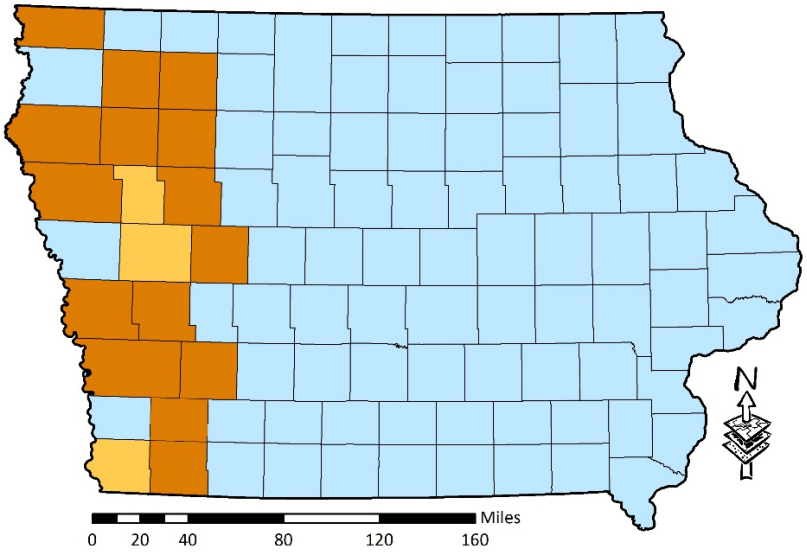
General project summary:

Spring planting conditions throughout Iowa were first cold and wet in 2018, and most soybean fields were planted later to accommodate corn planting. Then May was warmer than normal and June turned exceptionally wet throughout most of Iowa. Population fluctuations between locations and years is typical soybean aphid dynamics for Iowa. Soybean aphids arrived on soybean in July, slightly behind average infestation dates. Soybean aphid colonization was initially patchy and continued to grow at a slow pace, likely due to hot evenings providing little relief to adults. Some commercial fields experienced exponential growth of soybean aphid after bloom, especially in northern Iowa. However, few fields in northwestern and northcentral counties had soybean aphid exceed the economic threshold. Some populations did persist until after seed set (R5–R6), but very quickly crashed at most locations by mid-September. When applications had sufficient coverage and applied at the labeled rate, efficacy for soybean was good (i.e., >95% knockdown within three days after application) throughout most of Iowa. I was able to complete proposed work, including research and extension related to soybean aphid management. I established a foliar insecticide efficacy evaluation at two locations in 2018 (northwest and northeast Iowa). I had 25+ treatments at each location.

In addition to soybean aphid, Japanese beetle, bean leaf beetle and soybean gall midge were prevalent in some Iowa soybean fields. I ended up spending a lot of time responding to questions and concerns about soybean gall midge. This new pest was confirmed along western Iowa in 18 counties:



I did not conduct any research on this pest, but did work with ISU Research Farm Managers, Iowa Soybean Association staff and farmers. 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 dedicated many extension programs to soybean gall midge and spoke about the limited information on biology, life cycle and management. My program raised awareness of this new soybean pest and am arranging efficacy evaluations for 2019 at several locations.

My extension efforts are summarized here:

Peer-Reviewed Extension Publications and Proceedings (2018-2019): 8

Shanovich, H. N., A. N. Dean, R. L. Koch, and **E. W. Hodgson**. 2019. Biology and management of Japanese beetle in corn and soybean. Journal of Integrated Pest Management, *Accepted February 2019.*

Hodgson, E. W., and G. VanNostrand. 2019. Soybean aphid efficacy screening program, 2018. Entomological Society of America Arthropod Management Tests. DOI: 10.1093/amt/tsz013.

Hodgson, E. W. On the lookout for a new soybean pest, p. 14. *In* Proceedings: Iowa State University Crop Advantage Series, Ames, IA, January 2019.

Koch, R. L., **E. W. Hodgson**, J. J. Knodel, A. J. Varenhorst, and B. D. Potter. 2018. Management of insecticide-resistant soybean aphids in the Upper-Midwest. Journal of Integrated Pest Management. DOI: 10.1093/jipm/pmy014.

Hodgson, E. W., and J. McMechan. Fly in the ointment: soybean gall midge is a new pest, pp. 31-33. *In* Proceedings: 29th Annual Iowa State University Integrated Crop Management Conference, Ames, IA, 28–29 November 2018.

Hodgson, E. W., and G. VanNostrand. 2018. Evaluation of insecticides for control of soybean aphid, 2017. Entomological Society of America Arthropod Management Tests. DOI: 10.1093/amt/tsx045.

Hodgson, E. W. 2018. Using immediate feedback to improve short-term learning in extension. Journal of Integrated Pest Management. DOI: 10.1093/jipm/pmy001.

Hodgson, E. W. Use IPM to manage field crop pests, p. 19. *In* Proceedings: Iowa State University Crop Advantage Series, Ames, IA, January 2018.

Other Extension Publications (2018-2019): 12

Hodgson, E. "2018 Insecticide evaluation for soybean aphid." *In* ICM News. 28 January 2019.

Hodgson, E. W., and A. Dean. 2018. Soybean gall midge: a new field crop pest, 2 pp. Iowa State University Extension and Outreach, Publication CROP 3157.

Hodgson, E. W., G. VanNostrand, and A. Dean. 2018. 2018 Yellow Book Report of insecticide evaluation for soybean pests, 21 pp. Department of Entomology, Iowa State University, Publication 304-18.

Hodgson, E. W., and R. Koch. 2018. Soybean aphid management field guide for the north-central region, 62 pp. (2nd edition). North Central Soybean Research Program, Publication IPM 0060.

Hodgson, E. W. Use IPM to manage field crop pests, p. 19. *In* Proceedings: Iowa State University Crop Advantage Series, Ames, IA, January 2018.

Koch, R., **E. Hodgson**, J. Knodel, and A. Varenhorst. 2018. Management of insecticide-resistant soybean aphids, 4. pp. North Dakota State University, Publication E1878.

Hodgson, E. "When is it too late to spray for soybean aphid?" *In* ICM News. 8 August 2018.

Hodgson, E. "You 'mite' want to scout drought-stressed crops." *In* ICM News. 6 August 2018.

Hodgson, E. "New soybean pest in Iowa: soybean gall midge." *In* ICM News. 31 July 2018.

Hodgson, E. "A tough winter for bean leaf beetle." *In* ICM News. 23 April 2018.

Hodgson, E. "Soybean aphid egg hatch predicted in northern Iowa." *In* ICM News. 8 May 2018.

Hodgson, E. "Japanese beetle adults emerge in southern Iowa." *In* ICM News. 14 June 2018.

Extension presentations (2018-2019): 35

Hodgson, E. W. Soybean gall midge is a new soybean pest. Pioneer Sales Team Winter Meeting, Ames, IA. [75 people] 1 March 2019

Hodgson, E. W. Field crop insect mashup. WinField United Iowa Regional Conference, Ames, IA. [225 people] 21 February 2019

Hodgson, E. W. Soybean gall midge in Iowa. Iowa Soybean Association Farmer Research Tour, Storm Lake, IA. [85 people] 5 February 2019

McMechan, J., **E. Hodgson**, T. Hunt, B. Potter, B. Wright, and A. Varenhorst. 2019. Soybean gall midge: an emerging soybean pest. S1080 Annual Working Group Meeting, Cleveland, OH. [25 people] 25 January 2019

Hodgson, E. W. #IPM: how do we build resilient, sustainable pest management crop systems? University of Minnesota Extension Crop Pest Management Short Course, Minneapolis, MN [325 people] 12 December 2018

Hodgson, E. W. Soybean gall midge is a new soybean pest. 2019 Iowa State University Extension and Outreach Crop Advantage Series Workshops. Sheldon, IA [18 people] 3 January 2019; Burlington, IA [16 people] 4 January 2019; Storm Lake, IA. [12 people] 8 January 2019; Ames, IA. [125 people] 9 January 2019; Honey Creek, IA. [2 sessions; 10 people] 10 January 2019; Fort Dodge, IA. [2 sessions; 100 people] 16 January 2019; Davenport, IA. [2 sessions; 120 people] 18 January 2019; Le Mars, IA [50 people] 22 January 2019; Atlantic, IA. [100 people] 24 January 2019; Iowa City, IA. [2 sessions; 58 people] 29 January 2019; Denison, IA. [80 people] 30 January 2019

Hodgson, E. W. Field crop mashup for 2018. Iowa State University Extension and Outreach Crop Clinic for Worth and Cerro Gordo counties, Manly, IA. [60 people] 14 December 2018

Hodgson, E. W. Soybean gall midge is a new soybean pest. Iowa State University Extension and Outreach Ag Chem Dealer Update. Iowa City, IA. [85 people] 11 December 2018; Ames, IA. [63 people] 12 December 2018

Hodgson, E. W. and. J. McMechan. A fly in the ointment: soybean gall midge is a new pest. Iowa State University Extension and Outreach Integrated Crop Management Annual Conference, Ames, IA. [2 sessions; 230 people] 28 November 2018

Hodgson, E., and E. Rodbell. Host plant resistance for soybean aphid. Practical Farmers of Iowa Field Day, Marble Rock location?, IA. [22 people] 6 September 2018

Hodgson, E., and A. Saeugling. A new emerging pest: soybean gall midge. Armstrong Farm, Iowa State University, Lewis, IA. [50 people] 5 September 2018

Hodgson, E. Insect updates. Stine Field Day, Field Extension Education Laboratory, Iowa State University, Ames, IA. [2 sessions; 50 people] 23 August 2018

Hodgson, E. Soybean aphid efficacy evaluation using Sefina. Corteva Field Day, Northwest Research Farm, Iowa State University, Sutherland, IA. [8 people] 22 August 2018

Hodgson, E. Insect updates. Monsanto Field Day, Field Extension Education Laboratory, Iowa State University, Ames, IA. [45 people] 21 August 2018

Richardson, J., and **E. Hodgson**. Insect identification and scouting in field crops. Corteva New Agronomists Field Day, Field Extension Education Laboratory, Iowa State University, Ames, IA. [3 sessions; 35 people] 25 July 2018

Hodgson, E. Seed and seedling pest management in field crops. Early-Season Clinic, Field Extension Education Laboratory, Iowa State University, Ames, IA. [2 sessions; 25 people] 10 May 2018

Hodgson, E. W. Introduction to insect diagnostics. Iowa State University Extension and Outreach Crop Scout School, Ames, IA. [3 sessions; 65 people] 24 March 2018

Hodgson, E. W. Resistance management plans for soybean aphid. 2018 Iowa State University Extension and Outreach Crop Advantage Series Workshops. Okoboji, IA. [45 people] 4 January 2018; Burlington, IA. [7 people] 5 January 2018; Storm Lake, IA. [18 people] 9 January 2018; Atlantic, IA. [32 people] 16 January 2018; Waterloo, IA. [2 sessions; 110 people] 18 January 2018; Iowa City, IA. [40 people] 24 January 2018; Davenport, IL. [2 sessions; 35 people] 26 January 2018

Extension Videos: 2

Hodgson, E. W. Video: Soybean gall midge. PSEP Program, Iowa State University. January - December 2019.

Hodgson, E. W. Video: Threshold-based management for soybean defoliators. PSEP Program, Iowa State University. January - December 2018.