

Zachary P. Stewart

University of Nebraska
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EDUCATION:

University of Nebraska, Lincoln, NE, USA Doctorate of Philosophy (Ph.D.) Agronomy - Crop Physiology and Production & Soil Science GPA 3.96	Jan. 2013-May 2016
London School of Hygiene and Tropical Medicine, London, UK Master of Science (MSc) Control of Infectious Diseases GPA 3.97	Sept. 2011-Sept. 2012
Creighton University, Omaha, NE, USA Bachelor of Science (BS) Major: Biology GPA 3.62 Honors: <i>Cum Laude</i>	Aug. 2007-May 2011 Minors: International Relations, Environmental Science
Harlan Community High School, IA, USA High School Diploma GPA 3.96 Honors: <i>Summa cum Laude</i>	Aug. 2004-May 2007

CAREER SUMMARY:

I have extensive experience researching crop physiology and production topics as well as leading international development research working with small-holder farmers in East Africa on both agronomic and human health topics with well-documented impact. Impact highlights include: (1) developing and patenting a tool to kill insecticide resistant mosquitoes by delivering novel classes of agronomic insecticides, (2) pioneering the use of pheroid nanoparticles for the improved efficacy of foliar micronutrient fertilizer delivery, (3) publishing an evaluation of soil health assessment tools, (4) assessing how fertilizer use not only increases crop production but can also agronomically biofortify crops in Sub-Saharan Africa, and (5) receiving the 2008 John Chrystal Award from the World Food Prize Foundation for “improving international understanding and peaceful cooperation through agriculture and food security.” My academic background in both agriculture and human health has been a valuable tool enabling me to use cross-disciplinary thinking to advance agricultural production while always doing so in a manner that has the greatest impact on human well-being. It is my sincerest hope to be a part of the solutions to the grand challenges facing my generation, and I know the continuation of my career with the Kansas State SIIL, will help me be a part of the solutions to these monumental challenges.

WORK EXPERIENCE:

Ph.D. Candidate - Doctoral Graduate Research Assistant, University of Nebraska (UNL), Lincoln, Nebraska (Jan. 2013-May 2016)

- International Fertilizer & Biofortification Research: Evaluating the effect of N, P, K, and micronutrient fertilizers on the agronomic biofortification of 7 different staple crops across 13

countries in Sub-Saharan Africa as part of the “Optimizing Fertilizer Recommendations in Africa” grant funded through The Alliance for the Green Revolution in Africa

- *Soil Health Research:* Published an evaluation of the effect of tillage, crop rotation, (maize and soybeans), and nitrogen rate in a long term (30 year) study on Solvita and Haney Soil Health values as compared to values from conventional soil testing methods
- *Nanoparticle Fertilizer Research:* Performed hydroponics greenhouse trials to evaluate the use of pferoid nanoparticles for the improved efficacy of foliar micronutrient fertilizer delivery
- *Evaluation of Crop Monitoring Tools:* Performed a survey of crop growth monitoring tools to evaluate soil, plant tissue, grain, and yield samples to better predict fertilization and yield response
- *Global Food Security Reviews:* Experience publishing reviews on global food security topics in peer-reviewed journals
- *Farm & Field Research & Team Management:* Led 35 on-farm strip trials and five in-depth small plot trials evaluating the effect of foliar micronutrients on Maize yield and grain biofortification across Nebraska
- *Seed Improvement Research:* Evaluated the role of foliar micronutrient treatments in seed corn production as a tool for increasing the micronutrient density of grains for improved seedling vigor
- *Research Partnerships & Delivery:* Extensive experience working with and presenting to farmers, extension, industry, and NGOs to disseminate research and develop goals for future research
- *Dissertation Title:* Micronutrient Foliar Analysis and Supplementation in Nutrient Management for High Yield Maize (*Zea mays* L.)
- *Other Skills:* Continuous work with industry, proficient in large database statistical analysis using SAS, analyzing and collecting spatial data using ArcGIS, grant and proposal writing, presenting research findings to farmers, industry, and the scientific community, publishing research findings in scientific journals and extension publications, and managing research teams and budgets

Co-Lecturer and Graduate Teaching Assistant, University of Nebraska, Lincoln, Nebraska (Jan. 2014-May 2015)

- *Teaching:* Co-lectured the Agroecology course at UNL and teaching assistant and lecturer for Soil Nutrient Relationships, Organic Farming and Food Systems, and Urbanization of Rural Landscapes courses
- *Impact:* Developing a hydroponics teaching tool to teach crop-nutrient management, lecturer for over 150 undergraduate and graduate students, and mentor to a McNair Undergraduate Scholar
- *Other Skills:* Lecturer, mentor, prepared curriculum materials, wrote quizzes and exams, performed grading, wrote letters of recommendation

Graduate Research Assistant, London School of Hygiene and Tropical Medicine (LSHTM) Pan African Malaria Vector Research Consortium, London, UK & Moshi, Tanzania (Sept. 2011-2012)

- *International Research & Cross-Cultural Team Management:* Team lead for experimental hut trials in Moshi, Tanzania looking at the efficacy of attractive toxic sugar baits (ATSB) with agricultural insecticides for controlling insecticide resistant mosquitoes for malaria control
- *International Project Management:* Projects were overseen by Dr. Mark Rowland, director of the Malaria Centre, in London, UK while I performed the research with a team at the Pan African Malaria Vector Research Consortium in Tanzania
- *Grant Prioritization & Writing:* Prioritized research goals, wrote research grant proposals, and obtained a Helena Vrbova Research Grant, Gordon Smith Research Grant, and a LSHTM Wellcome Trust Grant
- *Statistical & Experimental Design:* Designed the Latin square protocols for “experimental hut” trials in Northeast Tanzania
- *Thesis Title:* Attractive Toxic Sugar Baits (ATSB) located near mosquito nets for control of pyrethroid resistant *Anopheles arabiensis* and *Culex quinquefasciatus* in Northeast Tanzania
- *Impact:* Research presented to stakeholders in Tanzania, findings published in *PLoS one*, and patent filed in November 2013 for insecticide resistant mosquito killing tool

World Food Prize Foundation Borlaug-Ruan International Intern, International Center of Insect Physiology and Ecology (ICIPE), Mbita, Kenya (June 2007-2014)

- International Research & Cross-Cultural Management: Developed and coordinated a survey/interview of 40 small-holder farmers to investigate the epidemiological influence of malaria in Mbita, Kenya
- International Research: Researched malaria control methods in Mbita, Kenya at the International Center of Insect Physiology and Ecology through the full sponsorship of the World Food Prize Foundation advised by Norman Borlaug (Nobel Peace Prize Laureate 1970)
- Impact Award: Awarded the 2008 John Chrystal Award for “improving international understanding and peaceful cooperation through agriculture and food security” for my malaria research in Western Kenya. The award presentation was televised live with guests including the former president of Mozambique, the president of the World Bank, and the Administrator of USAID
- Volunteering: Assistant to Ambassador Kenneth Quinn during World Food Prize events including close work with domestic and international ministers of agriculture, dignitaries, and heads of state. Periodically invited to serve as a guest speaker to share World Food Prize Research and current research to scientists and students

Undergraduate Research Assistant, NASA Space Grant, Creighton University, Guarjila, El Salvador (August 2009-2011)

- International Research: Performed a faunistic survey of Black Flies (*Simulium*) in Guarjila, El Salvador monitoring and evaluating taxonomic variation
- Laboratory Research: Researched reproductive proteomics of Black Flies which are the vector of *Onchocerciasis*, “river blindness”
- Laboratory Research: Researched Black Fly silk proteins as candidate polymers for an aquatic adhesive and surgical suture glue, funded by NASA
- Research Development: Wrote and designed grant proposals and obtained funding from a diverse group of funding sources including NASA, Trout’s Unlimited, and Creighton’s Ferlic Grant
- Impact: Isolated a protein marker to quantify biting rates of Black Flies using two-dimensional gel electrophoresis which contributed to the development of an ELISA to quantify the epidemiological biting rate of Black Flies and the entomological infectivity rate of *Onchocerciasis*

Biology Lab and Lecture Teaching Assistant, Creighton University, Nebraska, USA (August 2008-2010)

- Teaching: Teaching Assistant for 1) General Biology: Cellular and Molecular & 2) General Biology: Organismal and Population courses at Creighton University
- Impact: Taught ~75 undergraduate students how to perform 25 different laboratory procedures and served as the lecture teaching assistant for 252 undergraduate students
- Responsibilities: Responsible for presenting lab lectures, tutoring students, grading papers, drafting and grading quizzes, and entering attendance and final grades

PATENTS:

Stewart, Z. P., Oxborough, R. M., Tungu, P. K., Kirby, M. J., Rowland, M. W., & Irish, S. R. Indoor Attractive Toxic Sugar Baits for Control of Resistant Mosquitoes. UK Patent: November 2013.

PEER REVIEWED PUBLICATIONS:

Stewart, Z. P. 2016. Micronutrient Foliar Analysis and Supplementation in Nutrient Management for High Yield Maize (*Zea mays* L.). PhD Dissertation. *University of Nebraska*. Lincoln, NE.

Stewart, Z. P., Oxborough, R. M., Tungu, P. K., Kirby, M. J., Rowland, M. W., & Irish, S. R. 2013. Indoor Application of Attractive Toxic Sugar Bait (ATSB) in Combination with Mosquito Nets for Control of Pyrethroid-Resistant Mosquitoes. *PloS one*, 8(12), e84168.

- Stewart, Z., & Francis, C. 2013. *One Billion Hungry: Can We Feed the World?* by Gordon Conway: Cornell University Press, Ithaca, New York. 2012. 439 pp., paperback, \$24.95. ISBN 978-0-8014-7802-4. *Agroecology and Sustainable Food Systems*, 37(8), 964-967.
- Stewart, Z., & Francis, C. 2013. *Foodopoly: The Battle Over the Future of Food and Farming in America*, by Wenonah Hauter: The New Press, New York, NY. 2012. 355 p., cloth, \$26.95. ISBN 978-1-59558-790-9. *Agroecology and Sustainable Food Systems*, 37(10), 1187-1190.
- Stewart, Z., Stepanovic, S. & Shapiro, C. 2016. Iron Management in high pH Soils: A Strong Candidate for Precision Farming Technologies. *Proceedings of the Great Plains Soil Fertility Conference*. IPNI. Denver, CO.
- Stewart, Z. P & Shapiro, C. A. 2014. Effect of Tillage, Rotation, (Maize and Soybeans), and Nitrogen Rate in a Long Term Study on Solvita, Water Extract, H3A Extract Soil Health Values. *Proceedings of the 44th North Central Extension-Industry Soil Fertility Conference*. Vol. 30, 178-182.
- Stewart Z. P. 2012. Attractive Toxic Sugar Baits (ATSB) located near mosquito nets for control of pyrethroid resistant *Anopheles arabiensis* and *Culex quinquefasciatus* in Northeast Tanzania. MSc Thesis., *London School of Hygiene and Tropical Medicine*, London Call number: 105874.

PUBLICATIONS IN PREPARATION:

- Stewart, Z. P., Shapiro, C. A., Wortmann, C. S., Paparozzi, E. T., Shaver, T. M. & Schlegel, V. L. 2016. Effect of Iron and Zinc Nanoparticle, Chelate, and Sulfate Foliar Applications to Deficient Maize. Submitted, 2016- *Crop Science*.
- Stewart, Z. P., Shapiro, C. A., Bavougian, C. M., H. Blanco-Canqui. 2016. Evaluation of Soil Health under Contrasting Long Term Tillage, Crop Rotations and Nitrogen Fertilization using conventional and Haney/Solvita Soil Test. In Preparation - *Soil Science Society of America*.
- Stewart, Z. P., Shapiro, C. A., Wortmann, C. S., Paparozzi, E. T., Shaver, T. M. & Schlegel, V. L. 2016. Effect of Foliar Micronutrients (B, Mn, Fe, Zn), Applied at Different Rates and Timings, on Maize (*Zea mays* L.) Grain Yield and Micronutrient Uptake, Mobility, and Partitioning. In Preparation - *Agronomy Journal*.
- Stewart, Z. P., Shapiro, C. A., Wortmann, C. S., Paparozzi, E. T., Shaver, T. M. & Schlegel, V. L. 2016. Foliar Micronutrient Applications on Maize (*Zea mays* L.) in “On-Farm” Scenarios in Nebraska - *Agronomy Journal*.
- Stewart, Z. P., Shapiro, C. A., Wortmann, C. S., Paparozzi, E. T., Shaver, T. M. & Schlegel, V. L. 2016. A Survey of the Relationship Between Soil, Plant, Grain Nutrient Parameters and Yield in Nebraska Maize Production (*Zea mays* L.). In Preparation – *Soil Testing and Plant Analysis or Communications in Soil Science and Plant Analysis*.
- Stewart, Z. P., Shapiro, C. A., Wortmann, C. S., Paparozzi, E. T., Shaver, T. M. & Schlegel, V. L. 2016. Effect of Foliarly Applied Micronutrients (Fe, Zn, B, Mn) on Maize (*Zea mays* L.) Grain Biofortification. In Preparation – *Food Science*.

EXTENSION AND OUTREACH PUBLICATIONS:

- Stewart Z. P., Thompson, L., Glewen K., et al. 2016. Nebraska On-Farm Research Network 2016 Growing Season Results. Foliar Micronutrient Studies. *University of Nebraska-Lincoln*. <http://cropwatch.unl.edu/farmresearch>
- Stewart, Z. P. 2016. Where Do Foliar Micronutrients Fit into my Production System? *Yankton Press & Dakotan*. Yankton, NE. February 3, 2016.
- Stewart, Z., Shapiro, C., Shaver, T., Ferguson, R., Krienke, B., Wortmann C. 2015. Where Do Foliar Micronutrient Applications Fit in Corn Production? *Proceedings of the Crop Production Clinics - University of Nebraska Extension*. Lincoln, NE.
- Stewart, Z. P. 2015. Where Do Foliar Micronutrient Applications Fit into Midwest Agronomy? *Midwest Producer*. Tekamah, NE. October 5, 2015.
- Stewart, Z. P. 2015. Radio Interview: Foliar Micronutrient Fertilization in Nebraska Corn Production. *University of Nebraska Crop Watch*. Lincoln, NE. August 6, 2015.
- Stewart Z. P., Thompson, L., Glewen K., et al. 2015. Nebraska On-Farm Research Network 2014 Growing Season Results. Foliar Micronutrient Studies. *University of Nebraska-Lincoln*. <http://cropwatch.unl.edu/farmresearch>
- Stewart, Z. P. 2015. Radio Interview: Foliar Micronutrient Fertilization in Nebraska Corn Production. *Chad Moyer KTIC Rural Radio Network*. Concord, NE. August 27, 2015.
- Stewart, Z. P. 2014. When Health and Agriculture Intertwine. *The Department of Agronomy and Horticulture Annual Newsletter: Pots Plots and Plants* (pp. 10-11). Lincoln, NE. University of Nebraska. <http://agronomy.unl.edu/documents/ah-AnnualNewsletter14WEB.pdf>
- Stewart, Z. P & Shapiro, C. A. 2014. Effect of Tillage, Rotation, (Maize and Soybeans), and Nitrogen Rate in a Long Term Study on Solvita, Water Extract, H3A Extract Soil Health Values. *North Central Extension-Industry Soil Fertility Conference*. IPNI. Vol. 30, 178-182.
- Stewart, Z. P. & Tornquist S. 2014. Zachary Stewart Profile: Biofortification of Corn with Foliar micronutrient Applications for Improved Human Health and Seedling Vigor. *Land O'Lakes Inc*. Shoreview, MN.
- Stewart, Z. P. 2014. Celebrating Borlaug's Legacy: Zach Stewart. *The World Food Prize Foundation*. Des Moines, IA. www.youtube.com/watch?v=vwVWzTvh2fY
- Stewart, Z. P. & Manda, H. A. 2007. The Effect of Larval Habitat Size on Adult Mosquito (*Anopheles gambiae* s.s.) Energy Reserves. *The World Food Prize Foundation*. Des Moines, IA. http://www.worldfoodprize.org/documents/filelibrary/images/youth_programs/chrysal_awards/Stewart_Zachary_3B677666D2886.pdf

PROFESSIONAL PRESENTATIONS AND ABSTRACTS:

- Stewart, Z., Shapiro, C., & Shaver, T. 2016. Micronutrient Management on High pH Soils for Corn Production. *Proceedings of the Great Plains Soil Fertility Conference*. IPNI. Denver, CO.
- Stewart, Z. P. & Shapiro, C. A. 2016. Basic School - Foliar Micronutrient Applications in Nebraska Corn Production. *Crop Production Clinic - University of Nebraska Extension*. Grand Island, NE. January 28, 2016.

- Stewart, Z. P., Shapiro, C. A., Wortmann, C. S., Paparozzi, E. T., Shaver, T. M. & Schlegel, V. L. 2015. Effect of Foliar Micronutrients (B, Mn, Fe, Zn), Applied at Different Rates and Timings, on Maize (*Zea mays* L.) Grain Yield, Grain Nutrient Density, and Micronutrient Uptake, Mobility, and Partitioning. SSSA Division: Soil Fertility & Plant Nutrition. *Proceedings of the ASA-CSSA-SSSA International Meetings*, Minneapolis, MN 16 Nov. Poster 1313.
- Shapiro, C. A. & Stewart, Z. P. 2015. Nutrient Management Update; Solvita/Haney Soil Tests. *Crop Production Clinic - University of Nebraska Extension*. Kearney, NE. January 13, 2015.
- Shapiro, C. A. & Stewart, Z. P. 2015. Fast Break Session: Foliar Micronutrient Applications. *Growing our Future 2015 Institute of Agriculture and Natural Resources Department of Agronomy and Horticulture*. Lincoln, NE. November 6, 2015.
- Stewart, Z. P., Shapiro, C. A., Wortmann, C. S., Paparozzi, E. T., Shaver, T. M. & Schlegel, V. L. 2015. Effect of Foliar Micronutrients (B, Mn, Fe, Zn), Applied at Different Rates and Timings, on Maize (*Zea mays* L.) Grain Yield and Micronutrient Uptake, Mobility, and Partitioning. *Proceedings of the Great Plains Soil Fertility Conference*, Denver, CO. 16 March.
- Perez, Z. and Stewart, Z. P. 2015. A Comparison of the Effect and Mobility of Foliar Applied Pheroid™ Nanoparticles, Chelates, and Sulfate Forms of Iron and Zinc on Iron and Zinc Deficient Maize (*Zea mays* L.) *McNair Summer Research Colloquium*, Lincoln, NE. July 23, 2015.
- Stewart, Z. P. 2015. Foliar Micronutrient Fertilization in Nebraska Corn Production. *Northeast Research and Extension Center Haskell Agricultural Laboratory VIP Tour University of Nebraska*. Concord, NE. August 6, 2015.
- Stewart, Z. P. 2015. Micronutrient Management. *Soil Nutrient Relationships Guest Lecture*. Lincoln, NE. April 27, 2015.
- Stewart, Z. P. 2014. Agroecology: Agriculture and Health Interactions in East Africa. *Agroecology Guest Lecture*. Lincoln, NE. April 17, 2015.
- Stewart, Z. P. & Shapiro, C. A. 2014. Effect of Tillage, Rotation, (Maize and Soybeans), and Nitrogen Rate in a Long Term Study on Solvita, Water Extract, H3A Extract Values. Soil Change: Agronomic, Ecological, and Pedologic Process Measurements and Modeling. *Proceedings of the ASA-CSSA-SSSA International Meetings*, Long Beach, CA 2-5 Nov. Poster 454-9.
- Oxborough, R. M., & Stewart, Z. P. 2014. Indoor Application of Attractive Toxic Sugar Baits in Combination with Mosquito Nets for Control of Pyrethroid Resistant Mosquitoes. *Pan African Malaria Vector Research Consortium*. Moshi, Tanzania. March 18, 2014.
- Stewart, Z. P. 2014. Future Research Objectives and Collaboration in Foliar Micronutrient Applications. *University & Industry Partnerships Spraytec*. Maringa, Brazil. September 25, 2014.
- Stewart, Z. P. 2014. Crop Animal Interactions in Mixed Farming Systems in Asia. *Global Food Security Lecture*. Lincoln, NE. March 20, 2014.
- Stewart, Z. P. 2013. Update on Foliar Micronutrient Research. *Nebraska AgriBusiness Update Meeting*. Lincoln, NE. June 21, 2013.

- Stewart, Z. P. 2013. Micronutrient Fertilization for Improved Human Nutrition and Food Security in Malawi. *Purdue Borlaug Global Food Security Institute*. Lafayette, IN. June 8, 2013.
- Stewart, Z. P. & Brockhouse C. L. 2011. Black Fly (*Simulium*) Silk Proteins as Candidate Polymers for an Aquatic Adhesive and Surgical Suture Glue. *Creighton University Department of Biology Research Symposium*. Omaha, NE. September 22, 2011.
- Stewart, Z. P. & Brockhouse C. L. 2011. Isolation of a Black Fly (*Simulium*) Protein Marker in Development of an ELISA to Quantify the Epidemiological Biting Rate and the Entomological Infectivity Rate of *Onchocerciasis*. *Creighton University Ferlic Research Symposium*. Omaha, NE. November 12, 2011.
- Stewart, Z. P. & Brockhouse C. L. 2010. Black Fly (*Simulium*) Silk Proteins as Candidate Polymers for an Aquatic Adhesive and Surgical Suture Glue. 4th Annual *Arthropod Genomics Symposium*. Kansas City, MO. June 10, 2010.
- Stewart, Z. P. & Brockhouse C. L. 2009. Isolation of a Black Fly (*Simulium*) Protein Marker in Development of an ELISA to Quantify the Epidemiological Biting Rate and the Entomological Infectivity Rate of *Onchocerciasis*. *Johns Hopkins Malaria Research Institute International Conference*. Baltimore, MD. November 12, 2009.
- Stewart, Z. P. 2007. A Case Study: Interactions of Agriculture and Malaria in Mbita, Kenya. *World Food Prize Symposium*. Des Moines, IA. October 14, 2007.

ACADEMIC HONORS AND AWARDS (SEE APPENDIX):

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|---|---|
| - Gerald O. Mott Award in Crop Science (2016) | - Phi Sigma Society (Biology Honor Society) (2010-11) |
| - Wirth/McGowen Global Food and Nutrition Security Fellowship (2016) - \$3,500 | - World Food Prize John Chrystal Research Award (2008) |
| - McNair Graduate Student Mentor Award (2016) | - Creighton University Ferlic Research Scholar (2010) - \$3,700 |
| - Great Plains Soil Fertility Conference Graduate Student Award (2016) - \$400 | - NASA Nebraska Space Fellow (2010) - \$2,000 |
| - International Plant Nutrition Institute Scholar Award (2015) - \$2,000 | - Iowa Farm Bureau Scholar (2007-11) - \$2,000 |
| - American Society of Agronomy, Crop Science Society of America, and Soil Science Society of America Future Leaders in Science Award (2015) - \$500 | - Creighton Academic Scholar (2007-11) - \$40,000 |
| - North Central Extension-Industry Soil Fertility Outstanding Graduate Research Award (2014) - \$500 | - Creighton University Scholar (2007-11) - \$40,000 |
| - US Borlaug Fellow in Global Food Security (2013) - \$1,000 | - Kane, John & Eloise Scholar (2007-11) - \$7,500 |
| - Creighton University <i>Cum Laude</i> (2011) | - Connelly, Everett & Eileen Scholar (2007-11) - \$7,500 |
| | - High School <i>Summa cum Laude</i> (2007) |
| | - National Honor Society (2005-06) |

PROFESSIONAL EDITORIAL BOARDS:

- World Food Prize Board of Reviewers (2016) – Paid position

SOFTWARE PROFICIENCY:

SAS, STATA, SigmaPlot, ArcMAP 10, EpiData, EndNote, Excel, Word, PowerPoint

LABORATORY PROFICIENCY:

Two Dimensional Gel Electrophoresis, Dynabead Protein Extractions, N15 Labeling, PCR, RT-PCR, Gel-Electrophoresis, Western-Blots, Mosquito Resistance Assays, Gel Protein Imaging, Hydroponics

PROFESSIONAL MEMBERSHIP:

American Society of Agronomy (2014, 15, 16)
Crop Science Society of America (2014, 15, 16)
Soil Science Society of America (2014, 15, 16)

APPENDIX:

Gerald O. Mott Award- “The Gerald O. Mott Meritorious Graduate Student Award in Crop Science recognizes top-notch graduate students pursuing advanced degrees in crop science disciplines. Departments select students based on academic achievements, research and teaching contributions, leadership accomplishments, service activities and personal qualifications.” (2016)

Wirth/McGowen Global Food and Nutrition Security Fellowship \$3,500- “The purpose of this fellowship is to benefit and support the education and research efforts of graduate students pursuing degree programs that will contribute to significant advancements in ensuring global food and nutrition security for a growing world population through innovative research in the agricultural, natural resource and human sciences.” (2016)

McNair Graduate Student Mentorship Award- The award was presented “in recognition of outstanding mentorship to an undergraduate McNair scholar during the completion of their research and application to graduate school.” Each year one faculty mentor and one graduate student mentor are presented with this award. (2016)

Great Plains Soil Fertility Outstanding Graduate Student Award \$400- Presented by IPNI “in recognition of exceptional accomplishment, research and service.” (2016)

International Plant Nutrition Institute Scholar Award \$2,000- “In recognition of an outstanding scholastic record, and in appreciation of contributions to agricultural sciences.” (2015)

World Food Prize John Chrystal Research Award \$5,000- Awarded the 2008 John Chrystal Award from the World Food Prize Foundation for my research in Western Kenya in “improving international understanding and peaceful cooperation through agriculture and food security” and for “exemplifying John Chrystal's commitment to enriching Iowa's relationship with the world and devotion to the idea that everyone is entitled to a sense of dignity and adequate food.” (2008)

American Society of Agronomy, Crop Science Society of America, and Soil Science Society of America Future Leaders in Science Award \$500- Presented by ASA, CSSA, and SSSA “for exceptional dedication to supporting scientific research through science policy advocacy.” (2014)

North Central Extension-Industry Soil Fertility Outstanding Graduate Research Award \$500- Presented by IPNI “in recognition of exceptional accomplishment, research and service.” (2014)

US Borlaug Fellow in Global Food Security \$1,000- Selected as 1 of 35 graduate students from across the United States to participate in the U.S. Borlaug Summer Institute on Global Food Security. The institute “is an annual 2-week long learning program for graduate students interested in developing a holistic understanding of the conceptual challenges around global food security.” (2013)

NASA Nebraska Space Fellow \$2,000- “These competitive fellowships are granted to those students with academic achievement and a demonstrated interest in the STEM careers (science, technology, engineering, and math).” This was awarded for my Blackfly silk protein research at Creighton University. (2010)

Creighton University Ferlic Summer Research Scholar \$3,700- Awarded for my research looking at Blackfly biting rate indicator proteins for the development of an ELISA for epidemiological surveys of the transmission of River Blindness. (2010)

Biological Sciences Honor Society, Phi Sigma- Inducted to this professional society in 2010. (2010)

Connelly, Everett & Eileen Scholar \$7,500- Awarded by Creighton University. “It provides for full tuition and fees, plus a book allowance for an entering undergraduate student with exceptional academic and personal qualities. It is renewable for ensuing years by maintaining an overall GPA of at least 3.3.” (2007-11)

Creighton Academic Scholar \$40,000- This award is a “competitive academic scholarship, based on high school academic performance and national test scores.” (2007-11)

Kane, John & Eloise Scholar \$7,500- Awarded by Creighton University for “demonstrating high academic achievement [and] are actively involved in their school or community” (2007-11)

Creighton University Scholar \$40,000- “For exemplifying academic achievement” (2007-11)

Iowa Farm Bureau Scholar \$2,000- Awarded by the Iowa Farm Bureau “for excelling students pursuing careers in agriculture.” (2007-11)

Nebraska Corn Board Scholar- Funding my PhD research and assistantship at the University of Nebraska. (2013-2016)

London School of Hygiene and Tropical Medicine Helena Vrbova Scholar \$2,500- Funded my research at the Pan African Malaria Vector Research Consortium in Tanzania looking at branching agricultural insecticides and plant attractants for the control of pyrethroid resistant malaria vectors. (2012)

London School of Hygiene and Tropical Medicine Gordon Smith Scholar \$1,667- Funded my Master’s thesis research at the Amani Medical Research Centre, National Institute of Medical Research in Tanzania. (2012)