

**Adam J. Varenhorst**  
**Curriculum Vitae**

Department of Entomology  
Iowa State University  
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**Education:**

Ph.D. 2015. Entomology, Iowa State University at Ames, IA  
M.S. 2011. Entomology, Iowa State University at Ames, IA  
B.S. 2009. Biology, Briar Cliff University at Sioux City, IA

**Professional Experience:**

- 5/11 to present** Graduate Research Assistant. Soybean Entomology, Iowa State University. Dr. Matthew O'Neal, Advisor. Beyond biotypes: *Aphis glycines* (Hemiptera: Aphididae) biology and the durability of aphid-resistant soybean.
- 6/09 to 5/11** Graduate Research Assistant. Soybean Entomology, Iowa State University. Dr. Matthew O'Neal, Advisor. Thesis: Selective insecticides: the potential for improved control of the soybean aphid as a result of a bioresidual.
- Skills developed:
    - Insect identification
    - Designing small-plot field crop experiments
    - Managing hourly employees
    - Insecticide applicators license; endorsements to apply herbicides, insecticides, and fungicides; endorsements for demo and research pest control
- 8/08 to 5/09** Collection Curator. Briar Cliff University and Dorothy Pecaut Nature Center, Sioux City, IA. Dr. Ted. Wilson, Advisor.
- Skills developed:
    - Insect identification with dichotomous keys
    - Insect collection and curating
- 3/08 to 12/08** Research Assistant. Briar Cliff University Sioux City, IA. Dr. Ted Wilson, Advisor. Research Project: Survey of the insects in the Sioux City Prairie, Woodbury County.
- Skills developed:
    - Understanding of the scientific method

- Insect collection and curating

## 12/00 to present

Farm Consultant. Jerry Varenhorst Farms, location. Jerry Varenhorst, Owner.

- Skills obtained:
  - Maintenance and repair of machinery
  - Operation of heavy machinery
  - Marketing of commodities
  - Interpersonal communication

## Publications:

### Peer reviewed

**Varenhorst, A. J.**, and M. E. O’Neal. 2012. The response of natural enemies to selective insecticides applied to soybean. *Environ. Entomol.* 41: 1565-1574.

**Varenhorst, A. J.**, M. T. McCarville, and M. E. O’Neal. In press. An induced susceptibility response in soybean promotes avirulent *Aphis glycines* (Hemiptera: Aphididae) populations on resistant soybean. *Environ. Entomol.*

### In review

**Varenhorst, A. J.**, M. T. McCarville, and M. E. O’Neal. Determining the duration of *Aphis glycines* (Hemiptera: Aphididae) induced susceptibility effects in soybean. *Arthropod-Plant Inter.*

### In preparation

**Varenhorst, A. J.**, M. T. McCarville, and M. E. O’Neal. Exploring factors that may promote the longevity of *Aphis glycines* (Hemiptera: Aphididae) resistance genes. *J. Econ. Entomol.*

**Varenhorst, A. J.**, and M. E. O’Neal. The effect of interspersed refuges on *A. glycines* (Hemiptera: Aphididae) and natural enemy populations. *J. Econ. Entomol.*

**Varenhorst, A. J.**, and M. E. O’Neal. Managing *Aphis glycines* populations with selective insecticides. TBD

**Varenhorst, A. J.**, M. T. McCarville, J. A. Wenger, M. E. O’Neal, and A. P. Michel. How does virulence spread within a field? Soybean aphids, host-plant resistance, and interspersed refuges. *J. Econ. Entomol.*

**Varenhorst, A. J.**, A. E. Robertson, F. W. Nutter, Jr., and M. E. O’Neal. Determining the relationship between alate aphids and the prevalence of *Soybean mosaic virus* in Iowa. *Int. J. Entomol. Res.*

**Varenhorst, A. J.**, M. T. McCarville, M. E. O’Neal, A. E. Robertson, and F. W. Nutter Jr. Vector-based host plant resistance for crop virus management: the relationship between *Aphis glycines* and *Soybean mosaic virus* and the potential benefits of aphid-resistant soybeans.

Wagner, P. M., **A. J. Varenhorst**, M. E. O'Neal. Effect of varying the timing of insecticide application on natural enemies in soybean. *Environ. Entomol.*

### **Extension**

Hodgson, E., M. McCarville, and **A. Varenhorst**. 2010. Add another soybean defoliator to the mix. *Integrated Crop Management News*. 26 August 2010.

**Varenhorst, A.**, M. O'Neal, and E. Hodgson. 2012. Early confirmation of twospotted spider mite. *Integrated Crop Management News*. 8 June 2012.

### **Presentations:**

#### **Oral Presenting Author**

Nutter, F., M. T. McCarville, and **A. J. Varenhorst**. 2014. Defoliation.Pro: A new training tool for improving the accuracy and precision of defoliation ratings. 62<sup>nd</sup> Annual National Entomological Society of America. 19 November 2014. Portland, Oregon.

**Varenhorst, A. J.**, M. T. McCarville, and M. E. O'Neal. 2014. Does induced susceptibility occur between virulent and avirulent soybean aphids on resistant soybean? 62<sup>nd</sup> Annual National Entomological Society of America. 17 November 2014. Portland, Oregon. (Received 1<sup>st</sup> place in PIE student competition)

**Varenhorst, A. J.**, M. T. McCarville, and M. E. O'Neal. 2014. Do biotype-1 soybean aphids benefit from the presence of biotype-2 on resistant soybean. 1<sup>st</sup> Graduate and Professional Student Research Conference. 5 April 2014. Ames, Iowa (Received Best in Session).

**Varenhorst, A. J.**, M. T. McCarville, and M. E. O'Neal. 2014. Do biotype-1 soybean aphids benefit from the presence of biotype-2 on resistant soybean? 69<sup>th</sup> Annual North Central Branch of the Entomological Society of America. 10 March 2014. Des Moines, Iowa. (Received 2<sup>nd</sup> place in the Ph.D. PIE student competition)

**Varenhorst, A. J.**, and M. E. O'Neal. 2013. Induced susceptibility: a density dependent response that explains *Aphis glycines* populations on resistant soybean in field research plots. 68<sup>th</sup> Annual North Central Branch of the Entomological Society of America. 17 June 2013. Rapid City, South Dakota. (Received 2<sup>nd</sup> place in the Ph.D. PIE student competition)

**Varenhorst, A. J.**, and M. E. O'Neal. 2013. Density-dependent induced susceptibility: a non-genetic explanation of soybean aphid biotypes on aphid resistant soybean. 4<sup>th</sup> Biennial ISU Hemipteran Research Symposium. 26 March 2013. Ames, Iowa.

**Varenhorst, A. J.**, and M. E. O'Neal. 2012. Which aphids are important vectors of *Soybean mosaic virus*? 60<sup>th</sup> Annual Meeting of the Entomological Society of America. 12 November 2012. Knoxville, Tennessee.

**Varenhorst, A. J.,** and M. E. O’Neal. 2012. What role do alate soybean aphids (*Aphis glycines*) play in the spread of Soybean mosaic virus? 67<sup>th</sup> Annual North Central Branch of the Entomological Society of America. 4 June 2012. Lincoln, Nebraska. (Received 2<sup>nd</sup> in the Ph.D. PIE student competition)

**Varenhorst, A. J.,** and M. E. O’Neal. 2011. Managing soybean aphids with selective insecticides results in a bioresidual. 59<sup>th</sup> Annual Meeting of the Entomological Society of America. 14 November 2011. Reno, Nevada.

**Varenhorst, A. J.,** and M. E. O’Neal. 2011. The natural enemy community of the soybean aphid, and the effects that selective insecticides have on its populations. 66<sup>th</sup> Annual North Central Branch of the Entomological Society of America. 14 March 2011. Minneapolis, Minnesota. (Received 3<sup>rd</sup> place in the M.S. PIE student competition)

**Varenhorst, A. J.,** and M. E. O’Neal. 2010. Can selective insecticides control soybean aphid populations without harming natural enemies? 58<sup>th</sup> Annual Meeting of the Entomological Society of America. 13 December 2010. San Diego, California.

**Varenhorst, A. J.,** and M. E. O’Neal. 2010. Can selective insecticides control soybean aphid populations without harming natural enemies? Midwest Ecology & Evolution Conference 2010. 27 March 2010. Ames, Iowa.

**Varenhorst, A.** and T. Wilson. 2008. Survey of the insects in the Sioux City Prairie, Woodbury County. 18<sup>th</sup> Annual Prairie Invertebrate Conference. 25 October 2008. Newburg, Wisconsin.

## **Poster**

**Varenhorst, A. J.,** M. T. McCarville, and M. E. O’Neal. 2015. Fitness costs associated with virulent soybean aphids. 2015 Soybean Breeders Workshop: Entomology and Agronomy. 17 February 2015. St. Louis, Missouri.

**Varenhorst, A. J.,** M. T. McCarville, and M. E. O’Neal. 2014. Fitness costs associated with virulent soybean aphids. Soybean Aphid Field Day. 14 August 2014. Iowa State University Field Extension Education Laboratory Boone, Iowa.

McCarville, M. T., **A. J. Varenhorst,** M. E. O’Neal. 2014. Tougher than we all thought? Re-evaluating the surprisingly durable *Rag* genes. Soybean Aphid Field Day. 14 August 2014. Iowa State University Field Extension Education Laboratory Boone, Iowa.

**Varenhorst, A. J.** and M. E. O’Neal. 2009. Can reduced-risk insecticides prevent soybean aphid outbreaks? 57<sup>th</sup> Annual Meeting of the Entomological Society of America. 14 December 2009. Indianapolis, Indiana.

## **Photo Credits:**

Gill, K. 2015. Everyone can play a role in pollinator conservation. Ecological Landscape Alliance.

<http://www.ecolandscaping.org/01/beneficials/everyone-can-play-a-role-in-pollinator-conservation/>

Pearce, R. Researchers abuzz about soybean yields. Country Guide.

<http://www.country-guide.ca/2014/11/07/researchers-abuzz-about-soybean-yields/45085/>

Adamson, N. L., B. Borders, J. Cruz, S. Foltz-Jordan, K. Gill, J. Hopwood, E. Lee-Mäder, A. Minnerath, and M. Vaughn. 2014. Pollinator plants mid-Atlantic region. Cover, picture 15.

Vaughn, M. 2014. USDA NRCS Honey bee monitoring training. USDA NRCS West National Technology Support Center and Pollinator Program. Webinar 29 May 2014 picture C.

Jesse, L., D. Lewis, J. Coats, and M. Shour. 2013. Protecting bees from pesticides. Iowa State University Extension and Outreach. Pub SP 455.

O'Neal, M., and E. Hodgson. 2013. Best practices to promote pollinator habitat. Integrated Crop Management News. 15 August 2013

Hodgson, E., and T. Heidel-Baker. 2013. Soybean aphid field guide. North Central Soybean Research Program. P. 46. Pub CSI 0060.

O'Neal, M., and E. Hodgson. 2013. Bee health in the news. Iowa State University Extension and Outreach. Integrated Crop Management News. 9 May 2013.

Leopold Center. 2013. Conserving beneficial insects with native plants. Front, Back (pp. 4, 6, 8).

Practical Farmers of Iowa. 2012. The buzz about best pollinator practices.

<http://practicalfarmers.org/blog/2012/the-buzz-about-best-pollinator-practices>.

Hodgson, E., A. Sisson, D. Mueller, L. Jesse, E. Saalau-Rojas, and A. Duster. 2012. Field crop insects. Iowa State University Extension and Outreach. Pg. 37 top. Pub CSI 0014.

McCarville, M., E. Hodgson, and M. O'Neal. 2012. Soybean-aphid resistant soybean varieties for Iowa. Iowa State University Extension and Outreach. Integrated Crop Management News. Pub PM 3023

## **Teaching Experience:**

### **Teaching Assistant**

Fundamentals of Entomology and Pest Management (Entomology 376), Iowa State University

Lab Teaching Assistant, Spring 2015, 2014 (two sections), 2013, 2012

Lab Teaching Assistant Coordinator, Spring 2015

Insect Biology (Entomology 370), Iowa State University  
Lab Teaching Assistant, Fall 2013, 2012, 2011

Entomology (Entomology 300), Briar Cliff University  
Lab Teaching Assistant, Fall 2008

### **Undergraduate Mentor**

Project Title: Examining the effect of insecticide application timing, Iowa State University  
Student Mentored: Patrick Wagner, Spring 2013, Summer 2013, Fall 2013

### **George Washington Carver Student Advisor/Mentor**

Project Title: Determining the presence of fitness costs associated with biotype-4 soybean aphids, Iowa State University  
Student Mentored: Danaisa Green, Summer 2014

### **Tutoring**

Introduction to Microbiology (Biology 239), Briar Cliff University  
Tutor, Fall 2008. Three students.

Environmental Science (Environmental Science 110), Briar Cliff University  
Tutor, Winter 2008. One student.

### **Awards and Scholarships:**

2014	Jim Oleson Scholarship in Entomology
2014	1 <sup>st</sup> Place Plant-Insect Ecosystems Session 19. Student Talk Competition at 62 <sup>nd</sup> Annual ESA National Meeting.
2014	Best in Section Award. Student Talk Competition at 1 <sup>st</sup> Graduate and Professional Student Research Conference
2014	2 <sup>nd</sup> Place Plant-Insect Ecosystems Session 2 Ph.D. Student Talk Competition at 69 <sup>th</sup> Annual ESA NCB meeting
2013	Jim Oleson Scholarship in Entomology
2013	2 <sup>nd</sup> Place Plant-Insect Ecosystems Session 2 Ph.D. Student Talk Competition at 68 <sup>th</sup> Annual ESA NCB meeting
2012	Entomology Alumni Scholarship
2012	2 <sup>nd</sup> Place Plant-Insect Ecosystems Session II Ph.D. Student Talk Competition at 67 <sup>th</sup> Annual ESA NCB Meeting

2012	North Central Branch 2012 Presidential Student Travel Scholarship
2011	Wayne A. Rowley Scholarship
2011	3 <sup>rd</sup> Place Plant-Insect Ecosystems Session 2 M.S. Student Competition at 66 <sup>th</sup> Annual ESA NCB Meeting
2009-2011	Miller Graduate Fellowship
2008-2009	Briar Cliff University Grant National Smart Grant
2008-2009	Briar Cliff University Academic Scholarship Briar Cliff Leadership Scholarship
2007-2008	Briar Cliff Academic Award Scholarship Briar Cliff Leadership Scholarship Academic Competitiveness Grant
2006-2007	Briar Cliff Academic Award Scholarship Briar Cliff Leadership Scholarship Briar Cliff University Grant

## **Service and Society:**

### **Organizations**

Entomology Graduate Student Organization, Iowa State University

Member, 2009 to present

Student Chair of the Social Committee 2009 to 2015

Student Chair of the Newsletter Committee 2013 to 2015

Treasurer, 2010-2011, 2012-2013

President, 2011-2012

Volunteer at:

Annual EGSO Film Festival 2009, 2010, 2011, 2012, 2013, 2014

Edwards Elementary School Science Night 2010, 2011

EGSO participation in VEISHEA 2010, 2011, 2012, 2013

Briar Cliff Science Club, Briar Cliff University

Member 2006-2009

Vice President 2008-2009

### **Professional Societies**

Entomological Society of America

Member, 2008 to present

North Central Branch Student Affairs Committee Representative 2012-2014

National Student Affairs Committee Representative 2012-2014  
Treasurer of the North Central Branch Student Affairs Committee 2013-2014  
North Central Branch Local Arrangements Student Representative 2013-2014  
ESA and Foundations Awards Committee Member 2012-2013

**Honor Societies**

Gamma Sigma Delta: The Honor Society of Agriculture  
Member, 2011 to present

**Community and Other**

Pheasants Forever  
Member 2008 to present

The National Audubon Society  
Member 2008-2012

The Nature Conservancy  
Member 2008-2012

The Sierra Club  
Member 2008-2012

**Technical Skills:**

Developed complete randomized design and also randomized complete block design experiments.

Computer: Microsoft Office (Word, Excel, Power Point, Access), Photoshop, Inventor, Macromedia programs, CAD, SAS

Certified Commercial Chemical Applicator: Sections 1A, 1B, 1C, 10

Large machinery operator

**Training Programs/Short Courses:**

Aphid Identification Program

Attended a five-day mentoring program presented by Dr. David Voegtlin from the University of Illinois at the University of Illinois.