

Biographical Sketch

Hannah J. Burrack
Associate Professor & Extension Specialist
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Professional Preparation

University of Wisconsin, Madison Entomology & Rural Sociology BS, 2002
University of California, Davis Entomology PhD, 2007

Appointments

Associate Professor & Extension Specialist, Department of Entomology and Plant Pathology (2013-present)
Assistant Professor & Extension Specialist, Department of Entomology and Plant Pathology (2017-2013)

Publications

1. Swoboda-Bhattarai, K.S., D.R. McPhie, and H.J. Burrack. *Submitted*. Reproductive Status of *Drosophila suzukii* (Diptera: Drosophilidae) Females Influences Attraction to Fermentation-Based Baits and Ripe Fruits. *Journal of Economic Entomology*. *Short Communication*.
2. McPhie, D.R. and H.J. Burrack. *Submitted*. *Anthonomus signatus* (Curculionidae: Coleoptera) in annual plasticulture strawberries (*Fragaria* × *ananassa*). *Journal of Integrated Pest Management*.
3. Merchan, H.A., N. Allen, and H.J. Burrack. *In prep*. Measuring the effect of systemic imidacloprid applications on the colonization of tobacco by the green peach aphid (*Myzus persicae*). *Journal of Economic Entomology*.
Merchan is a PhD graduate
4. Diepenbrock, L.M., J.A. Hardin, H.J. Burrack. 2017. Season-long programs for control of *Drosophila suzukii* in southeastern United States blackberries. *Crop Protection*. 98: 149-156. <http://doi.org/10.1016/j.cropro.2017.03.022>
5. Howell, F., R. Heiniger, H.J. Burrack, and D. Reisig. *Submitted*. Impact of seed-applied clothianidin and in-furrow insecticides on the southeastern US corn (*Zea mays* L.) seedling insect pest complex, plant injury and growth, and clothianidin concentration in the plant. *Journal of Economic Entomology*.
Howell is a MS graduate.
6. Howell, F., R. Heiniger, H.J. Burrack, and D. Reisig. *Submitted*. Impact of imidacloprid treated seed and foliar insecticides on Hessian fly in wheat (*Triticum aestivum* L.). *Crop Protection*. 98: 46-55. <http://doi.org/10.1016/j.cropro.2017.03.007>
Howell is a MS graduate.
7. Slone, J.D., T.A. Toennisson, and H.J. Burrack. *Submitted*. Using economic thresholds for foliar feeding pests in flue cured tobacco (*Nicotiana tabacum*) to reduce insecticide applications and residues. *Pest Management Science*.
Slone is a current PhD student and MS graduate.

8. Reisig, D., R. Suits, H. Burrack, J. Bacheler, and J. E. Dunphy. 2017. Does florivory by *Helicoverpa zea* cause yield loss in soybeans? *Journal of Economic Entomology*. <https://doi.org/10.1093/jee/tow312>
Suits is a MS graduate.
9. Merchan, H.A. and H.J. Burrack. 2016. Using bioassays with the green peach aphid (*Myzus persicae*) to determine residual activity of two systemically applied neonicotinoid insecticides in field-grown tobacco. *International Journal of Pest Management*. <http://dx.doi.org/10.1080/09670874.2016.1261202>
Merchan is a PhD graduate.
10. Aly, M.F.K., D.A. Kraus, and H.J. Burrack. 2017. Effects of post-harvest cold storage on the development and survival of immature *Drosophila suzukii* (Matsumura) in artificial diet and fruit. *Journal of Economic Entomology*. 110(1): 87-93. <https://doi.org/10.1093/jee/tow289>
Aly is a visiting scholar and Kraus is a former undergraduate researcher
11. Suits, R. D. Reisig, and H.J. Burrack. *Accepted*. Feeding preference and performance of *Helicoverpa zea* (Lepidoptera: Noctuidae) larvae on different soybean (Fabales: Fabaceae) tissue types. *Florida Entomologist*.
Suits is a MS graduate.
12. McPhie. D.R. and H.J. Burrack. 2017. Effect of Simulated *Anthonomus signatus* (Coleoptera:Curculionidae) Injury on Strawberries (*Fragaria × ananassa*) Grown in Southeastern Plasticulture Production. *Journal of Economic Entomology*. 110(1): 208-212. <https://doi.org/10.1093/jee/tow266>
McPhie is a MS graduate.
13. Thekke-Veetil, T., A. Khadgi, D. Johnson, H.J. Burrack, S. Sabanadzovic, and I.E. Tzanetakis. 2017. First report of raspberry leaf mottle virus in blackberry in the United States. *Plant Disease*. 101(1): 265.
<http://dx.doi.org/10.1094/PDIS-07-16-1014-PDN>
14. Slone, J.D. and H.J. Burrack. 2016. Integrated pest management practices reduce insecticide applications, preserve beneficial insects, and decrease pesticide residues in flue cured tobacco production. *Journal of Economic Entomology*. DOI: <http://dx.doi.org/10.1093/jee/tow191>
Slone is a current PhD student and MS graduate.
15. McPhie. D.R. and H.J. Burrack. 2016. Effects of microbial, organically acceptable, and reduced risk insecticides on *Anthonomus signatus* (Curculionidae: Coleoptera) in strawberries (*Fragaria × ananassa*). *Crop Protection*.
McPhie is a MS graduate.
16. Diepenbrock, L.M. and H.J. Burrack. 2016. Variation of within-microhabitat use by *Drosophila suzukii* (Diptera: Drosophilidae) in blackberry. *Journal of Applied Entomology*. DOI: 10.1111/jen.12335
Diepenbrock is a post-doctoral scholar.
17. Diepenbrock, L.M., K.A. Swoboda-Bhattarai, and H.J. Burrack. 2016. Oviposition preference, fidelity, and fitness of *Drosophila suzukii* in a co-occurring crop and non-crop host system. *Journal of Pest Science*. 10.1007/s10340-016-0764-5
Diepenbrock is a post-doctoral scholar, and Swoboda-Bhattarai is a PhD student.
18. Diepenbrock, L.M., D.O. Rosentell, A. Sial, J.A. Hardin, and H.J. Burrack. 2015. Season-long programs for control of *Drosophila suzukii* in southeastern U.S. blueberries. *Crop Protection*. 81: 76-84.

Diepenbrock is a post-doctoral scholar, and Hardin is a former post-doctoral scholar.

19. Taylor, S.V., H.J. Burrack, R.M. Roe, J.S. Bachelier, and C.E. Sorenson. 2015. Systemic imidacloprid affects intraguild parasitoids differently. PLoS One. DOI: 10.1371/journal.pone.0144598

20. Lee, J.C., D.T. Dalton, K.A. Swoboda-Bhattarai, D.J. Bruck, H.J. Burrack, B.C. Strik, J.M. Moltz, and V.M. Walton. 2015. Characterization and manipulation of fruit susceptibility to *Drosophila suzukii*. Journal of Pest Science. DOI 10.1007/s10340-015-0692-9

Swoboda-Bhattarai is a PhD student.

21. Hardin, J.A., D.A. Kraus, and H.J. Burrack. 2015. Diet quality mitigates larval competition in *Drosophila suzukii* (Matsumura). Entomologia Experimentalis et Applicata. 156: 59-65.

Hardin is a former post-doctoral scholar.

22. Burrack, H.J., M Asplen, L. Bahder, F. Drummond, C. Guédot, R. Isaacs, D. Johnson, A. Kirk, J. Lee, G. Loeb, C. Rodriguez-Saona, S. Van Timmeren, D.R. McPhie. 2015. Multistate comparison of attractants for monitoring *Drosophila suzukii* (Diptera: Drosophilidae) in blueberries and caneberries. Environmental Entomology. DOI: 10.1093/ee/nvv022

McPhie is an MS graduate; this publication is a result of his undergraduate research.

23. Swoboda-Bhattarai, K.A. and H.J. Burrack. 2014. Influence of edible fruit coatings on *Drosophila suzukii* (Matsumura) (Diptera: Drosophilidae) oviposition and development. International Journal of Pest Management. DOI: 10.1080/09670874.2014.971453

Swoboda-Bhattarai is a PhD student.

24. Wiman, N.G., G. Anfora, H.J. Burrack, J. Chiu, K.M. Daane, D.T. Dalton, A. Grassi, C. Ioratti, B. Millar, S. Tochen, X. Wang, and V.M. Walton. 2014. Temperature dependent *Drosophila suzukii* population estimation. PLoS Computational Biology. DOI: 10.1371/journal.pone.0106909

25. Adrion, J., A. Kousathanas, M. Pascual, H. Burrack, N. Haddad, A. Bergland, H. Machado, T. Sackton, T. Schlenke, M. Watada, D. Wegmann, N. Singh. 2014. *Drosophila suzukii*: the genetic footprint of a recent, world-wide invasion. Molecular Biology and Evolution. DOI: 10.1093/molbev/msu246

26. Rogers, S.R., D.R. Tarpy, and H.J. Burrack. 2014. Bee species diversity enhances productivity and stability in a perennial crop plant. PLoS One. DOI: 10.1371/journal.pone.0097307

Rogers is an MS graduate.

27. Lee, J.C., L.D. Barrantes, E.H. Beers, H.J. Burrack, A.J. Dreves, L.J. Gut, K.A. Hamby, D.R. Haviland, R. Isaacs, A.L. Nielson, T. Richardson, C.R. Rodriguez-Saona, P.W. Shearer, C.A. Stanley, D.B. Walsh, V.M. Walton, F.G. Zalom, and D.J. Bruck. 2013. Trap designs for monitoring *Drosophila suzukii* (Diptera: Drosophilidae). Environmental Entomology. 42(6): 1348-1355.

28. Rogers, S.R., D.R. Tarpy, and H.J. Burrack. 2013. Multiple criteria for evaluating pollinator performance in highbush blueberry agroecosystems. Environmental Entomology. 42(6): 1201-1209.

Rogers is an MS graduate.

29. Rogers, S.R., D. Tarpy, V. Toupe, P. Cajamarca, and H.J. Burrack. 2013.

Encounters between bees influence foraging behavior. *Apidologie*. DOI: 10.1007/s13592-013-0210-0

Rogers is an MS graduate, and Cajamarca was an undergraduate researcher.

30. Burrack, H.J., G. Fernandez, T. Spivey, and D.A. Kraus. 2013. Variation in selection and utilization of host crops in the field and laboratory by *Drosophila suzukii* Matsumura (Diptera: Drosophilidae), an invasive frugivore. *Pest Management Science*. DOI: 10.1002/ps.3489

Spivey and Kraus were undergraduate researchers.

31. Burrack, H.J. and A.V. Chapman. 2013. Evaluation of biweekly pesticide applications for tobacco budworm (*Heliothis virescens*) management in tobacco (*Nicotiana tabacum* L.) seed production. *Crop Protection*. 45: 117-123. <http://dx.doi.org/10.1016/j.cropro.2012.12.004>

32. Burrack, H.J., J.P. Smith, D.G. Pfeiffer, G. Koehler, and J. LaForest. 2012. Using volunteer-based networks to track *Drosophila suzukii* (Diptera: Drosophilidae) an invasive pest of fruit crops. *Journal of Integrated Pest Management*. 4(3). <http://dx.doi.org/10.1603/IPM12012>

33. Rivera, M.J. and H.J. Burrack. 2012. Host utilization is mediated by movement of prefeeding larvae: *Phthorimaea operculella* in the *Nicotiana tabacum* agroecosystem. *Entomologia Experimentalis et Applicata*. 145(2): 153-161. doi: 10.1111/j.1570-7458.2012.01323.x

Rivera is an MS graduate.

34. Lee, J.C., H.J. Burrack, L.D. Barrantes, E.H. Beers, A.J. Dreves, K. Hamby, D.R. Haviland, R. Isaacs, T. Richardson, P. Shearer, C.A. Stanley, D.B. Walsh, V.M. Walton, and F.G. Zalom. 2012. Evaluation of monitoring traps for *Drosophila suzukii* (Diptera: Drosophilidae) in North America. *Journal of Economic Entomology*. 105(4): 1350-1357. doi: 10.1603/EC12132

All authors besides Lee contributed equally.

35. Estes, A.M., D.J. Hearn, H.J. Burrack, P. Rempoulakis, E.A. Pierson. 2012. Prevalence of 'Candidatus *Erwinia dacicola*' in wild and laboratory olive fly populations and across developmental stages. *Environmental Entomology*. 41(2): 265-274. doi: 10.1603/EN11245

36. Cobourn, K.M., H.J. Burrack, R.E. Goodhue, J.C. Williams, and F.G. Zalom. 2011. Implications of simultaneity in a physical damage function. *Journal of Environmental Economics and Management*. 62: 278-289. doi: 10.1016/j.jeem.2011.02.002

37. Cabrera, A.R., J. Van Kretschmar, J.S. Bacheler, H. Burrack, C.E. Sorenson, and R.M. Roe. 2011. Resistance monitoring of *Heliothis virescens* to pyramided cotton varieties with a hydrateable, artificial cotton leaf bioassay. *Crop Protection*. 30: 1196-1201. doi: 10.1016/j.cropro.2011.05.005

38. Burrack, H.J., R. Bingham, R. Price, J.H. Connell, P.A. Phillips, L. Wunderlich, P.M. Vossen, N.V. O'Connell, L. Ferguson, and F.G. Zalom. 2011. Understanding the seasonal and reproductive biology of olive fruit fly is critical to its management. *California Agriculture*. 65(1): 14-20. doi: 10.3733/ca.v065n01p14

39. Burrack, H.J., A.M. Fornell¹, J.H. Connell, N.V. O'Connell, P.A. Phillips, P.M. Vossen, and F.G. Zalom. 2009. Intraspecific larval competition in the olive fruit fly (*Bactrocera oleae* (Gmelin)) (Diptera: Tephritidae). *Environmental Entomology*. 38(5): 1400-1410. doi: 10.1603/022.038.0508

40. Burrack, H.J. and F.G. Zalom. 2008. Olive fruit fly (*Bactrocera oleae*

(Gmelin)) oviposition preference and larval performance in several commercially important olive varieties. *Journal of Economic Entomology*. 101(3): 750-758. doi: 10.1603/0022-0493(2008)101%5B750:OFFD%5D2.0.CO;2

41. Burrack, H.J., J.H. Connell, and F.G. Zalom. 2008. Comparison of olive fruit fly (*Bactrocera oleae* (Gmelin)) (Diptera: Tephritidae) captures in several commercial traps in California. *International Journal of Pest Management*. 54(3): 227-234. doi: 10.1080/09670870801975174

Book chapters

1. Pfeiffer, D., T.C. Leskey, and H.J. Burrack. 2012. Threatening the harvest: the threat from three invasive insects in late season vineyards. *In Grape Pests in Eastern North America*. Ed. Isaacs, R., N. Bostanian, and C. Vincent. Springer, London. pp. 449-474. DOI: 10.1007/978-94-007-4032-7

Conference proceedings, refereed

1. Swoboda-Bhattarai, K.A. and H.J. Burrack. 2016. *Drosophila suzukii* infestation in ripe and ripening caneberries. *Acta Horticulturae*. 1133. 10.17660/ActaHortic.2016.1133.65.

Swoboda-Bhattarai is a PhD student.

2. Rogers, S.R., D.R. Tarpy, and H.J. Burrack. 2014. Flower Morphology Influences Pollinator Community with Implications for Cross-Pollination: Observations in Rabbiteye Blueberry (*Vaccinium ashei* Reade). North American Blueberry Research and Extension Workers Conference. Atlantic City, NJ.

Rogers is a MS graduate.

3. Burrack, H.J. and K. Littlejohn. 2012. Rethinking blueberry maggot (*Rhagoletis mendax* (Curan)) distribution and abundance in North Carolina: when area wide management is unintentional. *International Journal of Fruit Science*. 1: 106-113. doi:10.1080/15538362.2011.619352

4. Burrack, H.J., F.G. Zalom, J.H. Connell. 2008. Comparison of several traps for use in monitoring the olive fruit fly (*Bactrocera oleae*) in California. *Acta Horticulturae*. 791:547-554. Izmir, Turkey. http://www.actahort.org/books/791/791_84.htm

5. Zalom, F.G., H.J. Burrack, R. Bingham, R. Price, L. Ferguson. 2008. Olive fruit fly (*Bactrocera oleae*) introduction and establishment in California. *Acta Horticulturae*. 791: 619-627. Izmir, Turkey. http://www.actahort.org/books/791/791_95.htm

Conference proceedings

1. Cabrera, A.R., J. Van Krestschmar, J.S. Bacheler, H.J. Burrack, C.E. Sorenson, and R.M. Roe. 2010. Development of hydrateable, commercially-relevant artificial cotton leaves and assay architecture for monitoring insect resistance to *Bt*. Beltwide Cotton Conferences. 4-7 January 2010. New Orleans, LA.

2. Davis, K., Z. Heath, H.J. Burrack, F.G. Zalom, and L. Ferguson. 2006. A probability model for olive fruit fly (*Bactrocera oleae*) damage in California Mission and Manzanillo olives. Proceedings of the Second International Seminar "Biotechnology and Quality of Olive Tree Products Around the Mediterranean Basin". 5-10 November 2006, Marsala, Italy.

Mentorship

Doctoral students in progress (5) and completed (1); Masters students in progress (1) and completed (6); Committee membership (14); Post doctoral scholars (3); Visiting international scholars (3, Egypt, China, Brazil); Undergraduate independent study projects (11)

Extramural program support

Total (2007-present): \$9,636,938

Extension, Outreach, and Engagement

Total 333 extension presentations (2007-present) to an audience of over 22,000 stakeholders.

45 technical reports, 18 edited production guides

Contributor to 8 NCSU extension information online portals and diagnostic websites

Selected Synergistic Activities

Principle Investigator, Center for Excellence in Sustainable Spotted Wing Drosophila Management (2015-present). This Coordinated Agricultural Project (CAP) is supported by a multi-year USDA SCRI grant and includes participants at 10 institutions throughout the United States.

Manager, USDA NIFA Crop Protection and Pest Management Applied Research Development Program (CPPM-ARDP) and Methyl Bromide Transitions (MBT) Competitive Grants Review Panel, 2014-2015.

North American Plant Protection Organization (NAPPO) Spotted Wing Drosophila (SWD) Technical Advisory Group (TAG), 2012-2013.