Dan Kane

Ph.D. Candidate

Yale School of the Environment

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Education

Yale School of the Environment — *New Haven, CT*

Ph.D. Environmental Studies — *2016-Present*

- Advisor: Dr. Mark Bradford
- Dissertation: Does soil organic carbon support climate resilient agricultural systems? Searching for evidence and developing adequate measurement tools.

Michigan State University — *East Lansing, MI*

M.S. Plant, Soil, and Microbial Sciences — *2011-2013*

- Advisor: Dr. Sieglinde Snapp
- Thesis: Spatial and temporal nitrogen synchrony in ridge tillage systems as compared to chisel plow systems.

Middlebury College — *Middlebury, VT*

B.A. Biology — *2005-2009*

- Cum Laude

Professional experience

Our Sci, LLC — *Ann Arbor, MI*

Consultant — *2020/9-Present*

- Developing web tool and smartphone app for soil sample stratification and guided data collection
- Developing sampling plans for Ecosystem Service Market Consortium soil carbon monitoring pilot projects

Repliculture — *New Haven, VT*

Consultant — *2020/7-Present*

- Assisting on research review to assess accuracy/cost trade-offs of various soil carbon monitoring approaches

General Mills, Inc. — *St. Paul, MN*

Consultant — *2020/3-Present*

- Developing sampling plans for soil carbon monitoring pilot projects in MI and KS

Project Drawdown — *Sausalito, CA*

Research Fellow — *2015/10-2016/11*

- Researched agricultural natural climate solutions and drafted reports for use in writing Project Drawdown book

Michigan State University — *East Lansing, MI*

Research Technician — *2013/9-2016/6*

- Managed lab for Dr. Sieglinde Snapp and oversaw participation in collaborative USDA-AFRI funded project on conservation tillage

Breakthrough Strategies and Solutions — *Takoma Park, MD*

Consultant — *2015/1-2016/1*

- Authored general audience publication for National Sustainable Agriculture Coalition summarizing the science of soil carbon sequestration and its potential as a natural climate solution

Publications

1. Smith, RG, AS Davis, NR Jordan, LW Atwood, AB Daly, AS Grandy, MC Hunter, RT Koide, DA Mortensen, P Ewing, D Kane, M Li, Y Lou, SS Snapp, KA Spokas, and AC Yannarell (2014). Structural Equation Modeling Facilitates Transdisciplinary Research on Agriculture and Climate Change. *Crop Science* **54**(2), 475–483.
2. Kane, DA, P Rogé, and SS Snapp (2016). A Systematic Review of Perennial Staple Crops Literature Using Topic Modeling and Bibliometric Analysis. *PLOS ONE* **11**(5), e0155788.
3. Williams, A, PM Ewing, NR Jordan, AS Davis, AS Grandy, RG Smith, DA Kane, SS Snapp, RT Koide, DA Mortensen, KA Spokas, and AC Yannarell (2016). Enhanced control of soil nitrogen cycling through soil functional zone management. *Crops & Soils* **49**(6), 42–45.
4. Kane, D, MA Bradford, E Fuller, EE Oldfield, and SA Wood (2020). Soil organic matter effects on US maize production and crop insurance payouts under drought. *In Review*.

5. Bradford, MA, CJ Carey, L Atwood, D Bossio, EP Fenichel, S Gennet, J Fargione, JRB Fisher, E Fuller, DA Kane, J Lehmann, EE Oldfield, EM Ordway, J Rudek, J Sanderman, and SA Wood (2019). Soil carbon science for policy and practice. *Nat Sustain* **2**(12), 1070–1072.
6. Williams, A, NR Jordan, RG Smith, MC Hunter, M Kammerer, DA Kane, RT Koide, and AS Davis (2018). A regionally-adapted implementation of conservation agriculture delivers rapid improvements to soil properties associated with crop yield stability. *Scientific Reports* **8**(1), 8467.
7. Williams, A, DA Kane, PM Ewing, LW Atwood, A Jilling, M Li, Y Lou, AS Davis, AS Grandy, SC Huerd, MC Hunter, RT Koide, DA Mortensen, RG Smith, SS Snapp, KA Spokas, AC Yannarell, and NR Jordan (2016). Soil Functional Zone Management: A Vehicle for Enhancing Production and Soil Ecosystem Services in Row-Crop Agroecosystems. *Front Plant Sci* **7**.
8. Williams, A, AS Davis, PM Ewing, AS Grandy, DA Kane, RT Koide, DA Mortensen, RG Smith, SS Snapp, KA Spokas, AC Yannarell, and NR Jordan (2016). A comparison of soil hydrothermal properties in zonal and uniform tillage systems across the US Corn Belt. *Geoderma* **273**, 12–19.
9. Williams, A, MC Hunter, M Kammerer, DA Kane, NR Jordan, DA Mortensen, RG Smith, S Snapp, and AS Davis (2016). Soil Water Holding Capacity Mitigates Downside Risk and Volatility in US Rainfed Maize: Time to Invest in Soil Organic Matter? *PLOS ONE* **11**(8), e0160974.
10. Williams, A, AS Davis, PM Ewing, AS Grandy, DA Kane, RT Koide, DA Mortensen, RG Smith, SS Snapp, KA Spokas, AC Yannarell, and NR Jordan (2016). Precision control of soil nitrogen cycling via soil functional zone management. *Agriculture, Ecosystems & Environment* **231**, 291–295.
11. Kane, D (2015). *Carbon Sequestration Potential on Agricultural Lands: A Review of Current Science and Available Practices*. `http://sustainableagriculture.net/wp-content/uploads/2015/12/Soil_C_review_Kane_Dec_4-final-v4.pdf`.
12. Kane, DA, SS Snapp, and AS Davis (2015). Ridge Tillage Concentrates Potentially Mineralizable Soil Nitrogen, Facilitating Maize Nitrogen Uptake. *Soil Science Society of America Journal* **79**(1), 81.

Contracts, awards, and grants

2020	Ecosystem Services Market Consortium: Contract for Pilot Project Planning	*$7,000*
2020	Ecosystem Services Market Consortium: Contract for Soil Sampling Design App	*$100,000*
2020	Support for Collaborative Research on Soil Spectroscopy, Shell Nature Based Solutions	*$107,930*
2019	No Regrets Initiative	*$75,000*
2018	Support for Quick Carbon 2018 fieldwork, Dillon family Foundation	*$50,000*
2018	Support for Quick Carbon 2018 fieldwork, TomKat Ranch Educational Foundation	*$71,471*
2017	Project GREEEN Grant, Michigan State University	*$5,000*
2017	Soil Health Institute Literature Review Grant	*$7,413*
2016	Ucross High Plains Stewardship Initiative Western Research Fellow	*$5,555*
2012	Kellogg Biological Station Summer Research Fellowship	*$1,000*
2011	Michigan State University Graduate Recruitment Fellowship	*$3,000*

Selected presentations

Does soil carbon mitigate crop yield losses and reduce crop insurance payments in bad weather years? — *Online*

Invited webinar for The Nature Conservancy — *2020-05-04*

Quick Carbon: A Rapid, Landscape-scale Soil Carbon Assessment Tool. — *San Francisco, CA*

American Geophysical Union Annual Meeting — *2019-12-11*

Does soil carbon mitigate crop yield losses and reduce crop insurance payments in bad weather years? — *New Haven, CT*

YSE Confluence Research Series — *2019-10-24*

Curent Challenges and Emerging Solutions for Soil Monitoring. — *Washington, DC*

Cultivating Solutions: Agriculture's Role in Climate-Smart Policy and Practice. Workshop hosted by Beveridge and Diamond Law. — *2019-10-17*

Quick Carbon: A Rapid, Landscape-scale Soil Carbon Assessment Tool. *New York, NY*

Soil Carbon Accrual in Carbon Markets: the State of Play. Workshop at IETA's Carbon Forum North America. *2019-09-25*

Quick Carbon: A Rapid, Landscape-scale Soil Carbon Assessment Tool. *Memphis, TN*

Benefical Ag Expo *2019-06-12*

Quick Carbon: A Rapid, Landscape-scale Soil Carbon Assessment Tool. *Minneapolis, MN*

Society for Range Management Annual Meeting *2019-02-13*

Quick Carbon: A Rapid, Landscape-scale Soil Carbon Assessment Tool. *Minneapolis, MN*

Invited talk at The Nature Conservancy, MN/ND/SD Chapter *2018-11-07*

It's Alive: Why Ecology and Evolution are Important to Terrestrial Carbon Cycling and Carbon Drawdown. *Middlebury, VT*

Invited talk at Middlebury College *2018-05-02*

Assessing Rangeland Rarbon Stocks with Low-cost Field Spectrometers. *Online*

Invited webinar for The Nature Conservancy, Wyoming Chapter *2017-12-12*

Yield Stability and Resilience: Looking for Signals in Long-term Data. *Phoenix, AZ*

ASA Annual Meeting *2016-11-07*

Perennial Grains Around the World: A Bibliometric Analysis. *Long Beach, CA*

Agronomy Society of America Annual Meeting *2014-11-03*

Improving Synchrony of Nitrogen Turnover and Crop Demand Through Zonal Management. *Tampa, FL*

Soil Science Society of America Annual Meeting *2013-11-06*

Teaching

How Carbon Sinks Work *Guest Instructor*

NY Botanical Garden, Adult Education Series *May 18, 2020; Aug. 14 & 21, 2020*

Foundations in Agriculture and the Environment *Teaching Fellow*

Yale School of the Environment *Fall 2019*

Soil Science *Teaching Fellow*

Yale School of the Environment *Fall 2018 & Spring 2020*

Ecosystems and Landscapes *Teaching Fellow*

Yale School of the Environment *Fall 2016 & Fall 2017*

Service

2019-20	Field Methods & Tech Working Groups	*OpenTEAM*
2020	YSE Ph.D. Anti-racist Network	*YSE*
2019-20	Peer Review Committee	*NORI*
2017-18	YSE Research Day 2018, Co-chair	*YSE*
2017-18	Carbon Offsets Task Force	*Yale University*
2013-14	Perennial Grains Development Community Co-Chair	*ASA*
2020	Peer Reviewer	*Scientific Reports*
2019-20	Peer Reviewer	*Geoderma*
2019	Peer Reviewer	*FCR*
2018	Peer Reviewer	*AEE*

Additional skills

- Multivariate data analysis
- Machine learning
- Spatial statistics and GIS
- Stable isotope analysis
- Computing
  - Advanced: R
  - Intermediate: Git, Unix
  - Basic: SQL, Python