

# IOWA STATE UNIVERSITY

Agricultural and Biosystems Engineering

## Matthew J. Helmers

### Professor

#### Extension Agricultural Engineer

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### Education

Ph.D. Interdepartmental Area of Engr., 2003  
Specialization: Ag & Biosystems Engineering  
University of Nebraska-Lincoln

M.S. Civil Engineering, 1997  
Virginia Polytechnic Institute and State Univ.

B.S. Civil Engineering, 1995  
Iowa State University

### Honors and Awards

ASABE G.B. Gunlogson Countryside  
Engineering Award (2014)

Member of Team that received 2013 College  
of Agriculture and Life Sciences Dean's  
Citation for Extraordinary Contributions

ASABE Blue Ribbon Award (2013) in the  
Educational Aids Competition for Electronic  
Delivery "Rock Your Watershed! A Game of  
Choice and Chance"

Member of Team that received Iowa State  
University Extension Team Award –  
Organizational (2009)

ASABE Nolan Mitchell Young Extension  
Worker Award (2009)

### Recent Publications

Chen, B., W.F. Krajewski, X. Zhou, and **M.J. Helmers**. 2015. Organized variability of surface runoff processes across neighboring hillslopes in Iowa. *Journal of Hydrology* 523: 1-13.

Daigh, A.L., **M.J. Helmers**, E. Kladvko, X. Zhou, R. Goeken, J. Cavadini, D. Barker, and J. Sawyer. 2014. Soil water during the drought of 2012 as affected by rye cover crop in fields in Iowa and Indiana. *Journal of Soil and Water Conservation* 69(6): 564-573.

Daigh, A.L., X. Zhou, **M.J. Helmers**, C.H. Pederson, R. Horton, and R. Ewing. 2014. Subsurface drainage flow and soil water dynamics of reconstructed prairies and corn rotations for biofuel production. *Vadose Zone Journal* doi:10.2136/vzj2013.10.0177.

Zhou, X., **M.J. Helmers**, H. Asbjornsen, R. Kolka, M. Tomer, and R. Cruse. 2014. Nutrient removal by prairie filter strips in agricultural landscape. *Journal of Soil and Water Conservation* 69(1): 54-64.

Christianson, L., J. Tyndall, and **M.J. Helmers**. 2013. Financial comparison of seven nitrate reduction strategies for Midwestern agricultural drainage. *Water Resources and Economics* 2-3: 30-56.

### Goals

The goal of Dr. Helmers' research and extension work at Iowa State University is to protect and enhance the quality of water resources by providing other researchers, agency personnel/policy makers, producers, and the general public with up-to-date data and information on water resource issues. The work is focused in the area of subsurface drainage and in the broader areas of water resources and water quality management.

### Extension

Dr. Helmers' extension program focuses on the areas of water quality and water management as they related to crop and animal systems. He works closely with field extension engineers and stakeholders; commodity groups, environmental organizations; and state, regional, and national agencies.

### Research

Dr. Helmers' research interests are in the areas of water management and water quality, specifically non-point source pollution, drainage, in-field performance of vegetative filters, and the impact of crop and animal production systems on Iowa's water resources. In addition, Dr. Helmers has research interests in monitoring and modeling watershed hydrology, including the hydrologic response of watersheds to land-use changes. Much of his present research focuses on subsurface drainage and the impacts of subsurface drainage on hydrology and water quality in agricultural areas. In addition, he is actively studying the water and soil quality benefits of cover crops and strategic placement of prairie strips.

### Other Professional Activities

Dr. Helmers is a member of ASABE, the American Society of Civil Engineers, the Soil and Water Conservation Society, and the American Water Resources Association.

