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



Table of Contents

A SECTION

FEATURES

141A Grass-shed

Grass-shed: Place and process for catalyzing perennial grass bioeconomies and their potential multiple benefits

Carol L. Williams, Paul Charland, Gary Radloff, David Sample, and Randall D. Jackson

147A Agricultural irrigation in China

Xiufang Zhu, Yizhan Li, Muyi Li, Yaozhong Pan, and Peijun Shi

VIEWPOINTS

155A A certain wholeness: The dividends of conservation

Clark Gantzer

159A Have conservation measures improved Yellow River health?

Guangju Zhao, Xingmin Mu, Peng Tian, Juying Jiao, and Fei Wang

STATEMENT OF OWNERSHIP, MANAGEMENT, AND CIRCULATION

I. Publication Title: Journal of Soil and Water Conservation. 2. Publication Number: 0282-8800. 3. Filing Date: September 30, 2013. 4. Issue Frequency: Bimonthly (January/February, March/April, May/June, July/August, September/October, November/December). 5. Number of Issues Published Annually: Six (6). 6. Annual Subscription Price: \$105. 7. Complete Mailing Address of Known Office of Publication: 945 SW Ankeny Rd., Ankeny, IA 50023-9764. 8. Full Names and Complete Addresses of Publisher. Editor, and Managing Editor: Publisher: Soil and Water Conservation Society, 945 SW Ankeny Rd., Ankeny, IA 50023-9764. Editor: Annie Binder, Soil and Water Conservation Society, 945 SW Ankeny Rd., Ankeny, IA 50023-9764. Editor: Annie Binder, Soil and Water Conservation Society, 945 SW Ankeny Rd., Ankeny, IA 50023-9764. 11. Known Bondholders, Mortgagees, and Other Security Holders Owning of Holding 1 Percent or More of Total Amount of Bonds, Mortgages. or Other Securities: None. 12. Tax Status: The purpose, function, and nonprofit status of this organization and the exempt status for federal income tax purposes has not changed during preceding 12 months. 13. Publication Title: Journal of Soil and Water Conservation. 14. Issue Date for Circulation Data Below: July/August 2013. 15. Extent and Nature of Circulation:

1	13. Extent and Nature of Oriculation.		
ı		Average no. copies each issue	No. copies of single issue
ı		during preceding 12 months	published nearest to filing date
ı	A. Total No. Copies Printed (net press run)	3,214	2,946
ı	B. Paid Circulation		
ı	1. Mailed Outside-County Paid Subscriptions	2,881	2,628
ı	2. Mailed In-County Paid Subscriptions	1	1
ı	3. Paid Distribution Outside the Mailes Including Sales Through Dealers and Carriers,	181	167
ı	Street Vendors, Counter Sales, and Other Paid Distribution Outside USPS		
ı	4. Paid Distribution by Other Classes of Mail Through the USPS	0	0
ı	C. Total Paid Distribution	3,063	2,796
ı	D. Free or Nominal Rate Distribution	0	0
ı	1. Outside-County	0	0
ı	2. In-County	0	0
ı	3. Other Classes Mailed Through USPS	0	0
ı	E. Total Free or Nominal Rate Distribution	0	0
ı	F. Total Distribution	3,063	2,796
ı	G. Copies Not Distributed	151	150
ı	H. Total	3,214	2,946
ı	I. Percent Paid	100%	100%
ı	16. Total circulation includes electronic copies. Circulation reported on PS From 3526-X worksheet:		
ı	A. Paid Electronic Copies	1,539	1,539
ı	B. Total Paid Print Copies + Paid Electronic Copies	4,602	4,335
ı	C. Total Print Distribution + Paid Electronic Copies	4,602	4,335
ı	D. Percent Paid (Both Print & Electronic Copies)	100%	100%

I certify that 50% of all my distributed copies (Electronic & Print) are paid above a nominal price. 17. Publication of Statement of Ownership: This publication is a general publication. Publication of this statement is required and will be printed in the November/December 2013 issue of this publication. 18. Signature and Title of Editor, Publisher, Business Manager, or Owner: Annie Binder, Editor, Soil and Water Conservation Society. I certify that all information furnished on this form is true and complete. I understand that anyone who furnishes false or misleading information on this form or who omits material or information requested on the form may be subject to criminal sanctions (including fines and imprisonment) and/or civil sanctions (including civil penalties).



On the Cover Old grey barn. Photo by Nancy Gill.



RESEARCH SECTION

- Effects of drainage water management on crop yields in North Carolina C.A. Poole, R.W. Skaggs, G.M. Cheschier, M.A. Youssef, and C.R. Crozier
- 438 On-farm environmental assessment of corn silage production systems receiving liquid dairy manure E.S. Krueger, J.M. Baker, T.E. Ochsner, C.D. Wente, G.W. Feyereisen, and D.C. Reicosky
- 450 Assessment of phosphorus retention in irrigation laterals
 J.A. Ippolito and N.O. Nelson
- **Modeling and mapping soil resistance to penetration and rutting using LiDAR-derived digital elevation data**D.M.H. Campbell, B. White, and P.A. Arp
- 474 Runoff under natural rainfall from small tall fescue catchments in the Georgia Piedmont, United States D.M. Endale, A.J. Franzluebbers, J.A. Stuedemann, D.S. Seman, D.H. Franklin, and H.H. Schomberg
- 487 Curve numbers for long-term no-till corn and agricultural practices with high watershed infiltration J.V. Bonta and M.J. Shipitalo
- Why do farmers adopt conservation tillage? An experimental investigation of framing effects
 A.C. Andrews, R.A. Clawson, B.M. Gramig, and L. Raymond
- Application of a rangeland soil erosion model using National Resources Inventory data in southeastern Arizona M. Hernandez, M.A. Nearing, J.J. Stone, F.B. Pierson, H. Wei, K.E. Spaeth, P. Heilman, M.A. Weltz, and D.C. Goodrich

CONSERVATION

o n I i n e

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

EXECUTIVE DIRECTOR

Jim Gulliford 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 Plant Nutrient Research Unit

USDA Agricultural Research Service Fort Collins, Colorado, USA

EDITORIAL ASSISTANT

Amy Thompson Soil and Water Conservation Society Ankeny, Iowa, USA

EDITORIAL BOARD

Verónica Acosta-Martinez Cropping Systems Research Laboratory USDA Agricultural Research Service Lubbock, Texas, USA

I. Gordon Arbuckle, Ir. Department of Sociology Iowa State University Ames, Iowa, USA

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

James C. Ascough II Agricultural Systems Research Unit USDA Agricultural Research Service Fort Collins, Colorado, USA

Karl Auerswald Technische Universität München

Freising, Germany

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

Institute of Soil Water and Environmental Sciences Agricultural Research Organization, Volcani Center Bet-Dagan, Israel

Lorenzo Borselli

Autonomous University of San Luis Potosí San Luis Potosí, Mexico

Department of Agricultural Economics & Rural Sociology The Pennsylvania State University University Park, Pennsylvania, USA

Adrian Chappell Digital Soil Mapping Team Commonwealth Science & Industry Research Organisation Canberra, Australia

Zhibao Dong 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

Clark J. Gantzer Soil, Environmental, and Atmospheric Sciences University of Missouri Columbia, Missouri, USA

Maigaret W. Oildu Biological and Agricultural Systems Engineering Florida A&M University Tallahassee, Florida, USA

LeRoy Hansen

USDA Economic Research Service

Washington, DC, USA

Katharina Helming Leibniz Centre for Agricultural Landscape Research (ZALF) Müncheberg, Germany

Chunsheng Hu Center for Agricultural Resources Research Shijiazhuang, Hebei, China

North Central Soil Conservation Research Laboratory

USDA Agricultural Research Service Morris, Minnesota, USA

Amy L. Kaleita

Agricultural and Biosystems Engineering lowa 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

Raúl S. Lavado

College of Agronomy University of Buenos Aires Buenos Aires, Argentina

Birl Lowery Department of Soil Science University of Wisconsin—Madison Madison, Wisconsin, USA

Loretta M. Lynch
Department of Agricultural and Resource Economics
University of Maryland

College Park, Maryland, USA

Machito Mihara Faculty of Regional Environmental Science

Tokyo University of Agriculture

Tom Mueller Department of Plant and Soil Sciences

University of Kentucky Lexington, Kentucky, USA

Mark A. Nearing Southwest Watershed Research Center

USDA Agricultural Research Service Tucson, Arizona, USA

Sharon K. Papiernik

Sharon K. Papiernik North Central Agricultural Research Laboratory USDA Agricultural Research Service Brookings, South Dakota, 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 Abeokuta, Nigeria

M.S. Srinivasan 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

. 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
Dan Towery, President & At-Large Director
Steve Young, Vice President & At-Large Director
Cheryl Simmons, Secretary & Southwestern Director
Mark Steffek, Treasurer & Western Director

Mark Berkland, Southeastern Director

Mark Berkland, Soutneastern Director Miliam W. Boyer, Northeastern Director Michael Collins, Northern Plains Director Gregory Johnson, South Central Director Susan Meadows, East North Central Director Pete Nowak, West North Central Director Tom Prout, Canada Director

John Rissler, At-Large Director Miranda Yoose, Student Director

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

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. © 2013 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

DuPont Pioneer www.pioneer.com

Hickenbottom Inc. www.hickenbottominc.com

SILVER CORPORATE MEMBERS

Agren Inc. www.agren-inc.com

The Fertilizer Institute www.tfi.org

BRONZE CORPORATE MEMBERS

Conservation Technology Information Center www.ctic.org

Ecosystem Services Exchange www.ecosystemservicesexchange.com

> **Forrest Keeling Nursery** www.fknursery.com

The Nature Conservancy www.nature.org

Validus Ventures LLC www.validusservices.com

White River Irrigation District

For information on becoming a corporate member, please contact

> **Christine Rhodes** 515-289-2331 ext. 114 corporate.info@swcs.org