

CURRICULUM VITA  
G. PHILIP ROBERTSON

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

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

**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 (advisor J.M. Tiedje)  
1980-1981 SCOPE-Mellon Postdoctoral Fellow, UNEP International Nitrogen Unit, Royal Swedish Academy of Sciences, Stockholm (advisor T. Rosswall)

**Primary Grant Support (past 10 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. \$970,000 (2020-2021).

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).

current 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).

2015-2020 USDA (ARS): Collaborative Long-term Agricultural Research (LTAR): Ecosystem services from row-crop agriculture; with co-PI S.K. Hamilton; \$97,182.

2017-2019 USDA (Foreign Agricultural Services): Nitrous oxide quantification and mitigation in Mexican grain crops; co-PI with postdoc N. Millar (PI); \$78,000.

2016-2018 NSF (Division of Environmental Biology): LTER: The ecology of row crop ecosystems and landscapes at the KBS LTER site. Co-PI with S.K. Hamilton (PI), S. E. Evans, D. A. Landis, J. A. Lau, S. T. Marquart-Pyatt, and S. M. Swinton; \$2.3M.

2013-2018 NSF (BCS Coupled Natural-Human Systems): A social-ecological analysis of nitrogen in agricultural systems of the Upper Midwest. Co-PI with D. Stuart (PI), D. Basso, S.T. Marquart-Pyatt, J. Zhao; \$1.5M.

- 2012-2017 DOE Office of Science (Biological and Environmental Sciences Division): Great Lakes Bioenergy Research Center; co-PI with T. Donohue (PI), K. Keegstra, B. Dale, J. Ralph, R. Landick; and ~50 co-I's. \$125M [Research Leader for Sustainability, \$20M].
- 2010-2016 NSF (Division of Environmental Biology): Long Term Ecological Research in field crop ecosystems. PI with co-PIs K.L. Gross, S.K. Hamilton, D.A. Landis, T.M. Schmidt, S. Snapp, S.M. Swinton; and 34 Co-I's; \$6.3M.
- 2015-2016 USDA (Foreign Agricultural Services): Nitrous oxide quantification and mitigation in Mexican grain crops; co-PI with postdoc N. Millar (PI); \$18,000.
- 2014-2016 NSF (DEB): EAGER: Development of a new technique to measure ecosystem-level soil nitrous oxide fluxes using micrometeorological towers. co-PI with postdoc I. Gelfand (PI), M. Zondlo (Princeton); \$150,000.
- 2010-2015 NSF (EHR Graduate Education Division); GK-12 Pre-doctoral Fellowship Program: Biofuel sustainability in K12 classrooms of rural Michigan; co- PI, with T. Getty (PI), C.W. Anderson, J. Lau, and K, Gross; \$2.7M.
- 2011-2015 USDA (AFRI Organic Transitions Program): Cover crops and N<sub>2</sub>O emissions, N availability and carbon accumulation in organic versus conventionally managed systems. Co-PI with PI Dale Mutch; \$749,000).
- 2014-2015 USDA NIFA (SARE): Linking soil testing with farmer decision making – an interdisciplinary approach. co-PI with PhD student Brendan O'Neill; \$6,853
- 2014-2015 USDA NIFA (SARE): Assessing soil carbon pools across rotational and diversified cropping systems in experimental plots and on-farm. co-PI with PhD student Christine Sprunger; \$6,382
- 2010-2013 EPRI (Electric Power Research Institute): Developing greenhouse gas emission offsets by reducing nitrous oxide emissions in agricultural crop production (PI) \$406,000.
- 2011-2013 NSF (Division of Environmental Biology): Dissertation Research: Denitrification in subsurface soils. PI with graduate student Iurii Shcherbak; \$9,832.
- 2008-2012 DOE Office of Science (Biological and Environmental Sciences Division): Great Lakes Bioenergy Research Center; co-PI with T. Donohue (PI), K. Keegstra, B. Dale, R. Amasino, R. Landick, J. Ohlrogge; and ~50 co-I's. \$143M; 5y (Research Leader for Sustainability, \$5M/year).

### ***Professional Affiliations and Awards***

Fellow, AAAS (2015)

Fellow, Soil Science Society of America (2003)

Member of AAAS, AIBS, Soil Science Society of America, American Geophysical Union, Ecological Society of America

Clarivate highly cited researcher 2018, 2019, 2020 (Cross-field & Ecology and Environmental Science)

### ***Professional Service (last 10 years)***

- current Member, National Leadership Team, USDA LTAR Network (from 2019)  
 Chair, AAAS Section on Agriculture, Food, and Renewable Resources (6,000 members)  
 Member, Scientific Advisory Board, Center for Advanced Biofuels and Bioproducts (CABBI), University of Illinois (from 2020)  
 Program chair, NSF NEON Workshop for Regionalizing Sustainable Intensification
- 2010-2020 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 Discussant, Environmental Defense Fund Workshop on Addressing Nitrogen Losses from Agriculture, Washington, D.C.

2013-2016 Member, U.S. National Climate Assessment Agricultural Indicators Team

2011-2016 Member, Science Advisory Board, Regional Approaches to Climate Change for Pacific Northwest Agriculture (USDA Wheat Climate Change Center)

2012-2016 Member, NSF DEB Ecosystems Panel (2012, 2013, 2014, 2015, 2016)

1988-2016 Member, NSF Long-Term Ecological Research Science Council

2015 Co-organizer, USDA LTAR Common Experiment Workshop, Minneapolis MN

2014-2015 Member, Scientific Program Committee for the 2015 Climate Change and Cereal Production Symposium, Minneapolis MN

2014 Member, Committee of Visitors, Biology Directorate, NSF

2014 Chair, US LTER Network Chair Nominating Committee

2013 Review editor, U.S. National Climate Assessment

2011-2014 Lead Author, US National Climate Assessment (Midwest Chapter)

2011-2014 Member, USDA Chief Economist's Workgroup on Quantifying Greenhouse Gas Emissions from Agriculture

2013-2014 Chair, Organizing Committee and Writing Team, DOE BioEnergy Sustainability Workshop, October 2013

2011-2013 Member, Climate Action Reserve Science Advisory Board

2011-2012 Member, Advisory Committee, Walmart Jack-n-Coke Sustainability Project

2009-2012 Member, National Ecological Observatory Network (NEON) Domain Science and Education Coordination Committee

2011 Member, USDA Long-term Agricultural Research Network Review Panel

2010-2011 Member, Council on Agricultural Science and Technology (CAST) Task Force on the Role of Agriculture in Greenhouse Gas Fluxes and Carbon Sequestration

2007-2011 Chair (elected), NSF Long-term Ecological Research (LTER) Network Science Council and Executive Board

### **Editorships**

1984-1989 Editor, *Plant and Soil*

1988-1992 Editor, *Ecology and Ecological Monographs*

2004-2009 Editor, *Biogeochemistry*

2009-2015 Guest Editor, *PNAS*

### **Invited Presentations (last 5 years)**

2021 Bayer Crop Science, International Sustainability Group (Jan 2021)  
Iowa State University Carbon Forum, Ames (Apr 2021)  
International Workshop on Sustainable Crop and Pasture Systems, CAU, Beijing (Aug 2021)  
North Central Soil Health Nexus Workshop, Michigan (Sep 2021)

2020 US-UK Forum on Sustainable Agriculture, National Academy of Science, Washington DC (Mar 2020)  
Biology Department, Kent State University (Jan 2020)  
Global Challenges in Food, Soil, & Environmental Quality, American Society of Agronomy (Nov 2020)

North Central Soil Fertility Industry Conference, Des Moines (Nov 2020)

- 2019 Nobel Nitrogen Symposium, Nobel Research Institute, OK (Mar 2019)  
DOE Bioenergy Research Centers Modeling Workshop, Chicago IL (May 2019)  
CABBI Annual Science Meeting, University of Illinois Urbana-Champaign, (June 2019)  
Ecological Society of America Annual Meeting, Louisville KY (Aug 2019)  
DOE-BETO Bio-Restore Workshop, Chicago IL (Sep 2019)  
ICHe Bioenergy Sustainability Symposium, Nashville TN (Oct 2019)  
American Society of Agronomy MegaSymposium, San Antonio TX (Nov 2019)  
Flagship Pioneering, Webinar (Dec 2019)  
Resilience Institute, Indiana University, Bloomington (Apr 2019)
- 2018 Conservation Research Institute, University of Cambridge, UK (2 talks; July 2018)  
US DOE, Biological and Environmental Research Advisory Committee, Washington DC (Oct 2018)  
GW Leeper Lecture, University of Melbourne (Nov 2018)  
Terrestrial Ecological Research Forum, Ecological Society of Australia, Brisbane (Nov 2018)
- 2017 University & Industry Consortium Symposium, Baltimore MD (May 2017)  
American Society of Plant Biology Plenary Symposium, Honolulu HI (June 2017)  
National Academies Science Breakthroughs 2030, Washington DC (Aug 2017)  
American Society of Agronomy Bioenergy Symposium, Tampa FL (Oct 2017)  
USDA SARE Extension Academy, Michigan (Sept 2017)  
American Chemical Society Keynote Speaker, Saginaw MI (Oct 2017)  
Kellogg Company Earth Day Speaker, Battle Creek MI (April 2017)  
KBS Dept. Seminar (Dec 2017)
- 2016 2016 JASON Spring Meeting, McLean VA (April 2016)  
Sierra Club, Flint MI (May 2016)  
The Nitrogen Roundtable, KBS (June 2016)  
K-12 ICCARS (Investigating Climate Change and Remote Sensing) Series, Wayne County MI  
Climate Change Conversations, KBS (June 2016)

***Presentations to Congressional Committees***

- 2014 Briefing for the U.S. Senate on Long-term Ecological Research: Regional Data for Large Scale Environmental Issues (AIBS-sponsored).
- 2008 Briefings for the U.S. House Science and Technology Committee and the U.S. Senate Agriculture, Nutrition, and Forestry Committee on the Sustainability of Cellulosic Biofuels (lead organizer; ESA-sponsored) (described at [www.esa.org/pao/policyActivities/briefing062008.php](http://www.esa.org/pao/policyActivities/briefing062008.php))
- 2005 Briefing for the U.S House Science Committee on Broader Impacts of Long-Term Ecological Research Program (AIBS-sponsored)
- 2003 Briefings for 1) the U.S Senate Agriculture, Nutrition and Forestry Committee and 2) the U.S. House Agriculture Committee on Findings of the NRC Committee to Evaluate the USDA Research, Extension, and Education Activities (Frontiers in Agricultural Research) (NRC-sponsored)
- 2002 Briefing for the U.S. House Agriculture Committee on Greenhouse Gas Mitigation Potentials for US Agriculture (CASMGs-sponsored)
- 2001 Testimony before the U.S. Senate Agriculture, Nutrition, and Forestry Committee on Research, Extension and Education in the Farm Bill for the National Academy of Sciences (available at <http://www4.nas.edu/ocga/testimon.nsf>) (NRC-sponsored)

2000 Briefing for the U.S. Senate Agriculture, Nutrition, and Forestry Committee on Carbon Sequestration Potentials in the US (SSSA and ESA sponsored)

**Outreach Presentations (last 5 years)**

2021 K-12 Partnership Climate Forum, Michigan

2017 Kellogg Company, Battle Creek MI (Climate Change)

2016 Flint Sierra Club, Flint MI (Ecosystem Services from Agriculture)  
Larry Meillor Show, Wisconsin Public Radio (Bioenergy Sustainability)  
Sierra Club, Midland MI (Climate Change and Agriculture)  
K-12 ICCARS (Investigating Climate Change and Remote Sensing) Series, Wayne County MI  
Climate Change Conversations, KBS

**Contributed Papers at National Meetings (last 5 years; >350 published abstracts since 1980)**

2020 11 total: **DOE Genomic Sciences Program** (Cordova et al.); **Ecological Society of America**, virtual (Cordova et al.; D'Souza et al.; Lei et al.; Roley et al.; Vizza et al.); **American Society of Agronomy**, virtual (Belanger et al.; Cordova et al.; Falvo and Robertson; Robertson; Hussain et al.)

2019 16 total: **American Geophysical Union**, San Francisco (Basso et al.; Cordova and Robertson; Glanville and Robertson; Hockaday et al.); **Ecological Society of America**, Louisville (Glanville and Robertson; Liang and Robertson); **American Society of Agronomy** (Cordova et al.; Flores et al.; Glanville and Robertson; Hussain et al.; Liebig et al.; Locke et al., Saha et al., Wang et al.); **Soil Ecology Society**, Toledo (Glanville and Robertson); 4<sup>th</sup> Int'l Symposium on Nitrogen Nutrition, Nanjing (Udvardi et al.)

2018 9 total: **American Geophysical Union**, Washington DC (Abraha et al); **DOE Genomic Science**, Tysons VA (Chicoine et al.); **Ecological Society of America** (Castro Vega et al.; Glanville and Robertson); **EGU General Assembly 2018**, Vienna Austria (Gelfand et al.); **International Society for Microbial Ecology**, Leipzig, Germany (Liang and Robertson); **LTER All Scientists Meeting**, Asilomar CA (Liang and Robertson; Glanville and Robertson; Millar and Robertson)

2017 12 total: **DOE Genomic Science Program**, Washington DC (Cole et al.; Liang and Robertson; Roley et al.); **Ecological Society of America**, Portland OR (Glanville and Robertson; Sánchez et al. (undergraduate REU)); **Soil Ecological Society**, Fort Collins CO (Glanville and Robertson; Liang and Robertson; O'Neill et al.; O'Neill et al.), **American Society of Agronomy**, Tampa FL (Liang and Robertson, Millar and Robertson, Kahmark et al.)

2016 10 total: **American Society of Agronomy**, Phoenix AZ (Liang and Robertson; Millar and Robertson; Glanville and Robertson; Thelen et al.; Valdez et al.); **Ecological Society of America**, Fort Lauderdale FL (Roley et al.); **American Geophysical Union**, San Francisco CA (Abraha et al.; Gelfand et al.; Hess et al.); **Keystone Symposium Conference**, Santa Fe NM (Chicoine et al.)

**University Service (last 5 years)**

current Member, KBS LTER Executive Committee (from 2016; chair from 1988)  
current Member, GLBRC Management Team (from 2008)  
2015-2018 Member, MSU Provost Promotion and Tenure Advisory Committee

**Department Service (last 5 years)**

current Member, KBS Faculty Advisory Committee  
current Member, KBS Farm Research Advisory Committee  
current Member, PSM Research Committee

current Chair, KBS Space Committee  
 current Member, Mentor Committee for five junior faculty  
 2019, 2021 KBS Eminent Ecologist host  
 2017-2018 Chair, KBS Information Technology Committee  
 2016-2017 Member, KBS Outreach Committee  
 2015-2016 Member, KBS Faculty Advisory Committee  
 2015-2016 Chair, Search Committee for Cropping System Agronomist (PSM)

### **Teaching Activities**

#### **Courses Taught**

Agricultural Ecology (CSS 412/442): 1989-1990, 2011-2016, 2020  
 Forest & Agricultural Ecology (CSS/FOR 404): 1992, 1994-2000  
 Biogeochemistry (CSS/MPH 426): 1996-2003, 2006-2007  
 Soil Biology (CSS 360): 2006-2007  
 Also: Geostatistics (CSS 412; 1987); Landscape Ecology (CSS 412; 1988); Root Resource Interactions (EEB 891; 1989); Plant Ecology (BOT 450; 1992); Terrestrial Ecology and Evolution (1993); Ecology (ZOL 250; 1993); Advanced Terrestrial and Aquatic Ecology (1995); Scientific Presentations (CSS 893; 1998); Soil Organic Matter Dynamics (CSS 893; 2004); Biogeochemistry of Sustainable Agriculture (CSS 893; 2004)

#### **Graduate Students Supervised**

Michel Cavigelli (Ph. D., 1998); Timothy Bergsma (Ph.D. 2000); Pongthep Sunwararee (Ph. D. 2003); Stuart Grandy (Ph.D. 2005); Terry Loecke (Ph.D. 2007); Sara Parr Syswerda (PhD. 2009) ; John Hoben (M.Sc. 2009); Iurii Shcherbak (Ph.D. 2013) ; Leilei Ruan (Ph.D. 2014); Christine Sprunger (Ph.D. 2015); Brendan O'Neil (PhD; 2016 co-advised); Di Liang (Ph.D. 2019); Kathryn Glanville (Ph.D.; 2020); Grant Falvo (Ph.D.; current)

#### **Postdoctoral Scholars**

Katherine M. Klingensmith (1988-1990); Jacqueline Henrot (1989-1991); Keith Paustian (1989-1994); Harold Collins (1994-1996); Per Ambus (1996-1998); Craig Russell (1997-1999); Kevin Kosola (1997-2000); Ann-Marie Fortuna (2001-2002); Tim Parshall (2002-2004); Claire McSwiney (2002-2007); Laurel Hartley (2006-2008); Poonam Jasrotia (2007-2011); Neville Millar (2008-2016); Ilya Gelfand (2009-2017); Sarah Roley (2012-2017), Adam Reimer (2013-2019); Debasish Saha (2018-2019), Carolina Cordova (current); Samantha Mosier (current); Ekrem Ozlu (current); Tian Guo (co-advise; current)

#### **Publications – Refereed journal articles and book chapters**

*(students and postdocs underlined)*

**Robertson, G.P.** and P.M. Vitousek. 1981. Nitrification potentials in primary and secondary succession. *Ecology* 62:376-386.

**Robertson, G.P.** 1982. Factors regulating nitrification in primary and secondary succession. *Ecology* 63:1561-1573.

**Robertson, G.P.** 1982. Nitrification in forested ecosystems. *Philosophical Transactions of the Royal Society London B* 296:445-457.

**Robertson, G.P.** 1982. Regional nitrogen budgets: approaches and problems. *Plant & Soil* 67:73-80.

**Robertson, G.P.** 1984. Nitrification and nitrogen mineralization in a lowland rainforest succession in Costa Rica, Central America. *Oecologia* 61:99-104.

**Robertson, G.P.** and J.M. Tiedje. 1984. Denitrification and nitrous oxide production in successional and old growth Michigan forests. *Soil Science Society of America Journal* 48:383-389.

- Robertson, G.P.** and J.M. Tiedje. 1985. An automated method for sampling the contents of stoppered gas collection vials. *Plant and Soil* 83:453-457.
- Robertson, G. P.** 1986. Nitrogen: Regional contributions to the global cycle. *Environment* 28: 16-21.
- Robertson, G.P.** and T. Rosswall. 1986. Nitrogen in West Africa: the regional cycle. *Ecological Monographs* 56:43-72.
- Robertson, G.P.**, P.M. Vitousek, P.A. Matson and J.M. Tiedje. 1987. Denitrification in a clear-cut Loblolly pine (*Pinus taeda* L.) plantation in the southeastern U.S. *Plant and Soil* 97:119-129.
- Robertson, G.P.** and J.M. Tiedje. 1987. Nitrous oxide sources in aerobic soils: nitrification, denitrification, and other biological processes. *Soil Biology and Biochemistry* 19:187-193.
- Robertson, G.P.** 1987. Geostatistics in ecology: interpolating with known variance. *Ecology* 68:744-748.
- Matson, P.A., P.M. Vitousek, J.J. Ewel, M.J. Mazzarino and **G.P. Robertson**. 1987. Nitrogen transformations following tropical forest felling and burning on volcanic soil. *Ecology* 68:491-502.
- Robertson, G.P.** and J.M. Tiedje. 1988. Deforestation alters denitrification in a lowland tropical rainforest. *Nature* 336:756-759.
- Robertson, G.P.**, M.A. Huston, F.C. Evans and J.M. Tiedje. 1988. Spatial variability in a successional plant community: patterns of nitrogen availability. *Ecology* 69:1517-1524.
- Sollins, P., **G.P. Robertson**, and G. Uehara. 1988. Nutrient mobility in variable- and permanent-charge soils. *Biogeochemistry* 6:181-199.
- Groffman, P.M., J.M. Tiedje, **G.P. Robertson** and S. Christensen. 1988. Denitrification at different temporal and geographic scales: proximal and distal controls. pp. 174-192. In J.R. Wilson, ed. *Advances in N Cycling in Agricultural Ecosystems*. Comm. Agric. Bur. International, Wallingford, U.K.
- Robertson, G. P.** 1989. Nitrification and denitrification in humid tropical ecosystems. Pages 55-70 in J. Proctor, ed. *Mineral Nutrients in Tropical Forest and Savanna Ecosystems*. Blackwell Scientific, Cambridge, MA.
- Paul, E.A. and **G.P. Robertson**. 1989. Ecology and the agricultural sciences: a false dichotomy? *Ecology* 70:1594-1596.
- Robertson, G.P.**, M.O. Andreae, H.G. Bingemer, P.J. Crutzen, R.A. Delmas, J.H. Duyzer, I. Fung, R.C. Harriss, M. Kanakidou, M. Keller, J.M. Melillo, and G.A. Zavarzin. 1989. Trace gas exchange and the physical and chemical climate: critical interactions. Pages 303-320 in M.O. Andreae and D.S. Schimel, eds. *Trace Gas Exchange between Terrestrial Ecosystems and the Atmosphere*. John Wiley, Berlin.
- Palm, C., **G. P. Robertson**, and P. M. Vitousek. 1989. Nitrogen availability. Pages 162-168 in J. M. Anderson and J. S. I. Ingram, eds. *Tropical Soil Biology and Fertility: A Handbook of Methods*. CAB International, Wallingford, UK.
- Schimel, J. P., **G. P. Robertson**, D. Baldocchi, J. E. Bogner, E. A. Davidson, J. Duyzer, D. Ehhalt, D. Fowler, P. Groffman, K. Haider, V. A. Isodorov, L. Klemetsson, J. M. Melillo, K. A. Smith, W. H. Su, and W. Wieprecht. 1992. Impacts of trace gas fluxes in mid-latitude ecosystems. *Ecological Bulletin (Stockholm)* 42:124-132.
- Robertson, G.P.**, J.R. Crum, and B.G. Ellis. 1993. The spatial variability of soil resources following long-term disturbance. *Oecologia* 96:451-456.
- Robertson, G.P.** 1993. Fluxes of nitrous oxide and other nitrogen trace gases from intensively managed landscapes: a global perspective. Pages 95-108 in L.A. Harper, A.R. Mosier, J.M. Duxbury, and D.E. Rolston. eds. *Agricultural Ecosystem Effects on Trace Gases and Global Climate Change*. American Society of Agronomy, Madison, Wisconsin.
- Henrot, J. and **G.P. Robertson**. 1994. Vegetation removal in two soils of the humid tropics: effect on microbial biomass. *Soil Biology and Biochemistry* 26:111-116.

- Robertson, G.P.** 1994. The impact of soil and crop management practices on soil spatial heterogeneity. Pages 156-161 in C.E. Pankhurst, B.M. Doube, V.V.S.R. Gupta, and P.R. Grace, eds. *Soil Biota Management in Sustainable Farming Systems*, CSIRO Press, Melbourne, Australia.
- Robertson, G.P.** and K.L. Gross. 1994. Assessing the heterogeneity of below ground resources: quantifying pattern and scale. Pages 237-253 In M.M. Caldwell and R. Pearcy, eds. *Exploitation of Environmental Heterogeneity by Plants: Ecophysiological Processes Above- and Belowground*. Academic Press, San Diego.
- Smith, K.A., **G.P. Robertson**, and J.M. Melillo. 1994. Exchange of trace gases between the terrestrial biosphere and the atmosphere in the mid-latitudes. Pages 179-204 in R.G. Prinn, ed. *Global Atmospheric-Biospheric Chemistry*. Plenum Press, NY.
- Robertson, G.P.** and D.W. Freckman. 1995. The spatial distribution of nematode trophic groups across a cultivated ecosystem. *Ecology* 76:1425-1432.
- Cavigelli, M.A., **G.P. Robertson**, and M.J. Klug. 1995. Fatty acid methyl ester (FAME) profiles as measures of soil community structure. *Plant and Soil* 170:99-113.
- Paustian, K., **G. P. Robertson**, and E. T. Elliott. 1995. Management impacts on carbon storage and gas fluxes (CO<sub>2</sub>, CH<sub>4</sub>) in mid-latitude cropland and grassland ecosystems. *Advances in Soil Science* 27:69-84.
- Robertson, G.P.**, K.M. Klingsmith, M.J. Klug, E.A. Paul, J.R. Crum, and B.G. Ellis. 1997. Soil resources, microbial activity, and plant productivity across an agricultural ecosystem. *Ecological Applications*, 7:158-170.
- Robertson, G.P.** 1997. Nitrogen use efficiency in row crop agriculture: crop nitrogen use and soil nitrogen loss. Pages 347-365 in L. Jackson, ed. *Ecology in Agriculture*, Academic Press, NY.
- Ambus, P. and **G.P. Robertson**. 1998. Automated near-continuous measurement of carbon dioxide and nitrous oxide fluxes from soil. *Soil Science Society of America Journal* 62:394-400.
- Hedin, L. O., J. C. von Fischer, N. E. Ostrom, B.P. Kennedy, M. G. Brown, and **G. P. Robertson**. 1998. Thermodynamic constraints on nitrogen transformations and other biogeochemical processes at soil-stem interfaces. *Ecology* 79:684-703.
- Ostrom, N. E., K. E. Knoke, L. O. Hedin, **G. P. Robertson**, and A. J. M. Smucker. 1998. Temporal trends in nitrogen isotope values of nitrate leaching from an agricultural soil. *Chemical Geology* 146: 219-227.
- Robertson, G.P.** and E.A. Paul. 1998. Ecological research in agricultural ecosystems: contributions to ecosystem science and to the management of agronomic resources. Pages 142-164 in P.M. Groffman and M.L. Pace (eds) *Successes, Limitations and Frontiers in Ecosystem Science*, Cary Conference VII, Springer-Verlag, NY.
- Ambus, P. and **G. P. Robertson**. 1999. Fluxes of CH<sub>4</sub> and N<sub>2</sub>O from aspen stands grown under ambient and twice-ambient CO<sub>2</sub>. *Plant and Soil* 209:1-8.
- Bergsma, T. T., Q.C. Bergsma, N.E. Ostrom, and **G. P. Robertson**. 1999. A heuristic model for the calculation of dinitrogen and nitrous oxide flux from <sup>15</sup>N-labeled soil. *Soil Science Society of America Journal* 63: 1709-1716.
- Paul, E. A., D. Harris, H. P. Collins, U. Schulthess, and **G. P. Robertson**. 1999. Evolution of CO<sub>2</sub> and soil carbon dynamics in biologically managed, row-crop agroecosystems. *Applied Soil Ecology* 11: 53-65.
- Martinelli, L. A., M. C. Piccolo, A. R. Townsend, P. M. Vitousek, E. Cuevas, W. McDowell, **G. P. Robertson**, O. C. Santos, and K. Treseder. 1999. Nitrogen stable isotopic composition of leaves and soil: tropical versus temperate forests. *Biogeochemistry* 46:45-65.
- Robertson, G. P.**, D. Wedin, P. M. Groffman, J.M. Blair, E. Holland, K. Nadelhoffer, and D. Harris. 1999. Soil carbon and nitrogen availability: nitrogen mineralization, nitrification, and soil respiration potentials. Pages 89-105 in G. P. Robertson, C. S. Bledsoe, D. C. Coleman, and P. Sollins, eds. *Standard Soil Methods for Long-Term Ecological Research*. Oxford University Press, NY.



- Robertson, G. P.**, P. Sollins, B. G. Ellis, and K. Lajtha. 1999. Exchangeable ions, pH, and cation exchange capacity. Pages 106-114 in G. P. Robertson, C. S. Bledsoe, D. C. Coleman, and P. Sollins, eds. *Standard Soil Methods for Long-Term Ecological Research*. Oxford University Press, NY.
- Groffman, P. M., E. A. Holland, D. D. Myrold, **G. P. Robertson**, and X. Zou. 1999. Denitrification. Pages 272-290 in G. P. Robertson, C. S. Bledsoe, D. C. Coleman, and P. Sollins, eds. *Standard Soil Methods for Long-Term Ecological Research*. Oxford University Press, NY.
- Holland, E. A., **G. P. Robertson**, J. Greenberg, P. Groffman, R. Boone, and J. Gosz. 1999. Soil CO<sub>2</sub>, N<sub>2</sub>O, and CH<sub>4</sub> Exchange. Pages 185-201 in G. P. Robertson, C. S. Bledsoe, D. C. Coleman, and P. Sollins, eds. *Standard Soil Methods for Long-Term Ecological Research*. Oxford University Press, NY.
- Robertson, G. P.**, E. A. Paul, and R. R. Harwood. 2000. Greenhouse gases in intensive agriculture: Contributions of individual gases to the radiative forcing of the atmosphere. *Science* 289:1922-1925.
- Cavigelli, M. A., and **G. P. Robertson**. 2000. The functional significance of denitrifier community composition in a terrestrial ecosystem. *Ecology* 81:1402-1414.
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