
Steven W. Culman

Associate Professor and State Specialist of Soil Fertility
The Ohio State University

School of Environment and Natural Resources
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EDUCATION

Ph.D., Agronomy, Cornell University, Ithaca, NY August 2008
M.S., Soil Science, Cornell University, Ithaca, NY May 2005
Fulbright Scholar, USEF Nepal, 2004
B.A., Biology, Thomas More College, Crestview Hills, KY May 1999

RESEARCH AND EXTENSION EMPHASIS

My research and extension programs focus on improving soil fertility and nutrient management through management practices that enrich nutrient cycling, active organic matter pools and soil health. As the state specialist in soil fertility, I conduct research with, educate and learn from a wide variety of growers on nutrient management and soil fertility issues.

PROFESSIONAL EXPERIENCE

Associate Professor of Soil Fertility, The Ohio State University 2020 - Present
School of Environment and Natural Resources
Appointment: 50% Extension, 35% Research, 15% Teaching
Assistant Professor of Soil Fertility, The Ohio State University 2013 - 2020
Postdoctoral Researcher
Agricultural Sustainability Institute, University of California, Davis 2013
Kellogg Biological Station, Michigan State University 2009 - 2012
Department of Land, Air and Water Resources, University of California, Davis 2008 - 2009
Graduate Research Assistant, Cornell University 2001 - 2008
Department of Crop and Soil Sciences

TEACHING

Instructor, The Ohio State University, *Soil Fertility* 2014 - Present
Instructor, The Ohio State University, *Introduction to R for Environmental Sciences* 2014 - Present
Instructor, Michigan State University, *Practical Analysis of Ecological Communities in R* 2010
Teaching Assistant, Cornell University, *Sustainable Agriculture, Forages* 2005 - 2006

ACTIVE GRANTS

Culman, S.W., Sprunger, C., Sulc, R.M., Haden, V.R., Junger, J., Ryan, M., Crews, T., DeHaan, L. 2019-2023.
Organic Dual-Use Perennial Grain Crops: Pathways to Profitability and Soil Health, USDA Organic
Agriculture Research and Extension Initiative. (\$1,776,905)
Culman, S.W. and Bergefurd, B. 2018-2020. Assessing Soil Fertility and Soil Health in Midwest Hop
Production. USDA North Central Sustainable Agriculture Research and Education Grant. (\$98,561)
Culman, S.W. 2017-2020. Using active organic matter tests to help predict crop nutrient needs. New Innovator
Award. Foundation for Food and Agriculture Research. (\$443,082)
Culman, S.W. 2020-2021. Documenting the impact of pipeline installation on crop productivity. 2016-2020.
Kinder Morgan and Ohio Farm Bureau Federation. (\$120,000)
A. Shah, F. Circle, K. Cornish, **S.W. Culman**, G. Kelderman, S. Khanal, S. Shearer, J. Witter. 2019-2022.
Whole-plant based feedstock supply system for biobased industries. USDA-NIFA, AFRI Foundational and
Applied Science. (\$1,000,000)

Culman, S.W. Demyan, M.S. 2020. Quantifying Soil Health in Ohio Soybean Fields. Ohio Soybean Council (\$65,000)

COMPLETED GRANTS

- Wilson, R., Doohan, D., Levies, K., **Culman, S.W.** Quantifying and predicting the effects of ecological weed management strategies on the organic agroecosystem to inform farmer decision making. 2015-2018. USDA Organic Transitions. (\$497,506)
- Subburayalu, S., **Culman, S.W.**, Dick, W. Developing a tool for growers to predict sulfur availability in their soils. USDA AFRI-CARE 2015-2018. (\$199,771)
- Doohan, D., Dick, W., Kleinhenz, M., **Culman, S.W.**, Jackson-Smith, D., Kumarappan, S. 2014-2018. Practiced by Farmers but Untested by Scientists: Uniting Both in Participatory Research and Education to Explain the Effects of Soil Balancing on Farms, Soils, Crops, Weeds and Insects, USDA Organic Agriculture Research and Extension Initiative. (\$1,996,381)
- Hoy, C., Klaiber, H.A., Kumarappan, S., **Culman, S.**, Mariola, M., Moledina, A. 2014-2018. Diversification Strategy for Small and Medium-Sized Farms, USDA AFRI Small Medium Farms. (\$499,600)
- Scarf, P., Osmond, D., **Culman, S.**, LaBarge, G., Lory, J., Myers, B., Wattes, H. 2014-2017. Adaptive Management For Phosphorus To Improve Economic And Water Quality Outcomes, USDA AFRI. (\$473,021)
- Culman, S.W.**, Thomison, P., Lindsey, L., LaBarge, G., Waters, H., Lentz, E., Haden, V.R. 2015-2017. Revising Corn and Wheat Fertilizer Recommendations in Ohio. Ohio Corn Marketing Programs. (\$410,104)
- Culman, S.W.** and Lindsey, L. 2017. Revising Soybean Fertilizer Recommendations. Ohio Soybean Council. (\$120,000)
- Culman, S.W.**, Hurisso, T.T., Fulford, A.M. Chaganti, V.N. 2017. Evaluating Soil Protein as a New Soil Health Indicator. Organic Farming Research Foundation. (\$14,993)
- Culman, S.W.**, Lindsey, L., Dorrance, A. 2016. Revising Soybean Fertilizer Recommendations. Ohio Soybean Council. (\$180,000)
- Culman, S.W.** 2013 – 2016. Developing A Soil Active Organic Matter Test For Organic Growers. Ceres Trust Organic Research Initiative. (\$178,981)
- Culman, S.W.**, Doohan, D., Goebel, C., Dick, W., Haden, R. Witter, J. 2015. OARDC Equipment Grant. (\$15,485)
- Culman, S.W.**, Lindsey, L., LaBarge, G., Dorrance, A., Michel, A. 2014. Refining soil fertility recommendations for soybeans in Ohio. Ohio Soybean Council. (\$200,000)
- Culman, S.W.**, Slater, B. Dick, W., Dorrance, A., Michel, A., Haden, H. Sulc, M., Francis, D., Cornish, K., Basta, N. 2014. OARDC Equipment Grant. (\$26,149)
- Culman, S.W.**, Lindsey, L., LaBarge, G., Dorrance, A., Michel, A. 2013. Refining soil fertility recommendations for soybeans in Ohio. Ohio Soybean Council (\$192,248)
- Culman, S.W.** and Snapp, S.S. 2011 – 2012. A new crop for a variable climate: intermediate wheatgrass biology and forage potential. Generating Research and Extension to meet Economic and Environmental Needs, Michigan Forage Council (\$64,200)
- Snapp, S.S., **Culman, S.W.** and Morrone, V. 2010 – 2012. Fostering complex soil food webs and building soil fertility with organic production: the potential of perennial wheat. Ceres Trust Organic Research Grant (\$155,159)
- Culman, S.W.** Land Institute Graduate Research Fellow. 2005 – 2008. The Land Institute (\$22,500)
- Culman, S.W.**, Gaby, J.C., O'Neill, B.E., Cadillo-Quiroz, H. 2007. T-RF Manager: Software for the Analysis of Microbial Community Data. National Science Foundation, Biogeochemistry Integrative Graduate Education and Research Traineeship Program, Small Grant (\$4,500)
- Culman, S.W.** 2004 – 2005. Cornell University Conference Travel Grant (\$875)
- Culman, S.W.** 2003 – 2004. Fulbright Scholar, United States Educational Foundation, Nepal (\$18,500)
- Culman, S.W.** 2003. Cornell University, Foreign Language Area Studies Research Travel Grant (\$2,200)

JOURNAL ARTICLES ** denotes research that originated in the Culman lab

- Culman, S.W.**, Mann, M., Sharma, S., Saeed, M.T., Fulford, A.M., Lindsey, L.E., Brooker, A., Dayton, E., Warden, R., Joern, B. 2020. Calibration of Mehlich-3 with Bray P1 and ammonium acetate in the Tri-State region of Ohio, Indiana and Michigan. *Communications in Soil Science and Plant Analysis*. 51: 86-97. doi: [10.1080/00103624.2019.1695825](https://doi.org/10.1080/00103624.2019.1695825).
- Bowles, T.M., M. Mooshammer, Y. Socolar, F. Calderón, M.A. Cavigelli, et al. 2020. Long-Term Evidence Shows that Crop-Rotation Diversification Increases Agricultural Resilience to Adverse Growing Conditions in North America. *One Earth* 2(3): 284–293. doi: [10.1016/j.oneear.2020.02.007](https://doi.org/10.1016/j.oneear.2020.02.007).
- **Deiss, L., **S.W. Culman**, and M.S. Demyan. 2020a. Grinding and spectra replication often improves mid-DRIFTS predictions of soil properties. *Soil Sci. Soc. Am. j.*: saj2.20021. doi: [10.1002/saj2.20021](https://doi.org/10.1002/saj2.20021).
- **Deiss, L., A.J. Margenot, **S.W. Culman**, and M.S. Demyan. 2020b. Tuning support vector machines regression models improves prediction accuracy of soil properties in MIR spectroscopy. *Geoderma* 365: 114227. doi: [10.1016/j.geoderma.2020.114227](https://doi.org/10.1016/j.geoderma.2020.114227).
- **Deiss, L., A.J. Margenot, **S.W. Culman**, and M.S. Demyan. 2020c. Optimizing acquisition parameters in diffuse reflectance infrared Fourier transform spectroscopy of soils. *Soil Sci. Soc. Am. j.*: saj2.20028. doi: [10.1002/saj2.20028](https://doi.org/10.1002/saj2.20028).
- Dill, T.E., S.K. Harrison, **S.W. Culman**, and A.J. Lindsey. 2020. Grain Yield Response of Corn (*Zea mays* L.) to Nitrogen Management Practices and Flooding. *Plants* 9(3): 348. doi: [10.3390/plants9030348](https://doi.org/10.3390/plants9030348).
- Hunter, M.C., C.C. Sheaffer, **S.W. Culman**, and J.M. Jungers. 2020. Effects of defoliation and row spacing on intermediate wheatgrass I: Grain production. *Agronomy Journal* 112(3): 1748–1763. doi: [10.1002/agj2.20128](https://doi.org/10.1002/agj2.20128).
- Hunter, M.C., C.C. Sheaffer, **S.W. Culman**, W.F. Lazarus, and J.M. Jungers. 2020. Effects of defoliation and row spacing on intermediate wheatgrass II: Forage yield and economics. *Agronomy Journal* 112(3): 1862–1880. doi: [10.1002/agj2.20124](https://doi.org/10.1002/agj2.20124).
- **Wade, J., **S.W. Culman**, J.A.R. Logan, H. Poffenbarger, M.S. Demyan, et al. 2020. Improved soil biological health increases corn grain yield in N fertilized systems across the Corn Belt. *Scientific Reports* 10(1). doi: [10.1038/s41598-020-60987-3](https://doi.org/10.1038/s41598-020-60987-3).
- Wade, J., G. Maltais-Landry, D.E. Lucas, G. Bongiorno, T.M. Bowles, et al. 2020. Assessing the sensitivity and repeatability of permanganate oxidizable carbon as a soil health metric: An interlab comparison across soils. *Geoderma* 366: 114235. doi: [10.1016/j.geoderma.2020.114235](https://doi.org/10.1016/j.geoderma.2020.114235).
- **Sprunger, C.D., **Culman, S.W.**, Peralta, A.L., DuPont, S.T., Lennon, J.T., Snapp, S. 2019. Perennial grain crop roots and nitrogen management shape soil food webs and soil carbon dynamics. *Soil Biology and Biochemistry*, 137:107573..
- Sprunger, C.D., **S.W. Culman**, M. Thuita, C.A. Palm, B. Vanlauwe. 2019. Long-term application of low C:N residues enhances maize yield and soil nutrient pools across Kenya. *Nutrient Cycling in Agroecosystems*, 114:261–276.
- **Wade, J., **Culman, S.W.**, Sharm, S., Mann, M. Demyan, S., Mercer, K., Basta, N. 2019. How does phosphorus restriction impact soil health parameters in Midwestern corn-soybean systems? *Agronomy Journal* 111: 1682-1692.
- **Pugliese, J., **Culman, S.W.**, Sprunger, C.D. 2019. Defoliation increases root biomass and stimulates nutrient cycling in a perennial grain crop managed for both grain and forage. *Plant and Soil*, 437: 241-254.
- **Chaganti, V., **Culman, S.W.**, Dick, W.A., Kost, D. 2019. Evaluating the Effects of Gypsum Application Rate and Frequency on Corn Response to Nitrogen, *Agronomy Journal* 111:1109-1117.
- Ryan, M.R., Crews, T.E., **Culman, S.W.**, DeHaan, L.R., Hayes, R.C., Jungers, J.M., & Bakker, M.G. 2018. Managing for Multifunctionality in Perennial Grain Crops. *BioScience*, 68:294–304.
- **Hurisso, T.T., Moebius-Clune, D.J., **Culman, S.W.**, Moebius-Clune, B.N., Thies, J.E., and Van Es, H.M. 2018. Soil Protein as a Rapid Soil Health Indicator of Potentially Available Organic Nitrogen. *Agricultural and Environmental Letters* 3: 1-5.

- Sprunger, C., **Culman, S.W.**, Robertson, G., & Snapp, S. 2018. Perennial grain on a Midwest Alfisol shows no sign of early soil carbon gain. *Renewable Agriculture and Food Systems*, 33:360–372.
- **Hurisso, T.T., **Culman, S.W.**, Zhao., K. 2018. Repeatability and Spatiotemporal Variability of Emerging Soil Health Indicators Relative to Routine Soil Nutrient Tests. *Soil Science Society of America Journal* 82: 939–948.
- Testen, A.L., Mamiro, D. Nahson, J., Amuri, N., **Culman, S.W.** Miller, S.A. 2018. Farmer-Focused Tools to Improve Soil Health Monitoring on Smallholder Farms in the Morogoro Region of Tanzania. *Plant Health Progress* 19: 56–63.
- **Hurisso, T., **Culman, S.W.**, Zone, P., & Sharma, S. 2018. Absolute values and precision of emerging soil health indicators as affected by soil sieve size. *Communications in Soil Science and Plant Analysis*, 49:1934–1942.
- **Wade, J., **Culman, S.W.**, Hurisso, T.T., Miller, R.O., Baker, L., Horwath, W.R. 2018 Sources of Variability that Compromise Mineralizable Carbon as a Soil Health Indicator, *Soil Science Society of America Journal* 82:243-252.
- **Fulford, A.M. and **Culman, S.W.** 2018. Over-Fertilization Does Not Build Soil Test Phosphorus and Potassium in Ohio. *Agronomy Journal* 111:56-65.
- **Chaganti, V., and **Culman, S.W.** 2017. Historical Perspective of Soil Balancing Theory and Identifying Knowledge Gaps: A Review. *Crop, Forage & Turfgrass Management*. 3:1-7.
- Obyrcki, J.F., Basta, N.T., **Culman, S.W.** 2017. Management Options for Contaminated Urban Soils to Reduce Public Exposure and Maintain Soil Health. *Journal of Environmental Quality* 46: 420-430.
- Brooker, A.P., Lindsey, L.E., **Culman, S.W.**, Subburayalu, S.K., Thomison, P.R. 2017. Low Soil Phosphorus and Potassium Limit Soybean Grain Yield in Ohio. *Crop, Forage & Turfgrass Management* 3: 1-5.
- Calderón, F.J., **Culman, S.W.**, Six, J., Franzluebbers, A.J., Schipanski, M.E., Beniston, J. Grandy, A.S., Kong, A.Y.Y. 2017. Quantification of Permanganate Oxidizable C Using Infrared Spectroscopy. *Soil Science Society of America Journal* 81, 277-288.
- Crews, T.E., Blesh, J., **Culman, S.W.**, Hayes, R.C., Jensen, E.S., Mack, M.C., Peoples, M.B., Schipanski, M.E., 2016. Going where no grains have gone before: From early to mid-succession. *Agriculture, Ecosystems & Environment* 223, 223–238. doi:10.1016/j.agee.2016.03.012
- **Hurisso, T.T., **Culman, S.W.**, Horwath, W.R., Wade, J., Cass, D., Beniston, J.W., Bowles, T.M., Grandy, A.S., Franzluebbers, A.J., Schipanski, M.E., Lucas, S.T., Ugarte, C.M., 2016. Comparison of Permanganate-Oxidizable Carbon and Mineralizable Carbon for Assessment of Organic Matter Stabilization and Mineralization. *Soil Science Society of America Journal* 80, 1352–1364. doi:10.2136/sssaj2016.04.0106
- DeHaan, L.R., Van Tassel, D.L., Anderson, J.A., Asselin, S.R., Barnes, R., Baute, G.J., Cattani, D.J., **Culman, S.W.**, Dorn, K.M., Hulke, B.S., Kantar, M., Larson, S., Marks, M.D., Miller, A.J., Poland, J., Ravetta, D.A., Rude, E., Ryan, M.R., Wyse, D., Zhang, X., 2016. A Pipeline Strategy for Grain Crop Domestication. *Crop Science* 56, 1–14. doi:10.2135/cropsci2015.06.0356
- **Fulford, A.M., **Culman, S.W.**, Mullen, R.W., Dygert, C.E., 2016. Corn and Soybean Response to Phosphorus and Potassium Fertilization in Ohio. *Better Crops With Plant Food* 100, 7–9.
- Londo, A.J., LaBarge, G., Watters, H., **Culman, S.W.**, Rose, M.A., Hall, P. Arnold, G., Custer, S., Richer, E., Noggle, S., Penrose. C. 2015. Water Quality and Nutrient Management Extension Programs in Ohio. *Journal of Contemporary Water Research & Education* 156: 48–55.
- Hankinson, M. W., Lindsey, L.E., **Culman, S.W.** 2015. “Effect of Planting Date and Starter Fertilizer on Soybean Grain Yield.” *Crop, Forage and Turfgrass Management* 1(1). doi:10.2134/cftm2015.0178.
- DuPont, S.T., Beniston, J., Glover, J.D., Hodson, A., **Culman, S.W.**, Lal, R., Ferris, H. 2014. Root traits and soil properties in harvested perennial grassland, annual wheat, and never-tilled annual wheat. *Plant and Soil* 381: 405-420
- Maul, J.E., Buyer, J.S., Lehman, R.M., **Culman, S.W.**, Blackwood, C.B., Roberts, D.P., Zasada, I.A., Teasdale, J.R. 2014. Microbial community structure and abundance in the rhizosphere and bulk soil of a tomato cropping system that includes cover crops. *Applied Soil Ecology* 77:42–50.

- Grandy, A.S., Salam, D.S., Wickings, K. McDaniel, M., **Culman, S.W.**, Snapp, S.S. 2013. Soil Respiration and Litter Decomposition Responses to Nitrogen Fertilization Rate in No-till Corn Systems. *Agriculture, Ecosystems and Environment* 179:35–40.
- Culman, S.W.**, Snapp, S.S., Ollenburger, M., Basso, B., DeHaan, L.R. 2013. Soil and water quality rapidly responds to the perennial grain, kernza wheatgrass. *Agronomy Journal* 105:735–744.
- Culman, S.W.**, Snapp, S.S., Green, J.M., Gentry, L. 2013. Short and long-term labile soil C and N dynamics reflect management and predict corn agronomic performance. *Agronomy J* 105: 493 – 502.
- Culman, S.W.**, Snapp, S.S., Schipanski, M.E., Freeman, M.A., Beniston, J., Drinkwater, L.E., Franzluebbers, A.J., Glover, J.D., Grandy, A.S., Lal, R., Lee, J., Maul, J.E., Mirsky, S.B., Six, J., Wander, M.M. 2012. Permanganate oxidizable carbon reflects a processed soil fraction that is sensitive to management. *Soil Science Society of America Journal* 76:494 – 504.
- Briar, S.S., **Culman, S.W.**, Young-Mathews, A., Jackson, L.E., Ferris, H. 2012. Nematode community responses to a moisture gradient and grazing along a restored riparian corridor. *European Journal of Soil Biology* 50: 32-38.
- Sánchez-Moreno, S., Ferris, H., Young-Mathews, A., **Culman, S.W.**, Jackson, L.E. 2011. Abundance, diversity and connectance of soil food web channels along environmental gradients in an agricultural landscape. *Soil Biology & Biochemistry* 43: 2374-2383.
- Jack, A.L.H., Rangarajan, A., **Culman, S.W.**, Sooksa-Nguan, T., Thies, J.E. 2011. Choice of organic amendments in tomato transplants has lasting effects on bacterial rhizosphere communities and crop performance in the field. *Applied Soil Ecology* 48: 94 – 101.
- Glover, J.D., Reganold, J.P., Bell, L.W., Borevitz, J., Brummer, E.C., Buckler, E.S., Cox, C.M., Cox, T.S., Crews, T.E., **Culman, S.W.**, DeHaan, L.R., Eriksson, D., Gill, B.S., Holland, J., Hu, F., Hulke, B.S., Ibrahim, A.M.H., Jackson, W., Jones, S.S., Murray, S.C., Paterson, A.H., Ploschuk, E., Sacks, E.J., Snapp, S., Tao, D., Van Tassel, D.L., Wade, L.J., Wyse, D.L., Xu, Y. 2010. Perennial questions of hydrology and climate response. *Science* 330: 33 – 34.
- Culman, S.W.**, Young-Mathews, A., Hollander, A., Sánchez-Moreno, S., Ferris, H., O’Geen, T.A., Jackson, L.E. 2010. Biodiversity is associated with indicators of soil ecosystem functions over a landscape gradient of agricultural intensification. *Landscape Ecology* 25: 1333 – 13348.
- Young-Mathews, A., **Culman, S.W.**, Sánchez-Moreno, S., O’Geen, T.A., Ferris, H., Hollander, A., Jackson, L.E. 2010. Plant-soil biodiversity relationships and nutrient retention in agricultural riparian zones of the Sacramento Valley, California. *Agroforestry Systems* 80: 41 – 60.
- Glover, J.D., Reganold, J.P., Bell, L.W., Borevitz, J., Brummer, E.C., Buckler, E.S., Cox, C.M., Cox, T.S., Crews, T.E., **Culman, S.W.**, DeHaan, L.R., Eriksson, D., Gill, B.S., Holland, J., Hu, F., Hulke, B.S., Ibrahim, A.M.H., Jackson, W., Jones, S.S., Murray, S.C., Paterson, A.H., Ploschuk, E., Sacks, E.J., Snapp, S., Tao, D., Van Tassel, D.L., Wade, L.J., Wyse, D.L., Xu, Y. 2010. Increased food and ecosystem security via perennial grains. *Science* 328: 1638 – 1639.
- Culman, S.W.**, DuPont, S.T., Glover, J.D., Crews, T.E., Buckley, D.H., Ferris, H., Fick, G.W. 2010. Long-term impacts of high-input annual cropping and unfertilized perennial grass production on soil properties and belowground food webs in Kansas, USA. *Agriculture, Ecosystems and Environment* 137: 13 – 24.
- Glover, J.D., **Culman, S.W.**, DuPont, S.T., Broussard, W., Young, L., Mangan, M., Mai, J., Crews, T.E., DeHaan, L.R., Buckley, D.H., Ferris, H., Reynolds, H., Turner, E., Wyse, D. 2010. Harvested perennial grasslands provide ecological benchmarks for agricultural sustainability. *Agriculture, Ecosystems and Environment* 137: 3 – 12.
- DuPont, S.T., **Culman, S.W.**, Glover, J.D., Buckley, D.H., Ferris, H. 2010. No-tillage conversion of harvested perennial grassland to annual cropland reduces root biomass, decreases active carbon stocks, and impacts soil biota. *Agriculture, Ecosystems and Environment* 137: 25 – 32.
- Culman, S.W.**, Bukowski, R., Gauch, H.G., Cadillo-Quiroz, H., Buckley, D.H. 2009. T-REX: Software for the processing and analysis of T-RFLP data. *BMC Bioinformatics* 10:171
- Culman, S.W.**, Gauch, H.G., Blackwood, C.B., Thies, J.E. 2008. Analysis of T-RFLP data using analysis of variance and ordination methods: a comparative study. *Journal of Microbiological Methods* 75: 55 – 63.

Culman, S.W., Duxbury, J.M., Lauren, J.L., Thies, J.E. 2006. Microbial community response to soil solarization in Nepal's rice-wheat cropping system. *Soil Biology and Biochemistry* 38: 3359 – 3371.

BOOK CHAPTERS AND OTHER PUBLICATIONS

Published

Dick, W.A. and **Culman, S.W.** 2017. Biological and Biochemical Tests for Assessing Soil Fertility, in *Soil Fertility Management in Agroecosystems (eds)* Chatterjee, A. and Clay, D. Soil Science Society of America, Madison, WI

Culman, S.W., Haden, V.R., Maxwell, T., Waterhouse, H., Horwath, W. 2014. Greenhouse Gas Mitigation Opportunities in California Agriculture: Review of California Cropland Emissions and Mitigation Potential. NI GGMOCA R3. Durham, NC: Duke University

EXTENSION ACTIVITIES

Provide state-wide leadership in soil fertility, nutrient management and soil health across Ohio.

Highlights

Soil Fertility and Nutrient Management

- Completed Efforts to Update Field Crop Fertilizer Recommendations in Tri-State Region, a major effort that has involved over 300 on-farm strip trials across the state
- Started and lead Agronomic Crop Research and Extension (ACRE), a summer internship experience where undergraduate students are placed in county extension offices across the state to help facilitate on-farm research

Soil Health

- Helped lead Ohio State University Signature Program in Soil Health, outreach program focused on education on diversity of soil health issues
- Lead Soil Health In-Service Workshops: Intensive 1 day workshops to train educators in soil health (7 workshop ran, 247 participants total)
- Provide national outreach leadership on soil health, have given over 7 invited talks on soil health in regional conferences for certified crop advisors and commercial soil test laboratory operators

Ohio Agronomy Guide, 15th edition

Culman, S., Haden, R., Witter, J. 2017. *Chapter 2: Soil and Water Management*. Ohio Agronomy Guide, 15th edition, Ohio State University Extension, Bulletin 472

Lentz, E., **Culman, S.**, Haden, R. 2017. *Chapter 3: Soil Fertility*. Ohio Agronomy Guide, 15th edition, Ohio State University Extension, Bulletin 472

Thomison, P., Michel, A., Tilmon, K., **Culman, S.**, Paul, P. 2017. *Chapter 4: Corn Production*. Ohio Agronomy Guide, 15th edition, Ohio State University Extension, Bulletin 472

Lindsey, L., Lentz, E., Michel, A., Tilmon, K., **Culman, S.** Paul, P. 2017. *Chapter 5: Small Grain Production*. Ohio Agronomy Guide, 15th edition, Ohio State University Extension, Bulletin 472

University Factsheets

Culman, S.W., Mann, M., Sharma, S., Saeed, M., Fulford, A., Lindsey, L., Brooker, A., Dayton, L., Eugene, B., Warden, R., Steinke, K., Camberato, J., Joern, B. Converting between Mehlich-3, Bray P, and Ammonium Acetate Soil Test Values, ANR-75: <https://ohioline.osu.edu/factsheet/anr-75>

- Culman, S.W.**, Zone, P., Kim, N., Fulford, A., Lindsey, L., Thomison, P., Dorrance, A., Minyo, R., Richer, E., Lentz, E., Haden, R., Watters, H., LaBarge, G. Nutrients Removed with Harvested Corn, Soybean and Wheat Grain in Ohio, ANR-74: <https://ohioline.osu.edu/factsheet/anr-74>
- Culman, S.W.**, Mann, M., Brown, C. Calculating Cation Exchange Capacity, Base Saturation, and Calcium Saturation. ANR-81: <https://ohioline.osu.edu/factsheet/anr-81>
- Sharma, S., **Culman, S.**, Fulford, A., Lindsey, L., Alt, D., Looker, G. *Corn, Soybean, and Alfalfa Yield Responses to Micronutrient Fertilization in Ohio*, AGF-519: <https://ohioline.osu.edu/factsheet/agf-519>
- Lentz, E., LaBarge, G., Lindsey, A., **Culman, S.** *Statistics and Agricultural Research*, ANR-40: <https://ohioline.osu.edu/factsheet/anr-40>
- Culman, S.**, Saeed, M., Fulford, A. *Ohio Data that Shaped the Tri-State Fertilizer Recommendations*, AGF-518: <https://ohioline.osu.edu/factsheet/agf-518>

Extension and Outreach Talks

- 2019: 26 presentations, ~1715 participants
 2018: 17 presentations, ~1211 participants
 2017: 14 presentations, ~480 participants
 2016: 16 presentations, ~750 participants
 2015: 18 presentations, ~870 participants
 2014: 6 presentations, ~398 participants

CORN Newsletter Articles (>4K active subscribers)

- 2019 Articles: 4 as primary author, 2 as coauthor (6 total)
 2018 Articles: 6 as primary author, 5 as coauthor (11 total)
 2017 Articles: 5 as primary author, 1 as coauthor (6 total)
 2016 Articles: 4 as primary author, 4 as coauthor (8 total)
 2015 Articles: 6 as primary author, 7 as coauthor (13 total)
 2014 Articles: 1 as primary author, 3 as coauthor (4 total)

Miscellaneous Extension Service

- Curricula Development for the Fertilizer Application Certification Training program which certifies >12k commercial applicators every 3 years
- Provide annual editorial review of extension ANR on-farm research reports in soil fertility

ADVISING AND MENTORSHIP

Postdoctoral Research Scholars (7 total)

Current: Leonardo Deiss

Complete: Anthony Fulford, Tunsisa Hurriso, Vijay Chaganti, Christine Sprunger, William Osterholz, Jordon Wade

Graduate Student Chair (5 total)

Complete: Jordon Wade (PhD, ENR), Noely Gonzalez-Maldonado (MS, ENR), Phoo Zone (MS, ESGP), Jennie Pugliese (MS, ENR), Cassandra Loney (MENR)

Graduated Student Committee Member (25 total)

Current MS students: Tvisha Martin (SENR), Prabu Singh (ESGP), Thomas Doohan (SENR)

Completed MS students: Matt Hankinson (HCS), Claire Sutton (SENR), Katie Linder (HCS), Aaron Brooker (HCS), Dave Tomashefski (SENR), Meredith Eyre (Plant Pathology), Andrea Leiva Soto (HCS), Steven Doyle (SENR), Jonell Winger (MPHM), Trey Colley (FABE), Louceline Fleuridor (HCS), Taylor Dill (HCS)

Current PhD students: Alyssa Lamb (HCS), Andrea Leiva Soto (HCS), Ram Khadka (Plant Pathology), Chris Eidson (ESGP), Nall Moonilall (ESGP)

Completed PhD students: John Obrycki (SENR), Anna Testen (Plant Pathology), Emma Kurth (SENR), Ellen Maas (SENR), Luis Huezco (FABE)

Visiting Scholars Hosted

Muhammad Tariq Saeed

Post-Bachelor Technicians

Kenzie Reynen, Phoo Zone, Stuti Sharma, Meredith Mann, Bethany Herman, Nicole Hoekstra, Mason Gingery

Summer Undergraduate Research Internships (7 total)

Student Research Opportunities (SROP): Noely Gonzalez-Maldonado, Otto Oppenheimer

OARDC Research Internship Advisor: Nakian Kim, Samantha Wander, Faheem Ali, Aista Sall

ATI Summer Internships: Andrew Herzog, Madison Campbell

Undergraduate Advisor for Sustainable Agriculture Minor (2015-Present)

ACADEMIC SERVICE AND ACTIVITIES

Manuscripts Reviewed for:

Agriculture, Ecosystems and Environment, Agricultural and Environmental Letters, Agronomy Journal (4), Applied Microbiology and Biotechnology, Applied Soil Ecology, Crop Management, FEMS Microbiology Letters, Field Crops Research, Geoderma, Journal of Environmental Quality, Microbial Ecology, Nature Methods, Renewable Agriculture and Food Systems (2), Plant and Soil, Plant Breeding, Soil Biology and Biochemistry, Soil Research, Soil Science Society of America Journal (9), The Journal of Agricultural Science

National and Regional Service:

North Central Extension and Research Activity (NCERA-13) State Representative	2014–Present
Foundation for Food and Agricultural Research Soil Health Advisory Committee	2016–2018
Perennial Grain Community Chair and Vice-Chair, American Society of Agronomy	2015–2016
Mentor for Golden Opportunity Scholars Program, Agronomy Science Foundation	2012
External Grant Reviewer for USDA-ARS Project Plan: Water Quality Processes, Management and Control	2012

Miscellaneous Service:

Ohio State SENR Grad Studies Committee Soil Rep	2016–Present
Ohio State OARDC Consolidated Farms Committee	2016–Present
Ohio State SENR Greenhouse Representative	2015–Present
Ohio State SENR Faculty Search Co-Chair, Soil Rhizosphere Processes	2018
Ohio State SENR Faculty Search Committee, Community Food Systems	2017
Ohio State Mellinger Farm Advisory Committee	2015 – 2017
Ohio State SENR Faculty Search Committee, Soil and Environmental Mineralogy	2016
Ohio No-Till Council Board Member	2015–2016
International Perennial Grains Conference Organizer, Kellogg Biological Station	2010, 2011
Seminar Committee Member, Kellogg Biological Station	2010 – 2011
President of New World Agriculture and Ecology Group at Cornell	2004 – 2005
Cornell Departmental Graduate Student Symposium Organizer	2003

Permaculture Designer Certificate, NSW Australia

1999

Professional Affiliations

American Society of Agronomy, Soil Science Society of America