

## Gregg R. Sanford, PhD

Associate Scientist / Senior Lecturer  
University of Wisconsin – Madison  
Department of Agronomy  
1575 University Ave.  
Madison, WI 53706

Office Phone: 608.263.6651  
E-mail: gsanford@wisc.edu

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### Education

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- 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

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### Publications

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- Osterholz, W.R., Shaviv, A., Rinot, O., Linker, R., Liebman, M., **Sanford, G.R.**, Strock, J., and M.J. Castellano. 2017. Predicting gross nitrogen mineralization and potentially mineralizable N using soil organic matter properties. *Soil Science Society of America Journal*. doi: 10.2136/sssaj2017.02.005 **2017**
- Sanford, G.R.**, Oates, L.G., Roley, S., Duncan, D.S., Jackson, R.D., Robertson, G.P., and K.D. Thelen. 2017. Biomass production a stronger driver of cellulosic ethanol yield than biomass quality. *Agronomy Journal*. 109. doi:10.2134/agronj2016.08.0454 **2017**
- Hossard, L., Archer, D.W., Bertrand, M., Colnenne-David, C., Debaeke, P., Ernfors, M., Jeuffroy, M.H., Munier-Jolain, N., Nilsson, C., Richard, G., **Sanford, G.R.**, Snapp, S.S., Jensen, E.S., and D. Makowski. 2016. A meta-analysis of maize and wheat yields in low-input vs. conventional and organic systems. *Agronomy Journal*. 108:1155-1167 **2016**

- Liang, C., Kao-Kniffin, J., **Sanford, G.R.**, Wickings, K., Balsler, T.C., and R.D. Jackson. 2016. Microorganisms and their residues under restored perennial grassland communities of varying diversity. *Soil Biology and Biochemistry*. 103:192-200. doi:10.1016/j.soilbio.2016.08.002 **2016**
- Oates, L.G., Duncan, D.S., **Sanford, G.R.**, Liang, C., and R.D. Jackson. 2016. Bioenergy cropping systems that incorporate native grasses stimulate growth of plant-associated soil microbes in the absence of nitrogen fertilization. *Agriculture Ecosystems and Environment*. 233:396-403. **2016**
- Ong, R.G., Higbee, A., Bottoms, S., Dickinson, Q., Xie, D., Smith, S.A., Serate, J., Pohlman, E., Jones, A.D., Coon, J.J., Sato, T.K., **Sanford, G.R.**, Eliert, D., Oates, L.G., Piotrowski, J.S., Bates, D.M., Cavalier, D., and Y.P. Zhang. 2016. Inhibition of microbial biofuel production in drought-stressed switchgrass hydrolysate. *Biotechnology for Biofuels*. 9. doi:10.1186/s13068-016-0657-0 **2016**
- Sanford, G.R.**, Oates, L.G., Jasrotia, P., Thelen, K.D., Jackson, R.D. and G.P. Robertson. 2016. Comparative productivity of alternative cellulosic bioenergy cropping systems in the North Central U.S.A. *Agriculture, Ecosystems and Environment*. 216:344-355. **2016**
- Skevas, T., Swinton, S., Tanner, S., **Sanford, G.R.**, and K. Thelen. 2016. Investment risk in bioenergy crops. *Global Change Biology Bioenergy*. 8:1162-1177. **2016**
- Sanford, G.R.**, Oates, L.G., Jasrotia, P., Thelen, K.D., Robertson, G.P., and R.D. Jackson. 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., and P. Thornley Eds. AAB, Warwick, UK. pp. 19-23. **2015**
- Sanford, G.R.**, Posner, J.L., Hedtcke, J.L., and R.D. Jackson. 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, B.M., Stockdale, E.A., and C. Watson 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, C.L., Boone, C.M., Bates, D., Cavalier, D., Eilert, D., Oates, L.G., **Sanford, G.R.**, Sato, T., Dale, B., Landick, R., Piotrowski, J., Ong, R.G., and Y. Zhang. 2015. Controlling microbial contamination during hydrolysis of AFEX-pretreated corn stover and switchgrass: effects on hydrolysate composition, microbial response and fermentation. *Biotechnology for Biofuels*. 8:180. **2015**
- Hedtcke, J.L., **Sanford, G.R.**, Hadley, K.E, and K.D. Thelen. 2014. Maximizing land use during switchgrass establishment in the North Central United States. *Agronomy Journal*. 106: 596-604. **2014**
- Sanford, G.R.** 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, G.R.**, and C.J. Kucharik. 2013. Effect of methodological consideration on soil carbon parameter estimates obtained via the acid hydrolysis-incubation method. *Soil Biology and Biochemistry*. 67: 295-305. **2013**
- Sanford, G.R.**, Posner, J.L., Kucharik, C.J., Jackson, R.D., Hedtcke, J.L. and T. Lin. 2012. Soil carbon lost from Mollisols of the North Central U.S.A. with 20 years of agricultural best management practices. *Agricultural Ecosystems and Environment*. 162:68-76. **2012**
- Liang, C., **Sanford, G.R.**, Jackson, R.D., and T.C. Balser. 2011. Potential legacy effects of biofuel cropping systems on soil microbial communities in southern Wisconsin, USA. *Journal of Agricultural Sciences*. 2:131-137. **2011**
- Sanford, G.R.**, Cook, A.R., Posner, J.L., Hedtcke, J.L., Hall, J.A., and J.O. Baldock. 2009. Linking Wisconsin dairy and grain farms via manure transfer for corn production. *Agronomy Journal*. 101:167-174. **2009**
- Sanford, G.R.**, Posner, J.L., and G.L. Hadley. 2009. Economics of hauling dairy slurry and its value in Wisconsin corn grain systems. *Agriculture Food and Environmental Science*. 3:1-10. **2009**
- Sanford, G.R.**, Posner, J.L., Schuler, R.T., and J.O. Baldock. 2008. Effect of dairy slurry on soil compaction and corn (*Zea mays* L.) yield in southern Wisconsin. *Journal of Soil and Tillage Research*. 100:42-53. **2008**

Oates, L.G., **Sanford, G.R.**, Roley, S., Robertson, G.P., and R.D. Jackson. 2017. Senescence and mechanical biomass loss in the production of dedicated bioenergy cropping systems. *Agron J.* *in prep*

**Sanford, G.R.**, Ferraro, J., Robertson, G.P., Thelen, K.D and R.D. Jackson. 2017. Comparative productivity of alternative cellulosic bioenergy cropping systems on marginal lands in the North Central USA. *Ag. Ecosys. Env.* *in prep*

**Sanford, G.R.**, Cates, A., von Haden, A.C., Roley, S., Robertson, G.P., and R.D. Jackson. 2017. Soil carbon dynamics in dedicated bioenergy crops. *Ag. Ecosys. Env.* *in prep*

Sanford, G.R., and C.J. Kucharik. In prep. Soil carbon dynamics along an agroecosystem land-cover gradient on Mollisols of southern Wisconsin. *Soil Sci. Soc. Am. J.* **in prep**

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## Awards

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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**

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## Funding

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*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

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**Teaching experience**

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*The 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.

*The 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.

*The 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**

Responsibilities included developing lab curriculum with professor for the first year of the course, and grading and administering exams. Led two weekly lab sessions teaching plant identification skills and helping students with specimen collections and herbarium preparation.

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**Invited lectures (2015 to present)**

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*Nuffield Farming Scholars*

**2017**

“The Wisconsin Integrated Cropping Systems Trial: 28 years of research in agricultural sustainability”

*IPM Field Crop Scout Training Class*

**2016**

“Corn growth and development”

<i>UW-Madison Agronomy Colloquium</i> “The Wisconsin Integrated Cropping Systems Trial: 26 years of research in agricultural sustainability”	<b>2016</b>
<i>GLBRC – All Science Retreat</i> “Productivity of bioenergy crops on marginal lands”	<b>2016</b>
<i>IPM Field Crop Scout Training Class</i> “Corn growth and development”	<b>2016</b>
<i>Wisconsin Public Radio – the Larry Meiller Show</i> “Sustainable Biofuel Research in Wisconsin”	<b>2016</b>
<i>Iowa County Grazing Network</i> “Grasslands, Grazing, and Soil Quality”	<b>2016</b>
<i>Bethel Lutheran Church – Mens Fellowship</i> “Productivity of alternative biomass crops”	<b>2015</b>

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**Selected presentations (2015 to present)**

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<i>Biomass and Energy Crops V: Association of Applied Biologists Brussels, Belgium</i> “Comparative productivity of maize, switchgrass, miscanthus, poplar, prairie, and other cellulosic bioenergy crops in the North Central US”	<b>2016</b>
<i>UW Agronomy/Soils Field Day</i> “Managing Organic Cropping Systems for Carbon”	<b>2015</b>
<i>UW Organic Agriculture Field Day</i> “The Wisconsin Integrated Cropping System Trial: Productivity, Profitability, and Ecosystem Services”	<b>2015</b>

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## Work experience

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*University of Wisconsin – Madison*

**2017 - present**

**Associate Scientist** – Agronomy & Great Lakes Bioenergy Research Center

*University of Wisconsin – Madison*

**2015 - present**

**Senior Lecturer** – College of Agriculture and Life Sciences

Responsible for curriculum development and instruction of two courses covering grain crop production and management and forage production for the UW's 133 year old short course program. Average enrolment is between 50 and 60 students per course.

*University of Wisconsin – Madison*

**2012 - 2017**

**Assistant Scientist** – Agronomy & Great Lakes Bioenergy Research Center

Responsibilities include analysis and publication of data derived from bioenergy related and integrated crop-livestock cropping systems trials in Wisconsin and Michigan, design and implementation of agronomic field trials, and development of independent research related to sustainable agricultural systems and the production of dedicated bioenergy crops with an emphasis on sustainable intensification, crop productivity, crop livestock re-integration, and soil quality metrics such as carbon pools and their dynamics. Additional responsibilities include the management and oversight of the 40 acre Biofuel Cropping System Experiment and the 60 acre Wisconsin Integrated Cropping Systems Trial both in Arlington, WI as well as a network of four Marginal Lands Experiments (MLE's) throughout the state (80 acres), production trials of dedicated bioenergy poplar clones, and a number of field research trials conducted in collaboration with Midwestern BioAg.

*University of Wisconsin – Madison*

**2008 - 2012**

**Research Specialist** – Great Lakes Bioenergy Research Center

Responsible for the management of a 40 acre intensive biofuel cropping systems trial located at the UW agricultural research station in Arlington, WI. Additional responsibilities include management of a field lab and feedstock supply facility to support multi-disciplinary bioenergy research at the GLBRC. Responsibilities include prioritizing and developing work plans for student and LTE labor, collecting, vetting, and selecting bids for remodeling work, overseeing remodeling efforts, managing the annual budget for agronomic components of the trial as well as for the field lab, maintaining lab and field equipment, and making and implementing agronomic decisions related to planting, pest management, and harvest.

*University of Wisconsin – Madison*

**2004 - 2008**

**Research Assistant** – Agronomy

Provided technical assistance in support of the UW Agronomy farming systems lab directed by Dr. Joshua Posner. Responsibilities included: field data collection, data analysis, and paper publication.

*Harmony Valley Farm – Viroqua, WI*

**2003 - 2004**

**Produce and Shipping Manager**

Managed packing-shed for 80 acre diversified organic vegetable farm. Directed crews of up to fifteen people in tasks including washing, sorting, packing and shipping of produce. Responsible for spring greenhouse work including seed sterilization, seeding, watering, and application of organic pesticides and beneficial organisms. Fall through spring responsibilities include planning for upcoming season, database management, seed inventories, farm maintenance, tractor work, and transplanting.

*Sakata Seed America – Lehigh Acres, FL*

**2002 - 2003**

**Research Technologist**

Assisted fruit breeder with full spectrum of research tasks: implementing plant breeding design, processing fruits and seeds, managing greenhouse cultural practices, working with seed inventory and data management. Responsible for supervising and coordinating work crews.

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