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EDUCATION

- 2009 **Ph.D. in Horticulture**
Minor concentrations: Soil science; International agriculture
Cornell University, Ithaca, New York
- 1995 **B.A. in Biology**, Minor in Environmental Studies
Oberlin College, Oberlin, Ohio

PROFESSIONAL EXPERIENCE

- 2014-present **Assistant Professor**, Department of Soil and Crop Sciences, Colorado State University
- 2010-2013 **Postdoctoral Scholar**, Department of Plant Science & Department of Ecosystem Science and Management, The Pennsylvania State University, University Park, PA
- 2009-2010 **Postdoctoral Fellow**, Department of Natural Resource Sciences
McGill University, Montreal, QC
- May 2009 **Consultant**, Natural Resource Defense Council
San Francisco, CA
- 2003-2009 **Graduate Research Assistant**, Department of Horticulture
Cornell University, Ithaca, NY
- 2001-2003 **Program Manager**, Environmental Careers Organization
Seattle, WA
- 1997-2000 **Field Manager**, Angelic Organics CSA Farm
Caledonia, IL

GRANTS AND FELLOWSHIPS (past 4 years)

- 2018-2021 **USDA-NIFA**. Leveraging crop genotype x soil rhizosphere community interactions to better manage N cycling in a context of improved soil health. S. Fonte (PI), coPIs Wallenstein, M. Byrne, P. F., Cotrufo, M. F., Schipanski, M. E., Kallenbach, C. M. (\$500,000)
- 2018-2021 **USDA-NIFA**. Drivers and indicators of soil health in semi-arid agroecosystems: Addressing the soil carbon dilemma through the lens of microbes and soil physical structure. PI P.F. Cotrufo, coPIs Wallenstein, M., Schipanski, M. E., Calderon, F. (\$500,000)
- 2017-2019 **CSU Catalyst Innovation Partnership grant**. Rural wealth creation: exploring food systems-led development strategies, Carolan, M. S. (PI), Jablonski, B. (PI),

- coPIs Ryan, E. P., Bonanno, A., Jones, A. S., Schipanski, M., Wallenstein, M., Meiman, P., Cabot, P. E., Martin, M. (\$200,000)
- 2016-2019 **USDA NIFA Organic Transitions Program.** Decision support to quantify GHG mitigation and ecosystem services from organic production systems. Lead PI M. Schipanski, coPIs K. Paustain, R. Jabbour (\$499,990)
- 2016-2020 **USDA NIFA Coordinated Agricultural Project.** Sustaining agriculture through adaptive management to preserve the Ogallala Aquifer under a changing climate. Lead PI M. Schipanski, coPIs E. Kelly, R. Waskom, C. Rice, C. West, K. Wagner, B. Auvermann, C. Ray, M. Marsalis, J. Warren, B. Guerrero. (\$9,800,000)
- 2015-2018 **USDA NRCS Conservation innovation Grant.** Demonstrating the Potential of Cover Crop and Forage Mixtures to Improve Soil Quality, Productivity, and Profitability in Water-Limited Regions. Lead PI M. Schipanski, co-PIs J. Brummer, A. Seshadri, N. Dalsted, S. Ward, R. Meyer, W. Trujillo, K. Larson, J. Holman L. Haag, et al. (\$995,492)
- 2015-2017 **USDA Western Sustainable Agriculture Research and Education Grant.** Dryland cropping system intensification in the West-Central Great Plains: Impacts and barriers to adoption. Lead PI M. Schipanski in collaboration with graduate student S. Rosenzweig (\$25,000)
- 2015-2016 **CSU Water Center Fellowship.** Improving precipitation use efficiency in dryland cropping systems. Lead PI. (\$9,760)
- 2015-2016 **CSU School for Global and Environmental Sustainability Global Challenges Research Team grant.** Food Systems Research Team. Lead PI with Co-PIs A. Seshadri, C. Brown, M. Carolan, R. Duffy (\$10,000)
- 2014-2019 **USDA-ARS Specific Cooperative Agreement.** Inter-compare and improve soil-crop models for evaluating effects of climate change and adaptations on production and natural resources. Lead PI. (\$138,855)
- 2015-2017 **CSU Catalyst Innovation Partnership grant.** Center for Sustainable Agriculture Innovation. Co-PI with M. Wallenstein (PI), and co-PI's R. Conant, C. Jahn, K. Reardon, A. Jones, G. Graff (\$199,434)
- 2015-2016 **Colorado Wheat Research Foundation.** Diversifying wheat-based rotations for profitability, pest management, and soil quality. Lead PI with Co-PI S. Ward (\$18,000)

PEER-REVIEWED PUBLICATIONS (* graduate student, ** postdoc)

Rosenzweig, S.*, S.J. Fonte, M.E. Schipanski. 2018. Intensifying rotations increases soil carbon, fungi, and aggregation in semi-arid agroecosystems. *Agriculture, Ecosystems & Environment* 258: 14-22. doi.org/10.1016/j.agee.2018.01.016

Uddameri, V., Singaraju, S., Karim, A., Gowda, P., Bailey, R. T., Schipanski, M. 2017. Understanding climate-hydrologic-human interactions to guide groundwater model development for Southern High Plains. *Journal of Contemporary Water Research & Education*, 162(1), 79-99.

Robertson, A. D.**, Zhang, Y., Sherrod, L. A., Rosenzweig*, S. T., Ma, L., Ahuja, L., & Schipanski, M. E. 2017. Climate change impacts on yields and soil carbon in row crop dryland agriculture. *Journal of Environmental Quality*. doi:10.2134/jeq2017.08.0309

Baraibar, B., M. Hunter*, M.E. Schipanski, A. Hamilton, D. Mortensen. 2017. Weed suppression by cover crop monoculture and mixtures: The importance of planting window and cover crop species. *Weed Science*. doi.org/10.1017/wsc.2017.59

Finney, D. M., E. G. Murrell, C. M. White, B. Baraibar, M. E. Barbercheck, B. A. Bradley, S. Cornelisse, M. C. Hunter, J. P. Kaye, D. A. Mortensen, C. A. Mullen, and M. E. Schipanski. 2017. Ecosystem services and disservices are bundled in simple and diverse cover cropping systems. *Agricultural & Environmental Letters* 2:170033. doi:10.2134/acl2017.09.0033

Rosenzweig, S.* , M.E. Schipanski, J.P. Kaye. 2017. Rhizosphere priming and plant-mediated cover crop decomposition. *Plant and Soil* 417: 127-139.

Calderon, F.J., S.W. Culman, J. Six, A.J. Franzluebbers, M. Schipanski, J. Beniston, S. Grandy, A. Kong. 2017. Quantification of soil permanganate oxidizable C (POXC) using infrared spectroscopy. *Soil Science Society of America Journal* 81(2): 277-288. doi:10.2136/sssaj2016.07.0216

Hunter, M.C.* , R.G. Smith, M.E. Schipanski, L.W. Atwood, D.A. Mortensen. 2017. Agriculture in 2050: Recalibrating targets for sustainable intensification. *BioScience* 67(4): 386-391. doi.org/10.1093/biosci/bix010

Schipanski, M.E., M.E. Barbercheck, E.G. Murrell, J. Harper, D.M. Finney, J.P. Kaye, D.A. Mortensen, R.G. Smith. 2017. Balancing multiple objectives in organic feed and forage cropping systems. *Agriculture, Ecosystems & Environment* 239: 219-227.

Murrell, E.G., M.E. Schipanski, D.M. Finney, M.C. Hunter*, M. Burgess, J.C. LaChance, B. Baraibar, C.M. White, D.A. Mortensen, J.P. Kaye. 2017. Achieving diverse cover crop mixtures: Effects of planting date and seeding rate. *Agronomy Journal* 109(1): 1-13.

Hurisso, T.T., S.W. Culman, W.R. Horwath, J. Wade, D. Cass, J.W. Beniston, T.M. Bowles, A.S. Grandy, A.J. Franzluebbers, M.E. Schipanski, S. Lucas, C. Ugarte. 2016. Comparison of permanganate oxidizable carbon and mineralized C to assess organic matter stabilization and mineralization. *Soil Science Society of America Journal* 80(5): 1352-1364.

Schipanski, M.E., G.K. MacDonald, S. Rosenzweig*, J. Chappell, E.M. Bennett, R. Bezner Kerr, J. Blesh, T. Crews, L. Drinkwater, J.G. Lundgren, C. Schnarr* 2016. Realizing resilient food systems. *BioScience* 66 (7): 600-610.

- Crews, T.E., J. Blesh, S.W. Culman, R.C. Hayes, E. Steen Jensen, M.C. Mack, M.B. Peoples, M.E. Schipanski. 2016. Going where no grains have gone before: From early to mid-succession. *Agriculture, Ecosystems & Environment* 223:223-238
- Schipanski, M.E., R.G. Smith, T.L. Pisani Gareau, R. Jabbour, D.B. Lewis, M.E. Barbercheck, D.A. Mortensen, J.P. Kaye. 2014. The structure of multivariate relationships influencing crop yields during the transition to organic management. *Agriculture, Ecosystems, and Environment* 189: 119-126.
- Schipanski, M.E., M.E. Barbercheck, M.R. Douglas, D.M. Finney, K. Haider, J.P. Kaye, A.R. Kemanian, D.A. Mortensen, M.R. Ryan, J. Tooker and C. White. 2014. A framework for evaluating multifunctionality of cover crops in agroecosystems. *Agricultural Systems* 125: 12-22.
- Riskin, S.H., S. Porder, M.E. Schipanski, E.M. Bennett, and C. Neill. 2013. Soils mediate agricultural consequences: the role of phosphorus in soybean agriculture. *BioScience* 63: 49-54.
- Schipanski, M. E., and L.E. Drinkwater. 2012. Soil fertility effects on nitrogen fixation in annual and perennial legume-grass mixtures. *Plant and Soil* 357: 147-159.
- Culman, S., S.S. Snapp, M.E. Schipanski, M.A. Freeman, J. Beniston, L.E. Drinkwater, A.J. Franzluebbers, J.D. Glover, A.S. Grandy, R. Lal, J. Lee, J.E. Maul, S.B. Mirsky, J. Six, J.T. Spargo, M.M. Wander. 2012. Permanganate oxidizable carbon reflects a processed soil fraction that is sensitive to management. *Soil Science Society of America Journal* 76: 494-504.
- Schipanski, M.E. and E.M. Bennett. 2012. The influence of agricultural trade and livestock production on the global phosphorus cycle. *Ecosystems* 15: 256-268.
- Grossman, J.M., M.E. Schipanski, T. Sooksanguan, S. Seehaver, L.E. Drinkwater. 2011. Diversity of rhizobia nodulating soybean [*Glycine max* (Vinton)] varies under organic and conventional management. *Applied Soil Ecology* 50: 14-20.
- Schipanski, M. E., L.E. Drinkwater. 2011. Nitrogen fixation of red clover interseeded with winter cereals across a management-induced fertility gradient. *Nutrient Cycling in Agroecosystems* 90(1): 105-119.
- Schipanski, M. E., L.E. Drinkwater, and M.P. Russelle. 2010. Understanding the variability in soybean nitrogen fixation across agroecosystems. *Plant and Soil* 329: 379-397.
- Drinkwater, L.E., M. Schipanski, S. Snapp, and L.E. Jackson. 2008. Ecologically-based nutrient management, *In* S. Snapp and B. Pound, eds. *Agricultural systems: Agroecology and rural innovation for development*. Academic Press, San Diego, CA.

Knapp, A.K., M. Coker (Schipanski), and E.P. Hammerlynck. 1994. Effect of elevated CO₂ on stomatal density and distribution in C₄ grass and a C₃ forb under field conditions. *Annals of Botany*, 74: 595-599.

Book chapters

Bennett, E.M., and M.E. Schipanski. 2012. Phosphorus. *In* K.C. Weathers, D.L. Strayer, G. E. Likens, eds. *Fundamentals of Ecosystem Science*. Elsevier Press. Waltham, MA.

Drinkwater, L.E., M. Schipanski, S. Snapp, and L.E. Jackson. 1st ed. 2008, 2nd ed. 2017. Ecologically-based nutrient management, *In* S. Snapp and B. Pound, eds. *Agricultural systems: Agroecology and rural innovation for development*. Academic Press, San Diego, CA.

Conference proceedings

Rudnick, D., Irmak, S., Ray, C., Schneekloth, J., Schipanski, M., Kisekka, I., Schlegel, A., Aguilar, J., Rogers, D., Mitchell, D., West, C., Marek, T., Xue, Q., Xu, W., Porter, D. 2017. *Deficit irrigation management of corn in the high plains: A review* (pp. 21-22). Proceedings of the 29th Annual Central Plains Irrigation Conference.

Schipanski, M., Andales, A. A., Chavez, J. L., Schneekloth, J., Aguilar, J., Rogers, D., Rudnick, D., Shaver, T., Warren, J., Kisekka, I. 2017. *The Ogallala water coordinated agricultural project: Optimizing water use for agriculture and rural communities*. Proceedings of the 29th Annual Central Plains Irrigation Conference.

TEACHING AND ADVISING

CSU courses

SOCR 200: Seed Anatomy and Identification, Spring 2018 (Lead Instructor)

SOCR 100: General Crops, Fall 2014-present (Lead Instructor)

SOCR 530: Scientific Writing, Spring 2015 (Co-Instructor)

ECOL 592: Food Systems, Fall 2015 (Co-Instructor)

SERVICE AND PROFESSIONAL DEVELOPMENT ACTIVITIES

2018-present **Committee Member**, College of Agricultural Sciences Diversity Catalyst Team

2017-present **Fellow**, CSU Faculty Institute for Inclusive Excellence

2016-present **Committee Member**, CSU Dept of Soil and Crop Sciences Research Panel

2015-present **Faculty Advisor**, CSU Student Agronomy Club

2015-present **Co-chair**, Future Farmers of America Crops Judging Contest

2017 **Committee Member**, CSU Area Extension Agronomist Search

2017 **Speaker**, La Luna Dairy Farm Field Day for Wellington Middle School

2017 **Committee Member**, Soil Microbiome Faculty Search

2015-2017 **Associate Director**, CSU Innovation Center for Sustainable Agriculture

- 2015-2017 **Committee Member**, Gary “Pete” Peterson Dryland Soil Management Scholarship, SSSA
- 2016 **Invited Organizer**, Food Systems Panel, CSU International Colloquium on Global Food Security and Sustainability
- 2015-2016 **Director**, CSU-Denver International Airport Agriculture and Natural Resource Management Internship Program
- 2014-2015 **Committee Member**, Seed Technology and Education Program Committee
- 2014 **Committee Member**, Agricultural Systems Faculty Search
- 2014 **Judge**, Front Range Student Ecology Symposium poster session
- 2013 **Organizer**, Ignite Session on Food Systems, Ecological Society of America
- 2011-2013 **Committee Member**, PA Certified Organic Certification Committee
- 2011-2013 **Organizer**, Penn State Sustainable Agriculture Systems Research Symposium
- 2010 **Invited Participant**, Graduate Student and Early Career Member Summit, Soil Science Society of America (co-authored summary article published in *CSA News*, October 2010)
- 2009 **Committee Chair**, Hank Beachell Future Leaders Scholarship, Agron. Society
- 2009 **Symposium Organizer**, Ecological Society of America, Albuquerque, NM
- 2008 **Mentor**, SEEDS Program for Undergraduates, Ecological Society of America
- 2007 **Steering Committee**, National Sustainable Agriculture Education Conference

Journals reviewed for in past 5 years: Agricultural Systems, Agriculture, Agronomy for Sustainable Development, Agronomy Journal, Climatic Change Ecosystems & Environment, Ecological Applications, Ecological Economics, Ecology Letters, Environmental and Experimental Botany, Elementa: Science of the Anthropocene, Environmental Research Letters, Environmental Science and Technology, Global Biogeochemical Cycles, Global Change Biology, Journal of Advances in Modeling Earth Systems, Journal of Arid Environments, Journal of Environmental Quality, Journal of Geophysical Research – Biogeosciences, Plant and Soil, Nature, Nutrient Cycling in Agroecosystems, Renewable Agriculture and Food Systems, SOIL, Soil Science Society of America Journal

Member: Agronomy Society of America, Soil Science Society of America, Ecological Society of America

AWARDS

- 2017 **Team Research Award** (Food Systems Team), College of Agricultural Sciences, Colorado State University
- 2016 **Outstanding Research Award**, College of Agricultural Sciences, Colorado State University
- 2009 **Macdonald Sustainable Agriculture Postdoctoral Fellowship**, McGill University Ecological Society of America
- 2007 **Barbara McClintock Award**, Plant Sciences outstanding graduate student Cornell University
- 2005 **Outstanding Teaching Assistant Award**, Department of Horticulture

Cornell University

SELECTED INVITED PRESENTATIONS

Scientific meetings

Schipanski, M. S. Rosenzweig, J. Kaye, D. Finney. Plant-mediated nitrogen cycling in agricultural systems. Invited keynote for the 19th European Nitrogen Workshop, Skara, Sweden. June 22-26, 2016

Schipanski, M. The next frontier in cropping systems research analysis: Moving beyond ANOVA. ASA/CSSA/SSSA Annual Meeting, Minneapolis, MN, Nov 16-18, 2015.

Schipanski, M., E. Bennett, S. Riskin, and S. Porder. Agricultural trade and the global phosphorus cycle. American Geophysical Union, San Francisco, Dec 3-7, 2012.

Schipanski, M. and J. Gardner. Nutrient loss from agricultural systems employing ecological approaches. Ecological Society of America, Austin, TX, Aug 7-12, 2011.

Schipanski, M. Phosphorus movement through the transport of food and animal feed. Workshop on the State of the Global Phosphorus Cycle, Aspen Global Change Institute, Aspen, CO, Oct 1-4, 2009.

Schipanski, M. Agroecology for a sustainable future: Cross-disciplinary research at multiple scales. Ecology Society of America, Albuquerque, NM, Aug 2-7, 2009.

Invited seminars

Leveraging plant diversity to manage soil water, carbon, and nitrogen in agricultural systems. University of Nebraska Agronomy and Horticulture seminar series. Lincoln, NE. March 30, 2018.

Grow it and they will come: Plant diversity effects on soil health and productivity. CSU Department of Bioagricultural Sciences and Pest Management seminar series. Fort Collins, CO. February 20, 2018.

Evaluating cover crop and forage mixtures for dryland systems. Oklahoma No-Till Conference. Swanee, OK. February 6, 2018. (~80 people)

No-till crop rotation effects on soil health and profitability. Cover Your Acres annual conference. Oberlin, KS. January 16, 2018. (~200 people)

Soil health management in dryland cropping systems. San Luis Valley Soil Health Working Group Meeting. Center, CO. December 19, 2017. (~20 people)

Dryland cropping systems intensification for soil health and profitability. Eastern Colorado Crop Production Conference. Fort Morgan, CO. December 5, 2017. (~80 people attended)

Managing for soil health in water-limited systems. Colorado Chapter of the Soil and Water Conservation Society Annual Meeting. Loveland, CO. November 29, 2017.

Optimizing water use for agriculture and rural communities. Republican River Conservation Water District Annual Meeting. Denver, CO. November 20, 2017.

The Ogallala Water Coordinated Agricultural Project: Optimizing water use for agriculture and rural communities. Climate Learning Network Webinar. October 5, 2017.

Evaluating cover crop and forage mixtures for dryland systems. No-Till on the Plains Field Day, Bucklin, KS. August 22, 2017. (~75 people attended)

Cropping system effects on soil quality under limited water availability. West Central Research and Extension Center Field Day, North Platte, NE. August 24, 2017. (~80 people attended)

On-farm cover crop research. KSU Cover Crop Field Day. HB Ranch, Brownell, KS. May 19, 2017.

Managing for soil health and resilience in dryland systems. Keynote for Soil Revolution: It's More than Just Dirt Conference, Longmont, CO, March 9, 2017.

The Ogallala water coordinated agricultural project: Optimizing water use for agriculture and rural communities. Central Plains Irrigation Association, Burlington, CO, February 22, 2017.

SELECTED EXTENSION PRODUCTS

Schipanski, M. B. Auvermann, P. Gowda, B. Guerrero, A. Kremen, D. Porter, C. Rice, M. Sanderson, K. Wagner, J. Warren, C. West, R. Waskom. The Future of the Ogallala Aquifer: We Can Measure It, But Can We Manage It? *Colorado Water* Vol. 34(6): 2-7.

Gowda, P., R. Bailey, I. Kisekka, X. Lin, M. Schipanski. An integrated modeling framework for investigating water management practices in the Ogallala Aquifer Region. *Colorado Water* Vol. 34(6):36-37.

Cano, A., A. Nunez, V. Acosta-Martinez, M. Schipanski, R. Ghimire, C. Rice. Linking soil health to water conservation in the Ogallala Aquifer Region. *Colorado Water* Vol. 34(6):38-40.

Rosenzweig, S. R. and M. Schipanski. 2017. Digging deeper into the relationship between crop rotation and soil health in no-till soils. Technical Bulletin, Wheat Field Days. Colorado State University Agricultural Experiment Station.

Rosenzweig, S., Schipanski, M. 2017. *Resilience: Dryland farming in the semi-arid High Plains*. Short film produced with Lexicon of Sustainability. www.drylandag.org

Schnarr, C. and M. Schipanski. 2016. Keeping the farm on the farm when the wind blows. Technical Bulletin, Wheat Field Days 2016. Colorado State University Agricultural Experiment Station.

Schipanski, M. 2015. Evaluating the ripple effect of cropping systems research. Technical Bulletin, Wheat Field Days 2015. Colorado State University Agricultural Experiment Station.

Schipanski, M. 2014. Reframing the discussion about cover crops in semi-arid regions. Southeast Area Extension Farm and Ranch Newsletter. Colorado State University Extension. Volume 2, Issue 3.