CURRICULUM VITA (abbr)
G. PHILIP ROBERTSON

University Distinguished Professor
W.K. Kellogg Biological Station and
Dept. of Plant, Soil, and Microbial Sciences
Michigan State University
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Education

1976 B. A. Hampshire College, Amherst, Massachusetts
1980 Ph.D. Biology (Ecology & Evolutionary Biology), Indiana University

Professional Experience

1985-now Assistant, Associate, Professor, and University Distinguished Professor, Dept. of Plant, Soil, and Microbial Sciences and W.K. Kellogg Biological Station, Michigan State University
1981-1985 Postdoctoral Research Associate, Dept. of Crop and Soil Sciences and Dept. of Microbiology and Public Health, Michigan State University
1980-1981 SCOPE-Mellon Postdoctoral Fellow, UNEP International Nitrogen Unit, Royal Swedish Academy of Sciences, Stockholm

Professional Honors and Affiliations

Fellow, American Association for the Advancement of Science (AAAS)
Fellow, Soil Science Society of America
MSU Distinguished Faculty Award
Clarivate highly cited researcher
LTAR Founders Award, USDA Agricultural Research Service
GW Leeper Lecture, Australia Soil Science Society, Melbourne
Philip C. Hamm Memorial Lecture Award, University of Minnesota
William E. Larson and Raymond R. Allmaras Lecture, University of Minnesota
William E. Pierre Soil Science Lecture, Iowa State University
Member of AAAS, AIBS, Ecological Society of America, Soil Science Society of America, AGU

Primary Grant Support (past 3 years)

current DOE Office of Science (Biological and Environmental Sciences Division): Great Lakes Bioenergy Research Center; co-PI with T. Donohue (PI; UW-Madison) and R. Landick (UW-Madison); 60 co-I's. $125M (2018-2022).
current USDA (ARS): Collaborative Long-term Agricultural Research (LTAR): Ecosystem services from row-crop agriculture; PI with co-PIs S.K. Hamilton, N. Haddad. $1.5M (2020-2022).
current NSF (Division of Environmental Biology): The ecological significance of nitrogen fixation in perennial grasses; co-PI with S.S. Roley (PI; Washington State), D. Buckley (Cornell Univ); $1.1M (2018-2021).
current NSF (Division of Environmental Biology): LTER: KBS-Mechanisms of resilience in agricultural landscapes. Co-PI with N. Haddad (PI), S.E. Evans, S.H. Hamilton, D. A. Landis, J. A. Lau, S. T. Marquart-Pyatt, and S. M. Swinton; $2.3M (2018-2022).
2020-2021 NSF (Division of Biological Infrastructure): NEON LTAR Workshop: Identifying continent scale questions and approaches for advancing the sustainable intensification of US agriculture. PI; $98,666 (2021-2022).

Professional Service (last 5 years)

current Member, National Leadership Team, USDA LTAR Network (from 2019)
Chair, AAAS Section on Agriculture, Food, and Renewable Resources (6,000 members; from 2020)
Member, Scientific Advisory Board, Center for Advanced Biofuels and Bioproducts (CABBI),

University of Illinois (from 2020)
Member, DOE Office of Science BERAC Subcommittee on Integrative Science
Organizer, Briefing for the U.S. Congress on Long-term Agroecosystem Research
2021 Program chair, NSF NEON Workshop for Regionalizing Sustainable Intensification
Member, NSF Panel on Open Environmental Data Centers
Member, NSF LTER Site Review Panel
2010-2021 DOE Office of Science Biological and Environmental Research Advisory Committee (BERAC)
2020 Program chair and host, LTAR Network Annual Science Meeting (2020)
2014-2019 Member, Research Committee, USDA Long-term Agricultural Research Network
2018 Member and workshop organizer, BERAC Subcommittee on Scientific User Research Facilities, BER, DOE Office of Science
2017 Member, External Review Panel, New Zealand Agricultural Greenhouse Gas Research Center
2017 Lead author and workshop organizer, Energy Sustainability Working Group of the BER Long-term Visioning Workshop, DOE Office of Science
2017 Member, Environmental Defense Fund Workshop on Addressing Nitrogen Losses from Agriculture, Washington, D.C.

Past Editorships
Plant and Soil, Ecology, *Ecological Monographs, Biogeochemistry, PNAS* (guest)

Invited Presentations (last 5 years)
2022 iFAST Microbial Ecology Symposium (keynote; virtual)

2021 Bayer Crop Science International Sustainability Group (virtual)
Symposium on Carbon Farming, American Society of Agronomy, Salt Lake City
Iowa State University Carbon Forum (keynote), Ames (virtual)
North Central Region Soil Health Nexus Workshop, Michigan
K12 Climate Series Symposium, Climate Change and Agriculture (virtual)

2020 US-UK Forum on Sustainable Agriculture, NASEM, Washington DC
Biology Department, Kent State University
Global Challenges in Food, Soil, & Environmental Quality, American Soc. of Agron.
North Central Soil Fertility Industry Conference, Des Moines

2019 Nobel Nitrogen Symposium, Nobel Research Institute, OK
DOE Bioenergy Research Centers Modeling Workshop, Chicago IL
CABBI Annual Science Meeting, University of Illinois Urbana-Champaign
Ecological Society of America Annual Meeting, Louisville KY
DOE-BETO Bio-Restore Workshop, Chicago IL
ICHe Bioenergy Sustainability Symposium, Nashville TN
American Society of Agronomy MegaSymposium, San Antonio TX
Flagship Pioneering, Webinar
Resilience Institute, Indiana University, Bloomington

2018 Conservation Research Institute, University of Cambridge, UK (2 talks)
US DOE, Biological and Environmental Research Advisory Committee, Washington DC
GW Leeper Lecture, University of Melbourne
Terrestrial Ecological Research Forum, Ecological Society of Australia, Brisbane

2017 University & Industry Consortium Symposium, Baltimore MD
American Society of Plant Biology Plenary Symposium, Honolulu
National Academies Science Breakthroughs 2030, Washington DC
American Society of Agronomy Bioenergy Symposium, Tampa FL

USDA SARE Extension Academy, Michigan
American Chemical Society (keynote), Saginaw MI
Kellogg Company Earth Day (keynote), Battle Creek MI

Publications – last 5 years (total >250; https://scholar.google.com)

Pan, D., I. Gelfand, L. Tao, M. Abraha, K. Sun, X. Guo, J. Chen, **G.P. Robertson**, and M. A. Zondlo. 2022. A new open-path eddy covariance method for nitrous oxide and other trace gases that minimizes temperature corrections. *Global Change Biology* 28:1446-1457.

Robertson, G.P. and A. S. Grandy. 2022. Managing soils as systems in temperate region landscapes. *In* N. Uphoff and J. Thies, editors. *Biological Approaches to Regenerative Soil Systems,* 2nd edition. CRC Press (in press)

Robertson, G.P. and P. M. Groffman. 2022. Nitrogen transformations. I*n* E. A. Paul and S. D. Frey, editors. *Soil Microbiology, Ecology, and Biochemistry, 5th edition*. Elsevier (in press).

Sciusco, P., J. Chen, V. Giannico, M. Abraha, C. Lei, G. Shirkey, J. Yuan, and **G.P. Robertson**. 2022. Albedo-induced global warming impact at multiple temporal scales within an upper Midwest USA watershed. *Land* 11:283.

Robertson, G.P., S. K. Hamilton, K. Paustian, and P. Smith. 2022. Land-based climate solutions for the United States. *Global Change Biology* 28:4912-4919. https://doi.org/10.1111/gcb.16267

Abraha, M., J. Chen, S. K. Hamilton, P. Sciusco, C. Lei, G. Shirkey, J. Yuan, and **G.P. Robertson**. 2021. Albedo-induced global warming impact of Conservation Reserve Program grasslands converted to annual and perennial bioenergy crops. *Environmental Research Letters* 16:084059. http://dx.doi.org/10.1088/1748-9326/ac1815

Aoda, M. I., A.J.M. Smucker, S.S. Majeed, H.A. Mohammed, F.H. Al-Sahaf, and **G.P. Robertson.** 2021. Novel root zone soil water retention improves production with half the water in arid sands. *Agronomy Journal* 113:2398-2406.

Belanger, M., C. Vizza, **G.P. Robertson**, and S. S. Roley. 2021. Quantifying and correcting for premature CO_2 loss in short-term carbon mineralization assays. *SOIL* 7:47-52.

Grace, P. R. and **G.P. Robertson**. 2021. Soil carbon sequestration potential and the identification of hotspots in the eastern Corn Belt of the United States. *Soil Science Society of America Journal* 85:1410-1424. https://doi.org/10.1002/saj2.20273

Hussain, M. Z., S. K. Hamilton, **G.P. Robertson**, and B. Basso. 2021. Phosphorus availability and leaching losses in annual and perennial cropping systems in an upper US Midwest landscape. *Scientific Reports* 11:20367. https://doi.org/10.1038/s41598-021-99877-7

Kravchenko, A. N., H. Zheng, Y. Kuzyakov, **G.P. Robertson**, and A. K. Guber. 2021. Belowground interplant carbon transfer promotes soil carbon gains in diverse plant communities. *Soil Biology and Biochemistry* 159:108297.

Liang, D. and **G.P. Robertson**. 2021. Nitrification is a minor source of nitrous oxide (N_2O) in an agricultural landscape and declines with increasing management intensity. *Global Change Biology* 27:5599-5613. https://doi.org/10.1111/gcb.15833

Lowry, C., **G.P. Robertson**, and D. C. Brainard. 2021. Strip-tillage decreases soil nitrogen availability and increases the potential for N losses in a cover cropped organic system. *Agriculture, Ecosystems & Environment* 319:107524.

Mosier, S., S. C. Córdova, and **G.P. Robertson**. 2021. Restoring soil fertility on degraded lands to meet food, fuel, and climate security needs via perennialization. *Frontiers in Sustainable Food Systems* 5:706142. https://lter.kbs.msu.edu/docs/robertson/mosier-et-al-2021-front-sus-food-sys.pdf

O'Neill, B., C. D. Sprunger, and **G.P. Robertson**. 2021. Do soil health tests match farmer experience? Assessing biological, physical, and chemical indicators in the upper Midwestern United States. *Soil Science Society of America Journal* https://doi.org/10.1002/saj2.20233.

Roley, S. S., T. C. Ulbrich, and **G.P. Robertson.** 2021. Nitrogen fixation and resorption efficiency differences among twelve upland and lowland switchgrass cultivars. *Phytobiomes Journal* 5:97-107. https://lter.kbs.msu.edu/docs/robertson/roley-et-al-2020-phytobiomes.pdf

Saha, D., B. Basso, and **G.P. Robertson**. 2021. Machine learning improves predictions of agricultural nitrous oxide (N_2O) emissions from intensively managed cropping systems. *Environmental Research Letters* 16:024004.

Spawn-Lee, S. A., T. J. Lark, H. K. Gibbs, R. A. Houghton, C. J. Kucharick, C. Malins, R. E. O. Pelton, and **G.P. Robertson**. 2021. Comment on 'Carbon intensity of corn ethanol in the United States: state of the science'. *Environmental Research Letters* 16:118001.

Udvardi, M., F. E. Below, M. J. Castellano, A. J. Eagle, K. E. Giller, J. K. Ladha, X. Liu, T. M. Maaz, B. Nova-Franco, N. Raghuram, **G.P. Robertson**, S. Roy, M. Saha, S. Schmidt, M. Tegeder, L. M. York, and J. W. Peters. 2021. A research road map for responsible use of agricultural nitrogen. *Frontiers in Sustainable Food Systems* 5:660155.

Bowles, T. M., M. Mooshammer, Y. Socolar, F. Calderón, M. A. Cavigelli, S. W. Culman, W. Deen, C. F. Drury, A. Garcia Y Garcia, A. C. M. Gaudin, W. S. Harkrom, R. M. Lehman, S. L. Osborne, **G.P. Robertson**, J. Salerno, M. R. Schmer, J. Strock, and A. S. Grandy. 2020. Long-term evidence shows crop rotation diversification increases agricultural resilience to adverse growing conditions in North America. *One Earth* 2:284-293.

Cusser, S., C. A. Bahlai, S. M. Swinton, **G.P. Robertson**, and N. M. Haddad. 2020. Long-term research needed to avoid spurious trends in sustainability attributes of no-till. *Global Change Biology* doi: 10.1111/gcb.15080

Gelfand, I., S.K. Hamilton, A.N. Kravchenko, R.D. Jackson, K.D. Thelen, and **G.P. Robertson**. 2020. Empirical evidence for the potential climate benefits of decarbonizing light vehicle transport in the U.S. with bioenergy from purpose-grown biomass with and without BECCS. *Environmental Science & Technology* 54: 2961-2974. doi:10.1021/acs.est.9b07019

Grace, P., T. J. van der Weerden, D. W. Rowlings, C. Scheer, C. Brunk, R. Kiese, K. Butterbach-Bahl, R. M. Rees, **G.P. Robertson**, and U. M. Skiba. 2020. Global Research Alliance N_2O chamber methodology guidelines: Considerations for automated flux measurement. *Journal of Environmental Quality* doi: 10.1002/jeq2.20124

Hess, L., E. S. Hinckley, **G.P. Robertson**, and P. A. Matson. 2020. Rainfall intensification increases nitrate leaching from tilled but not no-till cropping systems of the U.S. Midwest. *Agriculture, Ecosystems and Environment* 290:106747.

Hussain, M. Z., **G.P. Robertson**, B. Basso, and S. K. Hamilton. 2020. Leaching losses of dissolved organic carbon and nitrogen from agricultural soils in the upper US Midwest. *Science of the Total Environment* 734:139379. doi:10.1016/j.scitotenv.2020.139379

Liang, D., Y. Ouyang, L. K. Tiemann, and **G.P. Robertson**. 2020. Niche differentiation of bacterial versus archaeal soil nitrifiers induced by ammonium inhibition along a management gradient. *Frontiers in Microbiology* 11:568588.

Reed, D., J. Chen, M. Abraha, **G.P. Robertson**, and K. Dahlin. 2020. The shifting role of mRUE for regulating ecosystem production. *Ecosystems* 23:359-369. doi:10.1007/s10021-019-00407-4

Roley, S. S., T. C. Ulbrich, and **G.P. Robertson**. 2020. Nitrogen fixation and resorption efficiency differences among twelve switchgrass varieties. *Phytobiomes* doi: 10.1094/PBIOMES-11-19-0064-FI

Ruan, L. and **G.P. Robertson**. 2020. No-till establishment improves the climate benefit of bioenergy crops on marginal grasslands. *Soil Science Society of America* 84:1280-1295. doi: 10.1002/saj2.20082

Sciusco, P., J. Chen, M. Abraha, C. Lei, **G.P. Robertson**, R. Lafortezza, G. Shirkey, Z. Ouyang, R. Zhang, and R. John. 2020. Spatiotemporal variations of albedo in managed agricultural landscapes: Inferences to global warming impacts (GWI). *Landscape Ecology* doi: 10.1007/s10980-020-01022-8

Abraha, M.*, J. Chen, S. K. Hamilton, and **G.P. Robertson**. 2019. Long-term evapotranspiration rates for rainfed corn vs. perennial bioenergy crops in a mesic landscape. *Hydrological Processes* 34:810-822. doi: 10.1002/hyp.13630

Abraha, M.*, I. Gelfand, S.K. Hamilton, J. Chen and **G.P. Robertson**. 2019. Carbon debt of field-scale Conservation Reserve Program grasslands converted to annual and perennial bioenergy crops. *Environmental Research Letters* doi: 10.1088/1748-9326/aafc10

Basso, B., G. Shaui, J. Zhang, and **G.P. Robertson**. 2019. Yield stability analysis reveals sources of large-scale nitrogen loss from the U.S. Midwest. *Scientific Reports* 9:5774. doi: 10.1038/s41598-019-42271-1

Duncan, D. S., L. G. Oates, I. Gelfand, N. Millar, **G.P. Robertson,** and R. D. Jackson. 2019. Environmental factors function as constraints on soil nitrous oxide fluxes in bioenergy feedstock cropping systems. *Global Change Biology Bioenergy* 11:416-426. doi: 10.1111/gcbb.12572.

Hussain, M. Z., A. K. Bhardwaj, B. Basso, **G.P. Robertson**, and S. K. Hamilton. 2019. Nitrate leaching from continuous corn, perennial grasses, and poplar in the US Midwest. *Journal of Environmental Quality* 48:1849-1855.

Hussain, M. Z., S. K. Hamilton, B. Basso, A. K. Bhardwaj**,** K. Thelen, and **G.P. Robertson**. 2019. Evapotranspiration and water use efficiency of continuous maize and maize and soybean rotation in the upper Midwest U.S. *Agricultural Water Management* 221:92-98.

Kravchenko, A.N., A.K. Guber, B. S. Rasavi, J. Koestel, M.Y. Quigley, **G.P. Robertson**, and Y. Kuzyakov. 2019. Microbial spatial footprint as a driver of soil carbon stabilization. *Nature Communications* 10:3121

Roley, S.S., C. Xue, S.K. Hamilton, J.M. Tiedje, **G.P. Robertson**. 2019. Isotopic evidence for episodic nitrogen fixation in switchgrass (*Panicum virgatum* L.). *Soil Biology and Biochemistry* 129:90-98.

Shcherbak, I. and **G.P. Robertson**. 2019. Nitrous oxide (N_2O) from subsurface soils of agricultural ecosystems. *Ecosystems* 22:1650-1663.

Wang, S., G. R. Sanford, **G.P. Robertson**, R. D. Jackson, and K. D. Thelen. 2019. Perennial bioenergy crop yield and quality response to nitrogen fertilization. *BioEnergy Research* 13: 157-166. doi:10.1007/s12155-019-10072-z.

Hamilton, S. K., M. Z. Hussain, C. Lowrie, B. Basso, and **G.P. Robertson**. 2018. Evapotranspiration response to land cover and climate change in a Midwest U.S. watershed. *Hydrological Processes* 32:655-663.

Jones, C. D., L. G. Oates, **G.P. Robertson,** and R. C. Izaurralde. 2018. Perennialization and cover cropping mitigate soil carbon loss from residue harvesting. *Journal of Environmental Quality* 47:710-717.

Kleinman, P. J. A., S. Spiegal, J. R. Rigby, S. C. Goslee, J. M. Baker, B. T. Bestelmeyer, R. K. Boughton, R. B. Bryant, M. A. Cavigelli, J. D. Derner, E. W. Duncan, D. C. Goodrich, D. R. Huggins, K. W. King, M. A. Liebig, M. A. Locke, S. B. Mirsky, G. E. Moglen, T. B. Moorman, F. B. Pierson, **G.P. Robertson**, E. J. Sadler, J. S. Shortle, J. L. Steiner, T. C. Strickland, H. M. Swain, T. Tsegaye, M. R. Williams, and C. L. Walthall. 2018. Advancing the sustainability of U.S. agriculture through long-term research. *Journal of Environmental Quality* 47:1412-1425.

McGill, B. M., S. K. Hamilton, N. Millar, and **G.P. Robertson**. 2018. The greenhouse gas cost of agricultural intensification with groundwater irrigation in a Midwest US row cropping system. *Global Change Biology* 24:5948-5960.

Millar, N., A. Urrea, K. Kahmark, I. Shcherbak, **G.P. Robertson**, and I. Ortiz-Monasterio. 2018. Nitrous oxide (N_2O) responds exponentially to nitrogen fertilizer in irrigated wheat in the Yaqui Valley, Mexico. *Agriculture, Ecosystems and Environment* 261:125-132.

Roley, S. S., D. S. Duncan, D. Liang, A. Garoutte, J. M. Tiedje, R. D. Jackson, and **G.P. Robertson**. 2018. Associative nitrogen fixation (ANF) in switchgrass (*Panicum virgatum*) across a nitrogen input gradient. *PLoS ONE* 13:e0197320.

Spiegal, S., B. T. Bestelmeyer, D. W. Archer, D. J. Augustine, E. H. Boughton, R. K. Boughton, M. A. Cavigelli, P. E. Clark, J. D. Derner, E. W. Duncan, C. Hapeman, D. H. Harmel, P. Heilman, M. A. Holly, D. R. Huggins, K. King, P. J. A. Kleinman, M. A. Liebig, M. E. Locke, G. W. McCarty, N. Millar, S. B. Mirsky, T. B. Moorman, F. B. Pierson, J. R. Rigby, **G.P. Robertson**, J. L. Steiner, T. C. Strickland, H. M. Swain, B. J. Wienhold, J. D. Wulfhorst, M. A. Yost, and C. L. Walthall. 2018. Evaluating strategies for sustainable intensification of US agriculture through the Long-Term Agroecosystem Research Network. *Environmental Research Letters* 13:034031.

Sprunger, C. D., S. W. Culman, **G.P. Robertson**, and S. S. Snapp. 2018. How does nitrogen and perenniality influence belowground biomass and nitrogen use efficiency in small grain cereals? *Crop Science* doi: 10.2135/cropsci2018.02.0123.

Sprunger, C. D. and **G.P. Robertson**. 2018. Early accumulation of active fraction soil carbon in newly established cellulosic biofuel systems. *Geoderma* 318:42-51.

Duncan, D. S., L. G. Oates, I. Gelfand, N. Millar, **G.P. Robertson,** and R. D. Jackson. 2018. Environmental factors function as constraints on soil nitrous oxide fluxes in bioenergy feedstock cropping systems. *Global Change Biology Bioenergy* 11:416-426.

Austin, E. E., A. S. Grandy, K. Wickings, M. McDaniel, and **G.P. Robertson**. 2017. Cover crop root contributions to soil carbon in a no-till corn bioenergy cropping system. *Global Change Biology - Bioenergy* 9:1252-1263.

Izaurralde, C., W. B. McGill, J. Williams, C. Jones, R. Link, D. Manowitz, D. Schwab, X. Zhang, **G.P. Robertson**, and N. Millar. 2017. Simulating microbial denitrification with EPIC: model description and initial testing. *Ecological Modelling* 359:349-362.

Jones, C. D., X. Zhang, A. D. Reddy, **G.P. Robertson**, and C. R. Izaurralde. 2017. The greenhouse gas intensity and potential biofuel production capacity of maize stover harvest in the US Midwest. *GCB Bioenergy* 9:1543-

1554.
Kravchenko, A. N., S. S. Snapp, and **G.P. Robertson**. 2017. Field-scale experiments reveal persistent yield gaps in low-input and organic cropping systems. *Proceedings of the National Academy of Sciences USA* 114:926-93.
Kravchenko, A. N., E. R. Toosi, A. K. Guber, N. E. Ostrom, J. Yu, K. Azeem, M. L. Rivers, and **G.P. Robertson**. 2017. Hotspots of soil N_2O emission enhanced through water absorption by plant residue. *Nature Geoscience* 10:496-500.
Reimer, A., J. E. Doll, B. Basso, S. T. Marquart-Pyatt, **G.P. Robertson**, D. Stuart, and J. Zhao. 2017. Moving toward sustainable farming systems: Insights from private and public sector dialogues on nitrogen management. *Journal of Soil and Water Conservation* 72:5A-9A.
Robertson, G.P., S. K. Hamilton, B. L. Barham, B. E. Dale, R. C. Izaurralde, R. D. Jackson, D. A. Landis, S. M. Swinton, K. D. Thelen, and J. M. Tiedje. 2017. Cellulosic biofuel contributions to a sustainable energy future: Choices and outcomes. *Science* 356:eaal2324. doi: 10.1126/science.aal2324
Ruan, L. and **G.P. Robertson**. 2017. Reduced snowfall accelerates wintertime nitrous oxide (N_2O) fluxes from an agricultural soil in the upper U.S. Midwest. *Ecosystems* 20:917-927. doi: 10.1007/s10021-016-0077-9
Sanford, G. R., R. D. Jackson, L. G. Oates, **G.P. Robertson**, S. Roley, and K. D. Thelen. 2017. Biomass production a stronger driver of ethanol yield than biomass quality. *Agronomy Journal* 109:1-12.
Sprunger, C. D., S. W. Culman, **G.P. Robertson**, and S. S. Snapp. 2017. Perennial grain on a Midwest Alfisol shows no sign of early soil carbon gain. *Renewable Agriculture and Food Systems* doi:10.1017/S1742170517000138.
Sprunger, C. D., L. G. Oates, R. D. Jackson, and **G.P. Robertson**. 2017. Plant community composition influences fine root production and biomass allocation in perennial bioenergy cropping systems of the upper Midwest, USA. *Biomass and Bioenergy* 105:248-258.
Valdez, Z. P., W. C. Hockaday, C. A. Masiello, M. E. Gallagher, and **G.P. Robertson**. 2017. Soil carbon and nitrogen responses to nitrogen fertilizer and harvesting rates in switchgrass cropping systems. *BioEnergy Research* 10:456-464.
Yang, Q., X. Zhang, M. Abraha, S. Del Grosso, **G.P. Robertson**, and J. Chen. 2017. Enhancing the soil and water assessment tool model for simulating N_2O emissions of three agricultural systems. *Ecosystem Health and Sustainability* 3:e01259.
Abraha, M., S. K. Hamilton, J. Chen, and **G.P. Robertson**. 2018. Ecosystem carbon exchange on conversion of Conservation Reserve Program grasslands to annual and perennial cropping systems. *Agricultural and Forest Meteorology* 253-254:151-160.
Basso, B., B. Dumont, B. Maestrini, I. Shcherbak, **G.P. Robertson**, J. R. Porter, P. Smith, K. Paustian, P. R. Grace, S. Asseng, S. Bassu, C. Biernath, K. J. Boote, D. Cammarano, G. De Sanctis, J.-L. Durand, F. Ewert, S. Gayler, D. W. Hyndman, J. Kent, P. Martre, C. Nendel, E. Priesack, D. Ripoche, A. C. Ruane, J. Sharp, P. J. Thorburn, J. L. Hatfield, J. W. Jones, and C. Rosenzweig. 2018. Soil organic carbon and nitrogen feedbacks on crop yields under climate change. *Agricultural & Environmental Letters* 3:180026. doi: 10.2134/ael2018.05.0026

Selected Publications > 5years

Robertson, G.P., S. K. Hamilton, B. L. Barham, B. E. Dale, R. C. Izaurralde, R. D. Jackson, D. A. Landis, S. M. Swinton, K. D. Thelen, and J. M. Tiedje. 2017. Cellulosic biofuel contributions to a sustainable energy future: Choices and outcomes. *Science* 356:eaal2324. doi: 10.1126/science.aal2324
Kravchenko, A. N., S. S. Snapp, and **G.P. Robertson**. 2017. Field-scale experiments reveal persistent yield gaps in low-input and organic cropping systems. *PNAS* 114:926-93.
Paustian, K., J. Lehmann, S. Ogle, D. Reay, **G.P. Robertson**, and P. Smith. 2016. Climate-smart soils. *Nature* 532:49-57.
Shcherbak, I., N. Millar, and **G.P. Robertson**. 2014. Global meta-analysis of the nonlinear response of soil nitrous oxide (N_2O) emissions to fertilizer nitrogen. *PNAS* 111:9199-9204.
Werling, B. P., T. L. Dickson, R. Isaacs, H. Gaines, C. Gratton, K. L. Gross, H. Liere, C. M. Malmstrom, T. D. Meehan, L. Ruan, B. A. Robertson, **G.P. Robertson**, T. M. Schmidt, A. C. Schrotenboer, T. K. Teal, J. K. Wilson, and D. A. Landis. 2014. Perennial grasslands enhance biodiversity and multiple ecosystem services in bioenergy landscapes. *PNAS* 111:1652-1657.
Gelfand, I., R. Sahajpal, X. Zhange, R.C. Izaurralde, K.L. Gross, and **G.P. Robertson.** 2013. Sustainable

bioenergy production from marginal lands in the US Midwest. *Nature* 493:514-517.
Gelfand, I., T. Zenone, P. Jasrotia, J. Chen, S. K. Hamilton, and **G.P. Robertson**. 2011. Carbon debt of Conservation Reserve Program (CRP) grasslands converted to bioenergy production. *PNAS* 108:13864-13869.
Searchinger, T. D., S. P. Hamburg, J. Melillo, W. L. Chameides, P. Havlik, D. M. Kammen, G. E. Likens, R. N. Lubowski, M. Obersteiner, M. Oppenheimer, **G.P. Robertson,** W. H. Schlesinger, and G. D. Tilman. 2009. Fixing a critical climate accounting error. *Science* 326: 527-528.
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