

Terrance D. Loecke

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RESEARCH INTERESTS

Terrestrial biogeochemistry, soil-plant-atmosphere interactions, terrestrial ecosystem feedbacks to global change phenomena, greenhouse gas emissions, urban ecology, and agroecology

EDUCATION

- 2007 Ph.D., Crop and Soil Sciences, Michigan State University and W.K. Kellogg Biological Station (KBS), Hickory Corners, MI.
Dissertation title: Soil resource heterogeneity and ecosystem processes: effects of litter aggregation on soil microbial processes and plant root foraging.
- 2002 M.S. Crop Production and Physiology, Agronomy Department, Iowa State University, Ames, IA.
Thesis title: Composting and time of application affect corn (*Zea mays* L.) dry matter and grain yield response to deep-bedded swine (*Sus scrofa* L.) manure.
- 1999 B.A., *cum laude*, Biology with an Environmental Emphasis, University of Northern Iowa, Cedar Falls, IA.

PROFESSIONAL EXPERIENCE

- 2008-Present Postdoctoral Fellow, Cary Institute of Ecosystem Studies, Millbrook, NY.
- 2002-2007 Graduate Research Assistant, G. Philip Robertson Lab
- 2005-2007 Graduate Teaching Assistant, Michigan State University
Classes: Soil Biology Laboratory (2 semesters), K-12 Classroom Resource Scientist (2 semesters)
- 2000-2002 Graduate Research Assistant, Matt Liebman Lab
- 2001 Graduate Teaching Assistant, Iowa State University
Class: Weed Science
- 1999-2000 Research Associate, Iowa State University, Tom Richard Lab
- 1999 Research Associate, University of Northern Iowa, Laura Jackson Lab
- 1998 Research Intern, The Land Institute, Salina, KS

GRANTS & FELLOWSHIPS

- 2008-2010 USDA NRI Soil Processes Post Doctoral Fellowship - \$124,774
- 2006-08 NSF-Doctoral Dissertation Improvement Grant - \$9590
- 2007 Long-Term Ecological Research (LTER) Cross-site Synthesis Grant (\$7500)
Kominoski, J., Manhey, W., Adams, H., Ball, B., Burgin, A, Crenshaw, C., H., Jones, H., Kane, E., **Loecke, T.**, Prather, C., Robinson, T., Sobota, D., Solomon, C., The influence of changes in terrestrial plant community structure on aquatic ecosystem function across the LTER network.
- 2006 Eugene P. Whiteside Pedology Award - \$2400
- 2005-07 USDA NCR-SARE Graduate Student Grant - \$9970

2005-07 Soil organic matter dynamics in organic cropping systems, USDA Sustainable Agriculture Grant, G.P. Robertson (PI), T.D. Loecke (Co-PI) - \$53,644
2005 Kellogg Biological Station-LTER Small Grant - \$1500
2004 George Lauff Research Fellowship, Kellogg Biological Station - \$300
2002 Recruitment Fellowship, Michigan State University - \$3500

PUBLICATIONS

Loecke, T.D. and G.P. Robertson. *Submitted*. Soil heterogeneity in the form of aggregated litter alters maize productivity. *Plant and Soil*

Loecke, T.D. and G.P. Robertson. *In press*. Soil resource heterogeneity in terms of litter aggregation promotes nitrous oxide fluxes and slows decomposition. *Soil Bio. Biochem.* doi:10.1016/j.soilbio.2008.10.017

Grandy, A.S., **T.D. Loecke**, S. Parr, and G.P. Robertson. 2006. Long-term trends in nitrous oxide emissions, soil nitrogen, and crop yields of till and no-till cropping systems. *J. Environ. Qual.* 35:1487-1495.

Sadaka, S.S., T.L. Richard, **T.D. Loecke**, and M. Liebman. 2006. Determination of compost respiration rates using pressure sensors. *Compost Sci. Util.* 14:124-131

Loecke, T.D., M. Liebman, C.A. Cambardella, and T.L. Richard. 2004. Corn growth responses to composted and fresh solid swine manure. *Crop Sci.* 44:177-184.

Loecke, T.D., M. Liebman, C.A. Cambardella, and T.L. Richard. 2004. Composting and timing of application affect corn yield response to solid swine manure. *Agron. J.* 96:214-223.

In preparation to be submitted

Loecke, T.D., R.L. Graef, C.A. Cambardella, M. Liebman, and T.L. Richard. *In prep*. Net nitrogen mineralization and plant nitrogen uptake synchrony as affected by incorporation timing and organic soil amendment quality. *Under internal review to be submitted to Plant and Soil*

Loecke, T.D. and G.P. Robertson. *In prep*. Root foraging is responsive to soil microsite resource quality and availability. *In preparation to be submitted to Cell, Plant, and the Environment*

Loecke, T.D. and G.P. Robertson. *In prep*. Litter aggregation alters terrestrial nitrogen cycling. *In preparation to be submitted to Plant and Soil*

Ball, B.A., J.S. Kominoski, H.E. Adams, S.E. Jones, E.S. Kane, **T.D. Loecke**, W.M. Mahaney, J.P. Martina, C.M. Prather, T.M.P. Robinson, and C.T. Solomon. *In prep*. Putting the pieces together: global environmental changes and terrestrial-aquatic linkages. *Under friendly review to be submitted to Frontiers in Ecology and the Environment*

PRESENTED PAPERS

*** invited presentation**

Loecke, T.D. and P.M. Groffman. 2008. A novel approach for studying atmospheric CO₂ consequences in Baltimore metropolitan forests. *Volunteer Oral Presentation Baltimore Ecosystem Study Long-term Ecological Research Annual All-scientists Meeting*, Baltimore, MD. 10-15-08.

- Loecke, T.D.** and G. P. Robertson. 2008. Agronomic and Environmental Implications of Sub-Plant Scale Soil Resource Heterogeneity. *Volunteer Oral Presentation. Soil Science Society of America Annual Meeting*, Houston, TX. 10-6-08.
- Loecke, T.D.*** 2008. The Influence of Spatial Heterogeneity on C and N Cycling in Managed Ecosystems. *Invited Seminar Department of Agronomy. Iowa State University, Ames, IA.* 5-28-08.
- Loecke, T.D.,** P.M. Groffman, and K.K. Treseder. 2008. Getting ahead of the Mauna Loa curve: Does it matter if a step or a ramp is used to understand terrestrial feedbacks? *Invited Poster USDA-NRI Soil Processes Principle Director's Annual Meeting*, Menlo Park, CA. 2-25-08.
- Loecke, T.D.,** and G.P. Robertson. 2007. The Functional Significance of Plant-Scale Soil Resource Spatial Heterogeneity. *Volunteer Presentation. Soil Ecology Society Bi-annual Meeting*, Moab, UT. 4-30-07.
- Loecke, T.D.,** and G.P. Robertson. 2006. Residue Aggregation Affects Nitrous Oxide Emissions. *Volunteer Presentation. ASA-CSSA-SSSA Annual Meetings*, Indianapolis, IN. 11-16-06.
- Loecke, T.D.,** and G.P. Robertson. 2006. Rhizosphere Spatial Distribution in Response to Resource Heterogeneity and Availability. *Volunteer Poster. LTER All-Scientists Meeting*. Estes Park CO. 9-23-06
- Loecke, T.D.,** and G.P. Robertson. 2006. Soil Resource Aggregation Influences N Mineralization and Plant N Uptake. *Volunteer Presentation. Ecological Society of America Annual Meeting*. Memphis, TN. 9-9-06
- Loecke, T.D.,** and G.P. Robertson. 2005. Spatial aggregation affects decomposition, plant growth, and root proliferation. *Volunteer Poster. Ecological Society of America Annual Meeting*. Montreal, QC, CA. 9-10-05
- Loecke, T.D.,** and G.P. Robertson. 2005. Spatial aggregation influences decomposition, plant growth, and root proliferation. *Volunteer Poster. Soil Ecology Society Meeting*. Agronomie National Laboratory, Chicago, IL. 5-24-05
- Loecke, T.D.,** and G.P. Robertson. 2004. Does soil resource spatial heterogeneity influence plant growth? *Volunteer Poster. LTER-KBS All-Scientist Meeting*. East Lansing, MI 10-8-04.
- Loecke, T.D.,** and G.P. Robertson. 2003. Plant-species and plot-history influence on N₂O emission. *Volunteer Poster. LTER All-Scientist Meeting*. Seattle, WA. 9-20-03.
- Loecke, T.D.,** M. Liebman, C.A. Cambardella, and T.L. Richard. 2002. Timing of application and composting affect corn yield response to solid swine manure. *Volunteer Presentation. ASA-CSSA-SSSA Annual Meetings*, Indianapolis, IN. 11-13-02.
- Loecke, T.D.** and L.L. Jackson. 2001. Uncoupled nutrient cycles in midwestern agroecosystems: N and P flows on diversified farms vs. confined livestock operations. *Volunteer Poster. Annual Ecological Society of America Meeting*, Madison, WI. 8-3-01.
- Loecke T.D.,** C.A. Cambardella, M. Liebman, and T.L. Richard. 2001. Corn yield response to time of application and form of swine hoop manure. *Volunteer Poster. Practical Farmers of Iowa Winter Meeting*, Ames, IA. 1-12-01.

PROFESSIONAL SERVICE

Manuscript Reviewer: Soil Science, Plant and Soil, Agronomy Journal, Biogeochemistry

Organized Workshops:

1. Comparing Ecosystem Functions and Services Across Biomes. *Symposium Workshop Organized. 1st LTER Graduate Student Collative Research Symposium*. Andrew Experimental Forest, OR. 4-16-05.
2. Stable Isotopes in Ecology. *Symposium Workshop Organized. 2nd LTER Graduate Student Collative Research Symposium*. Estes Park, CO 9-14-06.

STUDENT MENTORING

Sarah Seehaver, Kalamazoo College Senior Individual Project, 2005

Chris Smart, Kalamazoo College Senior Individual Project, 2006

Matthew Beckwith, Keuka College, 2006

Hannah Birgé, St. Olaf College (Cary Institute REU), 2008

PROFESSIONAL SOCIETY MEMBERSHIPS

Ecological Society of America (ESA), American Society of Agronomy, Crop Science Society of America, Soil Science Society of America, American Geophysical Union (AGU)

REFERENCES

Dr. G. Philip Robertson

Professor of Ecosystem Sciences
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