Ranae Dietzel

Postdoctoral Research Associate, Lecturer
3403 Agronomy Hall, Iowa State University, Ames, IA 50010
✉ rdietzel@iastate.edu 📞 515 291 4702 🌐 ranae.github.io | *Updated:* July 31, 2019

Education

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

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

University of Minnesota - Morris   2006
Bachelor of Arts
Biology

Professional Experience

Iowa State University, Department of Agronomy
Graduate Faculty Associate Member   2017-present
Lecturer   2016-present
Postdoctoral Research Associate   2014-present
Graduate Research Assistant   2009-2014

Cornell University   2006-2009
Graduate Research and Teaching Assistant

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

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

Agro-Soyuz, Mayskoye, Ukraine   Summer 2004
Veterinary Assistant

Iowa State University, Natural Resource Ecology and Management   Summer 2003
Undergraduate Research Assistant

Fellowships and Grants

Project Title	Grantor	Role	Period	Amount
Crop insurance subsidies for resilient & sustainable agroecosystems	NSF-SESYNC	Co-PI	Pending	$5,000
Synthesizing data from a network of long-term diversified cropping system experiments to reduce producer risk in an uncertain climate	NIFA-AFRI	Co-PI	2019-2021	$500,000
A mobile application for data entry to Resource Stewardship Evaluation Tool	NRCS	Co-PI	2018-2019	$38,500
Understanding and predicting winter soil dynamics and the subsequent effects on spring nitrous oxide emissions	NIFA-ELI (Fellowship)	PI	2016-2019	$150,000
High yielding soybean trials and real-time forecasting at regional scale	Iowa Soybean Association	Co-PI	2017-2018	$80,183
Cropping systems modeling tools to improve soybean management and yield in Iowa	Iowa Soybean Association (ISU)	Co-PI	2016-2017	$131,036
What will it take to restore organic matter to Iowa soils?	Leopold Center	PI	2016-2018	$48,000
Cropping systems modeling tools to improve soybean management and yield in Iowa II	Soybean Research Center	Co-PI	2015-2016	$79,850
Cropping systems modeling tools to improve soybean management and yield in Iowa I	Iowa Soybean Association	Co-PI	2015-2016	$100,000
A comparison fo the environmental performance of corn- and prairie-based biofuel cropping systems	NIFA (Fellowship)	PI	2011-2014	$75,000
Andrew W. Mellon Student Research Grant	Cornell	PI	2008	$1,500
Agricultural Ecology Program Mini-grant	Cornell	PI	2008	$3,000
Clinton DeWitt Smith Summer Fellowship	Cornell	PI	2008	$5,000
NSF Biogeochemistry and Environmental Biocomplexity Small Grant	NSF-IGERT	PI	2007	$8,000
Integrating genotype, environment, and management to maximize sustainable water use across environments.	NIFA-AFRI	Co-PI	Not Funded	$5,200,000
Cover crop optimization to maximize ecosystem services	NIFA-AFRI	Co-PI	Not Funded	$500,000
Identifying and promoting data driven land management strategies to ensure agroecosystem resiliency in the Corn Belt	NIFA-AFRI	Co-PI	Not Funded	$1,199, 536
Data-driven decision support tools to optimize the economic and environmental performance of cropping systems	ISU-PIRI	Co-PI	Not Funded	$727, 568
Cover crop optimization to maximize ecosystem services	NIFA-AFRI	Co-PI	Not Funded	$500,000

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

Courses Taught

R for Data Science - 1 credit, every semester

This course covers the fundamentals of using R software to visualize, explore, and analyze data.

Data Stewardship for Earth Systems Scientists - 3 credit course, co-taught Fall 2016

This course taught students to clearly organize, track, and communicate data-based work, collect and house data through analysis and publication, collaborate in a reproducible way, model data structures and wrangle data, and complete the entire research cycle in a responsible way. http://agron590-isu.github.io/

Mentoring

Graduate Program of Study Member
Rafael Martinez-Feria, PhD
Kaitlin Togliatti, PhD Candidate
Virginia Nichols, PhD Student

Science with Practice Undergraduate Research Program
Megan Pippert, Spring 2016, Poster Contest Winner
Cooper Smith, Spring 2016

Publications

Journal Articles

Dietzel, R. *In Revision*. Global Spring N_2O Emissions Remain a Great Unknown.

Archontoulis, S., Castellano, M., Licht, M., Nichols, V., Baum, M., Huber, I., Martinez-Feria, R., Puntel, L., Ordonez, R., Iqbal, J., Wright, E., **Dietzel**, R., Helmers, M., VanLoocke, A., Liebman, M., Hatfield, J., Herzmann, D., Cordova, C., Edmonds, P., Togliatti, K., Kessler, A., Danalatos, G., Pasley, H., Pederson, C., and K. Lamkey. *In Review*. Predicting Crop Yields and Soil-Plant Nitrogen Dynamics in the US Corn Belt.

Cordova, S., Castellano, M., **Dietzel**, R., Licht, M., Togliatti, K., Martinez-Feria, R., and S. Archontoulis. 2019. Soybean nitrogen fixation dynamics in fertile Midwestern US soils. Field Crops Research 236:165-176

Cordova, S., Olk, D., **Dietzel**, R., Mueller, K., Archontoulis. S., and M. Castellano. 2018. Plant litter quality affects the accumulation rate, composition, and stability of mineral-associated soil organic matter. Soil Biology & Biochemistry 125:115-124

Martinez-Feria, R., Castellano, M., **Dietzel**, R., Helmers, M., Liebman, M., and S. Archontoulis. 2018. Linking crop- and soil-based approaches to evaluate system nitrogen-use efficiency and tradeoffs. Agriculture, Ecosystems & Environment 256:131-143

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. 2018. Maize and soybean root front velocity and maximum depth in Iowa, USA. Field Crops Research 215:122-131

Togliatti, K., **Dietzel**, R., Puntel, L., Archontoulis, S., and A. VanLoocke. 2017. How does inclusion of weather forecasting impact in-season crop model predictions? Field Crops Research 214:261-272

Dietzel, R., Liebman, M., and S. Archontoulis. 2017. 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 Articles

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

Presentations

Dietzel, R., Archontoulis, S., and M. Liebman. 2019. Do perennial roots lead to more soil carbon than annual roots? SSSA North American Meeting, San Diego, CA

Dietzel, R. Working towards a global estimate of N2O emissions. 2017. Invited lecture: Iowa State University Department of Agronomy Seminar Series

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. 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 N2O fluxes during soil thawing. ASA-CSA-SSSA Annual Meeting, Houston, TX

Service and Membership

Reviewer - Plant Biology, Global Change Biology, Agronomy Journal, European Journal of Agronomy, Frontiers
ISU Agronomy Postdoctoral Organization, Founder and Co-chair   2017-present

Rgronomists (R software use group) Founder and Organizer	2017-present
Gathering of Open Agricultural Technology (GOAT) member	2018-present
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
Candor, New York Town Planning Board	2008
Cornell Soil and Crop Science Graduate Student Association	
Secretary	2007
Co-chair	2008