Gregg R. Sanford, PhD

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University of Wisconsin – Madison
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Education

University of Wisconsin – Madison **2012**
Ph.D. – Agronomy / Soil Science
Dissertation: Agroecosystem land management and its effect on soil organic carbon stocks and dynamics in the Mollisols of southern Wisconsin

University of Wisconsin – Madison **2007**
M.S. – Agronomy
Thesis: Dairy slurry in corn based systems: impacts on soil compaction and profitability

New College of Florida **2002**
B.A. – Biology / Field Botany
Thesis: The Flora of Bailey's Cay, Roatan Honduras

Publications

Sanford GR, Jackson RD, Rui Y, Kucharik C. 2021. Soil carbon dynamics along a land use-land cover gradient on Mollisols of southern Wisconsin. ***in prep*** **2021** *in prep*

Sanford GR, Cates A, von Haden AC, Roley S, Robertson GP, Jackson RD. 2017. Soil carbon dynamics in dedicated bioenergy crops. ***in prep*** **2021** *in prep*

Potter TS, Vereecke L, Lankau RA, **Sanford GR**, Silva EM, Ruark MD. 2021. Long-term management drives divergence in soil microbial biomass, richness, and composition among upper Midwest, USA cropping systems. *Biol. Fert. Soil.* **2021** *in review*

Sanford GR, Jackson RD, Booth EG, Hedtcke JL, Picasso Risso V. 2020. Perenniality and diversity drive output stability and resilience in a 26-year cropping systems experiment. *Field Crops Res.* https://doi.org/10.1016/j.fcr.2021.108071 **2021**

Yaoping Z, Serate J, Xie D, Gajbhiye S, Kulzer P, **Sanford G**, Russell J, McGee M, Foster C, Coon JJ, Landick R, Sato TK. 2020. Production of hydrolysates from unmilled AFEX-pretreated switchgrass and coparative fermentation with Zymomonas mobilis. *Bioresource Tech. Reports* 11. https://doi.org/10.1016/j.biteb.2020.100517 **2020**

Rui Y, **Sanford GR**, Hedtcke JL, Ruark MD. 2020. Legacy effects of liquid dairy manure in grain production systems. *Agric. Sys.* 181. https://doi.org/10.1016/j.agsy.2020.102825 **2020**

Jackson RD, Paine LK, Gratton C, Barham BL, **Sanford GR**, Booth E, Porter P, Bell M, Grace J, Turnquist A, Paris B, LeZaks D, Cates RL, Keeney D Jr, Meine C, Carpenter SR, Jackson LL, Cavadini J, Johnson WC, Daigle P, Kolodziej WC, Doll JE, Anex R, Johnson P, Kriegl T. 2020. A vision for agriculture. *Aeon.* Ed. Hains B. Published in association with the Center for Humans and Nature, an Aeon partner. Published online 18 March 2020. https://aeon.co/essays/our-grasslands-hav-been-poisoned-by-intensive-farming **2020**

Szymanski LM, **Sanford GR**, Heckman K, Jackson RD, Marin-Spiotta E. 2019. Conversion to bioenergy crops alters amount and age of microbially-respired soil carbon. *Soil Biol. Bioechem*. 128: 35-44. **2019**

Wang S, **Sanford GR**, Robertson GP, Jackson RD, Thelen KD. 2019. Perennial bioenergy crop yield and quality response to nitrogen fertilization. *BioEnerg. Res*. doi: 10.1007/s12155-019-10072-z **2019**

Cates AM, **Sanford GR**, Good LW, Jackson RD. 2018. What do we know about cover crop efficacy in the North Central United States? *J. Soil Water Conserv*. 73: A153-A157. **2018**

Ong RG, Shinde S, Sousa ID, **Sanford GR.** 2018. Pre-senescence harvest of switchgrass inhibits xylose utilization by engineered yeast. *Frontiers Energy Res*. 6: 52. doi:10.3389/fenrg.2018.00052 **2018**

Zhang Y, Oates LG, Serate J, Xie D, Pohlman E, Bukhman YV, Karlen SD, Young MK, Higbee A, Eilert D, **Sanford GR**, Piotrowski JS, Cavalier D, Ralph J, Coon JJ, Sato TK, Ong RG. 2018. Diverse lignocellulosic feedstocks can achieve high field-scale ethanol yields while providing flexibility for the biorefinery and landscape-level environmental benefits. *GCB Bioenergy*. 10: 825-840. doi:10.1111/gcbb.12533 **2018**

Osterholz WR, Shaviv A, Rinot O, Linker R, Liebman M, **Sanford GR**, Strock J, Castellano MJ. 2017. Predicting gross nitrogen mineralization and potentially mineralizable N using soil organic matter properties. *Soil Sci. Soc. Am. J*. 81: 1115-1126. doi:10.2136/sssaj2017.02.0055 **2017**

Sanford GR, Oates LG, Roley S, Duncan DS, Jackson RD, Robertson GP, Thelen KD. 2017. Biomass production a stronger driver of cellulosic ethanol yield than biomass quality. *Agron. J*. 109: 1911-1922. doi:10.2134/agronj2016.08.0454 **2017**

Hossard L, Archer DW, Bertrand M, Colnenne-David C, Debaeke P, Ernfors M, Jeuffroy MH, Munier-Jolain N, Nilsson C, **Sanford GR**, Snapp SS, Jensen ES, Makowski D. 2016. A meta-analysis of maize and wheat yields in low-input vs. conventional and organic systems. *Agron. J*. 108:1155-1167 **2016**

Liang C, Kao-Kniffin J, **Sanford GR**, Wickings K, Balser TC, Jackson RD. 2016. Microorganisms and their residues under restored perennial grassland communities of varying diversity. *Soil Biol. Biochem*. 103:192-200. doi:10.1016/j.soilbio.2016.08.002 **2016**

Oates LG, Duncan DS, **Sanford GR,** Liang C, Jackson RD. 2016. Bioenergy cropping systems that incorporate native grasses stimulate growth of plant-associated soil microbes in the absence of nitrogen fertilization. *Ag. Ecosys. Env*. 233:396-403. **2016**

Ong RG, Higbee A, Bottoms S, Dickinson Q, Xie D, Smith SA, Serate J, Pohlman E, Jones AD, Coon JJ, Sato TK, **Sanford GR**, Eliert D, Oates LG, Piotrowski JS, Bates DM, Cavalier D, Zhang YP. 2016. Inhibition of microbial biofuel production in drought-stressed switchgrass hydrolysate. *Biotech. Biofuel*. 9: 237. doi:10.1186/s13068-016-0657-0 **2016**

Sanford GR, Oates LG, Jasrotia P, Thelen KD, Jackson RD, Robertson GP. 2016. Comparative productivity of alternative cellulosic bioenergy cropping systems in the North Central U.S.A. *Ag. Ecosys. Env.* 216: 344-355. **2016**

Skevas T, Swinton S, Tanner S, **Sanford GR**, Thelen KD. 2016. Investment risk in bioenergy crops. *GCB Bioenergy*. 8:1162-1177. **2016**

Sanford GR, Oates LG, Jasrotia P, Thelen KD, Robertson GP, Jackson RD. 2015. Comparative productivity of maize, switchgrass, Miscanthus, poplar, prairie, and other cellulosic bioenergy crops in the North Central US. In. *Aspects of Applied Biology: Biomass and Energy Crops V*. Carlton R, Halford N, Karp A, Lindegaard K, Shield I, Thornley P. Eds. AAB, Warwick, UK. pp. 19-23. **2015**

Sanford GR, Posner JL, Hedtcke JL, Jackson RD. 2015. The Wisconsin integrated cropping systems trial: 26 years of research in agricultural sustainability. In. *Aspects of Applied Biology 128: Valuing long-term sites and experiments for agriculture and ecology*. Peacock S, Smith BM, Stockdale EA, Watson C. Eds. AAB, Warwick, UK. pp. 249-251. **2015**

Serate J, Xie D, Pholmann E, Donald Jr C, Shabani M, Hinchman L, Higbee A, Mcgee M, La Reau A, Klinger G, Li S, Myers CL, Boone CM, Bates D, Cavalier D, Eilert D, Oates LG, **Sanford GR**, Sato T, Dale B, Landick R, Piotrowski J, Ong RG, Zhang YP. 2015. Controlling microbial contamination during hydrolysis of AFEX-pretreated corn stover and switchgrass: effects on hydrolysate composition, microbial response and fermentation. *Biotech. Biofuels.* 8:180. **2015**

Hedtcke JL, **Sanford GR**, Hadley KE, Thelen KD. 2014. Maximizing land use during switchgrass establishment in the North Central United States. *Agron. J.* 106: 596-604. **2014**

Sanford GR. 2014. Perennial grasslands are essential for long term SOC storage in the Mollisols of the North Central USA. In. *Soil Carbon.* Hartemink, A.E and K. McSweeney Eds. Springer. pp. 281-288. **2014**

Sanford GR, Kucharik CJ. 2013. Effect of methodological consideration on soil carbon parameter estimates obtained via the acid hydrolysis-incubation method. *Soil Biol. Biochem.* 67: 295-305. **2013**

Sanford GR, Posner JL, Kucharik CJ, Jackson RD, Hedtcke JL, Lin T. 2012. Soil carbon lost from Mollisols of the North Central U.S.A. with 20 years of agricultural best management practices. *Ag. Ecosys. Env.* 162: 68-76. **2012**

Liang C, **Sanford GR**, Jackson RD, Balser TC. 2011. Potential legacy effects of biofuel cropping systems on soil microbial communities in southern Wisconsin, USA. *J. Ag. Sci.* 2:131-137. **2011**

Sanford GR, Cook AR, Posner JL, Hedtcke JL, Hall JA, Baldock JO. 2009. Linking Wisconsin dairy and grain farms via manure transfer for corn production. *Agron. J.* 101:167-174. **2009**

Sanford GR, Posner JL, Hadley GL. 2009. Economics of hauling dairy slurry and its value in Wisconsin corn grain systems. *Ag. Food Env. Sci.* 3:1-10. **2009**

Sanford GR, Posner JL, Schuler RT, Baldock JO. 2008. Effect of dairy slurry on soil compaction and corn (Zea mays L.) yield in southern Wisconsin. *Soil Till. Res.* 100: 42-53. **2008**

Oates LG, **Sanford GR**, Roley S, Robertson GP, Jackson RD. Senescence and mechanical biomass loss in the production of dedicated bioenergy cropping systems. *Agron J.* **in prep** ***in prep***

Sanford GR, Robertson GP, Thelen KD, Jackson RD. 2017. Comparative productivity of alternative cellulosic bioenergy cropping systems on marginal lands in the North Central USA. *Ag. Ecosys. Env.* **in prep** ***in prep***

Invited Talks (2018 to present)

Soil Health Economics Forum: Minnesota Office for Soil Health **2020**
"Agroecosystems for an uncertain future"

Wisconsin Energy Institute – Forward in Energy Forum **2019**
"Can plants fix our carbon problems?"

GLBRC All Science Meeting **2019**
"Bioenergy crop yields on marginal lands"

UW Extension Advanced Soil Health Training **2018**
"How intensification impacts soil properties: impacts from long-term studies"

Wisconsin Academy of Sciences, Arts and Letters **2018**
"Can we accumulate C in agricultural soils"

Nuffield Farming Scholars **2017**
"The Wisconsin Integrated Cropping Systems Trial: 28 years of research in agricultural sustainability"

Awards

UW College of Agriculture & Life Sciences: Academic Staff Excellence Award **2020**

Excellence in Teaching Award – Wisconsin Agriculture and Life Sciences Alumni Association	**2019**
J.S. Donald Short Course Teaching Award	**2018**
UW-GLBRC Critical Compensation Fund award	**2013**
Outstanding Staff Award – Department of Agronomy, UW- Madison	**2011**
Dwayne A. Rohweder Forage Extension Fellowship – Department of Agronomy, UW-Madison	**2007**

Service

Wisconsin Initiative on Climate Change Impacts (WICCI): Ag. Working Group	**2019-present**
Wisconsin National Working Lands Team: US Climate Alliance	**2019-present**
Michael Fields Agricultural Institute: Board of Directors	**2018-present**

Funding

USDA, NIFA, PI: Sanford, Co-PI: R.D. Jackson **2019-2023**
Award: $500,000.00
Sustainable intensification to improve soil health and productivity of conventional and organic grain agroecosystems of the North Central US

The Ceres Trust: Organic Research Initiative, Co-PIs: Sanford, G.R. and L.G. Oates **2014 - 2016**
Award: $177,796.00
Soil carbon and microbial community dynamics in organic cash grain rotations under intensified cover cropping and reduced tillage

Great Lake Bioenergy Research Center: Capital Equipment Funds Award **2013**
Award: $329,700

Great Lakes Bioenergy Research Center: Capital Equipment Funds Award **2014**
Award: $74,000

Teaching experience

University of Wisconsin – Madison, WI **2015-present**
Forages

This course is directed at promoting an understanding of forage production and management in the upper Midwest, covering topics of grass and legume characteristics, forage quality, and management. Responsible for curriculum development, instruction, and evaluation of 50-60 students enrolled in the fall semester of the UW's 132 year old short course program.

University of Wisconsin – Madison, WI **2015-present**
Grain Crops

This course covers corn, soybeans, and small grains covering topics of current production recommendations related to hybrid and variety selection, seedbed preparation, pest control, fertility management, harvest, storage, marketing, and crop ecology. Responsible for curriculum development, instruction, and evaluation of 50-60 students enrolled in the spring semester of the UW's 132 year old short course program.

University of Wisconsin – Madison, WI **2013-present**
Agronomy 100

Invited guest lecturer on various topics: cropping systems, forage crops, grain crops, organic agriculture

University of Wisconsin – Madison, WI **2006**
Teaching Assistant: Plant Propagation

Responsible for planning and leading discussion and lab sessions. Administered all exams and grades for the lab and aided the professor in administration and oversight of exams.

New College of Florida – Sarasota, FL **2000 - 2001**
Teaching Assistant: Field Botany

Responsible for curriculum development, grading and administering exams. Led two weekly lab sessions teaching plant identification skills and helping students with specimen collections and herbarium preparation.

Work experience

University of Wisconsin – Madison **2018 - present**
Agroecologist – Center for Integrated Agricultural Systems

University of Wisconsin – Madison **2017 - present**
Associate Scientist – Agronomy Department & Great Lakes Bioenergy Research Center

University of Wisconsin – Madison **2015 - present**
Senior Lecturer – College of Agriculture and Life Sciences

University of Wisconsin – Madison **2012 - 2017**
Assistant Scientist – Agronomy Department & Great Lakes Bioenergy Research Center

University of Wisconsin – Madison **2008 - 2012**
Research Specialist – Great Lakes Bioenergy Research Center

University of Wisconsin – Madison **2004 - 2008**
Research Assistant – Agronomy Department

Harmony Valley Farm – Viroqua, WI **2003 - 2004**
Produce and Shipping Manager

Sakata Seed America – Lehigh Acres, FL **2002 - 2003**
Research Technologist