

# WEED SCIENCE

JOURNAL OF THE WEED SCIENCE SOCIETY OF AMERICA

8-JAN-1997 BLDSC BOSTON SPA  
LS23 7BQ

WEED SCIENCE



9284.450000

VOL 44

PART 4

\*ETOC

1/1

PB

VOLUME 44

OCTOBER-DECEMBER 1996

NUMBER 4

## PHYSIOLOGY, CHEMISTRY, AND BIOCHEMISTRY

- Thifensulfuron and Imazethapyr Interaction at the ALS Enzyme in Sulfonylurea-Tolerant Soybean (*Glycine max*). **David M. Simpson and Edward W. Stoller** . . . . . 763
- The Basis of Imazethapyr Tolerance in Cowpea (*Vigna sinensis*). **Roger J. Baerg and Michael Barrett** . . . . . 769
- Mechanisms of Resistance to Diclofop of Two Wild Oat (*Avena fatua*) Biotypes from the Willamette Valley of Oregon. **Steven S. Seefeldt, E. Patrick Fuerst, David R. Gealy, Amit Shukla, Gerard P. Irzyk, and Malcolm D. Devine** . . . . . 776
- Sampling a Poisonous Plant Population: Quantifying Toxic Alkaloids in Tall Larkspur (*Delphinium barbeyi*) Leaves. **Gary D. Manners and James A. Pfister** . . . . . 782
- Imidazolinone and Sulfonylurea Resistance in a Biotype of Common Waterhemp (*Amaranthus rudis*). **Sarah Taylor Lovell, Loyd M. Wax, Michael J. Horak, and Dallas E. Peterson** . . . . . 789
- Smallseed Dodder (*Cuscuta planiflora*) Gravitropism in Red Light and in Red Plus Far-red. **Gregory L. Orr, Mustapha A. Haidar, and Deborah A. Orr** . . . . . 795
- Postemergence Activity of Sulfentrazone: Effects of Surfactants and Leaf Surfaces. **Frank E. Dayan, Hannah M. Green, John D. Weete, and Gary Hancock** . . . . . 797

## WEED BIOLOGY AND ECOLOGY

- Morphological and Phenological Variation in Barnyardgrass (*Echinochloa crus-galli*) in California. **Robert F. Norris** . . . . . 804
- Tillage Effects on Seed Distribution and Common Milkweed (*Asclepias syriaca*) Establishment. **Joseph P. Yenish, Thomas A. Fry, Beverly R. Durgan, and Donald L. Wyse** . . . . . 815
- Predicting Yellow Nutsedge (*Cyperus esculentus*) Emergence Using Degree-day Models. **Cheryl A. Wilen, Jodie S. Holt, and William B. McCloskey** . . . . . 821
- Interference and Water Use of Biotypes Differing in Sensitivity to MSMA. **M. Raisuddin Akanda, Robert H. Walker, and Glenn Wehtje** . . . . . 830
- Herbicide Effects on Ivyleaf Morningglory (*Ipomoea hederacea*) and Soybean (*Glycine max*) Growth and Water Relations. **James C. Holloway, Jr. and David R. Shaw** . . . . . 836
- Soybean (*Glycine max*) Response to Weed Interference and Rhizoctonia Foliar Blight (*Rhizoctonia solani*). **B. David Black, James L. Griffin, John S. Russin, and Johnnie P. Snow** . . . . . 842
- Characterization of Wild Oat (*Avena fatua* L.) Populations and an Inbred Line with Multiple Herbicide Resistance. **Anthony J. Kern, Corey T. Colliver, Bruce D. Maxwell, Peter K. Fay, and William E. Dyer** . . . . . 847
- Competition Between Triazine-Resistant and -Susceptible Common Waterhemp (*Amaranthus rudis*). **Daniel D. Anderson, Leon G. Higley, Alex R. Martin, and Fred W. Roeth** . . . . . 853
- Effect of Herbicides on Ivyleaf Morningglory (*Ipomoea hederacea*) Interference in Soybean (*Glycine max*). **James C. Holloway, Jr. and David R. Shaw** . . . . . 860
- Effect of Planting Patterns and Inter-row Cultivation on Competition Between Corn (*Zea mays*) and Late Emerging Weeds. **Stephen D. Murphy, Yussif Takubu, Stephan F. Weise, and Clarence J. Swanton** . . . . . 865
- Growth and Seed Return of Auxin-Type Herbicide Resistant Wild Musard (*Brassica kaber*) in Wheat. **Daniel J. Debreuil, Lyle F. Friesen, and Ian M. Morrison** . . . . . 871

**LOAN BAN** EXPIRES - 9 JUL 1997

ISSN 0043-1745

WEESA6 44(4) 763-995 (1996)



|  |     |
|--|-----|
| Influence of Density on Johnsongrass ( <i>Sorghum halepense</i> ) Interference in Field Corn ( <i>Zea mays</i> ). <b>Hani Z. Ghosheh, David L. Holshouser, and James M. Chandler</b> . . . . . | 879 |
| Coleorhizal Hairs in Germinating Medusahead ( <i>Taeniatherum caput-medusae</i> ). <b>Francis E. Northam, Robert H. Callihan, and Michelle M. Puchalski</b> . . . . .                          | 884 |
| Effects of Soil Moisture on Observed and Predicted Yellow Nutsedge ( <i>Cyperus esculentus</i> L.) Emergence. <b>Cheryl A. Wilen, Jodie S. Holt, and William B. McCloskey</b> . . . . .        | 890 |

## WEED MANAGEMENT

|  |     |
|--|-----|
| Response of Eastern Black Nightshade ( <i>Solanum ptycanthum</i> ) to Low Rates of Imazethapyr and Metolachlor. <b>Katherine I. Ward and Susan E. Weaver</b> . . . . .   | 897 |
| Influence of Weed Control on Weed Population in Ridge-till Corn ( <i>Zea mays</i> ). <b>Gail A. Wicks, Robert G. Wilson, Garold W. Mahnken, and Gordon E. Hanson</b> . . . . .   | 903 |
| Comparison of Standard and Reduced Production Inputs on Cotton ( <i>Gossypium hirsutum</i> L.). <b>C. Dale Monks, Michael G. Patterson, Barry L. Freeman, and Bobby E. Norris</b> . . . . .  | 911 |
| Field Evaluation of a Bioeconomic Model for Weed Management in Corn ( <i>Zea mays</i> ). <b>Douglas D. Buhler, Robert P. King, Scott M. Swinton, Jeffrey L. Gunsolus, and Frank Forcella</b> . . . . .   | 915 |
| Infection by the Fungal Pathogen <i>Colletotrichum coccodes</i> Affects Velvetleaf ( <i>Abutilon theophrasti</i> )-Soybean Competition in the Field. <b>Antonio Ditommaso, Alan K. Watson, and Steve G. Hallett</b> . . . . .  | 924 |
| Control of Canada Thistle ( <i>Cirsium arvense</i> ) with Glyphosate Applied at the Bud vs Rosette Stage. <b>James H. Hunter</b> . . . . .   | 934 |
| Surface Wheat ( <i>Triticum aestivum</i> ) Residues, Giant Foxtail ( <i>Setaria faberi</i> ), and Soybean ( <i>Glycine max</i> ) Yield. <b>Ribas A. Vidal and Thomas T. Bauman</b> . . . . .   | 939 |
| The Critical Period of Johnsongrass ( <i>Sorghum halepense</i> ) Control in Field Corn ( <i>Zea mays</i> ). <b>Hani Z. Ghosheh, David L. Holshouser, and James M. Chandler</b> . . . . .   | 944 |
| Role of Pepper ( <i>Capsicum annuum</i> ) as a Trap and Catch Crop for Control of <i>Orobanche aegyptiaca</i> and <i>O. cernua</i> . <b>Joseph Hershenhorn, Yaakov Goldwasser, Dina Plakhine, Geza Herzlinger, Shmuel Golan, Rinat Russo, and Yeshayahu Kleifeld</b> . . . . . | 948 |
| Weed Control in Cole Crops and Onion ( <i>Allium cepa</i> ) Using Ammonium Nitrate. <b>Iris Bitterlich, Mahesh K. Upadhyaya, and Solomon I. Shibauro</b> . . . . .   | 952 |

## SOIL, AIR, AND WATER

|   |     |
|---|-----|
| Clomazone Dissipation in Two Tennessee Soils. <b>K. Bruce Kirksey, Robert M. Hayes, William A. Krueger, Charles A. Mullins, and Thomas C. Mueller</b> . . . . . | 959 |
|---|-----|

## SPECIAL TOPICS

|   |     |
|---|-----|
| Common and Chemical Names of Herbicides Approved by the Weed Science Society of America . . . . . | 964 |
| Minutes of the WSSA Board of Directors Meeting, February 4 and 5, 1996, Norfolk, VA . . . . .     | 970 |
| Minutes of the WSSA Business Meeting, February 6, 1996, Norfolk, VA . . . . .                     | 977 |
| Minutes of the WSSA Board of Directors Meeting, Thursday, February 8, 1996, Norfolk, VA . . . . . | 979 |
| Instructions to Authors . . . . .   | 982 |
| Author Index . . . . .  | 987 |
| Subject Index . . . . .   | 989 |



# WEED SCIENCE

Published four times a year by the Weed Science Society of America

Robert L. Zimdahl, *Editor*

## Associate Editors

James D. Burton, North Carolina State University, Box 7609, Raleigh, NC 27695  
Michael E. Foley, Botany and Plant Pathology, Purdue University, 1155 Lilly Hall of Life Science, West Lafayette, IN 47907-1155  
Clifford Gerwick, Natural Products Discovery, DowElanco, 9330 Zionsville Rd., Indianapolis, IN 46268  
Nicholas Jordan, Agronomy & Plant Genetics, University of Minnesota, 1991 Buford Circle, St. Paul, MN 55108  
Robert Hartzler, Iowa State University, 2104 Agronomy Hall, Ames, IA 50011  
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  
Tom Mueller, Plant/Soil Science Department, University of Tennessee, P.O. Box 1071, Knoxville, TN 37901-1071  
Karen Ann Renner, Crop & Soil Sciences, Michigan State University, 466 Plant/Soil Science Bldg., East Lansing, MI 48824  
Dale L. Shaner, American Cyanamid Company, P.O. Box 400, Princeton, NJ 08540  
Clarence J. Swanton, Crop Science Department, University of Guelph, Guelph, ON, Canada N1G 2W1  
Susan E. Weaver, Agriculture Canada, Research Station, Harrow, ON, Canada N0R 1G0  
Lori J. Wiles, Great Plains System Research, USDA-ARS, 301 South Howes, Room 353, Fort Collins, CO 80522  
Robert G. Wilson, Panhandle Station, University of Nebraska, 4502 Avenue I Panhandle Sta., Scottsbluff, NE 69361

Gayle Rodcay, *Technical Editor*

## Reviewers

|                     |                     |                    |                  |                  |
|---------------------|---------------------|--------------------|------------------|------------------|
| Yuguang Bai         | David Johnson       | Wondi Mersie       | Emilie Regnier   | M. K. Upadhyaya  |
| Todd Baughman       | Wayne Keeling       | Todd L. Mervosh    | Jill Schroeder   | Mark VanGessel   |
| Roger Becker        | Carol Mallory-Smith | David A. Mortensen | Reid Smeda       | Glenn Wehtje     |
| Robert E. Blackshaw | Diane R. Manthey    | Michael Owen       | Tracy Sterling   | Leslie A. Weston |
| William Dyer        | Bruce Maxwell       | Krishna Reddy      | Thomas Tworowski | John Wilcut      |

## Officers of the Weed Science Society of America

|   |   |
|---|---|
| Stephen O. Duke, <i>President</i>             | Jodie S. Holt, <i>Secretary</i>               |
| Calvin G. Messersmith, <i>President-Elect</i> | Laura L. Whatley, <i>Treasurer</i>            |
| F. Dan Hess, <i>Vice President</i>            | Ann Légère, <i>Editor-in-Chief</i>            |
| James L. Barrentine, <i>Past President</i>    | Robert A. Schmidt, <i>Executive Secretary</i> |

Horace D. Skipper, *Chair, Constitution and Operating Procedures*

*Weed Science* (ISSN 0043-1745) is an official publication of the Weed Science Society of America, 1508 West University Ave., Champaign, IL 61821-3133 (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 quarterly, one volume per year, four issues per year beginning in January.

Membership is \$75 per year, student affiliate membership \$30, which includes receipt of *Weed Science*, *Weed Technology*, and *WSSA Newsletter*. Dues should be sent to WSSA, 1508 West University Ave., Champaign, IL 61821-3133 not later than December 1 of each year. Membership in the society is on a calendar-year basis only.

Subscriptions (institutions, libraries, etc.) are \$125 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, 1508 West University Ave., Champaign, IL 61821-3133.

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, 1508 West University Ave., Champaign, IL 61821-3133. 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.

Manuscripts must be sent to the Editor, Robert L. Zimdahl, Weed Research Laboratory, Colorado State University, Fort Collins, CO 80523. Directions for contributors are published in the October–December issue of *Weed Science*. Authors are asked to pay \$50 (member) or \$100 (nonmember) per page charge 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 Champaign, IL and at additional mailing offices.  
Copyright 1996 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, 1508 West University Ave., Champaign, IL 61821-3133.

**Sustaining Members**  
**WEED SCIENCE SOCIETY OF AMERICA**  
**October 2, 1996**

**Patron**

American Cyanamid Company  
BASF Corporation  
DowElanco  
DuPont Agricultural Products  
ISK Bioscience Corporation  
Monsanto Agricultural Company  
Sandoz Crop Protection  
Valent USA Corporation  
Zeneca Ag Products

**Contributing**

AgrEvo USA Company  
Bayer Corporation  
Compliance Service Int'l., Inc.  
FMC Corporation Ag Chem Group  
Griffin Corporation  
Terra Chemical Int'l. Inc.

**Associate**

ABC Laboratories  
Agri-Growth Research Inc.  
Agvise Laboratories  
Allen Machine Works  
ALMACO Company  
American Agricultural Services  
The Andersons  
Astrix

Burch Company  
Cenex/Land O'Lakes  
Chemorse Ltd.  
Ciba-Geigy Canada Ltd.  
Ciba-Geigy Corporation  
CIRTA  
Concord Environmental Equipment  
Decagon Devices, Inc.  
Deere & Company Tech. Center  
EPL Bio-Analytical Services  
Gandy Corporation  
Growmark Inc.  
Gylling Data Management Inc.  
Heartland Technologies Inc.  
Kincaid Equipment Manufacture Corp.  
LABServices  
LI-COR Inc.  
MARATHON Ag/Environmental  
Minnesota Valley Testing Lab.  
Mycogen Corporation  
Nissan Chemical America Group  
PBI/Gordon Corporation  
R & D Sprayers, Inc.  
Research Options Inc.  
Rhone-Poulenc Ag Company  
Rohm & Haas Company  
The Scotts Company  
Spraying Systems Company  
Stewart Agric. Research Services  
Sumitomo Chemical America, Inc.  
Uniroyal Chemical Company  
United Agri Products  
Weed Systems Equipment, Inc.