

General project summary:

The 2020-2021 winter was relatively warm compared to previous years in Iowa (mean temperature of 27.85 degrees in December). April had cooler than average temperatures but planting conditions were favorable throughout much of the state. Planting progress was about two weeks ahead of the 5-year average. Soybean acres were up 200,000 compared to 2019 (9.4 million acres planted). In August, a derecho moved through central Iowa and impacted ~6 million acres of field crops. Drought was prevalent in western Iowa and reached “Extreme Drought” or D3 status in northwestern Iowa.

Soybean pests were highly variable throughout the state. Many caterpillars and beetles were present, but generally at non-economic levels. Soybean aphids arrived to Iowa soybean in July. Aphid populations were initially patchy and slowly spread within and between fields. In August, some populations grew quickly and exceeded the economic threshold. Sometimes, populations peaked in late August or early September. We treated plots when aphids reached the economic threshold on 10 August. Most of the cumulative aphid day (CAD) pressure was evident in August, but there were significant differences in yield responses. Warrior II CS had the most CAD and had significantly more aphids than most other treatments. Cruiser 5FS, an insecticidal seed treatment, had the second highest CAD. Transform WG and Endigo ZCX had generally more CAD than other foliar insecticidal treatments. With the help of ISU graduate student Ivair Valmorbida, we were able to confirm this population of aphids to be pyrethroid-resistant.

In addition to soybean aphid, soybean gall midge was prevalent in some Iowa soybean fields. This soybean pest is particularly devastating and can cause plant death. Affected plants were restricted to field edges and economic loss could be 100%. I continue to address questions and concerns about soybean gall midge. This new pest was confirmed along western Iowa in 31 counties. I had several field experiments in western Iowa in 2021. I dedicated many extension programs to soybean gall midge and spoke about the limited information on biology, life cycle and management. Adult soybean gall midge emergence began mid-June and midge-infested plants were found shortly after. Adult emergence was almost completely continuous throughout the summer, with three generations of adults being observed. Growth stage V2 foliar sprays were made on 9 June 2020 at the ISU Northwest Research Farm and 4 June 2020 at the Griswold Farm. Foliar sprays were made 10 days after adult emergence on 25 June 2020 at the ISU Northwest Research Farm and 22 June 2020 at the Griswold Farm. Injury was light at both locations and yield did not appear to be significantly impacted by soybean gall midge at either location.

My extension efforts are summarized here:

Peer-Reviewed Extension Publications and Proceedings (2020-2021): 9

1. Huseeth, A. S., R. L. Koch, D. Reisig, J. A. Davis, S. V. Paula-Moraes, and **E. W. Hodgson**. Current distribution and population persistence of five caterpillars in U.S. soybean. *Journal of Integrated Pest Management*, *accepted January 2021*.
2. **Hodgson, E. W.**, R. L. Koch, J. A. Davis, D. Reisig, and S. V. Paula-Moraes. Identification and biology of common caterpillars in U.S. soybean. *Journal of Integrated Pest Management*, *accepted February 2021*.
3. McMechan, A. J., **E. W. Hodgson**, A. Varenhorst, T. Hunt, R. Wright, and B. Potter. 2021. First report of a new species, *Resseliella maxima* (Diptera: Cecidomyiidae), causing injury to soybean in the United States. *Journal of Integrated Pest Management*. DOI: [10.1093/jipm/pmab001](https://doi.org/10.1093/jipm/pmab001).

4. **Hodgson, E. W.**, and M. Helton. 2021. Soybean gall midge efficacy screening program, 2020. Entomological Society of America Arthropod Management Tests. DOI: [10.1093/amt/tsab010](https://doi.org/10.1093/amt/tsab010).
5. **Hodgson, E. W.**, and G. VanNostrand. 2021. Soybean aphid efficacy screening program, 2020. Entomological Society of America Arthropod Management Tests. DOI: [10.1093/amt/tsaa053](https://doi.org/10.1093/amt/tsaa053).
6. **Hodgson, E. W.**, A. N. Dean, and Z. Wang. 2020. Using immediate feedback cards in extension. Journal of Extension. [v58-4rb4](https://doi.org/10.1093/ae/tmaa009).
7. **Hodgson, E. W.**, and G. VanNostrand. 2020. Soybean aphid efficacy screening program, 2019. Entomological Society of America Arthropod Management Tests. DOI: [10.1093/amt/tsaa053](https://doi.org/10.1093/amt/tsaa053).
8. Lagos-Kutz, D., D. J. Voegtlin, D. Onstand, D. Hogg, D. Ragsdale, K. Tilmon, **E. Hodgson**, C. DiFonzo, R. Groves, C. Krupke, J. LaForest, N. J. Seiter, E. Duerr, B. Bradford, and G. L. Hartman. 2020. The soybean aphid suction trap network: sampling the aerobiological “soup.” American Entomologist. DOI: [10.1093/ae/tmaa009](https://doi.org/10.1093/ae/tmaa009).
9. **Hodgson, E. W.** Field crop pest management updates from 2019, p. 23. *In* Proceedings: Iowa State University Crop Advantage Series, Ames, IA, January 2020.

Other Extension Publications (2020-2021): 16

1. Sisson, A. J., D. S. Mueller, S. P. Conley, C. K. Gerber, S. H. Graham, **E. W. Hodgson**, T. R. Leglieter, P. P. Price, K. J. Schaefer, E. J. Sikora, T. H. Wilkerson, and K. L. Wise. Crop scouting basics for corn and soybean. Crop Protection Network CPN 4007. DOI: [10.31274/cpn-20201214-0](https://doi.org/10.31274/cpn-20201214-0).
2. **Hodgson, E. W.**, G. VanNostrand, A. Dean, and M. Helton. 2020. 2020 Yellow Book Report of insecticide evaluation for soybean pests, 34 pp. Department of Entomology, Iowa State University, Publication CROP 3198.
3. **Hodgson, E. W.**, and A. Dean, V. Schmitt, and N. Seiter. 2020. Insect and mite management, pp. 109-116. *In* Hodgson, Licht, and Sisson [eds.], Field Crop Production Handbook, Iowa State University Extension and Outreach, Publication 3162.
4. Dean, A., and **E. Hodgson**. “Summary of 2020 insecticide evaluations for soybean pests.” *In* ICM News. 10 January 2021.
5. **Hodgson, E.** “Scouting reminders for spider mites.” *In* ICM News. 20 July 2020.
6. Dean, A., and **E. Hodgson**. “Potato leafhoppers abundant in soybean and alfalfa.” *In* ICM News. 10 July 2020.
7. Dean, A., **E. Hodgson**, and M. Helton. “Soybean gall midge larvae active in Iowa.” *In* ICM News. 2 July 2020.
8. **Hodgson, E.** “Watch for Japanese beetle emergence.” *In* ICM News. 11 June 2020.
9. **Hodgson, E.**, and A. Dean. “Stalk borers moving in southern Iowa.” *In* ICM News. 2 June 2020.
10. **Hodgson, E.**, and A. Dean. “Mild winter favors bean leaf beetle.” *In* ICM News. 24 April 2020.
11. Dean, A., and **E. Hodgson**. “Survival effects of fluctuating temperatures on insects.” *In* ICM News. 22 April 2020.

12. Dean, A., and **E. Hodgson**. "Cold hardiness of insects and the impact of fluctuating temperatures." *In* ICM Encyclopedia Article. 17 April 2020.
13. **Hodgson, E.** "Seedcorn maggots flying in Iowa." *In* ICM News. 16 April 2020.
14. Corona, C., A. Dean, and **E. Hodgson**. "Getting to know popular insecticides used in Iowa field crops" *In* ICM Encyclopedia Article. 14 April 2020.
15. Dean, A., and **E. Hodgson**. "Corteva™ to end chlorpyrifos production: what does this mean for Iowa farmers?" *In* ICM News. 21 February 2020.
16. Dean, A., and **E. Hodgson**. "Summary of 2019 insecticide evaluations for soybean pests." *In* ICM News. 13 January 2020.

Extension presentations (2020-2021): 30

1. **Hodgson, E. W.** #IPM: building resilient pest management in crop systems. Brookside Labs Regional Webinar Series [50 people] 30 October 2020
2. **Hodgson, E. W.**, and B. D. Potter. Understanding insect defoliation and management in field crops. Advanced Crop Advisers Annual Workshop, Fargo, ND [2 sessions; 95 people] 12 February 2020
3. Hodgson, E., and A. Dean. Soybean insect pests updates. ANR Extension Crops Team Fall In-Service, Field Extension Education Laboratory, Ames, IA. [25 people] 24 September 2020.
4. **Hodgson, E. W.** Research and management update for soybean gall midge. Iowa Soybean Research Center Annual Meeting, Ames, IA. [25 people] 18 September 2020
5. **Hodgson, E. W.**, and A. Dean. Insect identification, sampling and management. Iowa State University Extension and Outreach Crop Scout School, Ames, IA. [2 sessions; 48 people] 7 March 2020
6. **Hodgson, E. W.** Soybean gall midge and thistle caterpillar management. Jacobsen Annual Seed Meeting, Wall Lake, IA. [35 people] 19 February 2020
7. **Hodgson, E. W.** Midges, rootworms and corn borer management. MaxYield Cooperative Annual Winter Meeting, West Bend, IA. [35 people] 13 February 2020
8. **Hodgson, E. W.** Mashup of field crops insects from 2019. 2020 Iowa State University Extension and Outreach Crop Advantage Series Workshops.
 - Burlington, IA. [20 people] 3 January 2020
 - Sheldon, IA. [2 sessions; 43 people] 6 January 2020
 - Storm Lake, IA. [40 people] 7 January 2020
 - Ames, IA. [2 sessions; 45 people] 9 January 2020
 - Honey Creek, IA. [2 sessions; 28 people] 9 January 2020
 - Mason City, IA. [50 people] 10 January 2020
 - Okoboji, IA. [45 people] 14 January 2020
 - Fort Dodge, IA. [2 sessions; 95 people] 15 January 2020

- Waterloo, IA. [2 sessions; 135 people] 16 January 2020
- Davenport, IA. [2 sessions; 100 people] 17 January 2020
- Atlantic, IA. [60 people] 23 January 2020
- Iowa City, IA. [2 sessions; 95 people] 28 January 2020
- Le Mars, IA. [85 people] 29 January 2020
- Denison, IA. [80 people] 30 January 2020

Extension Webinars: 4

1. Hodgson, E. W., M. Helton, and J. McMechan. Soybean gall midge efficacy evaluations. Soybean gall midge discussion series, Virtual Delivery. 19 January 2021
2. McMechan, J., E. W. Hodgson, and Vilma Montenegro. Soybean gall midge ecology and plant injury. Soybean gall midge discussion series, Virtual Delivery. 12 January 2021
3. McMechan, J., T. Hunt, E. W. Hodgson, B. Koch, and B. Potter. Soybean gall midge biology, distribution, sampling tips, and look-alikes. Soybean gall midge discussion series, Virtual Delivery. 5 January 2021
4. Hodgson, E. W., and A. Dean. Soybean pest updates. Iowa State University Extension and Outreach CropsTV, Virtual Delivery. 1 December 2020

Extension Videos: 2

- 1 Hodgson, E. W. Video: Soybean gall midge management update, Iowa State University. November 2020
2. Hodgson, E. W. Video: Soybean aphid IPM, Iowa State University. July 2020