

**LOAN BAN** EXPIRES 17 OCT 1997

# Weed Science

Journal of the Weed Science Society of America

18-APR-1997 BLDSC BOSTON SPA  
WEED SCIENCE LS23 7BQ

\*ETOC



9284.450000 VOL 45 PART 1

1/1

PB

SF



Volume 45 Number 1  
JANUARY-FEBRUARY 1997

ISSN 0043-1745

<https://doi.org/10.1017/S0043174500092675> Published online by Cambridge University Press

# WEED SCIENCE

*Published six times a year by the Weed Science Society of America*

Robert L. Zimdahl, *Editor*

## Associate Editors

James D. Burton, Horticulture Dept., N. Carolina State University, Box 7609, Raleigh, ND 27695-7609  
Michael E. Foley, Botany & Plant Pathology, Purdue University, 1155 Lilly Hall of Life Science, West Lafayette, IN 47907-1155  
Clifford Gerwick, Agric. Products Dept., DowElanco, 9330 Zionsville Rd., Indianapolis, IN 46268  
Robert G. Hartzler, Agronomy Dept., Iowa State University, 2104 Agronomy Hall, Ames, IA 50011  
Nicholas Jordan, Dept. Agron/Plant Genetics, Univ. of Minnesota, 1991 Buford Circle, St. Paul, MN 55108  
Robert J. Kremer, USDA-ARS, 144 Mumford Hall, University of Missouri, Columbia, MO 65211  
Martin Locke, Southern Weed Science Lab, USDA ARS, P.O. Box 350, Stoneville, MS 38776  
David T. Patterson, USDA ARS, University of Florida, 2199 S. Rock Rd., Ft. Pierce, FL 34945-3138  
Dale L. Shaner, American Cyanamid Co., P.O. Box 400, Princeton, NJ 08540  
Clarence J. Swanton, Crop Science Dept., University of Guelph, Guelph, ON, Canada N1G 2W1  
Thomas Tworcoski, Appalachian Fruit Res. Station, USDA ARS, 45 Wiltshire Road, Kearneysville, WV 25430  
Susan E. Weaver, Agriculture Canada, Research Station, Harrow, ON, Canada N0R 1G0  
Lori J. Wiles, Great Plains Systems Res., USDA ARS, 301 S. Howes, Rm. 353, Ft. Collins, CO 80522  
Robert G. Wilson, Panhandle Station, University of Nebraska, 4502 Avenue 1, Scottsbluff, NE 69361  
Debra E. Palmquist, *Consulting Statistical Editor*  
Sheila M. Rake, *Managing Editor*

## Reviewers

Yuguang Bai	Stephen E. Hart	David Monks	Emilie E. M. Regnier	Mark VanGessel
Todd A. Baughman	David H. Johnson	David A. Mortensen	Jill Schroeder	Jerome B. Weber
Roger Becker	Carol Mallory-Smith	Chandrashekr I. Nimbal	Steven Seefeldt	Glenn Wehtje
Robin Bellinder	Diane R. Manthey	Roy Nishimoto	Reid Smeda	Leslie A. Weston
John Cardina	Bruce Maxwell	Gregory L. Orr	François Tardif	John Wilcut
William E. Dyer	Wondie Mersie	Michael D. K. Owen	John R. Teasdale	
Frank Forcella	Todd L. Mervosh	Krishna Reddy	Makeish K. Upadhyaya	

## Officers of the Weed Science Society of America

Calvin G. Messersmith, <i>President</i>	Jodie S. Holt, <i>Secretary</i>
F. Dan Hess, <i>President-Elect</i>	Joan Dusky, <i>Treasurer</i>
James M. Chandler, <i>Vice President</i>	Anne Légère, <i>Editor-in-Chief</i>
Stephen O. Duke, <i>Past President</i>	Horace D. Skipper, <i>Chair, Constitution and Operating Procedures</i>

Weed Science (ISSN 0043-1745) is an official publication of the Weed Science Society of America, 810 East 10th Street, Lawrence, KS 66044-8897 (AC/217-352-4212). 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 bimonthly, one volume per year, six issues per year beginning in January.

Membership is \$60 per year, student affiliate membership \$20, which includes receipt of *Weed Science*, *Weed Technology*, and *WSSA Newsletter*. Dues should be sent to WSSA, 810 East 10th Street, Lawrence, KS 66044-8897 not later than December 1 of each year. Membership in the society is on a calendar-year basis only.

Subscriptions (institutions, libraries, etc.) are \$100 per year, one volume per year of four issues beginning in January. New subscriptions and renewals begin with the first issue of the current volume and should be sent to WSSA, 810 East 10th Street, Lawrence, KS 66044-8897.

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. Claims for copies lost in the mail must be received within 30 days (90 days foreign) of the date of issue to insure replacement at no charge.

One copy of the manuscript must be sent to the Editor, Robert L. Zimdahl, Weed Research Laboratory, Colorado State University, Fort Collins, CO 80523. Two copies of the manuscript must be sent to the Managing Editor, Sheila M. Rake, Allen Press, Inc., 810 East 10th Street, Lawrence, KS 66044-8897. Directions for contributors are published in the October–December issue of *Weed Science*. Authors are asked to pay \$50 per page as a portion of the cost of publication. 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 1997 by the Weed Science 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.

# Weed Science

VOLUME 45

JANUARY–FEBRUARY 1997

NUMBER 1

## EDITORIAL

- My View. **Robert L. Zimdahl** . . . . . 1

## PHYSIOLOGY, CHEMISTRY, AND BIOCHEMISTRY

- Cellular Mechanisms Influence Differential Glyphosate Sensitivity in Field Bindweed (*Convolvulus arvensis*) Biotypes. **James H. Westwood and Stephen C. Weller** . . . . . 2
- Interaction of Glyphosate with Postemergence Soybean (*Glycine max*) Herbicides. **Julle M. Lich, Karen A. Renner, and Donald Penner** . . . . . 12
- Physiological Basis for Nicosulfuron and Primisulfuron Selectivity in Five Plant Species. **J. Boyd Carey, Donald Penner, and James J. Kells** . . . . . 22

## WEED BIOLOGY AND ECOLOGY

- Field Evaluation of Soybean (*Glycine max*) Genotypes for Weed Competitiveness. **Alvin J. Bussan, Orvin C. Burnside, James H. Orf, Eric A. Ristau, and Klaus J. Puettmann** . . . . . 31
- Common Cocklebur (*Xanthium strumarium*) Interference with Peanut (*Arachis hypogaea*). **Stanley S. Royal, Barry J. Brecke, and Daniel L. Colvin** . . . . . 38
- Establishment of Common Milkweed (*Asclepias syriaca*) in Corn, Soybean, and Wheat. **Joseph P. Yenish, Thomas A. Fry, Beverly R. Durgan, and Donald L. Wyse** . . . . . 44
- Seed Bank Characterization and Emergence of a Weed Community in a Moldboard Plow System. **Dawit Mulugeta and David E. Stoltenberg** . . . . . 54
- Temporal Changes in Velvetleaf (*Abutilon theophrasti*) Seed Dormancy. **John Cardina and Denise H. Sparrow** . . . . . 61
- Weed Seed Bank Emergence Across the Corn Belt. **Frank Forcella, Robert G. Wilson, Jack Dekker, Robert J. Kremer, John Cardina, Randy L. Anderson, David Alm, Karen A. Renner, R. Gordon Harvey, Sharon Clay, and Douglas D. Buhler** . . . . . 67
- Broom Snakeweed (*Gutierrezia sarothrae*) Dispersal, Viability, and Germination. **Ballard L. Wood, Kirk C. McDaniel, and Dennis Clason** . . . . . 77
- Seed Production and Seedbank Dynamics in Subthreshold Velvetleaf (*Abutilon theophrasti*) Populations. **John Cardina and Heather M. Norquay** . . . . . 85
- Interference Between Hemp Sesbania (*Sesbania exaltata*) and Soybean (*Glycine max*) in Response to Irrigation and Nitrogen. **C. Andy King and Larry C. Purcell** . . . . . 91
- Emergence and Survival of Horseweed (*Conyza canadensis*). **Douglas D. Buhler and Micheal D. K. Owen** . . . . . 98
- Analysis of Genetic Variation in Wild Mustard (*Sinapis arvensis*) Using Molecular Markers. **Michael Moodie, Robert P. Finch, and George Marshall** . . . . . 102
- Characterizing Spatial Stability and Weed Populations Using Interpolated Maps. **Roland Gerhards, Dawn Y. Wyse-Pester, David Mortensen, and Gregg A. Johnson** . . . . . 108
- Effect of Tillage and Corn on Pigweed (*Amaranthus* spp.) Seedling Emergence and Density. **Joseph O. E. Oryokot, Stephen D. Murphy, and Clarence J. Swanton** . . . . . 120
- Wheat (*Triticum aestivum*) Yield Reduction from Common Milkweed (*Asclepias syriaca*) Competition. **Joseph P. Yenish, Beverly R. Durgan, Douglas W. Miller, and Donald L. Wyse** . . . . . 127

## WEED MANAGEMENT

- Identification of Graminicide-Resistant Johnsongrass (*Sorghum halepense*). **Reid J. Smeda, Charles E. Snipes, and William L. Barrentine** . . . . . 132
- Postemergence Herbicide Application Timing Effects on Annual Grass Control and Corn (*Zea mays*) Grain Yield. **Larry S. Tapla, Thomas T. Bauman, Robert G. Harvey, James J. Kells, George Kapusta, Mark M. Loux, William E. Lueschen, Michael D. K. Owen, Larry H. Hageman, and Stephen D. Strachan** . . . . . 138

Efficacy of <i>Exserohilum monaceras</i> for the Control of <i>Echinochloa</i> Species in Rice ( <i>Oryza sativa</i> ). <b>Wenming Zhang and Alan K. Watson</b> . . . . .	144
Efficacy of Reduced-Rate Herbicide Combinations in Dry-Seeded Rice ( <i>Oryza sativa</i> ) on Alluvial Clay Soil. <b>David L. Jordan</b> . . . . .	151
Field Evaluation of a Bioeconomic Model for Weed Management in Soybean ( <i>Glycine max</i> ). <b>Douglas D. Buhler, Robert P. King, Scott M. Swinton, Jeffery L. Gunsolus, and Frank Forcella</b> . . . . .	158
Population Dynamics of Yellow Nutsedge ( <i>Cyperus esculentus</i> ) in Cropping Systems in the Southeastern Coastal Plain. <b>W. Carroll Johnson III and B. G. Mullinix, Jr.</b> . . . . .	166
Augmentation of Rose Rosette Disease for Biocontrol of Multiflora Rose ( <i>Rosa multiflora</i> ). <b>A. H. Epstein, J. H. Hill, and F. W. Nutter, Jr.</b> . . . . .	172

**SOIL, AIR, AND WATER**

Effect of Application Timing on Pyriithobac Persistence. <b>Eric P. Webster and David R. Shaw</b> . . . . .	179
Adsorption, Dissipation, and Movement of Fluometuron in Three Southeastern United States Soils. <b>William T. Willian, Thomas C. Mueller, Robert M. Hayes, Charles E. Snipes, and David C. Bridges</b> . . . . .	183