

## Timothy M Bowles, Ph.D.

Department of Land, Air, and Water Resources • University of California, Davis  
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### EDUCATION

- 2009 – 2015      **Ph.D., Ecology.** University of California Davis.  
Concentration: Agricultural Ecology  
Dissertation topic: Plant-soil-microbial nitrogen cycling across contrasting organic farms in an intensively-managed agricultural landscape  
Advisor: Louise E. Jackson  
Awarded Sept. 11, 2015
- 2003 – 2007      **B.A., Molecular and Cellular Biology.** Vanderbilt University.  
*Summa cum laude* with High Honors in Biological Sciences  
Honors thesis: Structural elucidation of plant potexviruses  
Minor in Spanish

### RESEARCH EXPERIENCE

- 2015              **NSF GROW Fellow**, laboratory of Tim Cavagnaro, Soil Ecology Lab, School of Agriculture, Food, and Wine, University of Adelaide, Australia.
- 2009 – present    **Doctoral research**, laboratory of Louise Jackson, Department of Land, Air, and Water Resources, UC Davis.
- 2007 – 2009      **Research Assistant**, laboratory of Brandt Eichman, Department of Biological Sciences, Vanderbilt University. Research topic: Structure and function of proteins involved in DNA repair and replication.
- 2004 – 2007      **Research Assistant**, laboratory of Gerald Stubbs. Department of Biological Sciences, Vanderbilt University. Research topic: Low resolution structure of flexible, filamentous plant viruses.

### GRANTS, FELLOWSHIPS, and AWARDS

- 2014 – 2015      **National Science Foundation** Graduate Research Opportunities Worldwide. \$5,000
- 2014 – 2015      **Henry A. Jastro Research Award**, UC Davis. \$3,000
- 2011 – 2014      **National Science Foundation** Graduate Research Fellowship. \$120,000
- 2009 – 2011      **UC Davis** Graduate Group in Ecology Block Grant Fellowship.
- 2009 – 2010      **UC Davis** Non-Resident Tuition Fee Fellowship.
- 2007              Nomination to Phi Beta Kappa Society Academic Honors Society.
- 2006 – 2007      Award for Outstanding Research in Biological Sciences, Department of Biological Sciences, Vanderbilt University.
- 2005              **Vanderbilt University** Undergraduate Summer Research Program. \$4,000
- 2003 – 2007      Dean's List for Outstanding Academic Performance, Vanderbilt University.
- 2003 – 2007      College Scholars Program, Vanderbilt University.
- 2003 – 2007      Academic Merit Scholarship, Vanderbilt University.

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### PUBLICATIONS

#### *Published (current research)*

- 2015 **Bowles, T.M.**, Hollander, A.D., Steenwerth, K., Jackson, L.E. Tightly-coupled plant-soil nitrogen cycling: Comparison of organic farms across an agricultural landscape. *PLoS ONE* 10(6):e0131888
- 2015 Margenot, A.J., Calderón, F.J., **Bowles, T.M.**, Parikh, S.J., Jackson, L.E. Soil organic matter functional group composition in relation to organic C, N, and P fractions in organically-managed tomato fields characterized by mid-infrared spectroscopy. *Soil Science Society of American Journal* **79**: 772-782.
- 2015 **Bowles, T.M.**, Raab, P., Jackson, L.E. Root expression of nitrogen metabolism genes reflects soil nitrogen cycling in an organic agroecosystem. *Plant and Soil* **392**: 175-189.
- 2014 **Bowles, T.M.**, Acosta-Martínez, V., Calderón, F.J., Jackson, L.E. Soil enzyme activities, microbial communities, and carbon and nitrogen availability in organic agroecosystems across an intensively-managed agricultural landscape. *Soil Biology and Biochemistry* **68**, 252-262.
- 2012 Jackson, L.E., **Bowles, T.M.**, Hodson A.K., Lazcano, C. Soil microbial-root and –microbial-rhizosphere processes to increase nitrogen availability and retention in agroecosystems. *Current Opinion in Environmental Sustainability* **4**, 517-522.

#### *Published (prior research)*

- 2013 Du, W., Josephraj, A., Adhikary, S., **Bowles, T.**, Bielinsky, A.K., Eichman, B.F. Mcm10 self-association is mediated by an N-terminal coiled-coil domain. *PLoS ONE*, **8(7)**, e70518.
- 2008 **Bowles, T.\***, Metz, A.H.\*, O'Quin, J., Wawrzak, Z., Eichman B.F. Structure and DNA binding of alkylation response protein AidB. *Proc. Natl. Acad. Sci., USA*, **105**, 15299-15304. (\*equal contribution)
- 2008 Kendall, A., McDonald, M., Bian, W., **Bowles, T.**, Baumgarten, S.C., Shi, J., Stewart, P.L., Bullitt, E., Gore, D., Irving, T.C., Havens, W.M., Ghabrial, S.A., Wall, J.S., Stubbs, G. Structure of flexible filamentous plant viruses. *J Virol.* **82**, 9546-54.
- 2007 Stubbs, G., Kendall, A., McDonald, M., Bian, W., **Bowles, T.**, Baumgarten, S., McCullough, I., Shi, J., Stewart, P., Bullitt, E., Gore, D. and Ghabrial, S. Flexible filamentous virus structures from fiber diffraction. *Powder Diffraction* **23**, 113-117.

### ORAL PRESENTATIONS AND POSTERS

- 2015 (invited) **Bowles, T.M.**, Barrios-Masias, F., Carlisle, E., Jackson, L.E. A tale of two tomatoes: Arbuscular mycorrhiza effects on plant responses to water stress under field conditions in California. University of Adelaide Soils Group Seminar. Adelaide, Australia.

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- 2014 **Bowles, T.M.** and Jackson, L.E. Tightly-coupled plant-soil nitrogen cycling on contrasting organic farms across an intensively-managed agricultural landscape. Ecological Society of America Conference, Sacramento, CA. (oral presentation)
- 2014 **Bowles, T.M.** and Jackson, L.E. Tightly-coupled plant-soil nitrogen cycling: Insight from root gene expression and biogeochemical indicators on organic farms across an agricultural landscape. SSSA Special Conference on Soil's Role in Restoring Ecosystem Services, Sacramento, CA. (oral presentation)
- 2014 Carlisle, E., Barrios-Masias, F., **Bowles, T.M.**, and Jackson, L.E. Cultivar trait selection to improve tomato water use efficiency and yield under low water availability. Harris Moran Seed Company, Davis CA. (invited seminar)
- 2014 **Bowles, T.M.** and Jackson, L.E. Researcher and farmer innovation to increase nitrogen cycling on organic farms. USDA Organic Research and Extension Initiative Project Director Meeting, Washington, D.C. (oral presentation)
- 2013 **Bowles, T.M.**, Acosta-Martínez, V., Calderón, F., and Jackson, L.E. Soil enzyme activities and carbon and nitrogen availability in organic agroecosystems across an intensively-managed agricultural landscape. ASA, CSA, and SSSA International Annual Meeting, Tampa, FL. (poster)
- 2013 **Bowles, T.M.** and Jackson, L.E. Researcher and farmer innovation to increase nitrogen cycling on organic farms. eOrganic webinar. Online at <http://www.extension.org/pages/25242/webinars-by-eorganic>
- 2013 **Bowles, T.M.** and Jackson, L.E. Managing organic tomato production for increased resilience. Ranching with Drought in the Southwest: Conditions, Challenges, and a Process to Meet the Challenges: Multi-stakeholder workshop, Tucson, AZ (oral presentation)
- 2013 **Bowles, T.M.** and Jackson, L.E. Nutrient cycling on organic farms across a gradient of soil organic matter in Yolo Co., California: On-farm research to improve nitrogen availability and retention. California Climate Action Network 2013 Summit, Davis, CA (poster)
- 2012 **Bowles, T.M.**, Raab, R.A., Jackson, L.E. Rapid changes in root gene expression in response to nitrogen availability: Linking molecular biology, plant physiology, and soil biogeochemical processes. Ecological Society of America Conference, Portland, OR (poster)
- 2008 **Bowles, T.**, Metz, A.H., O'Quin, J., Wawrzak, Z., Eichman B.F. Structure and DNA binding of alkylation response protein AidB. Tennessee Structural Biology Symposium, Nashville, TN (poster)
- 2008 Stubbs, G., Kendall, A., Bian, W., McDonald, M., Baumgarten, S., **Bowles, T.**, Shi, J., and Stewart. P. Fiber diffraction and cryo-electron microscopy applied to filamentous viruses. American Crystallographic Association, Knoxville, TN.

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### TEACHING EXPERIENCE

#### *Guest Lecturer*

- Fall 2014            Davis R-Users Group, UC Davis: “Using the R package *vegan* for community and multivariate analyses”
- Fall 2014            Ecology and Agriculture, UC Davis: “Defining agroecosystems and their services”
- Summer 2014        UC Davis Student Farm Discussion Series: “Roles of mycorrhizae in organic farming systems”
- Summer 2013        Science and Society: Civilizations, Soil, and Culture, UC Davis. Designed and delivered interactive field lecture and exercise on crops of California.
- Fall 2012            Ecology and Agriculture, UC Davis: “Carbon cycling in agroecosystems”

#### *Teaching assistant or Reader*

- Fall 2012, 2014     Ecology in Agriculture, UC Davis.
- Spring 2006        Introduction to Biological Sciences Laboratory, Vanderbilt University.

#### *Seminar development and training*

- Summer 2013        Completed an interactive, six-session workshop series offered by the Center for Excellence in Teaching and Learning at UC Davis: “Learner-Centered Teaching: Designing Courses, Activities, and Assessments to Enhance Student Learning”.
- Winter 2011        Human-Dominated Ecosystems (seminar), UC Davis. Designed course readings and co-led discussions.

### AFFILIATIONS

Soil Science Society of America  
Ecological Society of America

### PROFESSIONAL SERVICE

- Ongoing            Reviewer for *Agriculture, Ecosystems, and Environment*; *Organic Agriculture*; *PLoS One*; *Soil and Tillage Research*; *Journal of Soil and Water Conservation*; *Soil Biology and Biochemistry*; *Plant and Soil*
- 2015                Admissions review committee for Graduate Group in Ecology, UC Davis.
- 2012, 2013        Facilitator for workshop on writing NSF Graduate Fellowships for first and second graduate students.
- 2012                Volunteer Coordinator: UC Davis Ecology Graduate Student Symposium.
- 2011                UC Davis Graduate Student Association Representative

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**COMMUNITY OUTREACH AND EDUCATION**

- 2013 – 2014      **Neighborhood coordinator**, Harvest Sacramento, Sacramento, CA.
- 2013              **Project consultant**, Farm-to-Mouth Program, Davis, CA. Consulted on implementation of a farm experience and work training program for persons with mental health issues.
- 2011              **Assistant instructor**, Soil Born Farms, Sacramento, CA. Assisted instruction for local middle school students in a school garden and nutrition program.
- 2007 – 2009      **Coordinator**, Nashville Urban Harvest. Nashville, TN. Assisted in operation of one acre urban farm and development of subsidized community supported agriculture program