JOURNAL OF SOIL AND WATER CONSERVATION The science and art of natural resource management for sustainability



Table of Contents

A SECTION

FEATURES

75A A possible trade-off between clean air and clean water

Douglas R. Smith, Marie Stephensen, Kevin W. King, Helen P. Jarvie, Rick Haney, and Mark R. Williams

80A Sedimentation, navigation, and agriculture on the lower Missouri River

Kenneth R. Olson and Lois Wright Morton

87A Validity of Chesapeake Bay total maximum daily load upheld

J. David Aiken

A SECTION Call for Papers

Are you working on cutting edge research in soil and water conservation? Does your work involve new tools, technologies, or materials that others should be aware of? Have you observed or been a part of conservation practices that are worth sharing with the journal audience?

If you answered "Yes" to any of these questions, you are invited to submit your article ideas for the A Section of the *Journal of Soil and Water Conservation*.

Your work could be published in one of the A Section topic areas: Conservation in Practice, Viewpoint, Ideas & Innovations, Conservation in Action, In the News, Feature, etc.

To submit your article ideas or for more information, contact editor Annie Binder at annie.binder@swcs.org



On the Cover Radio towers and sailboats in Annapolis, Maryland. Photo by Jon Bilous.



RESEARCH SECTION

- Targeting waterfowl habitat restoration in the Prairie Pothole Region: A spatial analysis of marginal benefits and costs
 L. Hansen and C. Loesch
- 308 Modeling the relationship of soil water repellency with soil moisture for *Pinus massoniana* and *Schima superb* secondary forests

F. Liu, G. Wang, Z. Xiu, and P. Luo

- Variability of nitrate-nitrogen load estimation results will make quantifying load reduction strategies difficult in Iowa K.E. Schilling, C.S. Jones, C.F. Wolter, X. Liang, Y.-K. Zhang, A. Seeman, T. Isenhart, D. Schnoebelen, and M. Skopec
- Assessing effects of sediment-reducing agriculture conservation practices on stream fishes I.D. Fore, S.P. Sowa, D.L. Galat, and D.D. Diamond
- 343 Estimating crop residue cover using SPOT 5 data C.K. Wang, Z.T. Li, and X.Z. Pan
- Drip irrigation scheduling for annual crops in an impermeable saline-sodic soil with an improved method D. Feng, S. Wan, Y. Kang, Z. Xue, and T. Zhang
- Living cover crops have immediate impacts on soil microbial community structure and function D.M. Finney, J.S. Buyer, and J.P. Kaye
- Soil moisture dynamics and balance in apple (*Malus domestica* Borkh.) orchards in the Weibei rainfed highland, northwest China

L. Zhang, Y. Wang, J. Han, Z. Shi, C. Jiao, and G. Pang

- Conceptual models for surface water and groundwater interactions at pond and plug restored meadows
 K. Rodriguez, S. Swanson, and A. McMahon
- Agricultural Phosphorus Balance Calculator: A tool for watershed planning H.M. Peterson, L.A. Baker, D. Bruening, J.L. Nieber, J.S. Ulrich, and B.N. Wilson
- Deep soil carbon after 44 years of tillage and fertilizer management in southern Illinois compared to forest and restored prairie soils

M.K. Walia, S.G. Baer, R. Krausz, and R.L. Cook



The Journal of Soil and Water Conservation is online.

AUTHORS

Please submit manuscripts using the online manuscript review system.

MORE INFORMATION
Go to www.jswconline.org

JOURNAL OF SOIL AND WATER CONSERVATION

Soil and Water Conservation Society 945 SW Ankeny Road, Ankeny, IA 50023 USA www.swcs.org

EXECUTIVE DIRECTOR

Soil and Water Conservation Society

Ankeny, Iowa, USA

EDITOR & DIRECTOR OF PUBLICATIONS

Annie Binder Soil and Water Conservation Society Ankeny, Iowa, USA

RESEARCH EDITOR & CHAIR OF EDITORIAL BOARD

Jorge A. Delgado Soil Management and Sugar Beet Research Unit USDA Agricultural Research Service Fort Collins, Colorado, USA

EDITORIAL ASSISTANT

Jody Thompson Soil and Water Conservation Society

Ankeny, Iowa, USA

FDITORIAL BOARD J. Gordon Arbuckle, Jr. Department of Sociology

Iowa State University Ames, Iowa, USA

Cecilia María Armas Herrera University of Zaragoza

Zaragoza, Spain

Francisco Arriaga Department of Soil Science and UW-Extension University of Wisconsin-Madison

Madison, Wisconsin, USA

Karl Auerswald Technische Universität München

Freising, Germany

Jamiu Oladipupo Azeez Department of Soil Science and Land Management Federal University of Agriculture Abeokuta

Abeokuta, Ogun, Nigeria

Claire Baffaut Cropping Systems and Water Quality Research Unit USDA Agricultural Research Service Columbia, Missouri, USA

Kathryn J. Brasier Department of Agricultural Economics & Rural Sociology

The Pennsylvania State University University Park, Pennsylvania, USA

Key Laboratory of Desert and Desertification

Chinese Academy of Sciences Lanzhou, Gansu Province, China

Moustafa A. Elrashidi

National Soil Survey Center USDA Natural Resources Conservation Service Lincoln, Nebraska, USA

Uriel Figueroa-Viramontes

National Institute of Forestry, Agricultural, and Livestock Research Matamoros, Coahuila, Mexico

Clark J. Gantzer Soil, Environmental, and Atmospheric Sciences

University of Missouri Columbia, Missouri, USA

Margaret W. Gitau Agricultural and Biological Engineering

Purdue University West Lafayette, Indiana, USA

Valentin Golosov

Lomonosov Moscow State University Moscow, Russia

USDÁ Economic Research Service

Washington, DC, USA

Institute of Agricultural and Environmental Biosciences University of Buenos Aires Buenos Aires, Argentina

Chunsheng Hu Center for Agricultural Resources Research

Shijiazhuang, Hebei, China

Kanika Sharma Inglett Soil and Water Science Department University of Florida Gainesville, Florida, USA

Thomas Iserloh Department of Physical Geography Trier University

Trier, Germany

Gergely Jakab

Research Center for Astronomy and Farth Sciences

Hungarian Academy of Sciences Budapest, Hungary

Jane M.F. Johnson North Central Soil Conservation Research Laboratory

USDA Agricultural Research Service Morris, Minnesota, USA

Amy L. Kaleita Agricultural and Biosystems Engineering

Iowa State University

Ames, Iowa, USA

Peter J.A. Kleinman Pasture Systems & Watershed Management Research Unit

USDA Agricultural Research Service University Park, Pennsylvania, USA

Institute of Hydraulics and Rural Water Management BOKU-University of Natural Resources and Life Sciences Vienna, Austria

Lisa Lobry de Bruyn

School of Environmental and Rural Science University of New England Armidale, New South Wales, Australia

Birl Lowery

Department of Soil Science University of Wisconsin-Ma Madison, Wisconsin, USA

Loretta M. Lvnch

Department of Agricultural and Resource Economics University of Maryland

College Park, Maryland, USA

Machito Mihara Faculty of Regional Environmental Science Tokyo University of Agriculture

Tokýo, Japan Daniel Moriasi

Great Plains Agroclimate and Natural Resources Research Unit USDA Agricultural Research Service

El Reno, Oklahoma, USA

Rachid Mrabet Institut National de la Recherche Agronomique (INRA)

Rabat, Morocco

The New Zealand Institute for Plant and Food Research Limited Hamilton, New Zealand

Mark A. Nearing

Southwest Watershed Research Center USDA Agricultural Research Service Tucson, Arizona, USA

Linda S. Prokopy Department of Forestry and Natural Resources Purdue University

West Lafayette, Indiana, USA

Department of Chemistry and Environmental Science New Jersey Institute of Technology

Newark, New Jersey, USA

Felix Kolawole Salako

Department of Soil Science and Land Management University of Agriculture

Abeokutá, Nigeria

Gretchen Sassenrath

Department of Agronomy

Kansas State University Manhattan, Kansas, USA

National Institute of Water and Atmospheric Research Ltd.

Christchurch, New Zealand

Institute for Land and Water Management Research

Federal Agency for Water Management Pöchlarn, Austria

Wind Erosion and Water Conservation Research Unit

USDA Agricultural Research Service Big Spring, Texas, USA

Department of Agricultural Economics and Agribusiness

Louisiana State University Baton Rouge, Louisiana, USA

John D. Williams

, Columbia Plateau Conservation Research Center

USDA Agricultural Research Service Pendleton, Oregon, USA

Wanhong Yang Department of Geography University of Guelph Guelph, Ontario, Canada

BOARD OF DIRECTORS
Jon Scholl, President & At-Large Director
Rex Martin, Vice President & At-Large Director
Wendi Goldsmith, Secretary & Northeastern Director
Don Wysocki, Treasurer & Northwestern Director
Steve Kadas, Southwestern Director
Bruce Knight, At-Large Director
William Kuckuck, At-Large Director
Susan Meadows, North Central Director
Dale Threat-Taylor, Southeastern Director

Dale Threatt-Taylor, Southeastern Director

The Journal of Soil and Water Conservation (print ISSN 0022-4561, online ISSN 1941-3300) is published bimonthly by the Soil and Water Conservation Society. © 2017 by the Soil and Water Conservation Society. All rights reserved.

For subscriptions or membership, please visit www.swcs.org or call 800-THE-SOIL. POSTMASTER: Send address changes to Journal of Soil and Water Conservation, 945 SW Ankeny Road, Ankeny, IA 50023 USA. Periodicals postage paid at Ankeny, IA, and additional mailing offices.

Submit comments, contributions, advertising queries, and requests for reprints and permissions to the editor at pubs@swcs.org. Articles in the Research Section have undergone peer review. The Soil and Water Conservation Society assumes no responsibility for statements and opinions expressed by contributors.

Soil and Water **Conservation Society Corporate Membership**

GOLD CORPORATE MEMBERS

Agri Drain Corporation www.agridrain.com

Hickenbottom Inc. www.hickenbottominc.com

SILVER CORPORATE MEMBERS

Dairy Management Inc. www.dairy.org

The Fertilizer Institute www.tfi.org

BRONZE CORPORATE MEMBERS

Conservation Technology **Information Center** www.ctic.org

Ecosystem Services Exchange www.ecoexch.com

La Crosse Seed www.lacrosseseed.com

The Nature Conservancy www.nature.org

Watershed Materials www.maddogfoambridges.com

White River Irrigation District

For information on becoming a corporate member, please contact

Jamie Nieman

515-289-2331 ext. 114 corporate.info@swcs.org