Volume 64 Number 3 July-September 2016

eed Science Society of America

WEED SCIENCE

Published quarterly by the Weed Science Society of America

William K. Vencill, Editor

The Weed Science Society of America publishes original research and scholarship in the form of peer-reviewed articles in three international journals. Weed Science is focused on understanding "why" phenomena occur in agricultural crops. As such, it focuses on fundamental research directly related to all aspects of weed science in agricultural systems. Weed Technology focuses on understanding "how" weeds are managed. As such, it is focused on more applied aspects concerning the management of weeds in agricultural systems. Invasive Plant Science and Management is a broad-based journal that focuses not only on fundamental and applied research on invasive plant biology, ecology, management, and restoration of invaded non-crop areas, but also on the many other aspects relevant to invasive species, including educational activities, policy issues, and case study reports. Topics for Weed Science include the biology and ecology of weeds in agricultural, forestry, aquatic, turf, recreational, rights-of-ways, and other settings; genetics of weeds and herbicide resistance; chemistry, biochemistry, physiology and molecular action of herbicides and plant growth regulators used to manage undesirable vegetation, and herbicide resistance; ecology of cropping and non-cropping systems as it relates to weed management; biological and ecological aspects of weed control tools including biological agents, herbicide resistant crops, etc.; effects of weed management on soil, air, and water. Symposia papers and reviews are accepted. Consult the editor for additional information.

Associate Editors (Assignment Year)

Muthukumar V Bagavathiannan, Texas A&M (2015)

Bhagirath Singh Chauhan, Queensland Alliance for Agriculture and Food Innovation (QAAFI), The University of Queensland, Australia (2014)

Sharon Clay, South Dakota State University Plant Science Department, Brookings, SD 57007 (2002)

Adam Davis, USDA-ARS, Global Change and Photosynthesis Research, Urbana, IL 61801 (2007)

Franck E. Dayan, USDA-ARS-NPURU, National Center for Natural Products Research, University, MS 38677 (2003)

Anita Dille, Kansas State University, Department of Agronomy, Manhattan, KS 66506 (2013)

Timothy Grey, Department of Crop and Soil Science, University of Georgia, Tifton, GA 31793 (2009)

Marie Jasieniuk, Department of Plant Sciences, University of California, Davis, CA 95616 (2016)

Ramon Leon, West Florida Research and Education Center, University of Florida, Jay, FL 32565 (2016)

John L. Lindquist, Department of Agronomy, University of Nebraska, Lincoln, NE 68583-0817 (2002)

Vijay Nandula, Mississippi State University, Delta Research & Extension Center, Stoneville, MS 38776 (2008)

Chris Preston, Australian Weed Management, University of Adelaide, PMB1, Glen Osmond, SA 5064, Australia (2003)

Dean Riechers, Department of Crop Sciences, University of Illinois, Urbana, IL 61801 (2011)

Hilary Sandler, University of Massachusetts-Amherst Cranberry Station, East Wareham, MA 02538 (2008)

Steven Seefeldt, USDA-ARS, University of Alaska, Fairbanks, AK 99775 (2011)

Patrick J. Tranel, Department of Crop Sciences, University of Illinois, 360 ERML, Urbana, IL 61801 (2002)

Martin M. Williams II, USDA-ARS Global Change and Photosynthesis Research, Urbana, IL 61801 (2008)

Beverly Lindeen, Managing Editor

Officers of the Weed Science Society of America

Kevin Bradley, *President*Janis McFarland, *President-Elect*Hilary Sandler, *Secretary*Rick Boydston, *Treasurer*

Scott Senseman, Vice President Sarah Ward, Director of Publications

Dallas Peterson, Past President Mark Bernards, Chair, Constitution and Operating Procedures

Weed Science (ISSN 0043-1745) is an official publication of the Weed Science Society of America, 810 East 10th Street, Lawrence, KS 66044-8897 (785-843-1235). It contains refereed papers describing the results of research that elucidates the nature of phenomena relating to all aspects of weeds and their control. It is published quarterly, one volume per year, four issues per year beginning in January.

Membership includes receipt of *Weed Science, Weed Technology, Invasive Plant Science and Management*, and the online *WSSA Newsletter*. Dues should be sent to WSSA, 810 East 10th Street, P.O. Box 7065, Lawrence, KS 66044-8897 not later than December 1 of each year. Membership in the society is on a calendar-year basis only.

New subscriptions and renewals begin with the first issue of the current volume and should be sent to WSSA, 810 East 10th Street, P.O. Box 7065, Lawrence, KS 66044-7065; E-mail: wssa@allenpress.com.

Change of address affecting the mailing list for members, students, and subscribers, inquiries about copies lost in the mail, requests for back issues, and all matters pertaining to the receipt of the Journal, membership and subscription information should be sent to WSSA, 810 East 10th Street, Lawrence, KS 66044-8897; E-mail: wssa@allenpress.com. Claims for copies lost in the mail must be received within 90 days (180 days foreign) of the issue date to insure replacement at no charge.

Please use PeerTrack to access manuscript submissions (http://www.editorialmanager.com/ws). Authors are asked to pay \$65 per page as a portion of the cost of publication, plus an additional processing charge of \$50 per manuscript if none of the authors are WSSA members. The Editor can make exceptions in advance when justified.

The Weed Science Society of America fully subscribes to the belief that progress in science depends upon the sharing of ideas, information, and materials among qualified investigators. Authors of papers published in *Weed Science* are therefore encouraged, whenever practicable and when state and federal laws permit, to share genotypically unique, propagative materials they might possess with other workers in the area who request such materials for the purpose of scientific research.

Weed Science published by the Weed Science Society of America.

Periodical postage paid at Lawrence, KS and at additional mailing offices.

Copyright 2016 by the Weed Science Society of America. Printed in USA.

All rights reserved. Reproduction in part or whole prohibited.

POSTMASTER: Send address changes to WSSA, 810 East 10th Street, Lawrence, KS 66044-8897.

On the Cover:

Photo of wild oat. See article by Tidemann et al., "Identifying Critical Control Points in the Wild Oat (*Avena fatua*) Life Cycle, and the Potential Effects of Harvest Weed Seed Control" for more information. Photo credit to Breanne Tidemann.

Continued from cover

Critical Period for Weed Control in Grafted and Nongrafted Fresh Market Tomato. Sushila Chaudhari,	
Katherine M. Jennings, David W. Monks, David L. Jordan, Christopher C. Gunter, Samuel J. McGowen, and	
Frank J. Louws	523
Alternatives to Atrazine for Weed Management in Processing Sweet Corn. Zubeyde Filiz Arslan, Martin M. Williams II, Roger Becker, Vincent A. Fritz, R. Ed Peachey, and Tom L. Rabaey	531
Integrating Herbicide Programs with Harvest Weed Seed Control and Other Fall Management Practices for the Control of Glyphosate-Resistant Palmer Amaranth (<i>Amaranthus palmeri</i>). Jason K. Norsworthy, Nicholas E. Korres, Michael J. Walsh, and Stephen B. Powles	540