Ranae Dietzel

3403 Agronomy Hall
Iowa State University

Education

Iowa State University, Ames, IA 2009-2014
Doctorate of Philosophy
Crop Production & Physiology and Sustainable Agriculture

Cornell University, Ithaca, NY 2006-2009
Master of Science
Soil Science, Minors: Agronomy and Biogeochemistry

University of Minnesota – Morris, Morris, MN 2002-2006
Bachelor of Arts
Biology

Research and Teaching Experience

Iowa State University Department of Agronomy, Ames, IA Aug 2014-Present
Postdoctoral Research Associate, Lecturer

- Work in a lab group focused on addressing agronomic and environmental problems through field measurements and computer simulations
- Co-teach graduate course on Data Stewardship

Iowa State University Department of Agronomy, Ames, IA Jan 2009-2014
Graduate Research Assistant

- Examined differences in biogeochemical processes in corn- and prairie-based biofuel cropping systems

Cornell University, Ithaca, NY Aug 2006-Jan 2009
Graduate Research and Teaching Assistant

- Conducted research on the effect of freeze-thaw cycles on spring nitrous oxide emissions in cornfields with and without a winter rye cover crop, focusing on microbial mechanisms
- Assisted with teaching introductory soil science and soil ecology classes

USDA-Agricultural Research Service, Morris, MN May-Dec 2005
Biological Science Aid

- Assisted with research on trace gas fluxes
- Collected and processed soil, water, and gas samples
- Ran field and laboratory equipment

West Central Research and Outreach Center, University of Minnesota, Morris, MN
Undergraduate Research Assistant 2003-2004

- Assisted with research on low input dairies
- Measured various properties of cattle feed

Agro-Soyuz, Mayskoye, Ukraine Summer 2004
Veterinary Assistant

- Worked with dairy, swine, and ostrich
- Assisted with breeding, births, and treatments
- Assisted with veterinary research

Iowa State University, Ames, IA Summer 2003
Undergraduate Research Assistant

- Assisted with studies on the impact of land use on streams
- Field work included rain simulations, stream and stream bank measurements, and riparian zone measurements
- Lab work included water testing, soil measurements, and dishwashing

Fellowships and Grants

NIFA ELI Postdoctoral Fellowship ($150,000, PI)	2016-2018
Leopold Center for Sustainable Agriculture Competitive Grant ($48,000, PI)	2016-2019
Iowa Soybean Association Competitive Grant ($230,000, co-PI)	2015-2017
Soybean Research Center Competitive Grant ($79,805, co-PI)	2015-2016
NIFA Pre-doctoral Fellowship ($75,000, PI)	2011-2014
Andrew W. Mellon Student Research Grant	2008
Agricultural Ecology Program Mini-grant	2008
Clinton DeWitt Smith Summer Fellowship	2008
NSF Biogeochemistry and Environmental Biocomplexity Small Grant	2007

Honors and Awards

Outstanding Graduate Student, Iowa State University Department of Agronomy	2013
Crop and Soil Sciences Outstanding Teaching Assistant, Cornell University	2008
University of Minnesota – Morris Dean's Scholarship	2002-2006
Academic All-Conference Track and Field	2005, 2006
Academic All –Conference Cross Country	2005
All-American Wrestling	2003, 2004

Peer-reviewed Publications

Ordonez, R., Castellano, M., Hatfield, J., Helmers, J., Licht, M., Liebman, M., **Dietzel**, R., Martinez-Feria, R., Iqbal, J., Puntel, L., Cordova, C., Togliatti, K., Wright, E., and S. Archontoulis. *In review*. Maize and soybean root front velocity and maximum depth in the Midwest USA.

Togliatti, K., **Dietzel**, R., Puntel, L., Archontoulis, S., and A. VanLoocke. *In review.* How does inclusion of weather forecasting impact in-season crop model predictions?

Dietzel, R., Liebman, M., and S. Archontoulis. *In discussion*. A deeper look at the relationship between root carbon pools and the vertical distribution of the soil carbon pool. Soil. doi:10.5194/soil-2017-5

Puntel, L.A., Sawyer, J.E., Barker, D.W., **Dietzel**, R.N., Poffenbarger, H., Castellano, M., Moore, K.J., Thorburn, P., Archontoulis, S.V. 2016. Modeling long-term corn yield response to nitrogen rate and crop rotation. Frontiers in Plant Science. doi: 10.3389/fpls.2016.01630

Nichols, V., Miguez. F., Sauer, T., **Dietzel**, R. 2016. Field-measured root-growth derived CO_2 respiration in continuous maize and reconstructed prairies. Crop Science 56 2791-2801

Martinez-Feria, R.A., **Dietzel**, R., Liebman, M., Helmers, M.J., Archontoulis, S.V. 2016. Rye cover crop effects on maize: A system-level analysis. Field Crops Research 96: 145-159

Dietzel, R., Liebman, M., Ewing, R., Helmers, M., Horton, R., Jarchow, M., and S. Archontoulis. 2016. How efficiently do corn- and soybean-based cropping systems use water? A systems modeling analysis. Global Change Biology 22: 666-681, DOI: 10.1111/gcb.13101

Dietzel, R. Jarchow, M. and M. Liebman. 2015. Above- and belowground growth, biomass, and nitrogen use in maize and reconstructed prairie cropping systems. Crop Science 55:1-14

Jarchow, M., Liebman, M., Dhungel, S., **Dietzel**, R., Sundberg, D., Anex, R., Thompson, M., and T. Chua. 2015. Tradeoffs among agronomic, energetic, and environmental performance characteristics of corn and prairie bioenergy cropping systems. Global Change Biology Bioenergy 7:57-71

Dietzel, R and M. Liebman. 2014. Root inputs drive carbon storage potential differences in corn- and prairie-based cropping systems. Dissertation chapter. Order No. 3641012, Iowa State University, 2014, http://search.proquest.com.proxy.lib.iastate.edu/docview/1622571419

Dietzel, R. and M. Liebman. 2014. Predicted changes in soil organic carbon over fifty years in corn- and prairie-based cropping systems. Dissertation Chapter. Order No. 3641012, Iowa State University, 2014, http://search.proquest.com.proxy.lib.iastate.edu/docview/1622571419

Jarchow, M., Neal, J., Costanza, R., D'Adamo, S., Damery,P., and R. **Dietzel**, et al. 2012. The future of food and life: Four visions focused on Iowa. International Journal of Agricultural Sustainability. International Journal of Agricultural Sustainability 10:76-92

Dietzel, R., Wolfe, D., and J. Thies. 2011. The influence of winter cover crops on spring nitrous oxide emissions from an agricultural soil. Soil Biology & Biochemistry 43:1989-1991

Extension Publications

Castellano M, Archontoulis SV, Cordova C, Dietzel R, Poffenbarger H, 2016. Nitrogen myths and realities. In Proceedings of the 28th ICM conference, November 30–December 1, 2016, Ames, IA, pages 133–137.

Archontoulis SV, Licht M, Castellano M, Dietzel R, VanLoocke A, Ordonez R, Iqbal J, Puntel L, Cordova C, Togliatti K, Martinez-Feria R, Huber I, Helmers M, 2016. Understanding the 2016 yields and interactions between soils, crops, climate and management. In Proceedings of the 28th ICM conference, November 30–December 1, 2016, Ames, IA, pages 13–17

Archontoulis SV, Dietzel R, Castellano M, VanLoocke A, Moore K, Puntel L, Cordova C, Togliatti K, Huber I, Licht M, 2015. Forecasting yields and in season crop water nitrogen needs using simulation models. In Proceedings of the 27th ICM conference, December 2–3, 2015, Ames, IA.

Archontoulis S, Licht M, Dietzel R, 2015. Wrap up and validation of the yield forecast project for 2015. Integrated Crop Management News. Paper 2134

Licht M, Archontoulis S, Dietzel R, 2015. In-season forecast of soil water-nitrogen and corn-soybean yields for central and northwest Iowa; August 12 Forecast. Integrated Crop Management News. Paper 822

Archontoulis S, Licht M, Dietzel R, 2015. In-season forecast of soil water-nitrogen and corn-soybean yields for central and northwest Iowa; an update. Integrated Crop Management News. Paper 675

Archontoulis S, Licht M, Dietzel R, 2015. In-season corn and soybean forecast of soil water-nitrogen and yields for central and northwest Iowa. A pilot project. Integrated Crop Management News. Paper 338

Castellano M, Archontoulis S, Cordova C, Dietzel R, Licht M, 2015. Fixing the soybean nitrogen credit. Iowa Soybean Association, Advance Newsletter

Licht M, Dietzel R, Archontoulis S, 2015. Using the soybean planting decision tool to help make planting date and maturity selection. Integrated Crop Management News

Licht M, Dietzel R, Archontoulis S, 2015. Soybean planting decision tool released to help farmers make informed decisions. Iowa Soybean Association, Advance Newsletter

Archontoulis SV, 2014. Cropping systems modelling tools to improve soybean management and yields in Iowa. Iowa Soybean Association, Advance Newsletter

Dietzel RN and Archontoulis SV, 2014. What is a cropping systems model? Iowa Soybean Association, Advance Newsletter

Service and Membership in Professional Societies

Iowa State University Science with Practice Undergraduate Mentor 2016
Agronomy, Crop Science, and Soil Science Societies of America, member 2006-2016
Graduate Program in Sustainable Agriculture, Coordinating Committee 2010, Curriculum Committee 2011, Admissions Committee 2012
Agronomy Departmental Seminar Committee 2011, 2012
Environmental Working Group, Consultant 2011
Agronomy Graduate Student Club, President 2010
Reviewer – Plant Biology, Global Change Biology, Agronomy Journal
Candor, New York Town Planning Board 2008
Cornell Soil and Crop Science Graduate Student Association, secretary 2007, co-chair 2008

Presentations

Dietzel, R., Liebman, M., Ewing, R., Horton, R., and Archontoulis, S. 2016. How efficiently do corn- and soybean-based systems use water? A modeling analysis. **Invited lecture:** *University of South Dakota Biology Seminar Series*

Dietzel, R., Liebman, M., Ewing, R., Horton, R., and Archontoulis, S. 2015. How efficiently do corn- and soybean-based systems use water? A modeling analysis. *ASA-CSA-SSA Annual Meeting, Minneapolis, MN*

Dietzel, R., Archontoulis, S., and M. Liebman. 2014. Predicted changes in soil organic carbon over fifty years in corn- and prairie-based cropping systems. *ASA-CSA-SSA Annual Meeting, Long Beach, CA*

Dietzel, R. and M. Liebman. 2014. Root inputs drive C storage differences in corn- and prairie-based cropping systems. *ASA-CSA-SSA Annual Meeting, Long Beach, CA*

Dietzel, R. and M. Liebman. 2012. Root inputs drive C sequestration differences in corn and prairie cropping systems. *ASA-CSA-SSA Annual Meeting, Cincinnati, OH*

Dietzel, R. and M. Liebman. 2011. Root growth in corn- and prairie-based biofuel cropping systems. *ISU Agronomy Research Symposium, Ames, IA.*

Dietzel, R. and M. Liebman. 2010. Root growth in corn- and prairie-based biofuel cropping systems. *ISU Graduate Program in Sustainable Agriculture Symposium, Ames, IA*

Dietzel, R. and M. Liebman. 2010. C sequestration in cornfields and prairies? *Graduate Program in Sustainable Agriculture Colloquium, Ames, IA.*

Dietzel, R., Jarchow, M., Sundberg, D., and M. Liebman. 2009. A comparison of corn- and prairie-based cropping systems. *ASA-CSA-SSSA Annual Meeting, Pittsburgh, PA*

Dietzel, R., Jarchow, M., Sundberg, D., and M. Liebman. 2009. A comparison of biomass production in corn- and prairie – based cropping systems. *Live Green! Sustainability Series Poster Presentation, Ames, IA*

Dietzel, R., Jarchow, M., Sundberg, D., and M. Liebman. 2009. A comparison of biomass production in corn- and prairie – based cropping systems. *BioCentury Research Farm Dedication, Ames, IA*

Dietzel, R., Jarchow, M., Sundberg, D., and M. Liebman. 2009. A comparison of biomass production in corn- and prairie – based cropping systems. *Biofuels Research at ConocoPhillips – Women in STEM Speaker Series, Ames, IA*

Dietzel, R., Jarchow, M., Sundberg, D., and M. Liebman. 2009. A comparison of biomass production in corn- and prairie – based cropping systems. *Iowa State Graduate Student in Sustainable Agriculture Annual Research Symposium, Ames, IA*

Dietzel, R. 2008. The influence of winter field cover on spring nitrous oxide emissions. *Cornell Crop and Soil Sciences Seminar Series, Ithaca, NY*

Dietzel. R. and J. Thies. 2008. Surface insulation leads to higher N_2O fluxes during soil thawing. *ASA-CSA-SSSA Annual Meeting, Houston, TX*