

Steven J. Fonte

Assistant Professor in Agricultural Systems Science

CURRICULUM VITAE

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EDUCATION

Ph.D. Ecology (emphasis in Agricultural Ecology) - University of California, Davis, 2010

M.Sc. Forest Science, Oregon State University, 2003

B.Sc. Environmental and Resource Sciences (with Minors in Mathematics and Geology) University of California, Davis, 1998

RESEARCH EXPERIENCE

2015-present **Assistant Professor**, Department of Soil and Crop Sciences, Colorado State University

2013-2015 **Project Scientist/Researcher**, Department of Plant Sciences, UC Davis

2012-2013 **Researcher**, Tropical Soils Program, International Center for Tropical Agriculture (CIAT), Cali, Colombia

2010-2012 **Post-doctoral Researcher**, Tropical Soil Biology and Fertility Program, CIAT, Cali, Colombia, advisor - Dr. Patrick Lavelle

2010 **Post-doctoral Researcher (short-term = 2 months)**, Department of Land, Air and Water Resources, UC Davis, advisor - Dr. Kate Scow

2005-2010 **Graduate Research Assistant**, Department of Plant Sciences, UC Davis, advisor - Dr. Johan Six

2003-2005 **Post-Graduate Research Technician**, Department of Plant Sciences, UC Davis, supervisor - Dr. Johan Six and Dr. Chris van Kessel

2000-2003 **Graduate Research Assistant**, Department of Forest Science, Oregon State University, advisor - Dr. Timothy Schowalter

TEACHING AND ADVISING

Teaching:

2016, 2017 - lead instructor for SOCR 421 (Soil and Cropping Systems Management II)

2016, 2017 - contributor for Summer Soil Institute at CSU

2015 - co-developed field course on measuring soil quality for Univ. of Huancayo, Peru

2014, 2015 - lead instructor for PLS150 (Sustainable Agroecosystem Management) at UC Davis

2010-present - guest lecturer at CSU for SOCR 441 (Soil Ecology), SOCR 475 (Global Challenges), SOCR 455, (Soil microbiology) AGRI 500 (Issues in Agriculture); and at UC Davis SSC 211 (Advanced Soil Microbiology; IAD 219 (Topics in International Development)

Mentoring:

Current students as main advisor: 3 MS students and 3 PhD students

Current graduate student committees: 2 PhD students; 3 MS students

Number of students graduated as main advisor: 2 MS at CSU, 1 MS the Colombian Natl. Univ.

Previous graduate student committees: 2 PhD, 7 MS students (graduated)

Co-advisor for student organization - Minorities in Agriculture, Natural Resources and Related Sciences (MANRRS)

FUNDED RESEARCH PROPOSALS (LAST 5 YEARS):

Funded Research Proposals (\$1,829,100 as PI; \$1,035,492 as Co-PI)

- 2018 - Examining Cover Crops for Soil Health Restoration in Dryland Cropping Systems of SW Colorado and SE Utah, Western SARE (as PI, \$249,974)
- 2018 - Leveraging crop genotype x soil rhizosphere community interactions to better manage N cycling in a context of improved soil health, USDA-NIFA (as PI, \$500,000)
- 2017 - Expanding the impact of improved fallows and landscape management for soil fertility and ecosystem services
McKnight Foundation - Collaborative Crop Research Program (as PI, \$140,000)
- 2017 - Quantifying the effect of diversified rotations on yield stability and soil health, Colorado Wheat Research Foundation (as PI, \$37,000)
- 2017 - Developing rapid soil fertility testing capacity to evaluate soil characteristics and cropping system impacts in Colorado wheat production systems, Colorado Wheat Research Foundation (as co-PI, \$15,000)
- 2016 - McKnight Foundation - Collaborative Crop Research Program “Building Soil Quality Across the CCRP Program: Multi-Context Research and Engagement on Residues and Soil Organic Matter Management (as PI, \$490,000)
- 2016 - Evaluating Alternative Water and Nutrient Management Strategies as Climate-Smart Agricultural Options for Colorado and Beyond, CSU Water Center (as PI, \$23,813)
- 2016 - New Frontiers in the Nexus of Food, Energy and Water Systems: Exploring Food Crop Uptake of Contaminants from Oil & Gas Wastewater, CSU Water Center (as co-PI, \$25,000)
- 2015 - USDA - NRCS - Conservation Innovation Grant “Demonstrating the potential of cover crop and forage mixtures to improve soil health, productivity, and profitability in water-limited regions” (as co-PI, \$995,492)
- 2015 - USDA - ARS – Collaborative agreement (as PI, \$37,287)
- 2013 - McKnight Foundation “Diversification of Andean Agroecosystems: Plots to Farmscapes” (as joint PI, \$351,000)

PEER-REVIEWED PUBLICATIONS (LAST 5 YEARS)

Google Scholar (Mar 2018): H index = 23; 1409 citations; 42 total publications

- Kearney, S.P., S.J. Fonte, E. García, K.M. Chan, P. Siles, and S.M. Smukler (2018) Evaluating ecosystem service trade-offs and synergies from slash-and-mulch agroforestry systems in El Salvador ***Ecological Indicators*** *in press*.
- Sherrod, L.A., G. McMaster, J.A. Delgado, M.E. Schipanski, S.J. Fonte, R.L. Montenieri, and K. Larson (2018) ***Journal of Environmental Quality*** *in press*
- Rosenzweig, S., S.J. Fonte, and M. Schipanski (2018) Intensifying rotations increases soil carbon, fungi, and aggregation in semi-arid agroecosystems. ***Agriculture, Ecosystems and Environment*** 258: 14-22.
- Kearney, S.P., S.J. Fonte, E. García, and S.M. Smukler (2018) Improving the utility of erosion pins: absolute value of pin height change as an indicator of relative erosion rates. ***Catena*** 163: 427-432.
- Manning, D.T., S. Lurbé, T. Trout, L. Comas, N. Flynn, and S.J. Fonte (2018) Economic viability of deficit irrigation in the Western US. ***Agricultural Water Management*** 96: 114-123

- Margenot A.J., B.K. Paul, R.R. Sommer, M.M. Pulleman, S.J. Parikh, L.E. Jackson, and S.J. Fonte (*in press*) Biochemical proxies indicate differences in soil C cycling induced by long-term tillage and residue management in a tropical agroecosystem. ***Plant and Soil*** 420: 315-329.
- Wyckhuys, K.A.G., D.D. Burra, D.H. Tran, I. Graziosi, A.J. Walter, T.G. Nguyen, H.N. Trong, B.V. Le, T.T.N. Le, and S.J. Fonte (2017) Soil fertility regulates invasive herbivore performance and top-down control in tropical agroecosystems of Southeast Asia. ***Agriculture, Ecosystems and Environment*** 249: 38-49.
- Kearney, S.P., K.M.A. Chan, N.C. Coops, S.J. Fonte, P. Siles, and S.M. Smukler (2017) Predicting carbon benefits from climate-smart agriculture: high-resolution carbon mapping and uncertainty assessment in El Salvador. ***Journal of Environmental Management*** 202: 287-298.
- Wang, D., S.J. Fonte, S.J. Parikh, J. Six, and K. Scow (2017) Biochar additions can enhance soil structure and the physical stabilization of C in aggregates. ***Geoderma*** 303: 110-117.
- de Valença, A.W., S.J. Vanek, K. Meza, R. Ccanto, E. Olivera, M. Scurrah, E.A. Lantinga and S.J. Fonte* (2017) Land use as a driver of soil fertility and biodiversity across an agricultural landscape in the Central Peruvian Andes. ***Ecological Applications*** 27: 1138-1154.
- Margenot A.J., B.K. Paul, R.R. Sommer, M.M. Pulleman, S.J. Parikh, L.E. Jackson, and S.J. Fonte (2017). Can conservation agriculture improve P availability in weathered soils? Effects of tillage and residue management on soil P status after 9 years in a Kenyan Oxisol. ***Soil and Tillage Research*** 166: 157-166
- LaHue, G.T., M.A. Adviento-Borbe, B.A. Linquist, C. van Kessel, and S.J. Fonte (2016) Residual effects of fertilization history increase nitrous oxide emissions from zero-N controls: Implications for estimating fertilizer-induced emission factors. ***Journal of Environmental Quality*** 45: 1501-1508
- De Palma, A., S. Abrahamczyk, and 50+ coauthors (2016) Predicting bee community responses to land-use changes: Effects of geographic and taxonomic biases. ***Scientific Reports*** 6: 31153.
- Lavelle, P., S. Dolédec, and 20+ coauthors (2016) Unsustainable landscapes of deforested Amazonia: an analysis of the relationships among landscapes and the social, economic and environmental profiles of farms at different ages following deforestation. ***Global Environmental Change***, 40:137-155.
- Murphy, R., J. Six, B. Govaerts, J. Montes, C. van Kessel and S.J. Fonte* (2016) Crop residue retention enhances soil properties and nitrogen cycling in smallholder maize systems of Chiapas, Mexico. ***Applied Soil Ecology***, 103: 110-116.
- Sanabria, C., F. Dubs, P. Lavelle, S.J. Fonte, and S. Barot. (2016) Influence of Regions, Land Uses and Soil Properties on Termite and Ant Communities in Agricultural Landscapes of the Colombian Llanos. ***European Journal of Soil Biology***, 74:81-92.
- Blankinship, J.C., S.J. Fonte, J. Six, and J.P. Schimel (2016) Plant versus microbial controls on soil aggregate stability in a seasonally dry ecosystem. ***Geoderma***, 272: 39–50.
- Nesper, M., E.K. Bünemann, S.J. Fonte, J.E. Velásquez, I.M. Rao, E. Frossard and A. Oberson (2015) Pasture degradation decreases organic P content of tropical soils due to soil structural decline. ***Geoderma***, 257-258: 123-133.
- Hudson, L., T Newbold, and 50+ coauthors (2014) The PREDICTS database: a global database of how local terrestrial biodiversity responds to human impacts. ***Ecology and Evolution***, 4: 4701-4735.
- Sanabria, C., P. Lavelle, and S.J. Fonte* (2014) Ants as indicators of soil-based ecosystem services in agroecosystems of the Colombian Llanos. ***Applied Soil Ecology***, 84: 24-30.
- Fonte, S.J.*, D. Hegglin, M. Nesper, J.E. Velásquez, B. Ramirez, I.M. Rao, S. Bernasconi E.K. Bünemann, E. Frossard, and A. Oberson (2014) Pasture degradation impacts soil phosphorus storage via changes to aggregate-associated soil organic matter in highly weathered tropical soils of Caquetá, Colombia. ***Soil Biology and Biochemistry***, 68: 150-157.

- Lavelle, P., N. Rodríguez, O. Arguello, J. Bernal, C. Botero, P. Chaparro, Y. Gómez, A. Gutiérrez, M.P. Hurtado, S. Loaiza, E. Rodríguez, C. Sanabria, E. Velásquez, and S.J. Fonte (2014) Soil ecosystem services and land use in the rapidly changing Orinoco River Basin of eastern Colombia. ***Agriculture, Ecosystems, and Environment***, 185: 106-117.
- Lubbers, I., K.J. van Groenigen, S.J. Fonte, J. Six, L. Brussaard, and J.W. van Groenigen (2013) Greenhouse gas emissions from soils increased by earthworms. ***Nature Climate Change***, 3: 187-194.
- Rousseau, L., S.J. Fonte*, O. Téllez, R. van der Hoek and P. Lavelle (2013) Soil macrofauna as indicators of soil quality and land use impacts in smallholder agroecosystems of western Nicaragua. ***Ecological Indicators***, 27: 71–82.

* *Corresponding Author*

SELECTED PRESENTATIONS

73 total refereed oral/poster presentations at national and international meetings

- 2017 Fonte S.J., S.J. Vanek, K. Meza, A.W. de Valença, R. Ccanto, E. Olivera, and M. Scurrah. Impacts of land use intensification of soil-based ecosystem services in an agricultural landscape in the Peruvian Andes. Ecological Society of America Annual Meeting, Portland, OR.
- 2017 Kearney, S.P., S.J. Fonte, E. García, K.M. Chan, P. Siles, and S.M. Smukler. Composite indices demonstrating multiple ecosystem service benefits and synergies from agroforestry systems. Ecological Society of America Annual Meeting, Portland, OR.
- 2017 Fonte, S.J. Gestión de Agroecosistemas para la Biología y Servicios Ecosistémicos Múltiples del Suelo, Chilean National Soil Science Congress, Santiago, Chile (*Invited*)
- 2017 Kallenbach, C., D. Junaidi, S.J. Fonte, P.F. Byrne, and M.D. Wallenstein. Wheat genotypes and root traits alter rhizosphere community nitrogen function more than composition. American Geophysical Union, New Orleans, LA.
- 2017 Fonte S.J. Soil macrofauna as drivers of soil and ecosystem function, Soil Ecology Society Biannual Meeting, Fort Collins, CO.
- 2017 Melman, D., C. Kelly, J. Schneekloth, F. Calderon, and S.J. Fonte. Tillage and residue management drive soil quality and function in an irrigated cropping system of eastern Colorado. Soil Ecology Society Biannual Meeting, Fort Collins, CO.
- 2017 Flynn, N., L. Comas, C. Stewart and S.J. Fonte. Investigating deficit irrigation impacts on belowground processes and climate change mitigation potential. Soil Ecology Society Biannual Meeting, Fort Collins, CO.
- 2017 Kelly, C., M. Schipanski, W. Trujillo, D. Melman, A. Moore and S.J. Fonte. Soil health implications of grazed vs. un-grazed cover crops in the U.S. High Plains. Soil Ecology Society Biannual Meeting, Fort Collins, CO.
- 2016 Fonte, S.J. Soil Biology and Land Management, ASA, CSA, & SSSA Annual Meeting Symposium, Phoenix, AZ (*Invited*)
- 2016 Fonte, S.J. Biodiversidad y Servicios Ecosistémicos en Agroecosistemas - University of El Salvador, San Salvador (*Invited*)
- 2015 Fonte, S.J. J. Six, E. Barrios, L. Rousseau, and P. Lavelle. Soil macrofauna as drivers of soil-based ecosystem services in hillside agroecosystems of Central America. Invited Symposium - Entomology Society (ASA, CSA, & SSSA Annual Meeting), Minneapolis, MN. (*Invited*)
- 2015 Fonte, S.J. Participatory research for improving fallows in the Peruvian Andes – Invited seminar, Dept. of Plant Sciences, University Wyoming, Laramie, WY. (*Invited*)

SERVICE AND OUTREACH

Journal Reviewer: 80+ Manuscript reviews total for 30+ journals (e.g., Applied Soil Ecology, Biogeochemistry, Catena, Field Crops Research, Geoderma, Ecology, Ecosystems, Science of the Total Environment, Soil Biology & Biochemistry, Soil Science Society of America Journal)

Proposal Reviewer: SoGES; Natural Environment Research Council (NERC) - UK

Professional Societies: Ecological Society of America, Soil Ecology Society, Soil Science Society of America, Sustainable Agricultural Education Association

CSU Memberships: SoGES, CSU Water Center, Graduate Degree Program of Ecology, Graduate Center for Diversity and Access, & Soil and Crop Sciences Departmental Research Panel

Selected Outreach/Engagement Activities:

- 2018 Presenter at High Plains No-till conference, Burlington, CO (60+ attendees)
- 2018 Presenter at Workshop on Soil Health and Cropping Systems in Monticello, Utah (20+ attendees)
- 2017 Presenter at Eastern Colorado Crop Production Conference, Ft Morgan, CO. (100+ attendees)
- 2017 Co-organizer/presenter at WSARE proposal development meeting, Yellow Jacket, CO (15+ attendees)
- 2017 Presenter at USDA-ARS LIRF field day
- 2017 Presenter at Workshop on Soil Health in Dove Creek, CO (30+ attendees)
- 2017 Presenter at McKnight East Africa grantees meeting in Kisumu, Kenya (50+ attendees)
- 2017 Co-organizer/presenter at community workshop on ecosystem services, Huancayo, Peru (75+ attendees)
- 2016 Co-organizer/presenter 4-day workshop landscape analysis of ecosystem services, Quito, Ecuador (20+ attendees)
- 2016 Co-organizer/presenter for conference on USAID project findings and policy implications, San Salvador, El Salvador (60+ attendees)
- 2016 Co-organizer/presenter farmer workshops for project planning and outreach in Burlington, CO.
- 2014 Co-organizer/facilitator/presenter for 3-day soil research conference, in Lima, Peru (with 70+ attendees)