

Lee Beers

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EDUCATION

ABD

Ph.D. Plant Sciences

University of Maine

Adviser: Frank Drummond

Dissertation: “Genetic diversity and cold hardiness of the wild lowbush blueberry (*Vaccinium angustifolium*)”

2009

M.S. Botany and Plant Pathology

University of Maine

Advisor: Benildo de los Reyes

Thesis: “Genomic analysis of the cold acclimation response in *Solanum* species”

2005

B.S. Biology

Penn State Erie, The Behrend College

COOPERATIVE EXTENSION AND OUTREACH

The Ohio State University

Assistant Professor and Extension Educator

Agriculture and Natural Resources

December 2015 to Present

Provide leadership to the Agricultural and Natural Resources programming in Trumbull County through traditional and non-traditional methods. Trumbull County is located in NE Ohio. Trumbull County agriculture includes agronomic crops, 43 dairy farms (many Amish), small beef cattle operations, and a growing number of diversified small farms.

- Communications – weekly newsletter distributed to approximately 1300 farmers in the region, monthly news column in Tribune Chronicle, C.O.R.N. Newsletter article contributions
- Pesticide Applicator Training – Recertify approximately 200 local farmers annually so they can maintain their Private Pesticide Applicator License
- Fertilizer Applicator Training – Certification and re-certification for approximately 250 county farmers, over 1200 served in the Mahoning Valley
- Agricultural Programs – Highlighted programs include Northeast Ohio Agronomy School, Quality Hay Workshop, Waterhemp and Weed Control Clinic, Soybean Disease Field Day, Weed Identification Workshop, Pasture Walks, Trumbull County Farmer Lunch Series
- Horticultural Programs – Highlighted programs include GMOs for Extension Professionals, Industrial Hemp, Small Fruit Production, Lawn Maintenance
- Dairy Working Group – Contributing member
- Agronomic Crops State Team – Contributing member and Professional Development Chair, assist with Farm Science Review with teaching and educational activities
- Integrated Forage Management Team – Contributing member, coordinate hay producer fact sheet series, Forage for Horses curriculum development
- Ohio Ag Manager State Team – Member

- Collaborations – Work closely with Trumbull Soil and Water Conservation District, FSA, NRCS, and other local organizations to co-promote programs and offer combined programs

Area 6 Leader

July 2018 to December 2023

Provided supervision to OSU Extension staff in Area 6 which includes Ashtabula, Lake, Geauga, and Trumbull Counties. This included four ANR Educators, four 4-H Educators, two FCS Educators, four program staff, and five office staff.

- Performance Management – Conducted performance reviews for each employee, implemented performance improvement plans, and mentored all staff
- Administrative Liaison – Point of contact for business office, Human Resources, and other administrative offices
- Budget Management – Oversaw budgets for all counties within Area 6
- Program Council – Selected as a member of this council which provided oversight to programming activities at the state level

University of Maine

Graduate Assistant

January 2010 to December 2015

Incorporated Extension activities into graduate research within the lab group to assist lowbush blueberry growers in Maine.

- Extension Events – participated in the promotion, planning, and evaluation of field days
- Presentations – provided updates on current research conducted at University of Maine that benefit blueberry growers
- Farm Visits – provided one-on-one farm evaluations and offer recommendations to growers

TEACHING EXPERIENCE

University of Maine

Biology: The Living Science – BIO 222

Spring 2014

Instructor. Duties included: preparing and presenting lectures, creating and grading exams, evaluating student progress and reaching out to struggling students, preparing and grading quizzes for in and out of the classroom.

Biology: The Living Science is a 3-credit course designed for non-biology related majors who require a general education science course. Lectures introduce students to the major concepts of biology (evolution, ecology, biotechnology, genetics, etc.) in a broad sense.

Basic Biology – BIO 100

Fall 2006 – 2009, 2013

Laboratory teaching assistant. Duties included: guiding discussion of biological topics during lab, grading and evaluating student progress, proctoring exams, acting as a liaison between students and course instructor.

Basic Biology is required for most science majors and is a pre-requisite for upper level biology courses. This course introduces students to fundamental topics such as biodiversity, DNA replication, genetics, and ecology. Inquiry based teaching is used in the labs and allows students to design and implement their own experiments.

Biology: The Living Science Laboratory – BIO 223

Spring 2007–2008, 2013

Laboratory teaching assistant. Duties included: introducing topics for the day's discussion and lab activities, guiding student discussion, grading and evaluating student progress.

This one credit course is a companion to Biology: The Living Science (BIO 222) and is oriented to students not majoring in biological sciences. Through lab work students are introduced to experimental design, as well as provided a hands on learning experience dealing with

fundamental topics in biology that include; biodiversity, organismal biology, human anatomy and physiology.

Plant Biology – BIO 310

Spring 2009–2010

Teaching assistant. Duties included: assisting the instructor during lecture, preparing lab materials for viewing/use, introducing students to topics during the laboratory, grading, and guiding field trips.

This mid-level course is designed for students pursuing a degree in Botany, Biology, Forestry or other field that requires fundamental knowledge in plant biology. Throughout the course students are introduced to various plant families, basic morphology, physiology, and anatomy of plants commonly found in New England and beyond.

Penn State Erie, The Behrend College

Molecular Biology – BIOBD 460

Spring 2005

Laboratory teaching assistant. Duties included: lab setup and preparation, aid students during experimental procedures.

This upper-level course in molecular biology focuses on transcription, translation and protein synthesis. Lab work included gel electrophoresis and Western Blot analysis of protein extracts.

Biology: Function and Development of Organisms – BIOL 240W

Spring 2004

Laboratory teaching assistant. Duties included: assisting the lab coordinator with lab setup, aiding students during lab exercises. Additionally, designed a lab focused on toxicity of chemicals to the nervous system.

This introductory lab and lecture course is writing intensive and gives students a hands-on experience with plants and animals through detailed observations and dissections.

CERTIFICATIONS AND LICENSES

Certified Crop Advisor (CCA)– 2016 to present. Provide leadership to the CCA program at OSU by teaching exam preparation classes each year in Crop Management.

Ohio Private Pesticide Applicator License – 2016 to present. Licensed to apply restricted use pesticides to row crops, forages, vegetables, and fruit crops

Ohio Commercial Pesticide Applicator License – 2016 to present. Licensed to apply restricted use herbicides, fungicides, and insecticides to row crops, forages, and ornamentals

Ohio Fertilizer Applicator Certificate – 2016 to present.

RESEARCH EXPERIENCE

On-Farm Research – Field-scale research in collaboration with local farmers to investigate production practices. The goal of this research is to connect OSU Extension with local farmers to answer production questions that are relevant to their farming practices and local environments. Through collaboration with farmers research on emerging crops such as industrial hemp for fiber, field peas, and miscanthus have provided information to local farmers through field days, technical bulletins, and other communication. Additionally, practices such as rolling soybeans, in-season applications of sulfur to corn and soybeans, insect trapping networks, and IPM monitoring have strengthened local knowledge and built local relationships. Results from on-farm research have been published in the OSU eFields yearly publication, and multiple year research trials are being conducted for journal articles.

Ph.D. (ABD) – “Genetic diversity and cold hardiness of the wild lowbush blueberry (*Vaccinium angustifolium*)”

Vaccinium angustifolium is a highly diverse species, both genetically and phenotypically. The goal of this research is to examine the level of genetic diversity in lowbush blueberries throughout the native range and identify any regions of the genome that may be responsible for cold hardiness traits. This is accomplished by first identifying the level of genetic diversity using molecular markers (EST-PCR and SSR) to compare individuals from various populations representing distinct geographic locations. The second component of this research is to identify individual plants with superior cold hardiness traits through cold and frost hardiness trials. Using an association approach, any loci found by the use of molecular markers will be linked with associated cold hardiness traits.

M.S. – “Genomic analysis of the cold acclimation response in *Solanum* species”

The goal of this research was to identify genes that were critical in the response to low temperature in cultivated and wild potato species. Gene expression was compared between the non-acclimating domesticated potato (*Solanum tuberosum*) and the cold acclimating wild species *Solanum commersonii*. Gene expression changes were followed during exposure to low temperature with microarray and quantitative real time PCR.

B.S. – “Gene expression changes associated with dormancy breakage by bromoethane in potato”

Research followed the genetic and physiological changes that occurred in domestic potato as it exited the dormant state. Dormancy was broken with the use of bromoethane and RNA was extracted at several time points after treatment for analysis with microarray. Genes regulating the dormant state and/or the exit from dormancy were identified based on the relative expression levels compared to housekeeping genes.

PROFESSIONAL SERVICE

National Association of County Agricultural Agents (NACAA) – 2015 to present. Vice-President of the Ohio Chapter of NACAA in 2022, State President in 2023, current past-president.

Joint Council of Extension Professionals (JCEP) – 2015 to present. Current member of the Professional Development committee.

American Society of Agronomy – 2008 to present.

Crop Science Society of America – 2008 to present.

VOLUNTEER EXPERIENCE

2015 – Science mentor for Planting Science teams in Anchorage, AK and Bridgton, NJ (PlantingScience.org)

2014 – Forest thinning and maintenance for the Maine Organic Farmers and Gardeners Association (MOFGA, Unity, ME)

2013 – Hiking trail construction and maintenance for the Orono Land Trust (Orono, ME)

2009 – Biology tutor for the Support for Science Students (S3) Living Learning Community (UMaine)

GRANTS AND AWARDS

2024 – Ohio Soybean Council Grant (\$50,000) (Fungicides and Microclimates, Managing White Mold in Ohio)

2024 - National Association of County Agricultural Agents Communications Award, Team Newsletter

2024 - National Association of County Agricultural Agents Communications Award, Personal Column

2024 - National Association of County Agricultural Agents Communications Award, Computer Generated Presentation

- 2023** – Ohio Soybean Council Grant (\$31,000)
- 2023** – NIFA Special Needs Grant (\$151,000)
- 2023** - National Association of County Agricultural Agents Communications Award, Team Newsletter
- 2023** - National Association of County Agricultural Agents Communications Award, Computer Generated Presentation
- 2021** – National Association of County Agricultural Agents Achievement Award
- 2019** – National Association of County Agricultural Agents Communications Award, Team Newsletter
- 2018** – National Association of County Agricultural Agents Communications Award, Team Newsletter
- 2017** – National Association of County Agricultural Agents Communications Award, Team Newsletter
- 2017** – Conservation Tillage Conference Grant (\$3000)
- 2016** – National Association of County Agricultural Agents Communications Award, Team Newsletter
- 2015** – Fay Hyland-Hilborn Prize in Plant Biology (\$500)
- 2014** – Sarah Jane Spruce Memorial Scholarship (\$4000)
- 2014** – Susan J Hunter Graduate Teaching Fellowship (\$7300)
- 2013** – USDA Agricultural Food Research Initiative Competitive Grant (Co-PI) (\$138,000)
- 2013** – UMaine Graduate Student Government, grant for degree related purposes (\$850)
- 2011** – UMaine Graduate Student Government, grant for degree related purposes (\$582)
- 2011** – UMaine Graduate Student Government, grant to travel to present (\$800)
- 2010** – UMaine Graduate Student Government, grant to travel to present (\$800)
- 2008** – The Norris Charles Clements Graduate Student Award (\$2000)
- 2007** – UMaine Graduate Student Government, grant to travel to present (\$600)
- 2005** – Travel Award, American Society of Plant Biologists (\$400)
- 2004** – Undergraduate Student Summer Research Fellowship, Pennsylvania State University (\$1200)
- 2004** – Travel Award, American Society of Plant Biologists (\$450)
- 2003** – Undergraduate Student Summer Research Fellowship, Pennsylvania State University (\$1200)

CONFERENCE PRESENTATIONS

- 2024** – **Beers, L.** Engaging Youth and Adult to Adopt Safe Chainsaw Practices. Association of Natural Resources Extension Professionals (ANREP) Conference. Hershey, PA
- 2023** – **Beers, L.** Programmatic Backfill – A Successful Administrative Plan? National Association of County Agricultural Agents (NACAA) AM/PIC Conference. Des Moines, IA
- 2022** – **Beers, L.** Don't Lose Your Marbles – Refocusing Your Priorities. National Association of County Agricultural Agents (NACAA) AM/PIC Conference. West Palm Beach, FL
- 2022** – **Beers, L.** Master Gardener Volunteers – Restructuring County Model. National Association of County Agricultural Agents (NACAA) AM/PIC Conference. West Palm Beach, FL
- 2021** – **Beers, L.,** Marrison, D., Holden, A. The Next Big Thing – How Do Educators Respond to New and Emerging Crops? National Association of County Agricultural Agents (NACAA) AM/PIC Conference. Virtual
- 2021** – **Beers, L.,** Zoller, C., Morris, J., Bergefurd, B. Industrial Hemp in Ohio – Fiber and CBD Opportunities. National Association of County Agricultural Agents (NACAA) AM/PIC Conference. Virtual
- 2021** – **Beers, L.** A Different Perspective – Incorporating Farm Visits Into Interviews. National Association of County Agricultural Agents (NACAA) AM/PIC Conference. Virtual
- 2020** – **Beers, L.** Area Leaders – Hybrid Administration and Program Positions in Extension. National Association of County Agricultural Agents (NACAA) AM/PIC Conference. Virtual

- 2019** – **Beers, L.**, Marrison, D., Holden, A. New Educator Mentoring – Four Generations of Ag Educators in NE Ohio. National Association of County Agricultural Agents (NACAA) AM/PIC Conference. Fort Wayne, IN
- 2018** – **Beers, L.**, Drummond, F., Rowland, J. Genetic Diversity of Lowbush Blueberry in Managed and Non-Managed Populations. North American Blueberry Research and Extension Workers (NABREW) Conference. Orono, ME
- 2017** – **Beers, L.**, Drummond, F., Rowland, J. Cold and Frost Hardiness Evaluation of Lowbush Blueberry. *National Association of County Agricultural Agents (NACAA) AM/PIC*. Salt Lake City, UT
- 2017** – **Beers, L.**, Adams, E., Hall, P., Griffith, M., Zoller, C., Shoemaker, D. Identifying Emerging Issues. *National Association of County Agricultural Agents (NACAA) AM/PIC*. Salt Lake City, UT
- 2016** – **Beers, L.**, Drummond, F. Chilling Requirement of Lowbush Blueberry. *National Association of County Agricultural Agents (NACAA) AM/PIC*. Little Rock, AR
- 2015** – **Beers, L.**, Drummond, F., Rowland, J. Genetic diversity of lowbush blueberry (*Vaccinium angustifolium*) throughout its native range in managed and non-managed populations. *Botany 2015 Conference*. Edmonton, AB Canada
- 2014** – **Beers, L.**, Drummond, F., Rowland, J. Genetic diversity of *Vaccinium angustifolium* in managed and non-managed populations throughout its geographic range. *North American Blueberry Research and Extension Workers (NABREW) Conference*. Atlantic City, NJ
- 2013** – **Beers, L.**, Drummond, F. Deciphering the cold hardiness of lowbush blueberry using an association genetics approach. *Wild Blueberry Research and Extension Worker (WILDBREW) Conference*. Bangor, ME
- 2011** – **Beers, L.**, Drummond, F. Evaluating genetic diversity in Maine populations of *Vaccinium angustifolium* by the use of EST-PCR molecular markers. *Wild Blueberry Research and Extension Worker (WILDBREW) Conference*. Bangor, ME
- 2010** – **Beers, L.**, Drummond, F. Preliminary analysis of genetic diversity of lowbush blueberry (*Vaccinium angustifolium*) across its native range. North American Blueberry Research and Extension Workers (NABREW) Conference. Kalamazoo, MI
- 2008** – **Beers, L.**, Reyes, B. Low temperature transcriptome analysis of Solanum species. *Northeastern Potato Technology Forum*. Bangor, ME
- 2007** – **Beers, L.**, Yun, KY., Cheng, C., Ballou, S., Reyes, B. Comparative analysis of the low temperature transcriptomes of Solanum tuberosum and Solanum commersonii. *Plant and Animal Genomes XVI Conferences*. San Diego, CA.
- 2005** – **Beers, L.**, Campbell, M., Hunckle, L., Suttle, J. Chemically forced and natural dormancy progression in potato tubers induces similar patterns of gene expression. *Plant Biology 2005*. Seattle, WA
- 2004** – **Beers, L.**, Campbell, M., Suttle, J. Gene expression changes associated with dormancy breakage by bromoethane in potato. *Plant Biology 2004*. Lake Buena Vista, FL.

INVITED PRESENTATIONS

- 2014** – **Beers, L.**, Drummond, F. Deciphering the cold hardiness of lowbush blueberry using an association genetics approach. *Bluets NB Blueberries Annual General Meeting*. Moncton, NB, Canada
- 2013** – **Beers, L.**, Drummond, F. Seasonal and environmental influences on lowbush blueberry flowering. *Bluets NB Blueberries Annual General Meeting*. Moncton, NB, Canada

PEER REVIEWED PUBLICATIONS

- Beers, L.A.**, Rowland, L.J., Drummond, F.A. 2019. Genetic Diversity of Lowbush Blueberry Throughout the United States in Managed and Non-Managed Populations. *Agriculture*. 9:113
- Bushmann, S.L., Drummond, F.A., **Beers, L.A.**, Groden, E. 2012. Wild Bumblebee (*Bombus*) Diversity and Nosema (Microsporidia: Nosematidae) Infection Levels Associated with Lowbush Blueberry (*Vaccinium angustifolium*) Production and Commercial Bumblebee Pollinators. *Psyche*, vol. 2012
- Rowland, L.J., Bell, D.J., Alkharouf, N., Bassil, N.V., Drummond, F.A., **Beers, L.**, Buck, E.J., Finn, C.E., Graham, J., McCallum, S., Hancock, J.F., Polashock, J.J., Olmstead, J.W., Main, D. 2012. Generating genomic tools for improving blueberry. *International Journal of Fruit Science*. 12:276-287
- Campbell, M.A., Segear, E., **Beers, L.**, Knauber, D.C., Suttle, J.C. 2008. Dormancy in potato tuber meristems: chemically induced cessation in dormancy matches the natural process based on transcript profiles. *Functional and Integrative Genomics*. 8:317-328
- Beers, L.**, Labarge, G. 2022. Nutrient Management of Forage Crops Intended for Hay. The Ohio State University Extension. Fact Sheet.

PUBLICATIONS AWAITING PEER REVIEW

- Beers, L.**, Corboy, T., Ruff, G. 2022. Purchasing Hay Equipment – Tedders and Rakes. The Ohio State University Extension. Fact Sheet. Waiting On Peer Review.
https://forages.osu.edu/sites/forages/files/imce/Purchasing%20hay%20equipment%20-%20Tedders%20and%20rakes_2022.pdf
- Ruff, G., **Beers, L.**, Corboy, T. 2022. Forage Mowing Equipment. The Ohio State University Extension. Fact Sheet. Waiting On Peer Review.
https://forages.osu.edu/sites/forages/files/imce/Mower%20Factsheet_2022.pdf
- Corboy, T., Ruff, G., **Beers, L.** 2022. Purchasing Hay Equipment – Balers. The Ohio State University Extension. Fact Sheet. Waiting On Peer Review.
<https://forages.osu.edu/sites/forages/files/imce/Purchasing%20a%20Baler%20Fact%20Sheet.pdf>