

Michael L. Thompson - Curriculum Vitae

Agronomy Department, Iowa State University, Ames, Iowa 50011

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Professional Preparation

- Ohio State University, Columbus, Ph.D., Agronomy (Soil Genesis) (1980)
- University of Illinois, Urbana-Champaign, B.S., with High Honors, Agricultural Sciences (1974)

Employment

- Professor, Agronomy Department, Iowa State University, Ames (2005-present)
- Visiting Professor, School of Nat. Res. and Environ., Shandong Agricultural University, Tai'an, China (2018 – present)
- Visiting Professor, School of Nat. Res. and Environ., Anhui Agricultural University, Hefei, China (2016 – present)
- Pioneer Hi-Bred Professor of Agronomy, Agronomy Department, Iowa State University, Ames (2007 – 2010)
- Associate Professor, Agronomy Department, Iowa State University, Ames (1989-2005)
- Fulbright Junior Lecturer, Institut National Agronomique, Paris, France (October 1985 - June 1986)
- Assistant Professor, Agronomy Department, Iowa State University, Ames (1980-1989)

Recent Teaching Program

- *Environmental Soil and Water Chemistry* (with laboratory) (2003 – present)
- *Organic Compounds in Plants and Soils* (2011 – present)
- *Soil – Plant Relationships* (2015, 2016)

Current Research Program

My research program centers on environmental applications of soil chemistry and mineralogy. These studies seek to identify chemical and physical conditions that favor stability, transformations, and movement of nutrients, soil organic matter, and anthropogenic contaminants in soils. Current research projects include quantification of the impacts of biofuel cropping systems on plant nutrients in soil, the mechanisms of colloid-mediated transport of hormones derived from municipal biosolids, and the composition of organic matter preserved in Quaternary paleosols.

Awards and Honors

- **Fellow**, American Association for the Advancement of Science (2010)
- **Fellow**, Soil Science Society of America (2008) and American Society of Agronomy (2008)
- **Outstanding Associate Editor**, Journal of Environmental Quality (2008)

Professional Associations

- Soil Science Society of America
- American Society of Agronomy
- The Clay Minerals Society
- Iowa Water Environment Foundation
- American Association for the Advancement of Science

Recent Publications

Book

Schaetzl, R.J., and M.L. Thompson. 2015. **Soils: Genesis and Geomorphology**. Cambridge Press, New York.

Recent Refereed Journal Articles (2012-present)

- Zhang, Ligan; Chen, Xi; Xu, Yujun; Jin, Mengcan; Ye, Xinxin; Gao, Hongjian; Chu, Wenying; Mao, Jingdong; and Thompson, Michael L. 2020. Soil labile organic carbon fractions and soil enzyme activities after 10 years of continuous fertilization and wheat residue incorporation. *Sci. Rep.* 10:1-10.
- Chen, X.; X. Ye, W. Chu, D. Olk, X. Cao, K. Schmidt-Rohr, L. Zhang, M.L. Thompson, J. Mao, H. Gao. 2020. Formation of char-like, fused-ring aromatic structures from a non-pyrogenic pathway during decomposition of wheat straw. *J Agric. Food Chem.* 68:2607-2614. doi: 10.1021/acs.jafc.9b06037.
- Kalkhajah, Y.K., B.J. Amiri, B. Huang, A.H. Khalyani, H. Wenyou, H. Gao, and M.L. Thompson. 2019. Methods for sample collection, storage, and analysis of freshwater phosphorus. *Water*. In press.
- Ma C., X. Chen, J. Zhang, Y. Zhu, Y. Kalkhajah, R. Chai, X. Ye, H. Gao, W. Chu, J. Mao, and M.L. Thompson. 2019. Linking chemical structure of dissolved organic carbon and microbial community composition with submergence-induced soil organic carbon mineralization. *Sci. Tot. Environ.* DOI: 10.1016/j.scitotenv.2019.07.286.
- Chen, X., M. Jin, Y. Xu, W. Chu, D.C. Olk, J. Hu, Y. Jiang, J. Mao, H. Gao, and M.L. Thompson. 2019. Potential alterations in the chemical structure of soil organic matter components during NaOH extraction. *J. Environ. Qual.* In press.
- Rahutomo, S., J.L. Kovar, and M.L. Thompson. 2019. Malachite green method for determining phosphorus concentration in diverse matrices. *Commun. Soil Sci. Plant Anal.* DOI: 10.1080/00103624.2019.1635140.

- Forsythe, N.A., P.G. Spry, and M.L. Thompson. 2019. Low-sulfidation Au- and porphyry Cu-style mineralization, Navilawa Caldera, Fiji. *Geosciences* 9:42; DOI:10.3390/geosciences9010042.
- Rahutomo, S., J.L. Kovar, and M.L. Thompson. 2019. Phosphorus transformations in stream bank sediments in Iowa, USA, at varying redox potentials. *J. Soils Sediments*. 19:1029–1039. DOI:10.1007/s11368-018-2139-4.
- Chen, X., M. Jin, Y. Zhang, J. Hu, H. Gao, W. Chu, J. Mao, and M.L. Thompson. 2018. Nitrogen application increases abundance of recalcitrant compounds of soil organic matter: A six-year case study. *Soil Sci.* 183:169–178.
- Rahutomo, S., Kovar, J.L., and Thompson, M.L. 2018. Varying redox potential affects P release from stream bank sediments. *PLoS ONE* 13(12):e0209208. DOI: 10.1371/journal.pone.0209208.
- Ibrahim, M.A., Chua-Ona, T., Liebman, M., and M.L. Thompson. 2018. Soil organic carbon storage under biofuel cropping systems in a humid, continental climate. *Agron. J.* 110:1748-1753.
- Chen, X., Y. Xu, H. Gao, J. Mao, W. Chu, and M.L. Thompson. 2018. Biochemical stabilization of soil organic matter in straw-amended, anaerobic and aerobic soils. *Sci. Tot. Environ.* 625:1065-1073.
- Rahutomo, S., J.L. Kovar, and M.L. Thompson. 2018. Inorganic and organic phosphorus in sediments in the Walnut Creek Watershed of Central Iowa, USA. *Water, Air, & Soil Pollution* 229:72. DOI:10.1007/s11270-018-3721-5.
- Chen, X., A. Mao, Y. Zhang, L. Zhang, J. Chang, H. Gao, and M.L. Thompson. 2017. Carbon and nitrogen forms in soil organic matter influenced by incorporated wheat and corn residues. *Soil Sci. Plant Nutr.* 63:377-387.
- Liang, X., Liao, C., Soupier, M.L., Jarboe, L.R., Thompson, M.L., Dixon, P.M. 2017. *Escherichia coli* attachment to model particulates: The effects of bacterial cell characteristics and particulate properties. *PLOS ONE*. 12: e0184664. DOI: 10.1371/journal.pone.0184664.
- Liao, C., Liang, X., Yang, F., Soupier, M.L., Howe, A.C., Thompson, M.L., Jarboe, L.R. 2017. Allelic variation in outer membrane protein A and its influence on attachment of *Escherichia coli* to corn stover. *Frontiers in Microbiology* 8:708.
- Fidel, R.B., D.A. Laird, M.L. Thompson, and M. Lawrinenko. 2017. Characterization and quantification of biochar alkalinity. *Chemosphere* 167:367–373.
- Meng, Y., T. Chua-Ona, and M.L. Thompson. 2016. Short-term nitrogen mineralization potential in soils of biofuel cropping systems. *Soil Sci.* 181. *Soil Sci.* 181:503–512.
- Liang X., Liao C., M.L. Thompson, M.L. Soupier, L.R. Jarboe, and P.M. Dixon. 2016. *E. coli* surface properties differ between stream water and sediment environments. *Front. Microbiol.* 7:1732. DOI: 10.3389/fmicb.2016.01732.
- Prater J.R., R. Horton, and M.L. Thompson. 2016. Impacts of environmental colloids on the transport of 17 β -estradiol in intact soil cores. *Soil and Sediment Contamination: An International Journal* 25:164-180. DOI: 10.1080/15320383.2016.1112360.
- Gao, H., X. Chen, J. Wei, Y. Zhang, L. Zhang, J. Chang, and M.L. Thompson. 2016. Decomposition dynamics and changes in chemical composition of wheat straw residue under anaerobic and aerobic conditions. *PLOS ONE* 11:e0158172. DOI: 10.1371/journal.pone.0158172.
- Hongthanat, N., J.L. Kovar, M.L. Thompson, J.R. Russell, and T.M. Isenhardt. 2016. Phosphorus source—sink relationships of stream sediments in the Rathbun Lake watershed in southern Iowa, USA. *Environ. Monit. Assess.* 188:453-467. DOI:10.1007/s10661-016-5437-6.
- Prater, J.R., R. Horton, and M.L. Thompson. 2015. Reduction of estrone to 17 β -estradiol in the presence of swine manure colloids. *Chemosphere* 119:642–645.
- Zhou, Z., N. Chen, X. Cao, T. Chua, J. Mao, R.D. Mandel, E.A. Bettis III, and M.L. Thompson. 2014. Composition of clay-fraction organic matter in Holocene paleosols revealed by advanced solid-state NMR spectroscopy. *Geoderma* 223:54-61.
- Jarchow, M.E., M. Liebman, S. Dhungel, R. Dietzel, D. Sundberg, R.P. Anex, M.L. Thompson, and T. Chua. 2014. Trade-offs among agronomic, energetic, and environmental performance characteristics of corn and prairie bioenergy cropping systems. *GCB Bioenergy* 7:57-71. DOI:10.1111/gcbb.12096.
- Rivas, F.A., M.A. Tabatabai, D.C. Olk, M.L. Thompson. 2013. Kinetics of short-term carbon mineralization in roots of biofuel crops in soils. *Biology and Fertility of Soils* 50:527-535.
- Fidel, R.B., D.A. Laird, M.L. Thompson. 2013. Evaluation of modified Boehm titration methods for use with biochars. *Journal of Environmental Quality* 42:1771-1778.
- Mao, J.-D., R.L. Johnson, J. Lehmann, D.C. Olk, E.G. Neves, M.L. Thompson, and K. Schmidt-Rohr. 2012. Abundant and stable char residues in soils: Implications for soil fertility and carbon sequestration. *Environ. Sci. Technol.* 46: 9571–9576.