

Weed Science

Journal of the Weed Science Society of America

30-MAY-1997 BSDS

BOSTON SPA
LS23 7BQ

WEED SCIENCE

*ETOC



9284.450000

VOL 45 PART 2

PB



1/1



Volume 45 Number 2
MARCH-APRIL 1997

LOAN BAN

EXPIRES

28 NOV 1997

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	Chandrashekar I. Nimal	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	Mahesh K. Upadhyaya	

Officers of the Weed Science Society of America

Calvin G. Messersmith, *President*

F. Dan Hess, *President-Elect*

James M. Chandler, *Vice President*

Stephen O. Duke, *Past President*

Jodie S. Holt, *Secretary*

Joan Dusky, *Treasurer*

Anne Légère, *Editor-in-Chief*

Horace D. Skipper, *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 (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 \$75 per year, student affiliate membership \$30, 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 \$125 per year, one volume per year of six issues beginning in January. Subscription to *Weed Science* includes a subscription to *Weed Technology* (ISSN 0890-037X) (four issues per volume). 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 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.

Weed Science

VOLUME 45

MARCH-APRIL 1997

NUMBER 2

EDITORIAL

- My view—A new strategy for progress in weed science. **Nicholas Jordan** 191

PHYSIOLOGY, CHEMISTRY, AND BIOCHEMISTRY

- Palmer amaranth (*Amaranthus palmeri*) and common waterhemp (*Amaranthus rudis*) resistance to selected ALS-inhibiting herbicides. **Christy L. Sprague, Edward W. Stoller, Loyd M. Wax, and Michael J. Horak** 192
- Temperature effects on imazaquin soil bioavailability, uptake, and metabolism in corn (*Zea mays*). **Nicholas D. Poige and Michael Barrett** 198
- Adjuvant enhancement of large crabgrass (*Digitaria sanguinalis*) control with dithiopyr. **Steven J. Keeley, Bruce E. Branham, and Donald Penner** 205
- Altered acetolactate synthase activity in ALS-inhibitor resistant prickly lettuce (*Lactuca serriola*). **Charlotte V. Eberlein, Mary J. Guttieri, Carol A. Mallory-Smith, Donn C. Thill, and Roger J. Baerg** 212

WEED BIOLOGY AND ECOLOGY

- Model of rice (*Oryza sativa*) yield reduction as a function of weed interference. **Karl W. VanDevender, Thomas A. Costello, and Roy J. Smith, Jr.** 218
- Survival of downy brome (*Bromus tectorum*) seed in four environments. **Gail A. Wicks** 225
- Competitive interactions of tomato (*Lycopersicon esculentum*) and nutsedges (*Cyperus* spp.). **Bielinski M. Santos, Thomas A. Bewick, William M. Stall, and Donn G. Shilling** 229
- Increased weed emergence and seed bank depletion by soil disturbance in a no-tillage system. **Dawit Mulugeta and David E. Stoltenberg** 234
- Modeling weed emergence as influenced by burial depth using the Fermi-Dirac distribution function. **Eric P. Prostko, Hsin-I Wu, James M. Chandler, and Scott A. Senseman** 242
- Effect of volunteer barley (*Hordeum vulgare* L.) interference on field pea (*Pisum sativum* L.) yield and profitability. **John T. O'Donovan and Robert E. Blackshaw** 249
- Giant foxtail (*Setaria faberi*) interference in nonirrigated corn (*Zea mays*). **Jason C. Fausey, James J. Kells, Scott M. Swinton, and Karen A. Renner** 256
- Modelling the demography of crenate broomrape (*Orobancha crenata*) as affected by broad bean (*Vicia faba*) cropping frequency and planting date. **Francisca López-Granados and Luis García-Torres** 261
- Mechanisms of competition for light between rice (*Oryza sativa*) and redstem (*Ammannia* spp.). **Barney P. Caton, Theodore C. Foin, and James E. Hill** 269
- Influence of barnyardgrass (*Echinochloa crus-galli*) time of emergence and density on corn (*Zea mays*). **Aca C. Bosnic and Clarence J. Swanton** 276

WEED MANAGEMENT

- Reduced herbicide rates for large crabgrass (*Digitaria sanguinalis*) and goosegrass (*Eleusine indica*) control in bermudagrass (*Cynodon dactylon*). **B. Jack Johnson** 283
- Economic evaluation of field bindweed (*Convolvulus arvensis*) control. **Allen F. Wiese, Brent W. Bean, Clay D. Salisbury, Monty G. Schoenhals, and Steve Amosson** 288
- The influence of seeding rate on weed control in small-red lentil (*Lens culinaris*). **Daniel A. Ball, Alex G. Ogg, Jr., and Peggy M. Chevalier** 296

SOIL, AIR, AND WATER

- Norflurazon adsorption and dissipation in three southern soils. **William T. Willian, Thomas C. Mueller, Robert M. Hayes, David C. Bridges, and Charles E. Snipes** 301

REVIEW ARTICLE

Herbicide-soil interactions in reduced tillage and plant residue management systems. **Martin A. Locke and Charles T. Bryson** 307

SPECIAL TOPIC

Minutes of the WSSA Board of Directors Meeting—Orlando, Florida 321

Accessing Your New WSSA Business Office

Memberships, subscriptions, address changes, missing journal issues, single journal issue and back issue orders, reprints, color plates and page charge payments, ordering special publications: WSSA Business Office, 810 East 10th St., P.O. Box 1897, Lawrence, KS 66044-8897 [phone: 1-800-627-0629 (U.S. and Canada), 913-843-1235; fax: 913-843-1274; e-mail: wssa@allenpress.com]. Executive Secretary: John Breithaupt (jbreith@allenpress.com); Business Manager: Gina Black (gblack@allenpress.com).

Directions for Contributors to *Weed Science*

Send two copies of the manuscript and all illustrations to Sheila M. Rake, Managing Editor, Allen Press, 810 East 10th St., P.O. Box 1897, Lawrence, KS 66044-8897 and one copy to R. L. Zimdahl, Editor, *Weed Science*, Weed Research Laboratory, Colorado State University, Fort Collins, CO 80523. In the accompanying cover letter to R. L. Zimdahl provide: 1) the corresponding author's name and telephone number, b) three stick-on labels showing the name and address of the corresponding author, c) the category that best describes the paper's content: Weed Management; Physiology, Chemistry, and Biochemistry; Weed Biology and Ecology; Soil, Air, and Water; or Special Topic, and d) a brief list of names, addresses, phone numbers, fax numbers, and e-mail addresses of suggested reviewers.

Directions for Contributors to *Weed Technology*

Send three copies of the manuscript and all illustrations to Sheila M. Rake, Managing Editor, Allen Press, Inc., 810 East 10th St., P.O. Box 1897, Lawrence, KS 66044-8897 and one copy to Chester L. Foy, Editor, *Weed Technology*, Dept. of Plant Pathology, Physiology, and Weed Science, Virginia Polytechnic Institute and State Univ., 502 Price Hall, Blacksburg, VA 24061-0331. Please include the names, addresses, phone numbers, fax numbers, and e-mail addresses of suggested reviewers.