M. Scott Demyan, PhD

Email: demyan.4@osu.edu

Education:

2013	PhD. Major: Agricultural Sciences. University of Hohenheim, Stuttgart, Germany. 2013. Dissertation: "Development of coupled mid-infrared spectroscopic and thermal analytical approaches for the characterization and modeling of soil organic matter dynamics of arable soils."
2006	MSc. Major: Soil Science. The Ohio State University, Columbus, Ohio, USA. 2006. Thesis: "Chemical and physical changes in twenty five year-old minesoils in Southeast Ohio."
2003	BSc. Natural Resources. Major: Environmental Science. The Ohio State University, Columbus, Ohio, USA.

Work experience

Jan 2017-	Assistant professor (100%), soil and environmental mineralogy at the Ohio State University, School of Environment and Natural Resources.
Dec 2013-Nov 2016	Post doctoral researcher (100%) at the University of Hohenheim, Institute of Crop Science within the Research Unit "Agricultural Landscapes under Global Climate Change – Processes and Feedbacks on a Regional Scale (FOR 1695)." Duties: subproject coordination, report and proposal preparation, experimental design, and modeling of soil organic matter dynamics.
Apr 2012-Dec 2013	Research assistant (65% April to July, 2012; 100% Aug, 2012-Dec, 2013) at the University of Hohenheim, Institute of Crop Science within the Research Unit "Agricultural Landscapes under Global Climate Change – Processes and Feedbacks on a Regional Scale (FOR 1695)." Duties: experimental design, data collection, and method development to study and model soil organic matter dynamics.

Sept 2008-Mar 2012 Research assistant (50%) at the University of Hohenheim, Institute of Plant Production and Agroecology in the Tropics and Subtropics, Stuttgart, Germany within PAK Project 346, "Structure and Functions of Agricultural Landscapes under Global Climate Change-Processes and Projections on a Regional Scale." Duties: experimental design, data collection, and analytical method development to study soil organic matter dynamics.

Jun 2006-Aug 2008 U.S. Peace Corps environmental education volunteer- Gyumri, Armenia. Soil and water quality research project development and implementation in Shirak Village, research on deforestation and erosion on soil properties near Hrazdan, informal environmental education activities, and local NGO capacity building.

Jan 2004-Jun 2006 Graduate teaching/research associate in the School of Natural Resources, The Ohio State University, Columbus, Ohio, USA. Teaching associate for introductory soil science laboratory and pedology courses.

Sept 2001-Dec 2003 Student laboratory worker (part time), Soil Characterization Lab, Cooperative Soil Survey, The Ohio State University, Columbus, Ohio, USA. Performing analysis on total carbon, in organic carbon, pH, particle size analysis, extractable bases, X-ray diffraction, and surface area.

Oct 2000-Sept 2001 Student laboratory worker (part time), Plant Biotechnology Center, The Ohio State University, Columbus, Ohio, USA. Job included general lab duties such as cleaning of lab ware, making solutions and growth media, and care of corn and Arabidopsis plants.

Publications

Tokarski, D., Kučerík, J., Kalbitz, K., **Demyan, M. S.**, Merbach, I., Barkusky, D., Ruehlmann, J. and Siewert, C. 2018. Contribution of organic amendments to soil organic matter detected by thermogravimetry. *J. Plant Nutr. Soil Sci.*, 181: 664-674. doi:10.1002/jpln.201700537

Nkwain, F.N., **Demyan, M.S.**, Rasche, F., Dignac, M.-F., Schulz, E., Kätterer, T., Müller, T., Cadisch. G. 2018. Coupling pyrolysis with mid-infrared spectroscopy (Py-MIRS) to fingerprint soil organic matter bulk chemistry. *J. Anal. Appl. Pyrolysis*, 133: 176-184. doi.org/10.1016/j.jaap.2018.04.004

Ali, R.S, Kandeler, E., Marhan, S., **Demyan, M.S.**, Ingwersen, J., Mirzaeitalarposhti, R., Rasche, F., Cadisch, G., Poll, C. 2018. Controls on microbially regulated soil organic carbon decomposition at the regional scale. *Soil Bio. Biochem*.; **118**: 59-68,

Kučerík, J., Tokarski, D., **Demyan, M.S**., Merbach, I., Siewert, C. 2018. Linking soil organic matter thermal stability with contents of clay, bound water, organic carbon and nitrogen. *Geoderma*, **316**: 38-46.

Mirzaeitalarposhti, R., **Demyan, M. S.,** Rasche, F., Cadisch, G., & Müller, T. 2017. Mid-infrared spectroscopy to support regional-scale digital soil mapping on selected croplands of South-west Germany. *Catena*, **149**, 283-293.

Mirzaeitalarposhti, R., **Demyan, M. S.,** Rasche, F., Cadisch, G., & Müller, T. 2017. Mid-infrared spectroscopy to support regional-scale digital soil mapping on selected croplands of South-west Germany. Catena, **149**, 283-293. doi:10.1016/j.catena.2016.10.001

Demyan, M.S., J. Ingwersen, Y.N. Funkuin, R.S. Ali, R. Mirzaeitalarposhiti, F. Rasche, C. Poll, T. Müller, T. Streck, E. Kandeler, & G. Cadisch. 2016. Partitioning of ecosystem respiration in winter wheat and silage maize-modeling seasonal temperature effects. *Agriculture, Ecosystems and Environment*, **224**, 131-144.

Kucerik, J., **M.S. Demyan**, & C. Siewert. 2016. Practical application of thermogravimetery in soil science: Part 4. Relationship between clay, organic carbon and organic matter contents. *Journal of Thermal Analysis and Calorimetry*, **123**, 2441-2450.

Mirzaeitalarposhiti, R., **M.S. Demyan**, F. Rasche, G. Cadisch, & T. Müller. 2016. Overcoming carbonate interference on labile soil organic matter peaks for midDRIFTS analysis. *Soil Biology and Biochemistry*, **99**, 150-157.

Ali, R.S., J. Ingwersen, **M.S. Demyan**, Y.N. Funkuin, H.-D. Wizemann, E. Kandeler, & C. Poll. 2015. Modelling *in situ* activities of enzymes as a tool to explain seasonal variation of soil respiration from agro-ecosystems. *Soil Biology and Biochemistry*, **81**, 291-303.

Mirzaeitalarposhti, R., **M.S. Demyan**, F. Rasche, M. Poltoradnev, G. Cadisch, & T. Müller. 2015. MidDRIFTS-PLSR-based quantification of physico-chemical soil properties across two agroecological zones in Southwest Germany: generic independent validation surpasses region specific cross-validation. *Nutrient Cycling in Agroecosystems*, 102:265-283.

Smirnova, N., **Demyan, M**., Rasche, F., Cadisch, G. & Müller, T. 2014. Calibration of CO_2 trapping in alkaline solutions during soil incubation at varying temperatures using a Respicond VI. *Open Journal of Soil Science*, **4**, 161-167. DOI: 10.4236/ojss.2014.45019

Demyan, M.S., Rasche, F., Schütt, M., Smirnova, N., Schulz, E. & Cadisch, G. 2013. Combining a coupled FTIR-EGA system and in situ DRIFTS for studying soil organic matter in arable soils. *Biogeosciences*, **10,** 2897-2913. doi:10.5194/bg-10-2897-2013

Giacometti, C., **Demyan, M.S.**, Cavani, L., Marzadori, C., Ciavatta, C. & Kandeler, E. 2013. Chemical and microbiological soil quality indicators and their potential to differentiate fertilization regimes in temperate agroecosystems. *Applied Soil Ecology*, **64**, 32-48. doi:10.1016/j.apsoil.2012.10.002.

Siewert, C., Barsukov, P., **Demyan, S.**, Babenko, A., Lashchinsky, N., & Smolentseva, E. 2013. Teaching soil science and ecology in West Siberia: 17 years of field courses. *Environmental Education and Research*, **20**, 858-876. doi:10.1080/13504622.2013.839778.

Demyan, M.S., Rasche, F., Schulz, E., Breulmann, M., Müller, T. & Cadisch, G. 2012. Use of specific peaks obtained by diffuse reflectance Fourier transform mid-infrared spectroscopy to study the composition of organic matter in a Haplic Chernozem. European Journal of Soil *Science,* **63,** 189-199. DOI: 10.1111/j.1365-2389.2011.01420.x

Siewert, C., **Demyan, M.S.** & Kučerík, J. 2012. Interrelations between soil respiration and its thermal stability. *Journal of Thermal Analysis and Calorimetry,* **110,** 413-419. DOI: 10.1007/s10973-011-2099-z

Rhoades, J.L., **Demyan, M.S.** & Orr, B. 2011. Impacts of Deforestation and Land Cover Change on Mountain Soils in Hrazdan, Armenia. *Journal of Sustainable Forestry,* **30,** 677-696. DOI: 10.1080/10549811.2011.567965

Conference contributions

Demyan, S., N. Smeck How Does Soil Spatial Variability Change over 25 Years in a Reclaimed Strip Mine? 2019. Soil Science Society of America Annual Meeting, San Diego, California, USA.

Demyan, S., R. Mirzaeitalarposhti, F. Rasche, N. Funkuin, R. S. Ali, T. Müller, and G. Cadisch. 20 April, 2016. General Assembly of the European Geosciences Union. Vienna, Austria. Oral presentation.

Demyan, S., Marohn, C., Rasche, F., Mirzaeitalarposhti, R., Funkuin, Y. N., Ali, R.S., Högy, P. Ingwersen, J., Wizemann, H.-D., Müller, T., Cadisch, G. Implications of spectroscopic and thermo- spectroscopic approaches for pool parameterization of soil organic matter models. 29 April, 2014. General Assembly of the European Geosciences Union. Vienna, Austria. Oral presentation.

Demyan, S., F. Rasche, C. Marohn, T. Müller, G. Cadisch. Implications of SOM model pool parameterization via different methods. 24th October, 2012. Soil Science Society of America Annual Meeting. Cincinnati, Ohio, U.S.A. Oral presentation.

Demyan, S., F. Rasche, S. Becker-Fazekas, M. Schütt, A. R. Zinkeng, E. Schulz, T. Müller, G. Cadisch. Coupled mid-infrared spectroscopy (MIRS) and thermally evolved gas analysis to study SOM dynamics in arable soils. 3rd International Symposium on Soil Organic Matter: Organic matter dynamics-from soils to oceans. 11th-14th July, 2011. Leuven, Belgium. Oral presentation.

Demyan. S., F. Rasche, E. Schulz, S. Becker-Fazekas, M. Breulmann, T. Müller, and G. Cadisch. 2010. Soil organic matter (SOM) characterization by coupled mid-infrared spectroscopy and thermal analyses to compliment SOM fractionation. 4th International Symposium on Organic Matter Stabilization: Organic matter stabilization and ecosystem functions. 19th-23rd September 2010. Presqu'île de Giens, France. Poster

Demyan, S., N. Smirnova, F. Rasche, T. Müller, G. Cadisch. 2010. Characterization of Soil Organic Matter by Mid-Infrared Spectroscopy/Evolved Gas Analysis, Long Term Dynamics. Workshop: Regulation of soil organic matter and nutrient turnover in agriculture. University of Kassel, 12th-13th November 2009. Oral presentation

Demyan, S., F. Rasche, S. Becker-Fazekas, E. Schulz, T. Müller, and G. Cadisch. Soil organic matter characterization utilizing mid-infrared spectroscopy and thermal analyses. Euroleague for Life Sciences (ELLS) Science Student Conference on Climate Change, 4th-5th November, 2009 Hohenheim 2009. Poster

Demyan, S. and N. Smeck. 2005. Rapid pedogenesis in minesoils, changes in minesoils over 25 years. Soil Science Society of America Conference, Salt Lake City. Oral presentation.

Grants and awards

Oct 2017 "Restoring Ecosystems with bio-based wastes for BLended Soils (REBLS)", Sustainable and Resilient Economy Discovery Theme Seed Grant, The Ohio State University. (PIs: M.S. Demyan, N. Basta, M. Davies, S. Hovick, S Kawa).

Feb 2015 Co-author of project proposal FOR1695 subproject P-3 "Agricultural Landscapes under Global Climate Change – Processes and Feedbacks on a Regional Scale" (P.I.'s G. Cadisch and T. Müller). Funded by German Research Foundation

Oct 2012 Unibund, University of Hohenheim Conference Travel Support

Dec 2002 American Society of Agronomy Cross Cultural Exchange Scholarship

Teaching/supervision

ENR 3500 Introduction to Ecosystem Restoration, gave three-week block of soil lectures (Fall, 2017)

ENR 4260 Soil Resource Management, instructor of record (Spring, 2018, 2019)

ENR 8890.04 Soil Science Graduate Seminar, co-instructor (Fall, 2017; Spring, 2018)

ENR 7530 Soil and Environmental Mineralogy (Fall, 2018)

Supervised laboratory work and thesis writing of four MSc students, University of Hohenheim

Introduction to Soil Science-graduate teaching assistant, The Ohio State University

Pedology - graduate teaching assistant, The Ohio State University

Dec 2014 prepared and taught 2-week course for IAEA-FAO training mission on the use of Mid-Infrared Spectroscopy Techniques and Spectral Soil Library Data Analysis to Central University of Venezuela, Caracas, Venezuela (55 classroom and lab hours).

Aug 2012 prepared and delivered 2-week course for IAEA-FAO training mission on mid-infrared spectroscopy for research uses to the Peru Institute for Nuclear Energy, Lima, Peru (50 classroom and lab hours).

Activities and Organizations

- College of Food, Agricultural, Environmental Science Undergraduate Research Forum judge (2017, 2018)
- Denman Undergraduate Research Forum judge (2017)

- Soil Science Society of America –member
- Council for Tropical and Subtropical Agricultural Research -member
- German Soil Science Socity (DBG) - member
- reviewer for manuscripts (Journal of Environmental Management, Catena, European Journal of Soil Science, Geoderma)
- Outstanding Reviewer (Catena, 2015)
- Soil Judging at the American Society of Agronomy Regional Contests (2002, 2003) and National Contest (2004)
- Soil Science-Ecological Field Excursion to Western Siberia, Russia (July 4th-28th, 2004)
- Eagle Scout, Boy Scouts of America (March, 1998)