

**Charles W. Rice**  
**University Distinguished Professor**

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**EDUCATION:**

1983 Ph.D., University of Kentucky, Soil Microbiology  
1980 M.S., University of Kentucky, Soil Science  
1977 B.S., Northern Illinois University, Geography, Natural Environmental Systems

**PROFESSIONAL EXPERIENCE:**

2013-Present Professor, Dept. of Soil Science, Federal University of Santa Maria, Brazil.  
2009-Present University Distinguished Professor, Dept. of Agronomy, Kansas State University  
1998-2009 Professor, Department of Agronomy, Kansas State University  
2001-2011 Director, Consortium for Agricultural Soils Mitigation of Greenhouse Gases  
2004-2006 Research Assoc., Coop. Res. Centre for Greenhouse Accounting, Australia  
1996-1997 Interim Director, KS Center for Agric. Resources & the Environment  
1995 Visiting Professor, Univ. National de Mar del Plata, Balcarce, Argentina.  
1993-1998 Associate Professor, Department of Agronomy, Kansas State University  
1988-1993 Assistant Professor, Department of Agronomy, Kansas State University  
1986-1988 Assistant Professor-Research, Department of Crop and Soil Sciences, Michigan State University

**PROFESSIONAL MEMBERSHIPS:**

Soil Science Society of America	American Society of Agronomy
International Union of Soil Sciences	American Society of Microbiology
Ecological Society of America	American Geophysical Union
American Association for the Advancement of Science	
Sigma Xi	Gamma Sigma Delta
Phi Kappa Phi	

**AWARDS:**

Kansas Top 150 Scientists "Science in Kansas: 150 Years and Counting"  
Irvin E. Youngberg Award in the Applied Sciences, University of Kansas Higuchi Award. 2009  
University Distinguished Professor, 2009  
Commerce Bank Distinguished Graduate Faculty 2009  
Environmental Quality Award, American Society of Agronomy, 2009  
University of Kentucky Dept of Plant and Soil Science Distinguished Alumnus Award, 2009  
Gamma Sigma Delta (KSU Chapter) Distinguished Faculty Award, 2008  
Member of the Intergovernmental Panel on Climate Change, awarded Nobel Peace Prize, 2007, 2014  
Soil Science Research Award, SSSA 2006  
Fellow, American Association for the Advancement of the Sciences, 2004  
Phi Kappa Phi Faculty Scholar Award (KSU Chapter), 2004  
Sigma Xi Outstanding Senior Scientist Award (KSU Chapter), 2004  
Fellow, Soil Science Society America, 2000  
Fellow, American Society of Agronomy, 1999

**TEACHING:**

AGRON 645 Soil Microbiology, 1988-present  
AGRON 646 Soil Microbiology Laboratory, 2003-Present  
AGRON 935 Climate Change and Agriculture, Spring 2005, 2007, 2009  
AGRON 955 Soil Microbial Ecology, 1988-present

## RESEARCH INTERESTS:

Soil microbial ecology; carbon and nitrogen cycling in terrestrial ecosystems; soil quality.

Our research findings on soil organic matter dynamics provide some innovative concepts on soil organic C and N formation and storage. We have developed procedures for fractionating soil organic matter. The two most labile fractions are more sensitive to environmental changes and management practices than the total soil organic matter. We are now using the stable isotopes of C to determine rates of turnover, loss, and accumulation of C from the atmosphere and different vegetation. The significance of these findings is that we will be better able to assess the long-term changes in soil organic matter as a result of climate, and grassland management.

## PUBLICATIONS (183, Referred Publications last 5 years):

1. White, Jr., P.M., and C.W. Rice. 2009. Tillage effects on microbial and carbon dynamics during plant residue decomposition. *Soil Sci. Soc. Am. J.* 73: 138-145.
2. Pepper, I.L., C.P. Gerba, D.T. Newby, and C.W. Rice. 2009. Soil: A public health threat or savior? *Critical Rev Environ. Sci and Tech.* 39:416-432.
3. Wilson, G.W.T., CW. Rice, M.C. Rillig, A.C. Springer, and D.C. Hartnett. 2009. Arbuscular mycorrhizal fungal abundance controls soil aggregation and carbon sequestration. *Ecology Letters* 12:452-461.
4. Karlen, D.L. R. Lal, R.F. Follett, J. Kimble, J. Hatfield, C. Cambardella, A. Manale, R. Anex, and C. Rice. 2009. Crop residues: The rest of the story. *Environ. Sci. Tech.* 43:8011-8015.
5. Blanco-Canqui, H., L.R. Stone; A.J. Schlegel, D.J. Lyon, M.F. Vigil, M.M. Mikha, P.W. Stahlman, and C.W. Rice. 2009. No-till induced increase in organic carbon reduces maximum bulk density of soils. *Soil Sci. Soc. Am J.* 73:1871-1879.
6. White, Jr., P.M., and C.W. Rice. 2009. Tillage effects on microbial and carbon dynamics during plant residue decomposition. *Soil Bio Biochem.* 73 (1): 138-145.
7. Blanco-Canqui, H., N.L. Locke, A.J. Schlegel, L.R. Stone, and C.W. Rice. 2010. Impacts of deficit irrigation on carbon sequestration and soil physical properties under no-till. *Soil Sci. Soc. Am. J.* 74:1301-1309.
8. Brown, D.J., E.R. Hunt Jr., R.C. Izaurralde, K.H. Paustian, C.W. Rice, B.L. Shumaker, and T.O. West. 2010. Soil organic carbon change monitored over large areas. *EOS* 91:441-442.
9. Delgado, J.A., P. M. Groffman, M.A. Nearing, T. Goddard, D. Reicosky, R. Lal, N.R. Kitchen, C.W. Rice, D. Towery, and P. Salon. 2011. Conservation practices to mitigate and adapt to climate change. *J. Soil Water Conserv.* 66:118A-129A.
10. Aguilar, O.A., R. Maghirang, C. Rice, S. Trabue, L. Erickson, and E. Razote. 2011. Nitrous oxide emission from a commercial cattle feedlot in Kansas. *ASABE* 8:7-10.
11. Lal, R., J.A. Delgado, J. Gulliford, D. Nielsen, C.W. Rice, and R.S. Van Pelt. 2012. Adapting agriculture to drought and extreme events. *J. Soil Water Conserv.* 67:153A-157A.
12. A.J. Reisinger, J.M. Blair, C.W. Rice, and W.K. Dodds. 2013. Woody vegetation removal stimulates riparian and benthic denitrification in tallgrass prairie. *Ecosystems* 16:547-560. DOI: 10.1007/s10021-012-9630-3.
13. R.C. Izaurralde, C.W. Rice, L. Wielopolski, M.H. Ebinger, J.B. Reeves III, A.M. Thomson, R. Harris, B. Francis, S. Mitra, A.G. Rappaport, J.D. Etchevers, K.D. Sayre, B. Govaerts, and G.W. McCarty. 2013. Evaluation of Three Field-Based Methods for Quantifying Soil Carbon. *PLOS One*.
14. Smith, P., H. Haberl, A. Popp, K. Erb, C. Lauk, .Harper, F. Tubiello, A. de Siqueira Pinto, M. Jafari, S. Sohi, O. Maser, H. Böttcher, G. Berndes, M. Bustamante, H. Ahammad, H. Clark, H. Dong, E. A. Elsidig, C. Mbow, N.H. Ravindranath, C.W. Rice, C. Robledo Abad, A. Romanovskaya, F. Sperling, M. Herrero, J.I House and S. Ros. 2013. How much land based greenhouse gas can be achieved without compromising food security and environmental goals? *Global Change Biol.* 19:2285-2302.
15. Delgado, J.A., M.A. Nearing, and C.W. Rice. 2013. Conservation Practices for Climate Change Adaptation. *Adv Agron* 121:47-115.
16. Zeglin, L.H., P.J. Bottomley, A. Jumpponen, C.W. Rice, M. Arango, A. Lindsley, A. McGowan, P. Mfompeb, D.D. Myrold. 2013. Altered precipitation regime affects soil microbial C cycling – temporal dynamics suggest multiple mechanisms of C retention. *Ecology* 94:2334-2345.
17. Anandhi, A., S. Perumal, P.H. Gowda, M. Knapp, A. Lamsal, S.L. Hutchinson, J. Harrington, Jr., P. Tomlinson, M.B. Kirkham, C.W. Rice. 2012. Long-term spatial and temporal trends in frost day indices in Kansas, USA. *Climate Change* 120:1-13.
18. Koch, A., A. McBratney, M. Adams, D. Field, R. Hill, R. Lal, L. Abbott, D. Angers, J. Baldock, E. Barbier, D. Binkley, M. Bird, J. Bouma, C. Chenu, J. Crwford, C. Butler Flor, K. Goulding, S. Grunwald, J. Hempel, J. Jastrow, J.

- Lehmann, K. Lorenz, B. Minsany, C. Morgan, A. O'Donnell, W. Parton, C.W. Rice, D. Wall, D. Whitehead, I Young, and M. Zimmermann. 2013. Soil Security: Solving the Global Soil Crisis. *Global Policy J.* 4:434-441.
19. Walthall C.L., J. Hatfield, P. Backlund, L. Lengnick, E. Marshall, M. Walsh, S. Adkins, M. Aillery, E.A. Ainsworth, C. Ammann, C.J. Anderson, I. Bartomeus, L.H. Baumgard, F. Booker, B. Bradley, D.M. Blumenthal, J. Bunce, K. Burkey, S.M. Dabney, J.A. Delgado, J. Dukes, A. Funk, K. Garrett, M. Glenn, D.A. Grantz, D. Goodrich, S. Hu, R.C. Izaurralde, R.A.C. Jones, S-H. Kim, A.D.B. Leaky, K. Lewers, T.L. Mader, A. McClung, J. Morgan, D.J. Muth, M. Nearing, D.M. Oosterhuis, D. Ort, C. Parmesan, W.T. Pettigrew, W. Polley, R. Rader, C. Rice, M. Rivington, E. Roskopf, W.A. Salas, L.E. Sollenberger, R. Srygley, C. Stöckle, E.S. Takle, D. Timlin, J.W. White, R. Winfree, L. Wright-Morton, and L.H. Ziska. 2012. *Climate Change and Agriculture in the United States: Effects and Adaptation*, USDA Technical Bulletin 1935, Washington, DC. pp. 186.
  20. Campbell-Hibbs, A., 2013. *Agricultural Producer Perceptions of Climate Change and Climate Education Needs for the Central Great Plains*. J Extension
  21. Kenney, I., H. Blanco-Canqui, D.R. Presley, C.W. Rice, K. Janssen, and B. Olson. 2013. Soil and crop response to stover removal from rainfed and irrigated corn. *Global Change Biology Bioenergy* doi 10.1111/gcbb.12128.
  22. Orlando A.A., R. Maghirang, S.L. Trabue, C.W. Rice, and L.E. Erickson. 2013. Laboratory evaluation of surface amendments for controlling greenhouse gas emissions from beef cattle feedlots. *Int. J. Energy Environ Eng.* 4:1-14
  23. Giffing, E., R. Schauer, and C.W. Rice. 2014. Life cycle assessment of fertilization of corn and corn-soybean rotations with swine manure and synthetic fertilizer in IA. *J. Environ. Qual.* doi:10.2134/jeq2013.04.0112.