Associate Professor / State Integrated Pest Management Specialist
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Jaime C. Piñero, Ph.D.

Education

2005 Ph.D. Entomology. University of Massachusetts at Amherst. Thesis advisor: Dr. Ronald J. Prokopy.

1999 Statistical Methods (year-long course). School of Statistics, University of Veracruz, Xalapa, Veracruz, Mexico. Thesis advisor: Dr. Mario M. Ojeda.

1992 B.Sc. Agronomy. School of Agricultural Sciences, University of Veracruz, Xalapa, Veracruz, Mexico. Thesis advisor: Dr. Martin Aluja.

Professional Experience

2016 - Associate Professor / State Integrated Pest Management Specialist, Cooperative Research and Extension, Lincoln University, Jefferson City, MO 65101.

State-wide responsibility for all aspects of Integrated Pest Management in specialty crops with emphasis on fruits and vegetables. My current position carries responsibilities in research and outreach relating to development and implementation of IPM tactics compatible with sustainable agriculture. Appointment: Extension (62.5%), Research (25%), & Teaching (12.5).

2012- Adjunct Associate Professor, Division of Plant Sciences, University of Missouri, Columbia.

2010 – 2016 Assistant Professor / State Integrated Pest Management Specialist, Cooperative Research and Extension, Lincoln University of Missouri, Jefferson City, MO 65101.

2007 - 2010 Research Associate, University of Hawaii at Manoa. Supervisors: Drs. Ronald F.L. Mau and Roger I. Vargas. *Research: Area-wide IPM. Participated actively in the development of new behaviorally-based monitoring and control methods (e.g., novel reduced-risk bait sprays and reduced-risk male annihilation applications) for invasive fruit flies (Bactrocera spp. and Ceratitis capitata) in Hawaii.*

2005 - 2007 Post-Doctoral Research Associate, ETH, Zürich, Switzerland. Supervisor: Prof. Dr. Silvia Dorn. *Research: Insect-plant interactions. Conducted research involving insect behavior and neurophysiology (calcium imaging) aimed at investigating mechanisms underlying behavioral responses of female populations of oriental fruit moth to synergistic odor mixtures.*

2000 - 2005 Graduate Research Assistant. University of Massachusetts, Dept. of Entomology. Supervisor: Dr. Ronald J. Prokopy. *Research: Chemical ecology of key tree-fruit pests. Conducted IPM and behavioral/ecological studies on plum curculio, Conotrachelus nenuphar, a key pest of apple.* Also supported research on *Rhagoletis pomonella.*

1992 - 1999 Research Assistant. Instituto de Ecología, A.C., Xalapa, Veracruz, Mexico. Supervisor: Dr. Martin Aluja. *Supported research studies related to the behavior, ecology and IPM of fruit flies of the genus Anastrepha associated with tree fruits*.

Research Interests

Horticultural Entomology, Integrated Pest Management (including Area-Wide IPM), insect sensory ecology (focus: vision/olfaction) and behavior, development of attract-and-kill systems and other behaviorally-based, sustainable, pest management methods for improved production of horticultural crops.

Awards and Honors

2013 Regional (Missouri) Communication Award for Team Newsletter, National Association of County Agricultural Agents.

2012 University of Missouri Extension Teamwork Award. Winners of this award are members of the *Reaching Amish and Mennonite Producers with Specialized Programming* team. This nearly state-wide effort focused on three areas: Integrated Pest Management, general crop

production issues, handling practices, and food safety.

2012 – present Associate Graduate Faculty, University of Hawaii at Manoa, Honolulu, Hawaii.

2012 – present Graduate Faculty, University of Missouri.

2012 – present Graduate Faculty, Lincoln University.

2010 - National Researcher Mexico Level II (National System of Researchers [SNI] - National Council of Science and Technology [CONACYT]).

2008-2010 Associate Graduate Faculty, University of Hawaii at Manoa.

2007-2009 National Researcher Mexico Level I (National System of Researchers [SNI] - National Council of Science and Technology [CONACYT]).

2005 John H. Comstock Award for Ph.D. Thesis. Entomological Society of America-Eastern Branch.

2003 Harry A. Rosenfeld Research Award in Economic Entomology. Dept. of Entomology, Umass.

2001 Umass Fernald Entomological Club Award for Outstanding Teaching (Community Outreach Program) 2000 - 2001.

1999 Honorific Mention for final work presented for year-long course on Statistical Methods.

1996 "Ricardo Coronado Padilla" Award, by the Mexican Entomological Society, to the best B.Sc. Thesis in Entomology in Mexico.

Publications ***Peer Reviewed***

Impact of publications: Google Scholar reports an h-index of 27 and a total of 1,913 citations; Web of Science reports an h-index of 19 and a total of 914 citations (as of 04.01.2017).

Piñero, J.C. and Dudenhoeffer, A.P. Optimizing a mass trapping system design for organic control of Japanese beetles. Journal of Economic Entomology (submitted).

54. **Piñero, J.C.**, Souder, S.K., and Vargas, R.I. Vision-mediated exploitation of a novel host plant by a tephritid fruit fly. PLoS ONE (in press).

53. **Piñero, J.C.**, Souder, S.K., Smith, T.R., and Vargas, R.I. Attraction of *Bactrocera cucurbitae* and *B. dorsalis* (Diptera: Tephritidae) to beer waste and other protein sources laced with ammonium acetate. Florida Entomologist (in press).

52. Zuo, Y., Wang, K., Lin, F., Peng, X., **Piñero, J.C.**, and Chen, M. 2016. Sublethal effects of indoxacarb and beta-cypermethrin on *Rhopalosiphum padi* (Hemiptera: Aphididae) under laboratory conditions. Florida Entomologist 99: 445-450.

51. Zuo, Y., Wang, K., Zhang, M., Peng, X., **Piñero, J.C.**, and Chen, M. 2016. Regional susceptibilities of *Rhopalosiphum padi* (Hemiptera: Aphididae) to ten insecticides. Florida Entomologist 99: 269-275.

50. **Piñero, J.C.,** Manandhar, R. 2015. Effects of increased crop diversity using trap crops, flowering plants, and living mulches on vegetable insect pests. TRENDS in Entomology 11: 91 – 109.

49. Vargas, R.I., **Piñero, J.C.**, and Leblanc, L. 2015. An Overview of Pest Species of *Bactrocera* Fruit Flies (Diptera: Tephritidae) and the Integration of Biopesticides with Other Biological Approaches for Their Management with a Focus on the Pacific Region. Insects 6: 297-318.

48. **Piñero, J.C.**, Souder, S.K., I. Smith, T.R., Fox, A.J., and Vargas, R. 2015. Ammonium Acetate Enhances the Attractiveness of a Variety of Protein-Based Baits to Female Mediterranean Fruit Fly, *Ceratitis capitata* (Diptera: Tephritidae). Journal of Economic Entomology 108: 1–7.

47. **Piñero, J.C.,** Quinn, J. Byers, P.L., Miller, P.D., Baker, T., and Trinklein, D. 2015. Knowledge and Use of Integrated Pest Management by Underserved Producers in Missouri and the Role of Extension. Journal of Extension [On-line], 53(3) Article 3RIB3. Available at: http://www.joe.org/joe/2015june/rb3.php.

46. **Piñero, J.C.**, Souder, S.K., and Vargas, R.I. 2013. Residual attractiveness of a spinosad-containing insecticidal bait aged under variable conditions to wild female *Bactrocera dorsalis* and *B. cucurbitae* (Diptera: Tephritidae). Florida Entomologist 96: 1077-1083.

45. Ruiz-Montiel, C., Flores-Peredo, R., Hernandez-Librado, V., Illescas-Riquelme, C.P., Dominguez-Espinosa, P.I., and Piñero, J.C. 2013. *Annona liebmanniana* and *A. cherimola* x *A. reticulata* (Magnoliales: Annonaceae): two new host plant species for *Anastrepha ludens* (Diptera: Tephritidae) in Mexico. Florida Entomologist 96: 232–234.

44. Chou, M.Y., Mau, R.F.L., Jang, E.B., Vargas, R.I., and **Piñero, J.C.** 2012. Morphological features of the ovaries during oogenesis of the Oriental fruit fly, *Bactrocera dorsalis*, in relation to the physiological state. Journal of Insect Science 12:144.

43. Wright, S.E., Leskey, T.C., Jacome, I., **Piñero, J.C.**, and Prokopy, R.J. 2012. Integration of Insecticidal, Phagostimulatory, and Visual Elements of an Attract and Kill System for Apple Maggot Fly (Diptera: Tephritidae). Journal of Economic Entomology 105: 1548-1556.

42. Vargas, R.I., Leblanc, L., Putoa, R., and **Piñero, J.C.** 2012. Population dynamics of three *Bactrocera* spp. fruit flies (Diptera: Tephritidae) and two introduced natural enemies, *Fopius arisanus* (Sonan) and *Diachasmimorpha longicaudata* (Ashmead) (Hymenoptera: Braconidae), after an invasion by *Bactrocera dorsalis* (Hendel) in Tahiti. Biological Control 60: 199-206.

41. **Piñero, J.C.**, Souder, S.K., Gomez, L.E., Mau, R.F.L., and Vargas, R.I. 2011. Response of female Mediterranean fruit fly, *Ceratitis capitata* (Wiedemann), (Diptera: Tephritidae) to a spinosad bait / polymer matrix mixture with extended residual effect in Hawaii. Journal of Economic Entomology 104: 1856-1863.

40. LeBlanc, L., Vargas, R.I., Mackey, B., Putoa, R., and **Piñero, J.C.** 2011. Evaluation of cue-Lure and methyl eugenol solid lure and insecticide dispensers for fruit fly (Diptera: Tephritidae) monitoring and control in Tahiti. Florida Entomologist 94: 510-516.

39. **Piñero, J.C.**, Agnello, A.M., Tuttle, A., Leskey, T.C., Faubert, H., Koehler, G., Los, L., Morin, G., Leahy, K., Cooley, D.R., and Prokopy, R.J. 2011. Effectiveness of odor-baited trap trees for plum curculio (Coleoptera: Curculionidae) monitoring in commercial apple orchards in the Northeast. Journal of Economic Entomology 104: 1613-1621.

38. **Piñero, J.C.,** Mau, R.F.L., and Vargas, R.I. 2011. A comparative assessment of the response of three fruit fly species (Diptera: Tephritidae) to a spinosad-based bait: Effect of ammonium acetate, female age, and protein hunger. Bulletin of Entomological Research 101: 373-381.

37. Vargas, R.I., **Piñero, J.C**., Jang, E.B., Mau, R.F.L., Stark, J.D., Gomez, L., Stoltman, L., and Mafra-Neto, A. 2010. Response of Melon Fly (Diptera: Tephritidae) to Weathered SPLAT-Spinosad-Cue-Lure. Journal of Economic Entomology 103: 1594-1602.

36. **Piñero, J.C.,** Mau, R.F.L., and Vargas, R.I. 2010. Comparison of rain-fast bait stations versus foliar bait sprays for control of oriental fruit fly, *Bactrocera dorsalis* (Hendel), in papaya orchards in Hawaii. Journal of Insect Science 10:157, available online: insectscience.org/10.157.

35**.** Vargas, R.I., **J.C. Piñero,** R.F.L. Mau, E.B. Jang, L. M. Klungness, D.O. McInnis, E.B. Harris, G.T. McQuate, R.C. Bautista, and L. Wong. 2010. Area-wide suppression of Mediterranean fruit fly, *Ceratitis capitata*, and Oriental fruit fly, *Bactrocera dorsalis,* in Kamuela, Hawaii. Journal of Insect Science 10:135, available online: insectscience.org/10.135.

34. Vargas, R.I., Mau, R.F.L., Stark, J.D., **Piñero, J.C.**, Leblanc, L., and Souder, S.K. 2010. Evaluation of Methyl Eugenol and Cue-Lure Traps with Solid Lure and Insecticide Dispensers for Fruit Fly Monitoring and Male Annihilation in the Hawaii Area-Wide Pest Management Program. Journal of Economic Entomology 103: 409-415.

33. Vargas, R.I., **Piñero, J.C.**, Jacome, I., Revis, H.C. and Prokopy, R.J. 2009. Effectiveness of GF-120 Fruit Fly Bait spray against different ages of melon fly (Diptera: Tephritidae) females when applied to

border crops of various widths. Proceedings of the Hawaiian Entomological Society 41: 15-23.

32. **Piñero, J.C.,** Mau, R.F.L., McQuate, G.T., and Vargas, R.I. 2009. Novel bait stations for attract-and-kill of pestiferous fruit flies. Entomologia Experimentalis et Applicata 133: 208-216.

31. **Piñero, J.C.,** Mau, R.F.L. and Vargas, R.I. 2009. Managing oriental fruit fly, *Bactrocera dorsalis* (Diptera: Tephritidae), using spinosad-based protein bait sprays and sanitation in papaya orchards in Hawaii. Journal of Economic Entomology 102: 1123-1132.

30. Vargas, R.I., **Piñero, J.C.**, Mau, R.F.L., Stark, J.D., Hertlein, M., Mafra-Neto, A., Coler, R and Getchell, A. 2009. Attraction and mortality of oriental fruit flies (Diptera: Tephritidae) to SPLAT-MAT- methyl eugenol with spinosad. Entomologia Experimentalis et Applicata 131: 286-293.

29. **Piñero, J.C** and Dorn, S. 2009**.** Response of female oriental fruit moth to volatiles from apple and peach trees at three phenological stages. Entomologia Experimentalis et Applicata 131: 67-74.

28. Vargas, R.I., Burns, R.E., Mau, R.F.L., Stark, J.D. Cook, P., and **Piñero, J.C.** 2009. Captures in methyl eugenol and cue-lure detection traps with and without insecticides and with a Farma Tech solid lure and insecticide dispenser. Journal of Economic Entomology 102: 552-557.

27. Aluja, M., Pérez-Staples, D., Sivinski, J., Sánchez, A. and **Piñero, J.** 2008. Effects of male condition on fitness in two tropical tephritid flies with contrasting life histories. Animal Behaviour 76: 1997-2009.

26. Leskey, T.C., **Piñero, J.C.**, and Prokopy, R.J. 2008. Odor-baited trap trees: a novel management tool for the plum curculio, *Conotrachelus nenuphar* (Herbst) (Coleoptera: Curculionidae). Journal of Economic Entomology 101: 1302-1309.

25. Vargas, R.I., Stark, J.G., Hertlein, M., Mafra-Neto, A., Coler, R., and **Piñero, J.C.** 2008. Evaluation of SPLAT with spinosad and methyl eugenol or cue-lure for "attract-and-kill" of oriental and melon fruit flies (Diptera: Tephritidae) in Hawaii. Journal of Economic Entomology 101: 759-768.

24. **Piñero, J.C.**, C.G. Galizia and Dorn, S. 2008. Synergistic behavioral responses of female oriental fruit moths (Lepidoptera: Tortricidae) to synthetic host-plant derived mixtures are mirrored by odor-evoked calcium activity in their antennal lobes. Journal of Insect Physiology 54: 333-343.

23. **Piñero, J.C.**, and Dorn, S. 2007. Synergism between aromatic compounds and green leaf volatiles derived from the host plant underlies female attraction in the oriental fruit moth. Entomologia Experimentalis et Applicata 125: 185-194.

22. **Piñero, J.C.,** Jácome, I., Vargas, R.I., and Prokopy, R.J. 2006. Response of female melon fly, *Bactrocera cucurbitae*, to host-associated visual and olfactory stimuli. Entomologia Experimentalis et Applicata 121: 261-269.

21. Barry, J.D., Miller, N.W., **Piñero, J.C.,** Tuttle, A., Mau, R.F.I., and Vargas, R.I. 2006. Effectiveness of protein baits on melon fly and oriental fruit fly (Diptera: Tephritidae): attraction and feeding. Journal of Economic Entomology 99: 1161-1167.

20. **Piñero, J.C**. and Prokopy, R.J. 2006. Temporal dynamics of plum curculio, *Conotrachelus nenuphar* (Herbst.) (Coleoptera: Curculionidae), immigration into an apple orchard in Massachusetts. Environmental Entomology 35: 413-422.

19. **Piñero, J.C.** and Prokopy, R.J. 2005. Spatial and temporal within-canopy distribution of egglaying by plum curculios (Coleoptera: Curculionidae) on apples in relation to tree size. Journal of Entomological Science 40: 1-9.

18. **Piñero, J.C.** and Prokopy, R.J. 2004. Local enhancement of alighting in the melon fly, *Bactrocera cucurbitae:* effect of olfactory, visual and acoustical stimuli. Journal of Insect Behavior 17: 493-510.

17. Prokopy, R.J., Jácome, I., Gray, E., Trujillo, G., Ricci, M., and **Piñero, J.C.** 2004. Using odor-baited trap trees as sentinels to monitor plum curculio (Coleoptera: Curculionidae) in apple orchards. Journal of Economic Entomology 97: 511-517.

16. Sivinski, J., Aluja, M., **Piñero, J.**, and Ojeda, M.M. 2004. Novel analysis of spatial and temporal patterns of resource use in a group of tephritid flies of the genus *Anastrepha.* Annals of the Entomological Society of America 97: 504-512.

15. Aluja, M. and **Piñero, J.** 2004. Testing human urine as a low-tech bait for *Anastrepha* spp. (Diptera: Tephritidae) in small guava, mango, sapodilla and grapefruit orchards. Florida Entomologist 87: 41-50.

14. Prokopy, R.J., Miller, N.W., **Piñero, J.C.**, Oride, L., Perez, N., Revis, H., and Vargas, R.I. 2004. How effective is GF-120 Fruit Fly Bait spray applied to border area sorghum plants for control of melon flies (Diptera: Tephritidae)? Florida Entomologist 87: 354-360.

13. Aluja, M., Pérez-Staples, D., Macías-Ordoñez, R., **Piñero, J.**, McPheron, B., and Hernández-Ortíz, V. 2003. Nonhost status of *Citrus sinensis* cultivar Valencia and *C. paradisi* RubyRed to Mexican *Anastrepha fraterculus* (Diptera: Tephritidae). Journal of Economic Entomology 96: 1693-170.

12. **Piñero, J.C.**, and Prokopy, R.J. 2003. Field evaluation of plant odor and pheromonal combinations for attracting plum curculios. Journal of Chemical Ecology 29: 2735-2748.

11. Prokopy, R.J. Miller, N.W., **Piñero, J.C.**, Barry, J., Tran, L., Orida, L., and Vargas. R.I. 2003. Effectiveness of GF-120 Fruit Fly Bait spray applied to border area plants for control of melon flies (Diptera: Tephritidae). Journal of Economic Entomology 96: 1485-1493.

10. Prokopy, R.J., Chandler, B.W., Dynok, S.A., and **Piñero, J.C.** 2003. Odor-baited trap trees: a new approach to monitoring plum curculio (Coleoptera: Curculionidae). Journal of Economic Entomology 96: 826-834.

9. **Piñero, J.C.**, Aluja, M., Vázquez, A., Equihua, M., and Varón, J. 2003. Human urine and chicken feces as fruit fly (Diptera: Tephritidae) attractants for resource-poor fruit growers. Journal of Economic Entomology 96: 334-340.

8. **Piñero, J.**, Aluja, M., Equihua, M., and Ojeda, M. M. 2002. Feeding history and age influence the response of four *Anastrepha* species (Diptera: Tephritidae) to human urine and hydrolyzed protein. Folia Entomologica Mexicana 41: 283-298.

7. **Piñero, J.**, Wright, S.E., and Prokopy, R.J. 2001. Response of plum curculio (Coleoptera: Curculionidae) to odor-baited traps near woods. Journal of Economic Entomology 94: 1386-1397.

6. Aluja, M., Lozada, N., **Piñero, J.**, Birke, A., Hernández-Ortiz, V. and Díaz-Fleischer, F. 2001. Basic behavior of *Rhagoletis turpiniae* (Diptera: Tephritidae) with comparative notes on the sexual behavior of *R. pomonella* and *R. zoqui.* Annals of the Entomological Society of America 94: 268-274.

5. Aluja M., **Piñero J.**, Lopez M., Ruiz C., Zúñiga A., Piedra E., Díaz Fleischer F., and Sivinski J. 2000. New host plant and distribution records in Mexico for *Anastrepha* spp., *Toxotrypana curvicauda* Gerstacker, *Rhagoletis zoqui* Bush, *Rhagoletis* sp., and *Hexachaeta* sp. (Diptera: Tephritidae). Proceedings of the Entomological Society of Washington 102: 802-815.

4. Prokopy, R.J., Jácome, I., **Piñero, J.**, Guillen, L., Diaz-Fleischer, F. and Aluja, M. 2000. Post-alighting responses of Mexican fruit flies (Diptera: Tephritidae) to different insecticides in paint on attractive spheres. Journal of Applied Entomology 124: 239-244.

3. Sivinski, J., **Piñero, J.**, and Aluja, M. 2000. The distributions of parasitoids (Hymenoptera) of *Anastrepha* fruit flies (Diptera: Tephritidae) along an altitudinal gradient in Veracruz, Mexico. Biological Control 18: 258-269.

2. Aluja, M., Jiménez, A., **Piñero, J.**, Camino M., Aldana, L., Valdés, M.E., Castrejón, V., Jácome, I., Dávila, A., and Figueroa, R. 1997. Daily activity patterns and within-field distribution of papaya fruit flies (Diptera: Tephritidae) in Morelos and Veracruz, Mexico. Annals of the Entomological Society of America 90: 505-520.

1. Aluja, M., Jiménez, A., Camino, M., **Piñero J.**, Aldana, L., Castrejón, V. and Valdés, M.E. 1997. Habitat manipulation to reduce papaya fruit fly (Diptera: Tephritidae) damage: orchard design, use

of trap crops and border trapping. Journal of Economic Entomology 90: 1567-1576.

Extension articles, including in newsletters, trade media, and conference proceedings:

54. **Piñero, J.C.** 2017. Controlling cucumber beetles and squash bugs in cucurbit crops. University of Missouri IPM program. Newsletter article available at: https://ipm.missouri.edu/MPG/2017/2/controlling_cucumber_beetles_and_squash_bugs_in_cucurbit_crops.

53. **Piñero, J.C.** and Houseman, R. 2016. Brown Marmorated Stink Bugs in Homes. University of Missouri IPM program. Newsletter article available at: https://ipm.missouri.edu/MEG/2016/10/Brown_Marmorated_Stink_Bugs_in_homes

52. **Piñero, J.C.** 2016. A novel mass trapping system to control cucumber beetles in cucurbit crops. University of Missouri IPM program. Newsletter article available at: https://ipm.missouri.edu/MEG/2016/6/A-novel-mass-trapping-system-to-control-cucumber-beetles-in-cucurbit-crops/

51. **Piñero, J.C.** 2016. Controlling Cucumber Beetles in Small Farms and Gardens Using Mass Trapping. Down to Earth: Reports from The Field, Newsletter produced by the Lincoln University Innovative Small Farmers Outreach Program. 7(2): 6-7.

50. **Piñero, J.C.** 2016. Increasing Beneficial Insects in Your Vegetable Garden or Farm Using Insectary Plants. Down to Earth: Reports from The Field, Newsletter produced by the Lincoln University Innovative Small Farmers Outreach Program. 6(4): 4.

49. **Piñero, J.C.** 2015. Increasing beneficial insects for enhanced pollination and biological control using insectary plants. University of Missouri IPM program. Newsletter article available at: https://ipm.missouri.edu/MPG/2015/12/Increasing-beneficia-insects-for-enhanced-pollination-and-biological-control-using-insectary-plants/

48. **Piñero, J.C.** 2015. New Insecticide Alternative to Neonicotinoids, Safer for Bees. Missouri Produce Growers Bulletin. Available at: https://ipm.missouri.edu/MPG/archive/2015/April_2015.pdf

47. Wilson, J. and **Piñero, J.C.** 2015. Summer Cover Crops for Pest Management. Down to Earth: Reports from The Field, Newsletter produced by the Lincoln University Innovative Small Farmers Outreach Program. 6(1): 3.

46. Barrett, B.A. and **Piñero, J.C.** 2015. Spotted Wing Drosophila: Monitoring and Management. University of Missouri IPM program. Newsletter article available at: https://ipm.missouri.edu/MEG/archive/2015/v21n7.pdf

45. **Piñero, J.C.** 2015. Presence of breeding populations of the invasive Brown Marmorated Stink Bug in Missouri. Missouri Produce Growers Bulletin. Available at: https://ipm.missouri.edu/MEG/archive/2015/v21n10.pdf.

44. **Piñero, J.C.** 2014. Monitoring Systems in place for Brown-Marmorated-Stink-Bug-and-Spotted-Wing-Drosophila for 2014. Newsletter Article available at http://ipm.missouri.edu/IPCM/2014/5/Brown-Marmorated-Stink-Bug-and-Spotted-Wing-Drosophila/

43. **Piñero, J.C.** 2014. Cover Crops *are* Soil Health. Missouri Produce Growers Bulletin. Available at: https://ipm.missouri.edu/MPG/archive/2014/February_2014.pdf

42. Wilson, J. and **Piñero, J.C.** 2014. Update on the Spotted Wing Drosophila. Down to Earth: Reports from The Field, Newsletter produced by the Lincoln University Innovative Small Farmers Outreach Program. 5(3): 6-7.

41. **Piñero, J.C.** and Byers, P.L. 2014.The "1-2-3" IPM Approach for Spotted Wing Drosophila Management. University of Missouri IPM program. Newsletter article available at:

https://ipm.missouri.edu/IPCM/2014/5/The-1-2-3-IPM-Approach-for-Spotted-Wing-Drosophila-Management.

40. Wilson, J. and **Piñero, J.C.** 2014. Cover Crops and Soil Health. Down to Earth: Reports from The Field, Newsletter produced by the Lincoln University Innovative Small Farmers Outreach Program. 5(1): 2-4.

39. **Piñero, J.C.** 2013. The Dreaded Spotted Wing Drosophila is Causing Extensive Fruit Damage in Missouri. Down to Earth: Reports from The Field, Newsletter produced by the Lincoln University Innovative Small Farmers Outreach Program. 4(3): 3.

38. **Piñero, J.C.** 2013. Using IPM in Urban Farms and Community Gardens. Down to Earth: Reports from The Field, Newsletter produced by the Lincoln University Innovative Small Farmers Outreach Program. 4(1): 3-4.

37. **Piñero, J.C.** and Wilson, J.T. 2013. Trap Cropping: A simple, effective, and inexpensive Integrated Pest Management strategy to manage squash bugs and cucumber beetles in cucurbit crops in small farms. Small Farm Today 164: 6-8.

36. **Piñero, J.C.** 2013. Spotted Wing Drosophila. Missouri Produce Growers Bulletin. Available at: https://ipm.missouri.edu/MPG/archive/2013/April_2013.pdf

35. **Piñero, J.C.** and Byers, P.L. 2013. Integrated Pest Management of Spotted Wing Drosophila with Emphasis in High Tunnel Grown Fall Bearing Primocane Raspberries. University of Missouri IPM program. Newsletter article available at: https://ipm.missouri.edu/MEG/2013/8/Integrated-Pest-Management-of-Spotted-Wing-Drosophila-with-Emphasis-in-High-Tunnel-Grown-Fall-Bearing-Primocane-Raspberries/

34. **Piñero, J.C.** 2013. Detecting larval infestations and insecticidal options for Spotted Wing Drosophila, a significant pest of small fruit crops in Missouri. University of Missouri IPM program. Newsletter article available at: https://ipm.missouri.edu/meg/2013/8/Detecting-larval-infestations-and-insecticidal-options-for-Spotted-Wing-Drosophila-a-significant-pest-of-small-fruit-crops-in-Missouri/Detecting_larval_infestations_in_fruits_and_insecticidal_options_forSWD.pdf

33. **Piñero, J.C.** 2013. Research and Extension Highlights of the New Integrated Pest Management Program at Lincoln University, pp. 240-244. In: Proceedings of the 6th National Small Farm Conference: Promoting the Successes of Small Farmers and Ranchers, September 18 - 20, 2012, Memphis, TN, Tennessee State University, the University of Tennessee, and the U.S. Department of Agriculture.

32. **Piñero, J.C.** 2012. Reducing Heat Stress and Insect Pressure in Crops using Kaolin Clay (Surround WP). The Broadcaster (Bi-Monthly Periodical of the Midwest Organic and Sustainable Education Service – MOSES) Vol: 20, Number 2, pages 6-7.

31. **Piñero, J.C.** 2012. Selecting insecticides or miticides with less impact to honeybees for use in Cucurbit crops. Missouri Produce Growers Bulletin. Available at: https://ipm.missouri.edu/MPG/archive/2012/June_2012.pdf.

30. **Piñero, J.C.** 2012. What Does This Warm Winter Mean for Insects? Missouri Produce Growers Bulletin. Available at: https://ipm.missouri.edu/MPG/archive/2012/March_2012.pdf.

29. **Piñero, J.C.** 2012. Community Gardens: Policy, Planning and Management. Down to Earth: Reports from The Field, Newsletter produced by the Lincoln University Innovative Small Farmers Outreach Program. 3(2): 2-4.

28. **Piñero, J.C.** 2012. Importance of Pollination and Pollinator Insects. Down to Earth: Reports from The Field, Newsletter produced by the Lincoln University Innovative Small Farmers Outreach Program. 2(4): 3-4.

27. **Piñero, J.C.** 2011. Brown Marmorated Stink Big: A New Invasive Insect Pest. Down to Earth: Reports from The Field, Newsletter produced by the Lincoln University Innovative Small Farmers

Outreach Program. 2(3): 3.

26. **Piñero, J.C.** 2011. Using Trap Crops to Minimize Damage to Vegetables by Insect Pests. Down to Earth: Reports from The Field, Newsletter produced by the Lincoln University Innovative Small Farmers Outreach Program. 2(2): 2.

25. **Piñero, J.C.** 2011. IPM Tips for Tomato Disease Prevention and Management. Down to Earth: Reports from The Field, Newsletter produced by the Lincoln University Innovative Small Farmers Outreach Program. 2(1): 4.

24. **Piñero, J.C.** 2010. Home Garden Disease and Insect Control Begins This Fall. Down to Earth: Reports from The Field, Newsletter produced by the Lincoln University Innovative Small Farmers Outreach Program. 1(3): 4.

23. **Piñero, J.C.** 2010. Basics of Integrated Pest Management (IPM). Down to Earth: Reports from The Field, Newsletter produced by the Lincoln University Innovative Small Farmers Outreach Program. 1(2): 3.

22. Vargas, R.I., Leblanc, L., Putoa, R., and **Piñero, J.** 2008. Classical biological control releases of the natural enemies, *Fopius arisanus* (Sonan) and *Diachasmimorpha longicaudata* (Ashmead), against Oriental fruit fly in French Polynesia, pp. 149-155. In: Proceedings of the 7th Meeting of the Working Group on Fruit Flies of the Western Hemisphere. November 2-7, Mazatlan, Sinaloa, Mexico.

21. **Piñero, J.C.,** Tuttle, A., Agnello, A.M. Faubert, H., Koehler, G., Morin, G., Leahy, K., Los, L., Cooley, D., and Prokopy R. 2006. Using odor-baited trap trees as indicators of need and timing of insecticide spray against plum curculio in the northeast: validation studies 2004-2005. Fruit Notes 71(4): 1-11.

20. **Piñero, J.**, Jácome, I., Cooley, D., and Prokopy, R. 2005. Penetration of overwintered plum curculio into commercial apple blocks of differing tree size. Fruit Notes 70(3): 6-7.

19. **Piñero, J.C**. and Prokopy, R.J. 2004. Predicting plum curculio immigration into apple orchards in Massachusetts: degree days versus tree phenology. Fruit Notes 69(4): 1-8.

18. **Piñero, J.C.** and Prokopy, R.J. 2004. Immigrants or re-colonizers? Studying plum curculio movement using odor-baited traps. Fruit Notes 69(4): 9-13.

17. **Piñero, J.C.** Jácome, I., Appleton, P., Blanco, M.B., and Prokopy, R.J. 2004. Is more than one trap tree required on perimeter rows to monitor the course of plum curculio injury to fruit? Fruit Notes 69(4): 14-17.

16. **Piñero, J.,** Bigurra, E., Jácome, I. Trujillo, G., and Prokopy, R. 2004. Are adult plum curculios capable of overwintering within apple orchards? Fruit Notes 69(1): 3-5.

15. **Piñero, J.,** Jácome, I., Bigurra, E., Trujillo, G., and Prokopy, R. 2004. Extent of early-season plum curculio penetration into commercial apple orchards. Fruit Notes: 69(1): 6-8.

14. **Piñero, J.,** Bigurra, E., Hoffmann, S., and Prokopy, R. 2004. What size of apple is the most prone to plum curculio attack early in the season? Fruit Notes 69(1): 16-17.

13. Prokopy, R., Jácome, I., and **Piñero, J.** 2004. A threshold for spraying against plum curculio using odor-baited trap trees. Fruit Notes 69: 14-15.

12. Prokopy, R., Jácome, I., Gray, E., Trujillo, G., Ricci, M., and **Piñero, J.** 2004. Establishing characteristics of odor-baited trap trees for monitoring plum curculio. Fruit Notes 69: 9-13.

11. Clements, J., **Piñero, J.**, and R. Prokopy. 2004. Photographs of fresh and older egglaying scars plum curculio in apples. Fruit Notes 69: 18-22.

10. Prokopy, R., Chandler, B., Dynok, S., Gray, E., Harp, M., Talley, A., and **Piñero, J.** 2003. Comparison of traps and trap trees for monitoring plum curculios: 2002 results. Fruit Notes 68(1): 5-10.

9. Prokopy, R., Chandler, B., Dynok, S., Gray, E., Harp, M., Talley, A., and **Piñero, J.** 2003. Evaluation of odor combinations for attracting plum curculios to trap trees. Fruit Notes 68(1): 11-12.

8. **Piñero, J.**, Hoffmann, S., and Prokopy, R.J. 2002. Evaluation of formulations and release rates of benzaldehyde, an attractive fruit odor for plum curculios. Fruit Notes 67(4): 1-5.

7. **Piñero, J.**, Hoffmann, S., Bigurra, E., and Prokopy, R.J. 2002. Influence of insecticide on the ability of traps to capture plum curculios. Fruit Notes 67(4):6-12.

6. **Piñero, J.**, Hoffman, S., Bigurra, E., and Prokopy, R.J. 2002. Devising an attractive bait to monitor the seasonal course of plum curculio immigration into apple orchards using traps. Fruit Notes 67(4): 13-17.

5. Prokopy, R.J., Chandler, B., and **Piñero, J.** 2002. Commercial-orchard evaluation of traps for monitoring plum curculio: 2001 Results. Fruit Notes 67(1): 17-22.

4. **Piñero, J.**, Prokopy, R.J., and Wright, S.E. 2000. Using odor-baited traps to capture immigrating plum curculios. Fruit Notes 65: 42-44.

3. **Piñero, J.**, Bednaz, K., Ross, A., and Prokopy, R.J. 2000. Spatial distribution of plum curculio egglaying in apple trees. Fruit Notes 65: 36-41.

2. Prokopy, R.J., Chandler, B., Wright, S., and **Piñero, J.** 2000. Evaluation of baited and unbaited traps for monitoring plum curculios in commercial apple orchards. Fruit Notes 65: 32-35.

1. Prokopy, R., Leskey, T., **Piñero, J.**, Rull, J., and Wright, S. 2000. Managing agricultural pests. Issues in Science and Technology 6(4): 11-12.

Book chapters:

9. Vargas, R.I., **Piñero, J.C**., Leblanc, L., Manoukis, N.C., and Mau, R.F.L. 2016. Area-Wide Management of Fruit Flies (Diptera: Tephritidae) in Hawaii, pp. 673-693. In: S Ekesi S, Mohamed S, Meyer M [eds.], Fruit Fly Research and Development in Africa - Towards a Sustainable Management Strategy to Improve Horticulture, Springer.

8. Tewari, S., Leskey, T.C., Nielsen, A.L., **Piñero, J.C**., and Rodriguez-Saona, C.R. 2014. Use of pheromones in insect pest management, with special attention to weevil pheromones, pp. 141-168. In: D.P. Abrol (Ed.), Integrated Pest Management: Current Concepts and Ecological Perspectives, Elsevier Inc.

7. Vargas, R.I., Leblanc, L., **Piñero, J.C.**, and Hoffman, K.M. 2014. Male Annihilation, Past, Present, and Future, pp. 493-511. In*:* T. Shelly, N. Epsky, E. Jang, J. Reyes-Flores, and R.I. Vargas (Eds.), Trapping and the Detection, Control, and Regulation of Tephritid Fruit Flies, Springer.

6. **Piñero, J.C.** Enkerlin, W., and Epsky, N.D. 2014. Recent Developments and Applications of Bait Stations for Integrated Pest Management of Tephritid Fruit Flies, pp. 457-492. In*:* T. Shelly, N. Epsky, E. Jang, J. Reyes-Flores, and R.I. Vargas (Eds.), Trapping and the Detection, Control, and Regulation of Tephritid Fruit Flies, Springer.

5. Díaz-Fleischer, F., **Piñero, J.C.**, and Shelly, T. 2014. Interactions between tephritid fruit fly physiological state and stimuli from baits and traps: Looking for the Pied Piper of Hamelin to lure pestiferous fruit flies, pp. 145-172. In*:* T. Shelly, N. Epsky, E. Jang, J. Reyes-Flores, and R.I. Vargas (Eds.), Trapping and the Detection, Control, and Regulation of Tephritid Fruit Flies, Springer.

4. **Piñero, J.C.** and Ruiz-Montiel, C. 2012. Ecologia Química y Manejo de Picudos (Curculionidae) (Chemical Ecology and Management of Weevils [Curculionidae]), 361-400. En: J.C. Rojas & E.A. Malo (Eds.). Temas Selectos en Ecología Química de Insectos (Selected Topics in the Chemical Ecology of Insects). Trillas, Mexico. 446p. (IN SPANISH).

3. Vargas, R.I., Shelly, T.E., Leblanc, L., and **Piñero, J.C.** 2010. Recent Advances in Methyl Eugenol and Cue-Lure Technologies for Fruit Fly Detection, Monitoring, and Control in Hawaii, pp. 575-596. In: Gerald Litwack (Ed.): Vitamins and Hormones, Vol. 83, Burlington, Academic Press.

2. Dorn, S. and **Piñero, J.C.** 2009. How Do Key Tree-Fruit Pests Detect and Colonize Their Hosts: Mechanisms and Application for IPM, pp. 85-109. In: Aluja, M., T. C. Leskey & C. Vincent (Eds.), Biorational Tree-Fruit Pest Management, CABI Publishers, Wallingford, U.K.

1. Aluja, M., **Piñero, J.** Jácome, I., Diaz-Fleischer, F. and Sivinski, J. 2000. Behavior of flies in the genus *Anastrepha* (Trypetinae, Toxotrypanini), pp. 375-406. In: M. Aluja and A. Norrbom (Eds.), Fruit Flies (Diptera: Tephritidae): Phylogeny and Evolution of Behavior, CRC Press, Boca Raton, Florida.

Fact Sheets / Guide Sheets (Extension)

13. **Piñero, J.C.** and Lee, R. 2016. Controlling Cucumber Beetles in Gardens and on Small Farms with Mass Trapping. Lincoln University Cooperative Extension IPM program Guide Sheet. GS#18-F-2016, 12/12/2016.

12. Manandhar, R. and **Piñero, J.C.** 2015. The Harlequin Bug. Lincoln University Cooperative Extension IPM program Fact Sheet. GS#18-F-2015, 5/08/2015.

11. Manandhar, R. and **Piñero, J.C.** 2015. The Pest Caterpillars of Cole Crops in Missouri I: Identification and Life Cycle. Lincoln University Cooperative Extension IPM program Fact Sheet. FS#18-F-2015. 12/08/2015.

10. Manandhar, R. and **Piñero, J.C.** 2015. The Pest Caterpillars of Cole Crops in Missouri II: Management. Lincoln University Cooperative Extension IPM program Fact Sheet. FS#19-G-2015. 12/10/2015.

9. Manandhar, R. and **Piñero, J.C.** 2015. Aphid Pests of Cole Crops in Missouri. Lincoln University Cooperative Extension IPM program Fact Sheet. FS#18-H-2015. 12/10/2015

8. Wilson, J.T. and **Piñero, J.C.** 2015. The Basics of Organic Insect Pest Management. Lincoln University Cooperative Extension IPM program Guide Sheet. GS#18-F-2015, 5/08/2015.

7. Wilson, J.T. and **Piñero, J.C.** 2014. The Japanese beetle. Lincoln University Cooperative Extension IPM program. LUCE FS#18-D-2014 07/10/2014.

6. **Piñero, J.C.** 2014. Detecting larval infestations and insecticidal options for Spotted Wing Drosophila with notes on insecticidal options. Lincoln University Cooperative Extension, IPM Program. LUCE GS#18-E-2014 11/25/2014.

5. **Piñero, J.C.** and Byers, P.L. 2013.Management Options for Spotted Wing Drosophila with emphasis on high-tunnel grown, fall-bearing primocane raspberries. Lincoln University Cooperative Extension, IPM Program. LUCE GS#18-E-2014 11/25/2014.

4. **Piñero, J.C.** 2013. Monitoring for Spotted Wing Drosophila, an Insect Pest of Berries and Other Fruits in Missouri. Lincoln University Cooperative Extension, IPM Program. LUCE FS#18-A-2013 - Rev. 7/16/2013.

3. **Piñero, J.C.** 2011 (revised 2012). Tomato Pinworm. Lincoln University Cooperative Extension, IPM Program.

2. **Piñero, J.C.** 2011 (revised 2012). Stink Bugs: the Good, the Bad, and the Ugly. Lincoln University Cooperative Extension, IPM Program.

1. **Piñero, J.C.** 2011. Tips for Tomato Disease Prevention in High Tunnels. Lincoln University Cooperative Extension, IPM Program.

Relevant Professional Activities

2011- North Central Region, IPM co-coordinator for the state of Missouri.

2011-2016 Co-editor of the Midwest Vegetable Production Guide for Commercial Growers (covering 7 Midwest states) (available at https://ag.purdue.edu/btny/midwest-vegetable-

guide/PublishingImages/2016PDFs/ID-56.pdf).

2013-2014 Co-organizer, Missouri Minority and Limited Resource Farmers' Conference, held on March 14-16, 2014 at the Lincoln University George Washington Carver farm in Jefferson City, MO. This 2-day conference (and farm tour) brought together over 120 minority and limited-resource farmers from across the state of Missouri. In all, there were 32 speakers at the conference.

2011 - Planning Committee Member of the Great Plains Growers Conference, held annually in St. Joseph, MO. This conference is made possible by a conglomeration of five area land grant universities and extension services from the states of Missouri, Kansas, Nebraska, and Iowa. It is attended by over 500 farmers.

2011- Member of Stakeholder Committee – North Central IPM Center.

Webinars

2012 Coordinated Webinar on Bacterial Canker of Tomato: Identification, Prevention and Management, actual presentations were by expert plant pathologists Dr. Dan Egel (Purdue University) and Dr. Sally Miller (The Ohio State University). Announced through eXtension.org, held on July 30, 2012. Attendees: 21+

Teaching and Thesis Advising Experience

Courses developed: *AGRL 428/528 Integrated Pest Management (since 2012).*

This course deals with the theory and application of principles of arthropod, disease, and weed pest management, with emphasis on insects. Major focus will be on pest prevention and identification, life cycles, economic impact, sampling strategies, pest-control decision processes and management tactics, including biological, behavioral, cultural, plant resistance, biorational, and pesticidal approaches to control. Course objectives:

1. Recognize the importance of Integrated Pest Management both within and outside the US

2. Gain an understanding of the taxonomy of major insect groups and their economic impact

3. Gain general knowledge about the biology, habits and survival requirements of common insect pests

4. Identify causes and symptoms of common plant and animal diseases

5. Understand the importance of pest identification, action thresholds, and pest monitoring tools and techniques

6. Learn about the biology and management options of weeds and plant pathogens

7. Identify the components of a state-of-the art IPM program including biological control, behavioral control, physical and cultural control, host plant resistance

8. Understand the importance of ecologically-based IPM and conservation of pollinators and other beneficial organisms

9. Learn concepts of pest eradication and area-wide IPM

2016-2018 Main supervisor of MS student Justin Keay. Lincoln University.

2015-2017 Main supervisor of MS student Binita Shrestha. University of Missouri.

2014 - 2018 Ph.D. thesis committee member (Steven K. Souder). University of Hawaii at Manoa.

2016. Integrated Pest Management AGRL 428/528P (undergraduate / graduate level)**,** Lincoln University, Department of Plant and Soil Sciences (fall semester) – 22 students.

2015. Integrated Pest Management AGRL 328P**,** Lincoln University, Department of Plant and Soil Sciences (fall semester) – 22 students.

2015 Ph.D. Thesis Committee Member (Steven Souder). University of Hawaii at Manoa. In progress.

2014. Integrated Pest Management AGRL 328P**,** Lincoln University, Department of Plant and Soil Sciences (fall semester) – 5 students.

2014 Online course on IPM titled "Integrated Pest Management: A Global Perspective" offered to 80 students in Nigeria (University of Benin University of Benin and the Nigerian Tertiary Education). May

5-9, 2014. In partnership with the E-Don Electronic Initiative.

2014 Lecturer – "Vineyard Pests and IPM" for class 'Viticulture II', University of Missouri – Columbia, Department of Plant Sciences (04.10.14).

2013- Current main supervisor of MS Thesis, Mr. Jacob Wilson, Lincoln University. MS in Biology and Natural Sciences.

2013 Ph.D. Thesis Committee Member (Ming Yi Chou). University of Hawaii at Manoa. Successfully defended on May 4, 2013.

2013. Integrated Pest Management AGRL 328P**,** Lincoln University, Department of Plant and Soil Sciences (fall semester) – 7 students.

2012. Integrated Pest Management AGRL 328P**,** Lincoln University, Department of Plant and Soil Sciences (fall semester) – 22 students.

2010 Guest lecturer for course AGH 483 "Plant Pathology". Topic: "Diseases of Vegetable Crops: Identification, Prevention and Management". Missouri State University, Springfield MO.

2007 Co-supervisor of "Diplomarbeit"(equivalent to MS degree) (Michael Muller). ETH – Zürich.

2003 Guest lecturer for course N297 "Spanish for Health Professionals". Lecture: "Insect biology and health-related problems to humans". Umass Amherst.

2002 - 2003 Guest lecturer for course ENT 581 "Integrated Pest Management". Lecture: "Weather and Insect Biology". Umass Amherst.

2002 - 2003 Guest lecturer for course ENT 581 "Integrated Pest Management". Lecture: "Management of Indoor Pests". Umass Amherst.

2002 Guest lecturer for course ENT 581 "Integrated Pest Management". Laboratory: "Toxicology of Insecticides". Umass Amherst.

1998 B.Sc. Thesis Committee Member (Anita Sanchez-Martinez). Universidad Veracruzana, Xalapa, Veracruz, Mexico.

Extension Presentations including workshops, Field Days, etc.

2017 Great Plains Growers Conference, held in St. Joseph, MO (Jan. 12-14). Presentation title: "*Ecological Pest Management in High Tunnels*" (Audience: 74 farmers). Three posters were presented. Poster titles and authors: (1) "*Growing lettuce using Japanese beetle-based compost and vermi-compost*" by T. Shivers, H.Y. Johnson, and J.C. Piñero, (2) "*Optimizing a Mass Trapping System Design for Organic Control of Japanese Beetles*" by A. Dudenhoeffer, J. Miller, and J.C. Piñero, (3) "*Attractiveness of seven insectary plants to natural enemies of insect pests in a vegetable cropping system*" by B. Shrestha, D. Finke, and J.C. Piñero.

2017. High Tunnel/Winter Production Workshop, held in Hillsboro, MO (Feb. 4th). Presentation titled "*Ecologically-based arthropod pest management in high tunnels*". Audience: 32 farmers.

2016 Growing Blackberry Production and Sales in Missouri Workshop, held in St. Joseph, MO (June 29). Presentation titled "*The 1-2-3 Approach to Spotted Wing Drosophila Management*". Audience: 16 farmers.

2016 coordinator and presenter of workshop on Organic Management of Spotted Wing Drosophila, held at the Lincoln University Alan T. Busby organic farm, Jefferson City, MO (June 9). Audience: 9 farmers.

2016 Fourth Alternative Agriculture Field Day at Lincoln University Organic and Integrated Research Alan T. Busby Farm, June 9, 2016**.** Seven organic animal / crop protection production and protection were offered as part of the overall event. Audience: 140 farmers.

2016 Commodity Conference & Legislative Briefing, held in Jefferson City, MO (Feb. 29). Topic: "*Integrated Pest Management is Key to Agricultural Sustainability*". Audience: 12 farmers.

2016 Practical Growers of Iowa Conference, SARE Farmers' Forum held at Iowa State University, Ames, IA (January 23). Presentation titled "*Trap Cropping for Insect Pest Management*". Audience: 65 farmers.

2016 Midwest Winter Production Conference held in Joplin, MO (January 22). Presentation titled: "*Enhancing Biological Control in High Tunnels*". Audience: 78 farmers.

2016 Three presentations at the Great Plains Growers Conference, held in St. Joseph, MO (Jan. 7-9). Presentation titles: (1) "*Trap Cropping Indicator Plants and Banker Plants as IPM tools in High Tunnels*" (Audience: 71 farmers), (2) "*Brown Marmorated Stink Bug: A New Insect Pest for Tree Fruits*" (Audience: 38 farmers), (3) "*SWD and BMSB Pest Management Recommendations for 2016*" (Audience: 55 farmers). Also co-authored three posters: (1) "*Japanese Beetle Composting: Converting Pests to Soil Fertilizer using Common Farm Materials*" by Traron L. Shivers, Hwei-Yiing Johnson, and Jaime C. Piñero; (2) "*Optimizing a Mass Trapping System Design for Organic Control of Japanese Beetles*" by Austen Dudenhoeffer, Jason Miller, and Jaime C. Piñero, and (3) "*Mass trapping as an IPM strategy for cucumber beetle management*" by Jaime C. Piñero.

2015 Third Alternative Agriculture Field Day at Lincoln University Organic and Integrated Research Alan T. Busby Farm, June 3, 2015**.** One organic IPM workshop was also offered as part of the overall event. Audience: 74 farmers.

2015 Governors Harvest Festival – display of live insects and educational materials were made available. Free insect toys for kids, etc. October 3rd, 2015. Audience: 500+ citizens.

2015 Market Farming Workshops – Growing Growers Kansas City. Presentation titled "Diagnosis, Identification, and Control of Major Insects Affecting Vegetable and Fruit Crops. Kansas City, MO (July 25) (Audience: 9 farmers).

2015 Great Plains Growers Conference, held in St. Joseph, MO (Jan. 8-10). Presentation title: "*Spotted Wing Drosophila/Brown Marmorated Stink Bug Update*". (Audience: 25 farmers). Two posters were presented. Poster titles: "*Farming practices and level of knowledge and methods of pest management of fruit and vegetable producers in Missouri*" and "*Trap cropping: A simple, effective, and inexpensive organic IPM approach to manage cucumber beetles and squash bugs in cucurbit crops*". Also co-authored two presentations titled "*The Basics of Organic Pest Management*" and "*Cover Crops and Vegetable IPM*" by J. Wilson and J. Piñero (Combined audience: 130 farmers).

2014 Governors Harvest Festival – display of live insects and educational materials were made available. Free insect toys for kids, etc. Audience: 400+ citizens.

2014 Introduction to Small Fruit Production – Growing Growers Kansas City. Presentation titled "*Spotted Wing Drosophila: Pest of Small Fruits*". Kansas City, MO (June 14) (Audience: 16 farmers).

2014 Second Alternative Agriculture Field Day at Lincoln University Organic and Integrated Research Alan T. Busby Farm, June 4, 2014**.** Audience: ca. 130 farmers.

2014 Midwest Organic and Sustainable Education Service (MOSES) conference held on Feb. 27 – Mar. 1, 2014 in LaCrosse, WI. Two posters were presented. Poster titles: (1) "*Season Extension: Enjoying Wider Profit Margins by Using Sustainable Techniques to Expand the Growing Season on Small Farms in Southwest Missouri*" by Bishop, N.A., Byers, P.L., Nichols, F.E., and Piñero, J.C. and (2) "*Trap Cropping: A Simple, Effective, and Inexpensive Organic IPM Approach to Manage Cucumber Beetles and Squash Bugs in Cucurbit Crops*" by J.T. Wilson and J.C. Piñero. Audience: cannot be quantified, but conference is attended by 2,000+ organic farmers.

2014 Great Plains Growers Conference, held in St. Joseph, MO (Jan. 9-11). Three presentations titled: (1) "*Integrated Pest Management options for Spotted Wing Drosophila*" (Audience: 37 farmers), (2) "*Invasive Insects Threatening Vegetable Production in The Midwest*" (Audience: 65 farmers), (3) "*Enhancing Beneficial Insects for Biological Control and Pollination in Organic Systems*" (Audience: 55 farmers). In addition, co-authored a presentation titled "*Increasing Profits Through the Use of Trap Cropping to Manage Key Insect Pests of Cucurbits***"** by J.T. Wilson and J.C. Piñero (Audience: 48 farmers), and a poster "*Spotted Wing Drosophila, a New Invasive Insect Affecting Small Fruit Production*" by J.C. Piñero.

2014 Coordinated the "Spotted Wing Drosophila Clinic" at the Great Plains Growers Conference (January 9-11). Room was setup with educational materials, stereomicroscopes, free bait and traps, free samples of specimens for farmers to identify this pest at their farms were available. Extension educators from Lincoln university, Univ. of Missouri, Iowa State University and University of

Nebraska – Lincoln supported this effort. At least 45 farmers visited the clinic.

2013 National Small Farm Trade Show and Conference held in Columbia, MO (November 1). Presentation title "'*Trap Cropping for Effective Pest Management of Key Insect Pests*". Audience: 49 farmers.

2013 In-Service-Education Workshop on 'Spotted Wing Drosophila' held at the Lincoln University George Washington Carver farm in Jefferson City, MO (November 20). Audience: 51 Extension professionals from Univ. Missouri Extension, Lincoln University, Missouri Department of Conservation, Missouri Department of Agriculture, and Missouri Master Naturalists.

2013 In-Service-Education Workshop on 'Sustainable Management of Soil-Borne Diseases and Weeds', held at the Lincoln University George Washington Carver farm in Jefferson City, MO (June 4-5). Audience: 44 Extension professionals from Univ. Missouri Extension, Lincoln University, Univ. of Illinois Extension, University of Nebraska-Lincoln, NRCS and MO Department of Agriculture.

2013 First Vegetable and IPM Festival held at Lincoln University George Washington Carver Farm, August 28, 2013**.** Audience: 125 farmers.

2013 First Alternative Agriculture Field Day at Lincoln University Organic and Integrated Research Alan T. Busby Farm, June 3, 2013**.** Audience: 140 farmers.

2013 Presentation at the Midwest Refugee Farmers Conference held in Kansas City, KS (April 19). Audience: 36 farmers from numerous nationalities, there was simultaneous translation.

2013 Presentation at Missouri Organic Association Conference held in Springfield, MO (February 8). Audience: 65 organic farmers.

2013 – First International elderberry symposium held on June 9-14, 2013, in Columbia, MO. Poster titled "*Mass Trapping: A Potential Organic Management Option for the Japanese Beetle (Coleoptera: Scarabaeidae)*" by J.C. Piñero and J.T. Wilson.

2013 Poster presentation at the Midwest Organic and Sustainable Education Service (MOSES) conference held on February 21-23, 2013 in LaCrosse, WI. Audience: cannot be quantified, but conference is attended by 2,000+ organic farmers. Presented two posters: (1) "*Mass trapping: a potential organic management option for Japanese beetles*", and (2) "*Getting Benefits Out of A Bad Bug by On-farm Composting Japanese Beetles*".

2013 Four presentations at the Great Plains Growers Conference, held in St. Joseph, MO (Jan. 10-12). Presentation titles: (1) "*An Introduction to Integrated Pest Management*", (2) "*Determining Economic Thresholds for Pesticide Applications*" (Audience: 57 farmers), (3) "*Organic Research and Extension at Lincoln University: Farmer Input*" (Audience: 27 farmers), and (4) "*Update on Brown Marmorated Stink Bug/Spotted Wing Drosophila/ Japanese Beetles*" (Audience: 31 farmers). Also co-authored a presentation titled "*Organic Management of Japanese Beetles"* by J. Wilson and J. Piñero) (Audience: 39 farmers), and a poster title "*Getting benefits out of a bad bug: On-farm composting of Japanese beetles*" by H.Y. Johnson, J. Wilson, P. Byers, and J.C. Piñero.

2012 Presentation to Master Gardeners, Jefferson City, MO (October 29). Presentation title: "*Plant Diseases: Identification, Prevention, and Management***:** Audience: 26.

2012 Workshop Small Scale Vegetable Production, Kearney, MO (August 25). Presentation title: "*Integrated Pest Management for Vegetables*". Audience: 20.

2012 Growing Growers IPM workshop in Kansas City MO (August 20). Presentation title: "*Organic Insect Pest Management"*. Audience: 34.

2012 IPM Workshops for Beginner Farmers. Series of 4 workshops offered in Jefferson City, Warrenton, Kansas City, and Mt. Vernon, MO on July 25-26, July 30-31, August 1-2 and August 22-23). About 48 hours of presentations (12 hours per workshop). Audience: 24.

2012 Presentation to Master Gardeners, Jefferson City, MO (April 24), presentation: Using Trap Crops to Minimize Insect Pest Damage to Vegetable Crops. Audience: 75.

2012 Workshop for Hispanic Farmers, Sedalia MO (April 24, 2012). A series of presentations on IPM. Audience: 8 (Hispanics).

2012 Minority and Limited-Resource Farmers Conference, Jefferson City, MO (March 2-3).

Presentation title: "*Integrated Pest Management*". Audience: 35 farmers.

2012 Annual Conference of the Missouri Organic Association (St. Louis, MO, Feb. 2-4, 2012). Presentation title: "*Determining Economic Levels for Pesticide Applications*". Audience: 7 farmers.

2012 Great Plains Growers Conference, held in St. Joseph, MO. Two presentations titled: (1) "*Using Trap Crops to Minimize Insect Pest Damage to Organic Vegetables*" and (2) "*Basics of Pest Management in Organic Systems*". Audience: > 200 farmers.

2012 Pest Management and Safe Production/Harvest Practices Workshop in Barton County (January 11, 2011). Three presentations titled: (1) "*using trap crops to reduce insect pest damage to cash crops*", (2) "*how to use kaolin clay (Surround) to protect crop plants from heat while reducing insect damage*", and (3) "*how to recognize the Brown Marmorated Stink Bug*". Audience: ca. 40 Amish farmers.

2011 Tomato Workshop, Spickard, MO (December 5, 2011). Presentation title: "*Using trap crops and Surround to protect vegetable crops*". Jamesport, Dec. 5, 2011. Audience: 50 Amish farmers.

2011 Tomato Workshop, Spickard, MO (June 1, 2011) "*Pest Management for High Tunnel and Field Tomatoes*". Audience: 45 farmers.

2011 Field Day "In Touch with Nature", Lincoln University Cooperative Extension, Busby Farm, Jefferson City, MO (Sep. 24), Hands-on activity titled: "*All About Bugs!*". Audience: 101 people.

2011 Annual Field Day, University of Missouri Southwest Research Center, Mt. Vernon, MO (Sep. 9).

2011 Insect Identification and IPM workshop held in Nehoso, MO (Mar. 2). Audience: 11 Hmong vegetable farmers.

2011 Tomato Pest Management, Higginsville, MO (Mar. 1). Audience: 13 Farmer's Market Vendors.

2011 Annual Meeting Missouri Organic Association, Springfield, MO (Feb. 10-12). Presentation title: "*IPM for Organic Systems*".

2011 Great Plains Growers Conference, St. Joseph, MO (Jan. 6-8). Presentation title: "*Organic Pesticide Update*". Audience: 81.

2010 Annual Meeting Watermelon Growers. Two presentations titled: (1) "*Insect Pests of Watermelon*" and (2) "*Watermelon Disease Management with MELCAST*", Kennett, MO (Dec. 1). Audience: 34.

2010 Columbia Farmers' Market 2010 Fall Roundup, Bradford Research and Extension Center, Columbia, MO (Nov. 6). Presentation title: "*Current and Future Directions in Cucumber Beetle Management*". Audience: 11.

2010 18th National Small Farm Trade Show and Conference, Boone County Fairgrounds, Columbia, Missouri (November 4th): "*Integrated Pest Management for Small Farms*". Audience: 59.

2010 High Tunnel Workshop (coordinated by Univ. of Missouri Extension) (audience: Hmong/Amish), Pierce City, MO (Oct 26). Presentation title: "*Integrated Pest Management in High Tunnels*".

2010 Native Pollinators Workshop (Lincoln University Coop. Extension), Bradford Research and Extension Center, Columbia, MO (Aug. 13): "*Integrated Pest Management and Pesticide Risk Management*".

2010 Field Day "In Touch with Nature", Lincoln University Cooperative Extension, Busby Farm, Jefferson City, MO (Sep. 27), Hands-on activity titled: "*All About Bugs!*". Audience: 66.

2010 Beginning Vegetable and Fruit Growers Workshop (MU Extension), Springfield, MO (Jun. 25). Presentation title: "*Basics of Integrated Pest Management*".

2009 Risk Management Training for Immigrant Farmers of Hawaii (May 21, 2009), Keaau, Hawaii: *"Recent advances in fruit fly control in papaya orchards*". Included workshop time.

Scientific Presentations

2016 International Congress of Entomology held in Orlando, FL (Sep. 25-30). Authored one oral presentation, and co-authored four posters and two oral presentations. Title and authors of oral presentations: (1) "*Synergistic / additive interactions among components of food-based baits*

underlie female attraction in three invasive fruit fly species" by J.C. Piñero, S.K. Souder, T. Smith, A. Fox, and R.I. Vargas., (2) "*Impacts of novel insecticides to three opine braconid parasitoids Fopius arisanus (Sonan), Diachasmimorpha longicaudata (Ashmead), and Psyttalia fletcheri (Silvestri) based on adult mortality under foliar cover spray application*" by S. Souder, J.C. Piñero, T. Smith, and R.I. Vargas.

Title and authors of poster presentations: (1) "*Japanese beetle composting: Converting pests to soil fertilizer using common farm materials*" by T. Shivers, H.Y. Johnson, and J.C. Piñero, (2) "*Laboratory assessment of the attractiveness of selected fruit and leaf volatiles to Drosophila suzukii*" by G.Bolton, B. Barrett, and J.C. Piñero, (3) "*Attractiveness of seven insectary plants to natural enemies of insect pests in a vegetable cropping system*" by B. Shrestha, D. Finke, and J.C. Piñero (poster was awarded second place in the graduate student competition), and (4) "*Optimizing a mass trapping system design for organic management of Japanese beetles*" by A. Dudenhoeffer J. Miller, and J.C. Piñero.

2016 Annual Meeting of the Entomological Society of America- Pacific Branch held in Honolulu, HI (April 3-6, 2016). Title of presentation: "*Captures of Wild Male Oriental Fruit Fly (Bactrocera dorsalis) and Melon Fly (Bactrocera cucurbitae) with SPLAT Containing a Mixture of Methyl Eugenol, Cue-Lure and Spinosad*" by S.K. Souder, J.C. Piñero, H. Spafford, and R.I. Vargas.

2015 Three poster presentations at the Entomological Society of America Annual Meeting (November 15-18), Minneapolis, MN. Titles and authors: (1) "*Evaluation of Trap Crops for Their Attractiveness to the Key Insect Pest Complex of Cole Crops in Missouri*" by R. Manandhar and J.C. Piñero, (2) "*A Comparative Assessment of the Response of Two Species of Cucumber Beetles to Visual and Olfactory Cues and Prospects for Mass Trapping*" by J.C. Piñero, and (3) "*Laboratory Assessment of Plant Volatile Organic Compounds as Potential Attractants for Spotted Wing Drosophila*" by G. Bolton, B.A. Barrett, and J.C. Piñero".

2015 8th International IPM Symposium, Salt Lake City, UT (March 23-26). Poster title: "*IPM of Tropical Fruit Flies (Diptera: Tephritidae) with Fruit Fly Lures and SPLAT® technologies*" by R.I. Vargas, J.C. Piñero, and A. Mafra-Neto.

2015 8th International IPM Symposium, Salt Lake City, UT (March 23-26). Poster title: "*Building IPM Capacity in Missouri Through Train-The-Trainer Workshops and Effective Partnerships*" by J.C. Piñero.

2015 8th International IPM Symposium, Salt Lake City, UT (March 23-26). Poster title: "*Trap Cropping: A Simple and Effective Organic IPM Approach to Manage Multiple Pests in Cucurbits*" by J.C. Piñero and J.T. Wilson.

2014 2nd International Symposium on Insects (December 1-3) held in Melaka, Malaysia. Organized by the Entomological Society of Malaysia and Universiti Kebangsaan Malaysia. Poster title: "*Exploiting Synergistic Interactions within and across Insect Sensory Modalities for Improved Pest Management*" - winner of 1st place.

2014 Two poster presentations at the Entomological Society of America Annual Meeting held in Portland, OR (November 13-16). Poster titles: (1) "*Trap Cropping: A Simple, Effective, and Inexpensive Organic IPM Approach to Manage Cucumber Beetles and Squash Bugs In Cucurbit Crops*", and (2) "*Arthropod Abundance and Diversity on Elderberry Extra-Floral Nectaries is Influenced by Cultivars and Pruning Methods"*.

2013 Two presentations at the Entomological Society of America Annual Meeting (November 9-13), Austin, TX: (1) "*Getting to Know a Moth: The Chemical Ecology of The Oriental Fruit Moth*", Audience: 38, (2) "*Addressing the IPM Needs of Small-Scale Vegetable Farmers in Missouri*".

2013 Co-presented two posters at the Entomological Society of America Annual Meeting (November 9-13), Austin, TX. Titles: (1) "*Getting benefits out of a bad bug: On-farm composting of Japanese beetles, Popillia japonica (Coleoptera: Scarabaeidae)*" by G. Ndunguru, H.Y. Johnson, J. Wilson, and J.C. Piñero, and (2) "*Mass trapping: A potential organic management option for the Japanese beetle (Coleoptera: Scarabaeidae)*" by J. Wilson and J.C. Piñero.

2012 Entomological Society of America Annual Meeting (November 11 -15), Knoxville, TN. Presentation title: "*Behavioral evidence for the exploitation of a novel host plant on the basis of vision in the melon fly, Bactrocera cucurbitae (Diptera: Tephritidae)*" Audience: 44. Co-authored an oral presentation by an undergraduate student in the undergraduate student competition: "*Abundance and diversity in insect visitors to extra-floral nectaries in elderberries, Sambucus nigra*" by T. Hossain and J.C. Piñero.

2012 6th National Small Farm Conference, Memphis, TN (September 20). Presentation title: "*Research and Extension highlights of the new Integrated Pest Management Program at Lincoln University*". Audience: 18.

2012 XXIV International Congress of Entomology, Daegu, South Korea (August 19-25). Co-authored two oral presentations titled: (1) "*Plant volatiles attracting an invasive fruit moth: basic findings relevant for future monitoring*" by S. Dorn, J.C. Piñero and A. Najar-Rodriguez, and (2) "*How fruit moths recognize host plant odors*" by S. Dorn, A. Najar-Rodriguez and J.C. Piñero.

2012 7th International IPM Symposium, Memphis, TN (March 27-29). Poster title: "*The New IPM Program at Lincoln University of Missouri, an 1890 Land-Grant University*" by J.C. Piñero.

2012 7th International IPM Symposium, Memphis, TN (March 27-29). Poster title: "*Synergistic interactions within and across insect sensory modalities: Applications for IPM*" by J.C. Piñero, S. Dorn, R.I. Vargas, G.C. Galizia, and R.F.L. Mau.

2012 7th International IPM Symposium, Memphis, TN (March 27-29). Poster title: "*Impact of invasive fruit flies on IPM programs in the U.S*" by R.I. Vargas, R.F.L. Mau, J.C. Piñero, and L. Leblanc.

2010 Entomological Society of America Annual Meeting (December 11 -15), San Diego, CA. Poster presentation titled "*Attract-and-Kill Stations for Management of a Temperate Fruit Fly Pest, Rhagoletis indifferens, in Cherry*" by D.G. Alston and J.C. Piñero.

2009 Entomological Society of America Annual Meeting held in Indianapolis, IN (December 13 -16). Presentation title: "*A comparative assessment of the response of three fruit fly species (Tephritidae) to a protein bait: effect of ammonium acetate, female age and protein hunger*".

2009 Pacific Entomology Conference / 13th Biennial Conference of the Hawaiian Entomological Society, Honolulu, Hawaii (February 18-19): "*Area-wide control of fruit flies in Hawaii and Asia*" (by R.F.L. Mau, R.I. Vargas, J.C. Piñero, M.-Y. Chou, C.-H. Kao, E.Y. Cheng, J. Chen, and J. Qinge.

2009 Pacific Entomology Conference / 13th Biennial Conference of the Hawaiian Entomological Society, Honolulu, Hawaii (February 18-19): "*Technology transfer for fruit fly control in Hawaii through the area-wide pest management program*" by R.I. Vargas, R.F.L. Mau, J.C. Piñero, L. Leblanc and E.B. Jang.

2008 Entomological Society of America Annual Meeting (November 16 -19), Reno, Nevada: "*Novel rain-fast bait stations for applications of insecticidal baits to control pestiferous fruit flies (Tephritidae) in Hawaii*".

2008 7th Meeting of the Fruit Fly Working Group of the Western Hemisphere (November 2-7), Mazatlan, Mexico. Invited as Discussion Leader for the section on Chemical Control, Bait Stations and Quarantine Treatments. Two posters were presented: (1) "*Managing Oriental fruit fly, Bactrocera dorsalis (Diptera: Tephritidae) using Spinosad-based protein sprays in papaya orchards in Hawaii*" by J.C. Piñero, R.F.L. Mau, and R.I. Vargas, and (2) "*Novel bait stations for attract-and-kill of pestiferous fruit flies (Tephritidae) in Hawaii*" by J.C. Piñero, R.F.L. Mau, G.T. McQuate, and R.I. Vargas.

2008 23rd International Congress of Entomology, held in Durban, South Africa (on July 6-12). Two posters were presented: (1) "Managing Oriental fruit fly, Bactrocera dorsalis (Diptera: Tephritidae) using Spinosad-based protein sprays in papaya orchards in Hawaii" by J.C. Piñero, R.F.L. Mau, and R.I. Vargas, and (2) "*Synergistic behavioral responses of female moths to synthetic plant-derived mixtures*

are mirrored by odor-evoked calcium activity in their antennal lobes" J.C. Piñero, C.G., Galizia, and S. Dorn.

2008 Risk Management Training for Immigrant Farmers of Hawaii (May 29, 2009), Keaau, Hawaii: "*Highlights of the Puna project*". Included workshop time.

2007 - 2008 Four presentations to papaya growers on results of Fruit Fly Project in Puna, Hawaii (Aug. 2007 to Mar. 2008).

2007 43rd Annual Conference of the Hawaii Papaya Industry Association (HPIA), Hilo, Hawaii (Sep. 21-22). Presentation title: "*Highlights of the Puna Project*".

2007 Entomological Society of America Annual Meeting, San Diego, California (Dec. 9-12). Presentation title: "*Efficacy of GF-120 Fruit Fly Bait sprays against Oriental fruit fly (Diptera: Tephritidae) in Hawaii*".

2006 Entomological Society of America Annual Meeting, Indianapolis, Indiana (Dec. 10-13). Presentation title: "*Olfactory response of female oriental fruit moth (Lepidoptera: Tortricidae) to peach-derived synthetic mixtures*".

2004 66th Annual New England, New York, Canadian Fruit Pest Management Workshop, Burlington, Vermont (Oct. 26-27). Three presentations titled: (1) "*Dynamics of plum curculio immigration into Massachusetts apple orchards*", (2) "*Managing plum curculio in Massachusetts apple orchards: 2004 results*", and (3) "*Managing apple maggot in Massachusetts apple orchards: 2004 results*".

2004 Entomological Society of America Annual Meeting, Salt Lake City, Utah (Nov. 13-18). Presentation title: "*Temporal dynamics of plum curculio immigration into an apple orchard*".

2003 Entomological Society of America Annual Meeting, Cincinnati, Ohio (Oct. 26-29). Presentation title: "*Patterns of plum curculio penetration into apple orchards*".

2002 Entomological Society of America Annual Meeting, Fort Lauderdale, Florida (Nov. 17-20). Presentation title: "*Evaluations of different amounts of attractive odors for luring plum curculios*".

2001 Entomological Society of America Annual Meeting, San Diego, California (Dec. 9-12). Presentation title: "*Monitoring plum curculio immigration into apple orchards by using odor-baited traps*".

2000 Joint Annual Meeting. Société d'entomologie du Québec, Entomological Society of Canada, Entomological Society of America, Montreal, Québec, Canada (Dec. 3-6). Presentation title: "*Traps for intercepting plum curculio immigrating into orchards*".

BY INVITATION:

2016 International Workshop on Sustainable Agriculture and Pest Management held in Taipei, Taiwan (Nov. 1-12, 2016). Invited presentation title: "*Ecological/Behavioral Factors Influencing the Efficacy of Trapping Systems for Insect Pests*".

2016 Invited presentation at the International Center for Tropical Agriculture located in Hanoi, Vietnam (Nov. 14). Presentation title: "*Developing improved attract-and-kill systems to suppress pestiferous fruit flies*".

2016 Annual Meeting of the Entomological Society of America –Pacific Branch, Honolulu, HI (April 3-6, 2-016). Presentation title: "*Synergistic / additive interactions among components of food-based baits underlie fruit fly (Tephritidae) attraction*" by J.C. Piñero, S.K. Souder, T. Smith, and R.I. Vargas.

2016 International Symposium on "Chemical-Biological Strategies for Weevil Pest Management", held in Puebla, Mexico. Title of presentation (plenary talk): "*Ecología química del picudo de la*

manzana, Conotrachelus nenuphar, y opciones de monitoreo/manejo" (in Spanish). Feb. 10-11, 2016.

2014 2nd International Symposium on Insects (December 1-3) held in Melaka, Malaysia. Organized by the Entomological Society of Malaysia and Universiti Kebangsaan Malaysia. Presentation title: "*Promoting Farm Sustainability through Trap Cropping Research, Outreach, and Effective Integrated Pest Management Implementation in Small Farms in the Midwest USA*".

2014 Kansas State University, Manhattan, KS (February 17th). Host. Dr. Jim Nechols. Presentation title: "*Exploiting Synergistic Interactions Within and Across Insect Sensory Modalities for the Benefit of Pest Management*".

2013 Invited trip to China where I gave four presentations (total audience including students, faculty, and staff: ca. 200).

1) 4th International Conference of Insect Physiology, Biochemistry and Molecular Biology (IPMB) held at the Nanjing Agricultural University (June 15 to 19). Title of presentation: "*Synergistic behavioral responses of female oriental fruit moths to synthetic host-plant derived mixtures are mirrored by odor-evoked calcium activity in their antennal lobes*".
2) Northwest A&F University - Yanling (on June 20). Title of presentation: "*Exploiting Synergistic Interactions Within and Across Insect Sensory Modalities for the Benefit of Pest Management*".
3) Qingdao Agricultural University (on June 23). Title of presentation: "*Exploiting Synergistic Interactions Within and Across Insect Sensory Modalities for the Benefit of Pest Management"*.
4) Shandong Peanut Research Institute – Qingdao (on June 24). Title of presentation: "*Developing Effective, Ecologically-Based Integrated Pest Management Strategies to Manage Insect Pests: Push-Pull, Trap Cropping, and Mass Trapping*".

2013 USDA ARS center located in Tallahassee, FL (Apr. 11). Title of presentation: "*Role of Semiochemicals in Insect Vector / Plant Pathogen Relationships: the Case of Cucumber Beetles (Coleoptera: Chrysomelidae)*".

2012 USDA ARS Pacific Basin Agricultural Research Center located in Hilo, HI (Mar. 20). Presentation title: "*Role of Semiochemicals in Insect Vector / Plant Pathogen Relationships: the Case of Cucumber Beetles (Coleoptera: Chrysomelidae)*".

2011 University of Missouri – Columbia, Plant Science Seminar Series (Nov. 30). Presentation title: **"***Insect Sensory Ecology and Applications for Pest Management*".

2011 Lincoln University, College Seminar Series (Nov 7). Presentation title: "*Insect Sensory Ecology and Applications for Pest Management*".

2011 Iowa State University, Ames, IA, joint seminar to the departments of Plant Pathology/Microbiology and Entomology (Oct. 25). Presentation title: "*Role of Semiochemicals in Insect Vector / Plant Pathogen Relationships: the Case of Cucumber Beetles (Coleoptera: Chrysomelidae)*".

2011 Iowa State University, Ames, IA, (Oct. 25), seminar ('chalk talk') related to Insect Sensory Ecology to grad students in the Plant Pathology and Entomology Departments.

2011 Invasive Insect Behavior and Biocontrol Laboratory, USDA ARS, Beltsville, MD (May 6). Presentation title: "*Insect Sensory Ecology and Applications for Pest Management*".

2011 Pacific Branch Entomological Society of America Annual Meeting, Waikoloa, Hawaii (Mar. 27-30). Presentation title: "*Attract-and-kill bait stations for improved fruit fly (Diptera: Tephritidae) management in papaya orchards*".

2011 Pacific Branch Entomological Society of America Annual Meeting, Waikoloa, Hawaii (Mar. 27-30): Student Career Session "*My Journey to Finding a Job*".

2009 Institute of Applied Biotechnology, Xalapa, Veracruz, Mexico (Oct. 16). Presentation title: "*Insect Sensory Ecology and Applications for Pest Management*". In Spanish.

2009 Pacific Entomology Conference / 13th Biennial Conference of the Hawaiian Entomological Society, Honolulu, Hawaii (February 18-19). Presentation title: "*Behavioral approaches to tephritid fruit fly management in Hawaii: recent advances*" by J.C. Piñero, R.F.L. Mau, G.T. McQuate, and R.I. Vargas.

2008 University of Hawaii at Manoa, Dept. of Plant and Environmental Protection Sciences, Honolulu, Hawaii (Jun. 18). Seminar hosted by the Hawaiian Entomological Society. Presentation title: "*Insect sensory ecology and applications for pest management*".

2006 University of Konstanz, Dept. of Neurobiology, Konstanz, Germany (Sep. 12). Presentation title: "*Chemical ecology of Cydia molesta (Lepidoptera: Tortricidae): integrating behavior, semiochemicals and neurophysiology*". Host: Prof. Dr. Giovanni Galizia.

2005 Annual Meeting of the Entomological Society of America (2005), Fort Lauderdale, Florida (Dec. 18-22). Presentation title: "*Semiochemically-based monitoring of plum curculio immigration and egglaying in the Northeast*". Program Symposia "Bridging the Gap Between Basic Behavioral Research and Crop Protection Applications for Tree Fruit Agro-Ecosystems: Honoring the Life and Work of Ronald J. Prokopy".

2004 University of Massachusetts, Dept. of Plant, Soil and Insect Science (Dec. 6). Presentation title: "*Monitoring the dynamics of plum curculio immigration into apple orchards using odor-baited traps*". Host: Dr. Anne Averill.

2004 University of California at Riverside, Dept. of Entomology, Ontario, CA (Nov. 18). Presentation title: "*Dynamics of plum curculio immigration into apple orchards*". Host: Dr. Giovanni Galizia.

2004 Eastern Branch Entomological Society of America Annual Meeting; Grad Student Symposium 'From pitfall traps to GIS: emerging tools in quantifying arthropod distribution and movement', New Haven, Connecticut (Mar. 7-9). Presentation title: "*Patterns of plum curculio immigration into apple orchards*".

Professional Activities

2015, 2016, 2017 Review Panel for Northeastern IPM Center, Partnership Grants program.

2015 Review Panel for NIFA AFRI Critical Agriculture Research and Extension program.

2015 Chair, Review Panel for USDA Agricultural Research Service National Program Action Plans.

2014 Chairman of the "Behavioral and Chemical Ecology" session, at the 2nd International Symposium on Insects (December 1-3) held in Melaka, Malaysia. Organized by the Entomological Society of Malaysia and Universiti Kebangsaan Malaysia.

2014 Planning Committee Chair for the "*2014 Missouri Minority and Limited-Resource Farmers Conference*". This event was held successfully on March 20-22, 2014, at the Lincoln university George Washington Carver farm in Jefferson City, MO. This 2-day conference (and farm tour) brought together over 120 minority and limited-resource farmers from across the state of Missouri. Budget managed: $ 25,000 provided by USDA/Office of Advocacy and Outreach, Socially Disadvantaged Farmer and Rancher program (formerly 2501 program).

2013 Organizer of Member Symposium titled "*Strengthening the Connection between Continents –A Symposium Honoring Silvia Dorn's Impact on Applied Entomological Research*" at the Annual Meeting of the Entomological Society of America. Co-organizer: Dr. Mark Sarvary, Cornell University. Symposium held on November 12, 2013. Audience: 31 per session, on average.

2013 Co-organizer of Member Symposium titled "*IPM for Small-Scale Farmers: Research and Extension Needs and Experiences*" at the Annual Meeting of the Entomological Society of America. Organizer: Dr. Tessa R. Grasswitz, New Mexico State University. Symposium held on November 13,

2013. Audience: 11 per session, on average.

2013 Review panel for USDA NIFA's Pest Management Alternatives Program (PMAP)

2013 Review panel for USDA NIFA's Southern IPM Center

2013 Review panel for USDA NIFA's Eastern IPM Center

2013 Review panel for USDA NIFA's Hispanic-Service Institutions Education Program

2012 Ad-hoc Reviewer for USDA NIFA's Organic Research and Extension Initiative

2011 – Missouri State IPM Co-coordinator, National Information System, Regional IPM Centers.

2011 - 2012 North Central IPM Center stakeholder panel. By invitation.

2011 Review panel of USDA NIFA's Extension Integrated Pest Management Coordination and Support, Washington, D.C., June 30, July 1, 2011.

2011 Review panel of USDA NIFA's Organic Research and Extension Initiative, Washington, D.C., May 3-5, 2011.

2011 Technical Committee USDA Sustainable Agriculture Research and Education Program, North Central Region.

2011- Contributor for various Newsletters (e.g., MU Extension Ag. Opportunities, Missouri Alternatives Center's, Lincoln University Cooperative Extension "Innovative Small Farmers' Outreach Program (ISFOP)" Newsletter, University of Missouri Extension IPM mini-clinics Newsletter - led by Mr. James Quinn).

2011- Contributor for the 2011, 2012, and 2013 Midwest Vegetable Production Guide for Commercial Growers (targeting 7 Midwest states). Editor: Dr. Dan Egel (Purdue University).

2011- *Ask-the-Expert* for e-Organic.org and eXtension.org. From the eXtension website: "*eXtension is a national internet-based educational network that is integral to and complements the community-based Cooperative Extension System with 24/7/365 availability… eXtension is an interactive learning environment delivering the best, most researched knowledge from the smartest land-grant university minds across America. eXtension connects knowledge consumers with experts in various fields who act as knowledge providers…".*

2009 Reviewer of scientific proposals for BARD, the United States - Israel Binational Agricultural Research & Development Fund.

2008 Reviewer of scientific projects for CONACyT Mexico (analogous to NSF in USA).

2007 Associate Graduate Faculty, University of Hawaii at Manoa.

2006 - present. Have reviewed manuscripts for 20+ entomological / ecological journals:

- Annals of the Entomological Society of America
- Biological Control
- Bulletin of Entomological Research
- Crop Protection
- Entomologia Experimentalis et Applicata
- Environmental Entomology
- Florida Entomologist
- Forest and Agricultural Entomology
- Fruits
- International Journal of Pest Management
- Journal of Applied Entomology
- Journal of Economic Entomology
- Journal of Insect Behavior
- Journal of Insect Science
- Proceedings of the Hawaiian Entomological Society
- Journal of Pest Science

- Physiological Entomology
- Plos ONE
- Journal of Asia-Pacific Entomology
- Environment, Development and Sustainability
- Arthropod-Plant Interactions
- Journal of the Royal Society of New Zealand

Professional Societies (memberships):

- Entomological Society of America (since 2000)
- Florida entomological Society (since 2012)

Fellowships & Research / Extension Support

*(**$ 1'461,266** in grants and support for research / extension - 2011-2016)*

2016 $ 34,694 (sub-award for Lincoln University: $ 14,800): co-PI of Research/Extension project "*Optimizing Monitoring and Mass Trapping Systems for Spotted Wing Drosophila"* funded by the Missouri Department of Agriculture Specialty Crops Block Grant (2 years).

2016 $ 2,000: PI of mini-grant funded by the Missouri SARE for demonstration project titled "*Demonstrating organic vegetable production and consumption in Central Missouri*". Collaborators: Jack Ryan (NEEED project), Jefferson City Elementary Schools, Capital Region Medical Center of Jefferson City, Parks and Recreation of Jefferson City, Lincoln University Cooperative Extension.

2015 $ 10,000 for In-Service Education workshop on "*Organic Pest Management*", funded by the Missouri SARE program. This workshop was offered on May 26-27, 2015 with trainers from 3 US states.

2014 $ 33,102: PI of Research/Extension project "*Evaluating Plant Volatile Organic Compounds as Potential Species-Specific Attractants in Spotted Wing Drosophila Monitoring Traps"* funded by the Missouri Department of Agriculture Specialty Crops Block Grant (2 years).

2014 $ 153,659 (Lincoln Univ. sub-award: $ 35,500). Co-PI of NIFA Extension IPM project titled "*IPM for the State of Missouri*" (3 years, 2014-2017).

2014 $ 178,519: PI of Research/Outreach organic project "*Improving the Profitability of Small Farms in Missouri by Reducing Inputs through the Integration of Farmscaping and Small Ruminants for Insect Pest and Weed Control*" funded by The Ceres Trust: An Organic Research Initiative" (3 years).

2013 $ 4,000. PI of mini-grant funded by the Missouri SARE program for demonstration project titled "*Attract-and-Kill methods for Spotted Wing Drosophila management*".

2013 $ 5,000 for In-Service Education workshop on "*Addressing Spotted Wing Drosophila Extension & Research Needs in Missouri*", funded by the Missouri SARE program. This workshop was offered on November 20, 2013 with trainers from 2 US states.

2013 $ 10,000 for In-Service Education workshop on "*Sustainable Management of Soil-Borne Diseases and Weeds in Vegetable and Small Fruit Farms in Missouri*", funded by the Missouri SARE program. This workshop was offered on June 4-5, 2013 with trainers from 4 US states.

2013 $ 164,809 ($ 54,228 for Lincoln Univ.): co-PI of extension project "*The Missouri IPM Program*" funded by USDA NIFA Extension IPM Coordination and Support Program (1 year).

2013 $ 300,000: PI of project "*Empowering Socially Disadvantaged Farmers and Ranchers in Missouri with Sustainable Agriculture Techniques and Appropriate USDA Outreach Programs*", USDA- NIFA Outreach for Disadvantaged Farmers & Ranchers (OASDFR)

2013 $ 179,484: PI of Research/Outreach organic project "*Optimizing Trap Cropping Systems for Key Insect Pests and Enhancing Beneficial Arthropods in Cucurbit Crops*" funded by The Ceres Trust: An Organic Research Initiative" (3 years).

2012 $ 23,197: PI of Research/Extension project "*Invasive Insect Pests Threatening Specialty Crops in Missouri: Monitoring, Organic Management, and Farmer's Education"* funded by the Missouri Department of Agriculture Specialty Crops Block Grant (2 years).

2012 $ 49,745: PI of extension project "*Strengthening the Extension IPM Program at Lincoln University of Missouri*" funded by USDA NIFA Extension IPM Coordination / Support Program (1 yr).

2012 $ 24,938: PI of research project "*Pest Management in Vegetables through the Exploitation of Applied Aspects of Insect Sensory Ecology*" funded by ETH- Zurich. Collaborative project with Prof. Dr. Silvia Dorn (2012-2014).

2012 $ 11,000 for In-Service Education workshop on "*Small Fruit IPM*", funded by the Missouri SARE program. This workshop was offered on June 19-20, 2012 with trainers from 3 US states.

2011 $ 255,214: co-PI of research project "Developing a Behaviorally-Based, Sustainable Integrated Pest Management Push-Pull Strategy for Cucumber Beetles in Missouri" funded by USDA NIFA Capacity Building Grant program (3 years).

2011 $ 12,000 for In-Service Education workshop on "Vegetable IPM", funded by the MO SARE program. This workshop was offered on August 23-24, 2011 with trainers from 7 US states.

2010 – 2011 $ 9,825.49: PI of research project "*Developing a semiochemically-based mass trapping system for cucumber beetle management in cucurbit crops in Missouri"* funded by NCR IPM Center.

2010 - 2011 $ 40,000: Co-PI of research project "*Optimization of bait stations with semiochemicals and the reduced-risk insecticide spinosad for suppression of melon and oriental fruit fly in papaya*" funded by USDA ARS (SCA RFP), in Hawaii.

2008 - 2010 $ 80,000: Co-PI (internally I was the PI) of research project "*Optimization of bait stations for applications of GF-120 Fruit Fly Bait to control oriental fruit fly, Bactrocera dorsalis, in papaya and melon fly, B. cucurbitae, in vegetable crops in Hawaii*", funded by USDA ARS (SCA RFP) ($ 40,000 for each of two years).

2004 $ 4,000: PI of research project: "*Improving the effectiveness of trap trees for potential control of plum curculio*", funded by the New England Tree Fruit Growers Research Committee" (Apr.-Dec.).

2003 - 2004 $ 10,000: Graduate School Fellowship, University of Massachusetts (academic year).

2000 - 2005 $ 79,500: Graduate Research Assistantship, University of Massachusetts, Dept. of Entomology.

Community and University Service

2016-2017 President, PTO Moreau Heights Elementary School, Jefferson City, MO.

2015-2016 Vice-President, PTO Moreau Heights Elementary School, Jefferson City, MO.

2013-2014 Greenhouse Committee, Lincoln University.

2013-2014 Dickinson Research Facility Expansion Committee member.

2013-2014 Chair, Search Committee for five positions at Lincoln University: State Horticulture Position, Small Farm Specialist position (SW MO), Research Technician I position (IPM program), 2 Farmer Outreach Worker positions.

2013-2014 Served as a member in the Search Committee for Farmer Outreach Worker, Lincoln and St. Charles counties.

2013 Chair, Search Committee for Post-doctoral Fellow, Sustainable Pest Management Systems.

2012-2013 Lincoln University Ag Club Field Day, George Washington Carver Farm.

2012-2016 Active participant in AgDiscovery. AgDiscovery is an USDA-funded summer camp outreach program designed to help middle through high school aged students explore careers in animal science, veterinary medicine, agribusiness, plant pathology, aquaculture.

2013 Main organizer school parties for Mrs. Carry Dunn's classroom (2nd grade), Moreau Heights Elementary.

2011 Presentation about Insects to children participating in program titled "Sprouts and Roots", at held Lincoln University Dickinson Research Facility, Aug. 9, 2011.

2010- Member (3) and Chair (2) of Search Committees for Lincoln University Coop. Extension

2010- Busby Farm Advisory Committee. Lincoln University of Missouri.

2001 - 2004 Umass Graduate Student representative for the Entomological Society of America - Eastern Branch.

2002 - 2003 President of the Fernald Entomological Club, Umass –Amherst, Dept. of Entomology.

2000 - 2003 Community Outreach Program, Umass - Amherst, Dept. of Entomology.

2002 J.J. Duggan Middle School, Springfield, Massachusetts. 'Introduction to Arthropods' presentation to 7th grade class (four presentations, 45-min presentations each).