjorklund, Univ. of Nebraska - Lincoln, Lincoln, NE, Douglas Golick, Univ. of Nebraska - Lincoln, Lincoln, NE and Tammy Stuhr, Univ. of Nebraska - Lincoln, Central City, NE |
| 8:45 | 91 | Using technology and social media to elevate inquiry in GK-12 classrooms. Brian McCornack and Wendy Johnson, Kansas State Univ., Manhattan, KS |
| 9:05 | 92 | Exploring pollination knowledge of undergraduates through interviews. Douglas Golick ¹ , Jenny Dauer ¹ , Louise Lynch ¹ and E. M. Ingram ² , ¹ Univ. of Nebraska - Lincoln, Lincoln, NE, ² Univ. of Nebraska, Lincoln, NE |
| 9:25 | 93 | Evaluation literacy: The human dimensions of measuring success. Jean Haley, North Central IPM Center, Bloomington, IN |
| 9:45 | | Break |
| 10:00 | 94 | Utilizing time travel to interpret natural history: A Victorian naturalist revisits the Long Expedition. Michael Weissman, Kallima Consultants, Northglenn, CO |
| 10:20 | 95 | The six-legged subject: Examining insect incorporation in high school biology classrooms. E. M. Ingram, Univ. of Nebraska, Lincoln, NE and Douglas Golick, Univ. of Nebraska - Lincoln, Lincoln, NE |

- 10:40 96 Evaluating the effect of an arthropod education intervention with preservice middle school science teachers. Ron Wagler and Amy Wagler, Univ. of Texas-El Paso, El Paso, TX
- 11:00 97 Round table discussion exercise: Creating educational programming to impact entomology literacy. Douglas Golick and Louise Lynch, Univ. of Nebraska - Lincoln, Lincoln, NE

SCIENTIFIC PROGRAM TUESDAY AFTERNOON

Symposium: Entomology Literacy: Research in the Human Dimensions of Entomology Education, Extension, and Citizen Science, Part II

2:00pm – 4:00pm

Alcove / Manhattan Conference Center

Organizers and Moderators: Douglas Golick, Louise Lynch, Univ. of Nebraska - Lincoln, Lincoln, NE

- 2:00 Introductory Remarks
- 2:05 98 Pieris Project: Using citizen science to achieve population-level sampling of an invasive butterfly on a global scale. Sean Ryan, Univ. of Notre Dame, Notre Dame, IN
- 2:25 99 Milkweed Watch: The quirks and quest of an invertebrate diversity citizen science project. Tom Weissling, Univ. of Nebraska, Lincoln, NE and Louise Lynch, Univ. of Nebraska - Lincoln, Lincoln, NE
- 2:45 100 Avoid a data disaster! Simple solutions to validate diverse user data. Wendy Johnson and Brian McCornack, Kansas State Univ., Manhattan, KS
- 3:05 Break
- 3:15 101 Point A to point bee: Learning from challenges in pollinator citizen science programs. Louise Lynch and Douglas Golick, Univ. of Nebraska - Lincoln, Lincoln, NE

- 3:35 102 Round table discussion: Trouble shooting in citizen science. Louise Lynch and Douglas Golick, Univ. of Nebraska - Lincoln, Lincoln, NE

Submitted Ten-Minute Papers - Session I

2:00pm – 4:15pm

Konza Prairie / Manhattan Conference Center

Moderator: Deanna Scheff,
Kansas State Univ., Manhattan, KS

- 2:00 103 Influence of soil type on Cry3Bb1 expression and efficacy in the field. David S. Wangila¹, Blair Siegfried¹, Haichuan Wang¹, Arnubio Valencia J^{1,2} and Lance Meinke¹, ¹Univ. of Nebraska, Lincoln, NE, ²Universidad de Caldas, Manizales, Colombia
- 2:12 104 Local and statewide patterns of Bt resistance evolution in western corn rootworm: The effects of insect and human behavior. John Doudna and Aaron Gassmann, Iowa State Univ., Ames, IA
- 2:24 105 Can cropping history influence the risk of western corn rootworm developing bt resistance? Ram B. Shrestha, Mike W. Dunbar and Aaron J. Gassmann, Iowa State Univ., Ames, IA
- 2:36 106 Evaluation of management options for Bt resistant western corn rootworm. Siva Jakka, Ram Shrestha, Michael Dunbar and Aaron Gassmann, Iowa State Univ., Ames, IA
- 2:48 107 Dow AgroSciences transgenic corn strategy and field efficacy performance. Dwain M. Rule, Dow AgroSciences, Indianapolis, IN, Kevin Johnson, Dow AgroSciences, Danville, IL and Laura Campbell, Dow AgroSciences, Carbondale, IL
- 3:00 Break
- 3:15 108 Toxic refuge: The effect of Bt cross pollination on ear feeding caterpillars. Sarah Zukoff, Kansas State Univ., Garden City, KS, Patrick Porter, Texas A&M Univ., Lubbock, TX and Ed Bynum, Texas AgriLife Extension Service (TAES), Amarillo, TX
- 3:27 109 Management of soybean aphid with transform insecticide in Midwest. Fikru Haile, Dow AgroSciences, Carmel, IN, Melissa Siebert, Dow AgroSciences, Greenville, MS and Patricia Prasifka, Dow AgroSciences, West Fargo, ND

- 3:39 110 Isoclast™ Active: A new tool for managing key sap-feeding insects on commodity and specialty crops in the U.S. Melissa Siebert, Dow AgroSciences, Greenville, MS and Luis Gomez, Dow Agro-Sciences, LLC, Indianapolis, IN
- 3:51 111 Virulence in different populations of Hessian fly to resistance genes in wheat. Richard Shukle¹, Sue Cambron², Hossam Eldien Abdel Moniem³, Brandon Schemerhorn³, Julie Redding⁴, G. David Buntin⁵, Kathy Flanders⁶ and Dominic Reisig⁷, ¹US-DA-ARS, Purdue Univ., West Lafayette, IN, ²US-DA-ARS, West Lafayette, IN, ³Purdue Univ., West Lafayette, IN, ⁴USDA, West Lafayette, IN, ⁶Univ. of Georgia, Griffin, GA, ⁷Auburn Univ., Auburn, AL, ⁸North Carolina State Univ., Plymouth, NC
- 4:03 112 Tolerance as a putative mechanism for Hessian fly control in wheat. Kirsten Roe and Brandon Schemerhorn, Purdue Univ., West Lafayette, IN

***Symposium: Little Microbes Big World:
Demonstrating the Role that Insect
Symbionts Play in Nature***

2:00pm – 4:55pm

Flint Hills + Kings / Manhattan Conference Center

**Organizers and Moderators: Paul Lenhart, and
Jennifer White, Univ. of Kentucky, Lexington, KY**

- 2:00 Introductory Remarks
- 2:05 113 Specialization of aphid defensive symbionts and potential effects on natural enemy composition in the field. Adam J. Martinez, Kyungsun Kim, Matthew Doremus and Kerry M. Oliver, Univ. of Georgia, Athens, GA
- 2:30 114 Facultative endosymbionts in a pest aphid have variable effects on host plant breadth and natural enemy defense. Paul Lenhart and Jennifer White, Univ. of Kentucky, Lexington, KY
- 2:55 115 Insect-microbial symbioses and some (genomic) consequences of intimacy. Zakee Sabree, Laura Kenyon and Noelle Beckman, The Ohio State Univ., Columbus, OH

3:20	Break
3:35	116 Nutrient provisioning functions of gut microbes in a wood-feeding insect. Paul Ayayee, The Ohio State Univ., Columbus, OH
4:00	117 Regulation of the aphid- <i>Buchnera</i> integrated amino acid metabolism. Allison Hansen, Univ. of Illinois, Urbana, IL
4:25	118 The bacterial symbiont <i>Rickettsia</i> manipulates whitefly fitness and ecology. Anna Himler ¹ , Martha Hunter ² , Suzanne E. Kelly ² , Paul Nabity ³ , Peter Asimwe ⁴ , Bodil N. Cass ² and Jacqueline E. Bergen ² , ¹ College of Idaho, Caldwell, ID, ² Univ. of Arizona, Tucson, AZ, ³ Washington State Univ., Pullman, WA, ⁴ Monsanto Company, St. Louis, MO
4:50	Concluding Remarks

Symposium: Potential of RNAi Technology in Entomology

2:00pm – 5:25pm

McDowell + Tuttle / Manhattan Conference Center

Organizer and Moderator: Shripat Kamble, Univ. of
Nebraska, Lincoln, NE

2:00	Welcoming Remarks
2:05	119 Clathrin-dependent endocytosis as a major mechanism of cellular uptake of dsRNA in the red flour beetle. Kun Yan Zhu, Kansas State Univ., Manhattan, KS
2:25	120 RNAi as a research tool in dipteran vectors of animal and human diseases. Kristin Michel, Kansas State Univ., Manhattan, KS
2:45	121 Steps toward development of dsRNA as a commercial insecticide. Subba Reddy Palli, Univ. of Kentucky, Lexington, KY
3:05	122 Control of pest insects using RNA interference technologies. Steve Whyard, Aditi Singh, Cassidy Erdelyan and Alison Partridge, Univ. of Manitoba, Winnipeg, MB, Canada

3:25	123	RNAi to evaluate targets for stored product insect control. Brenda Oppert, USDA, Manhattan, KS
3:45		Break
4:00	124	Meeting expectations: Conforming phenotypes with RNAi. Marce Lorenzen ¹ , Fu-Chyun Chu ² , William Klobasa ² and Nathaniel Grubbs ² , ¹ Kansas State Univ. and USDA Grain Marketing & Production Research Center, Manhattan, KS, ² North Carolina State Univ., Raleigh, NC
4:20	125	Recent developments in RNAi for western corn rootworm. Ana Arango, Univ. of Nebraska, Lincoln, NE
4:40	126	Use of RNAi technology to control western corn rootworm. Renata Bolognesi, Monsanto Company, Chesterfield, MO
5:00	127	Use of RNAi technology by Dow AgroSciences. Sek Yee Tan, Dow AgroSciences, Indianapolis, IN
5:20		Concluding Remarks

MEETING-AT-A-GLANCE

Wednesday | 3 June 2015

Services

7:00 AM - 10:00 AM	Meeting Registration <i>Foyer</i>
7:00 AM - 12:00 PM	IT Support <i>Little Apple</i>

Functions

7:00 AM - 10:00 AM	Continental Breakfast <i>Big Basin</i>
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Business

7:30 AM - 8:30 AM	Final Business Meeting <i>Alcove</i>
8:00 AM - 12:00 PM	NCERA 220 Working Group Meeting <i>Flint Hills + Kings</i>
12:30 PM - 2:00 PM	Executive Committee Meeting <i>Big Blue River</i>

Scientific Program

8:30 AM - 12:30 PM	Symposium: Ecology and Control of disease vectors <i>Konza Prairie</i>
8:30 AM - 12:50 PM	Symposium: Corn Rootworm Management: Working Together for Change <i>McDowell + Tuttle</i>
9:30 AM - 12:10 PM	Submitted Ten-Minute Papers - Session II <i>Alcove</i>

SCIENTIFIC PROGRAM WEDNESDAY MORNING

Symposium: Ecology and Control of Disease Vectors

8:30am – 12:30pm

Konza Prairie / Manhattan Conference Center

Organizers and Moderators: Alice Harris,
Kansas State Univ., Manhattan, KS and
Lee Cohnstaedt, USDA-ARS, Manhattan, KS

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|-------|-----|--|
| 8:30 | | Introductory Remarks |
| 8:35 | 128 | Invasion ecology of exotic ticks imported to the United States by migratory birds. Sarah Hamer ¹ , Peter P. Marra ² , Emily Cohen ³ and Lisa Auckland ¹ , ¹ Texas A&M Univ., College Station, TX, ² Smithsonian Conservation Biology Institute, Washington, DC, ³ Migratory Bird Center, Washington, DC |
| 9:05 | 129 | Getting under your skin: Entomophobia and cryptic infestations. Holly Schwarting, Kansas State Univ., Manhattan, KS |
| 9:25 | 130 | New molecular and physiological targets for vector control. Travis Calkins and Peter Piermarini, The Ohio State Univ., Wooster, OH |
| 9:45 | 131 | Managing mosquitoes in the suburban environment: Reducing nuisance vs disease threat. Grayson C. Brown, Univ. of Kentucky, Lexington, KY |
| 10:05 | 132 | Innate immune responses in <i>Anopheles gambiae</i> as an opportunity for disease control. Kristin Michel, Kansas State Univ., Manhattan, KS |
| 10:25 | | Break |
| 10:40 | 133 | The North American Mosquito Project (NAMP): The phylogenetics of <i>Culex tarsalis</i> . Lee Cohnstaedt, USDA - ARS, Manhattan, KS |
| 10:55 | 134 | Population genetics of <i>Aedes vexans</i> and <i>Culex tarsalis</i> in the United States. Phillip Schumm and Lee Cohnstaedt, USDA - ARS, Manhattan, KS |

- 11:10 135 Diapause induction in *Culicoides*. Kathryn Baker, USDA-ARS, Manhattan, KS and Lee Cohnstaedt, USDA - ARS, Manhattan, KS
- 11:20 136 Manipulating light properties to increase insect photoattraction for disease vector surveillance. Jordan Disberger, USDA-ARS, Manhattan, KS and Lee Cohnstaedt, USDA - ARS, Manhattan, KS
- 11:30 137 Innate immunity in the biting midge *Culicoides sonorensis*. Dana Nayduch, USDA - ARS, Manhattan, KS
- 11:45 138 Inducing RNA interference in the arbovirus vector, *Culicoides sonorensis*. Mary Mills¹, Kristin Michel¹ and Dana Nayduch², ¹Kansas State Univ., Manhattan, KS, ²USDA - ARS, Manhattan, KS
- 11:55 139 Monitoring for *Culicoides* at locations of previous epizootic hemorrhagic disease outbreaks in Michigan. Mark Ruder¹, Robert Pfannenstiel¹, Michelle Rosen², Stephen Schmitt², Stacey Vigil³ and Joseph Corn³, ¹USDA - ARS, Manhattan, KS, ²Michigan Dept. of Natural Resources, Lansing, MI, ³Univ. of Georgia, Athens, GA
- 12:10 140 Effect of animal use patterns on *Culicoides* emergence from aquatic environments. Robert Pfannenstiel and Mark Ruder, USDA - ARS, Manhattan, KS
- 12:25 Concluding Remarks

Symposium: Corn Rootworm Management: Working Together for Change

8:30am – 12:50pm

McDowell + Tuttle / Manhattan Conference Center

Organizer: Roxanne Fegley, Pioneer Hi-Bred International, Inc, Windfall, IN

- 8:30 Introductory Remarks
- 8:35 141 EPA recommendations for corn rootworm insect resistance management changes. Alan Reynolds, U.S. Environmental Protection Agency, Washington, DC

- 9:05 142 New era of corn rootworm management: Perspective from ABSTC. Anthony D. Burd, Syngenta Plant Protection, Greensboro, NC and Clinton D. Pilcher, DuPont Pioneer, Johnston, IA
- 9:35 143 Managing resistance: Options for shared pest susceptibility. Steven Bradbury, Iowa State Univ., Ames, IA
- 10:05 Break
- 10:20 144 The role of soil insecticides in corn rootworm IPM and IRM. Robert Wright, Univ. of Nebraska, Lincoln, NE
- 10:50 145 Best management practices for corn rootworm management. Ken Ostlie, Univ. of Minnesota, Saint Paul, MN
- 11:20 146 Monsanto's Rootworm Knowledge Grant Program. Thomas L. Clark, Technology Crop Team, Monsanto Company, Chesterfield, MO and Renata Bolognesi, Monsanto Company, Chesterfield, MO
- 11:50 147 Monitoring adult corn rootworm populations using sticky traps. Brad Van Kooten, DuPont Pioneer, Johnston, IA
- 12:20 Panel Discussion

Submitted Ten-Minute Papers - Session II

9:30am – 12:10pm

Alcove / Manhattan Conference Center

Moderator: Mario Andrada,
Kansas State Univ., Manhattan, KS

- 9:30 148 The ability of plant essential oils to enhance different synthetic pyrethroids against *Aedes aegypti* and *Anopheles gambiae*. Edmund Norris¹, Lyric Bartholomay² and Joel Coats¹, ¹Iowa State Univ., Ames, IA, ²Univ. of Wisconsin-Madison, Madison, WI
- 9:42 149 Susceptibility of life stages of *Trogoderma variabile* and *Tribolium castaneum* to pyrethrin aerosol. Sharon Dobesh¹, Frank Arthur² and R. Jeff Whitworth¹, ¹Kansas State Univ., Manhattan, KS, ²USDA - ARS, Manhattan, KS

- 9:54 150 Aerosol particle size and effects on flour beetles. Frank Arthur, USDA - ARS, Manhattan, KS and James Campbell, USDA-ARS Center for Grain and Animal Health Research, Manhattan, KS
- 10:06 151 Meta-analysis of post-harvest structural treatment efficacy. James Campbell, USDA-ARS, Manhattan, KS, Karrie Buckman, USDA, Agricultural Research Service, Center for Grain and Animal Health Research (CGAHR), Manhattan, KS, Paul Fields, Agriculture and Agri-Food Canada, Winnipeg, MB, Canada and Bhadriraju Subramanyam, Kansas State Univ., Manhattan, KS
- 10:18 152 Spectral response to defoliation by Colorado potato beetle (*Leptinotarsa decemlineata*). Tim Baker, Univ. of Minnesota, Crookston, MN, Ian MacRae, Univ. of Minnesota, Saint Paul, MN and Nathan Russart, Univ. of Minnesota, Crookston, MN
- 10:30 Break
- 10:46 153 Remote sensing of biomass changes caused by Colorado potato beetle (*Leptinotarsa decemlineata*). Ian MacRae, Univ. of Minnesota, Saint Paul, MN, Tim Baker, Univ. of Minnesota, Crookston, MN and Nathan Russart, Univ. of Minnesota, Crookston, MN
- 10:58 154 Impact of switchgrass (*Panicum virgatum*) cultivar and cropping system on insect communities and biological control services. Marissa Schuh and Douglas A. Landis, Michigan State Univ., East Lansing, MI
- 11:10 155 Impact of cover cropping on the epigeal arthropod community in dryland Nebraska cornfields. Julie A. Peterson¹, Michael J. Eskelson² and Charles A. Burr¹, ¹Univ. of Nebraska - Lincoln, North Platte, NE, ²Univ. of Nebraska - Lincoln, Ogallala, NE
- 11:22 156 Comparative suitability of *Melanaphis sacchari* and *Schizaphis graminum* (Hemiptera: Aphididae) as prey for aphid predators in Kansas sorghum. Felipe Colares, Universidade Federal Rural de Pernambuco, Dois Irmãos, Recife, Brazil and J.P. Michaud, Kansas State Univ., Hays, KS

- 11:34 157 Recruitment of natural enemies to sorghum plants infested with *Melanaphis sacchari* and *Schizaphis graminum* in central Kansas. J.P. Michaud, Kansas State Univ., Hays, KS and Felipe Colares, Universidade Federal Rural de Pernambuco, Dois Irmãos, Recife, Brazil
- 11:46 158 *Rhyzopertha dominica* movement and spatial pattern formation in wheat. Erick Cordeiro¹, James Campbell², Thomas Phillips¹ and Kimberly A. With¹, ¹Kansas State Univ., Manhattan, KS, ²USDA-ARS, Manhattan, KS

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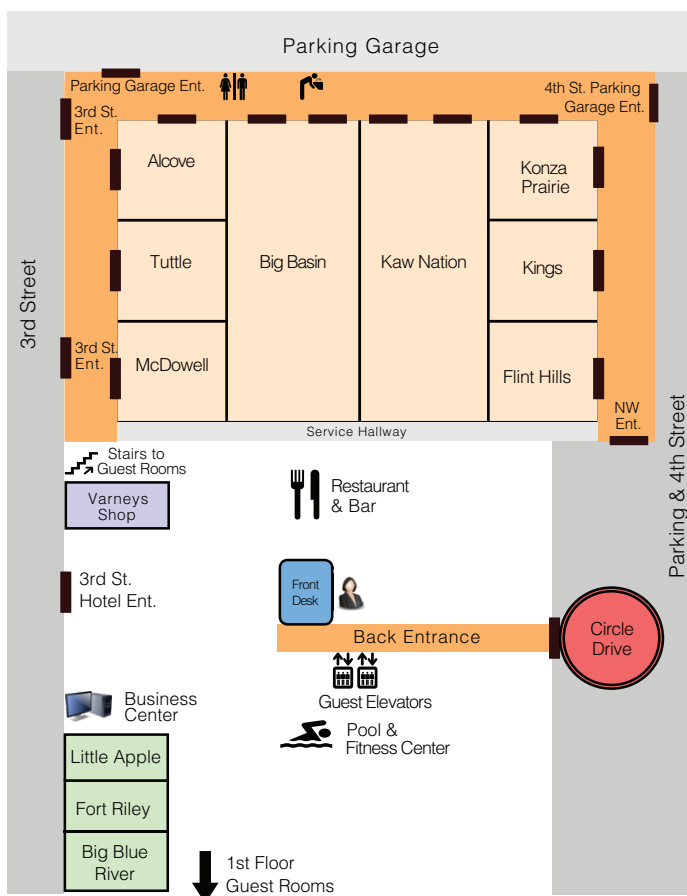
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