

James L. Baker

University Professor

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Education

Ph.D. Physical Chemistry, 1971
Iowa State University

B.S. Chemistry, 1966
South Dakota School of Mines and Technology

Honors and Awards

ASAE Paper Awards: 2002, 1999, 1998, and 1997

Hancor Soil and Water Eng, 1996

Recent Publications

Wauchope, R.D., T.L. Estes, R. Allen, J.L. Baker, A.G. Horusby, R.L. Jones, R.P. Richards, and D.I. Gustafson. 2002. Predicted impact of transgenic, herbicide-tolerant corn on drinking water quality in vulnerable watersheds of the Midwestern United States. *Pest Mgt. Sci.* (In press).

Hanna, H. M., M. L. White, T. S. Colvin, and J. L. Baker. 2002. Anhydrous ammonia distribution during field application. *Appl. Engr. in Ag.* 18(4):443-451.

Baker, J.L. 2001. Limitations of improved nitrogen management to reduce nitrate leaching and increase use efficiency. In *Optimizing Nitrogen Management in Food and Energy Production and Environmental Protection: Proceedings of the 2nd International Nitrogen Conference on Science and Policy. The Scientific World*, 1(S2), 10-16.

Glanville, T.D., J.L. Baker, S.W. Melvin, and M.M. Agua. 2001. Measurement of leakage from earthen manure structures in Iowa. *Trans. of the ASAE*, 44:1609-1616.

Mickelson, S.K., S. Alton, J.L. Baker, and S.I. Ahmad. 2001. Subsurface herbicide application with the John Deere Mulch Master. *Trans. of the ASAE*, 44:807-812.

Cook, M.J., and J.L. Baker. 2001. Bacteria and nutrient transport to tile lines shortly after application of large volumes of liquid swine manure. *Trans. of the ASAE*, 44:495-503.

Kladivko, E.J., L.C. Brown, and J.L. Baker. 2001. Pesticide transport to subsurface tile drains in humid regions of North America. *Crit. Rev. Environ. Sci. Tech.*, 31:1-62.

Mickelson, S.K., P. Boyd, J.L. Baker, and S.J. Ahmad. 2001. Tillage and herbicide incorporation effects on residue cover, runoff, erosion, and herbicide loss. *Soil and Tillage Res.*, 60:55-66.

Baker, J.L. 1999. Reducing agricultural pesticide losses to surface and groundwater resources. In *Handbook of Pest Management*. Edited by J.R. Ruberson. Marcel Dekker, Inc.:New York, 82-103.

Patents

Horton, R., D.E. Ressler, T.C. Kaspar, and J.L. Baker. 1999. Method and Tool to Increase N-Use Efficiency and Reduce Leaching. U.S. Patent No. 5,913,368.



Teaching

Currently in Iowa and the Corn Belt, concerns sometimes arise about agricultural production and drainage water quality with respect to sediment, nutrients, and pesticides. With more stringent resource protection/water quality goals on the horizon, research, education, and extension activities that encourage improved land management and landscape modification are becoming more important. Systems of in-field practices and off-site installations need to be devised and tested, thus achieving sustainable agricultural production far into the future. Water quality projects funded by industry and by state and federal agencies have generated information that Dr. Baker has used in the course AE 520 Agricultural Water Quality Engineering, at the annual ISU Integrated Crop Production Conference and other conferences, and in the recent development of a phosphorus index for the state of Iowa.

Research

Dr. Baker's research involves the effects of management practices particularly conservation tillage; cropping; and chemical application in terms of rate, timing, and method of application on nutrient and pesticide transport in surface runoff and subsurface drainage. His most recent work has also included the use and siting of permanent vegetation/buffers and constructed/reconstructed wetlands to improve watershed management.

Other Professional Interests

Dr. Baker is a member of the ASAE, the Soil and Water Conservation Society, and the American Society of Agronomy, where he holds the rank of Fellow. Recently he served as the chair on a review committee for the Maryland Agroecosystem Research Center and on a national nutrient management task force. He has also served on two U.S. EPA review panels for agency research and on USDA-CSREES grant review panels in 2000 and 2001.