# WEED TECHNOLOGY

A Journal of the Weed Science Society of America

**VOLUME 12** 

**JULY-SEPTEMBER 1998** 

**NUMBER 3** 



WETEE9 12(3) 421-568 (1998)

ISSN 0890-037X

## WEED TECHNOLOGY

#### A Journal of the Weed Science Society of America

Weed Technology, published quarterly beginning each January-March issue, is included along with Weed Science and WSSA Newsletter to Weed Science Society of America (WSSA) members. Annual membership costs \$75 with \$30 student affiliate memberships on a calendar year basis only.

Weed Technology subscriptions are \$83 per year (four issues per volume). New subscriptions begin with the January–March issue. Subscribers, including libraries and institutions, can obtain both Weed Science (ISSN 0043-1745) (volume of six issues per year) and Weed Technology for \$139 annually.

Changes of mailing address, inquiries about copies lost in the mail, and requests for back issues and for information about placing advertisements and about receiving journals, membership and subscriptions should be sent to WSSA, 810 East 10th Street, P.O. Box 1897, Lawrence, KS 66044-8897. Send dues by December 1 each year. Claims for copies lost in the mail must be received within 30 days (90 days foreign) of the issue date to insure replacement at no charge.

Send three copies of the manuscript to Sheila M. Rake, Managing Editor, Allen Press, Inc., 810 East 10th Street, 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. Directions for Contributors are published in each October–December issue of *Weed Technology*. Authors are charged \$50 per page to cover a portion of publication costs. The Editor can exempt page charges in advance when justified.

Weed Technology (ISSN 0890-037X) is published by the Weed Science Society of America, 810 East 10th St., Lawrence, KS 66044-8897. Periodical postage paid at Lawrence, KS and at additional mailing offices. Copyright 1998 by the Weed Science Society of America. Printed in U.S.A. All rights reserved. Reproduction in part or whole is prohibited. POSTMASTER: Send address changes to WSSA, 810 East 10th Street, Lawrence, KS 66044-8897.

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 Technology* 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 that area who request such materials for the purpose of scientific research.

#### **WSSA OFFICERS**

F. Dan Hess, President
James M. Chandler, President Elect
Lawrence R. Oliver, Vice President
Calvin G. Messersmith, Past President
Jill Schroeder, Secretary
Joan Dusky, Treasurer
Anne Légère, Director of Publications
Horace D. Skipper, Chair,
Constitution and Operating Procedures



## Sustaining Members

April 14, 1998

#### **PATRON**

American Cyanamid Company DowElanco DuPont Agricultural Products Griffin Corporation ISK Bioscience Corporation Monsanto Agricultural Company Novartis Crop Protection, Inc. Zeneca Inc.

#### **CONTRIBUTING**

AgrEvo USA Company
Bayer Corporation
Cenex/Land O'Lakes
FMC Corporation Ag Chem Group
Terra Industries Inc.

#### **ASSOCIATE**

Agri Business Group Agri-Growth Research Inc. Agvise Laboratories Inc. Allen Machine Works **ALMACO Company** American Agricultural Services Inc. The Andersons **Burch Company** Chemtec Inc. **CIRTA** Concord Environmental Equipment Conviron Deere & Company Tech. Center **EPL Bio-Analytical Services** Farmland Industries **Gandy Corporation** Gempler's, Inc. Growmark Inc. Gylling Data Management Inc. HarvestMaster Inc. Heartland Technologies Inc. Kincaid Equipment Manufacture Corp. LI-COR Inc. MARATHON Ag/Environmental Minnesota Valley Testing Lab Mycogen Corporation Nissan Chemical America Group PBI/Gordon Corporation R & D Sprayers, Inc. Rhone-Poulenc Ag Company Rohm and Haas Company The Scotts Company Springborn Laboratories Inc. Stewart Agric. Research Services Stone Environmental Inc. **Thomson Publications** Uniroyal Chemical Company United Agri Products

Wintersteiger Inc.



Volume 12 Number 3

A Journal of the Weed Science Society of America

#### **Table of Contents**

#### • Research =

- 421 Control of Downy Brome (*Bromus tectorum*) in Winter Wheat (*Triticum aestivum*) with MON 37500. Robert E. Blackshaw and William M. Hamman
- 426 Biocontrol of Common St. Johnswort (Hypericum perforatum) with Chrysolina hyperici and a Host-Specific Colletotrichum gloeosporioides. Kimberly D. Morrison, Edward G. Reekie, and Klaus I. N. Jensen
- Evaluation of V-10029 and Trinexapac-Ethyl for Annual Bluegrass Seedhead Suppression and Growth Regulation of Five Cool-Season Turfgrass Species. Matthew J. Fagerness and Donald Penner
- 441 Effect of Oil Adjuvants and Nitrogen Fertilizer on the Efficacy of Imazethapyr Applied at Conventional and Ultralow Spray Volumes. Gene D. Wills, James E. Hanks, Elizabeth J. Jones, and Robert E. Mack
- Validation of an Operator-Assisted Module to Measure Weed and Crop Leaf Cover by Digital Image Analysis. Mathieu Ngouajio, Claudel Lemieux, Jean-Jacques Fortier, Denis Careau, and Gilles D. Leroux
- Sugarcane (Saccharum spp. hybrids) Response to Simulated Fallow Field Residues of Metribuzin and Sulfometuron. Donnie K. Miller, Edward P. Richard, Jr., and James L. Griffin
- Weed Management in Transplanted Bell Pepper (Capsicum frutescens) with Clomazone and Rimsulfuron. John A. Ackley, Henry P. Wilson, and Thomas E. Hines
- Spray Adjuvant, Formulation, and Environmental Effects on Synergism from Post-Applied Tank Mixtures of SAN 582H with Fluazifop-P, Imazethapyr, and Sethoxydim. Robert C. Scott, David R. Shaw, William B. O'Neal, and Troy D. Klingaman
- 470 Response of Cotton (Gossypium hirsutum) to Flame Cultivation. Simone Seifert and Charles E. Snipes
- 474 Differential Tolerance of Corn (Zea mays) Inbreds to Four Sulfonylurea Herbicides and Bentazon.

  Jerry M. Green
- 478 Ecological Characteristics of Three Winter Annual Grasses. R. L. Anderson
- 484 Management of Blackgrass (*Alopecurus myosuroides*) in Winter Wheat in Greece. S. Vizantinopoulos and N. Katranis
- 491 Comparison of Purple Nutsedge (Cyperus rotundus) from Around the World. Gene D. Wills

#### Cover

Mayweed chamomile (Anthemis cotula L.), a native of Europe, is an annual and has followed man all over the world. It is found throughout the United States and is common in Canada. It is a strong-smelling weed of waste land and cultivated fields. In sensitive people, it produces contact irritations similar to those induced by poison-oak or poison-ivy. The mouths and noses of animals eating hay contaminated by mayweed chamomile may be burned and blistered. This photograph was submitted by Larry C. Burrill, Department of Crop and Soil Science, Oregon State University, Corvallis, Oregon 97331.

Peer reviewed papers.

- 504 Red Rice (Oryza sativa) Control and Seedhead Reduction with Glyphosate. Shawn D. Askew, David R. Shaw, and Joe E. Street
- 507 Contribution of Nitrogen Fertilizer Placement to Weed Management in Spring Wheat (Triticum aestivum). Kenneth J. Kirkland and Hugh J. Beckie
- Hophornbeam Copperleaf (Acalypha ostryifolia) Biology and Control. Michael J. Horak, Zhuping Gao, Dallas E. Peterson, and Larry D. Maddux
- The Influence of Weed Management in Wheat (*Triticum aestivum*) Stubble on Weed Control in Corn (*Zea mays*). Theodore M. Webster, John Cardina, and Mark M. Loux
- 527 Rapid Determination of Glyphosate Injury to Plants and Identification of Glyphosate-Resistant Plants.

  Bijay K. Singh and Dale L. Shaner
- Weed Community and Species Response to Crop Rotation, Tillage, and Nitrogen Fertility. Randy L. Anderson, Don L. Tanaka, Al L. Black, and Edward E. Schweizer
- 537 Barnyardgrass (*Echinochloa crus-galli*) Control with Postemergence Applications of Propanil and Clomazone in Dry-Seeded Rice (*Oryza sativa*). David L. Jordan and J. Andrew Kendig
- 542 Duration of Broadleaf Weed Control with Isoxaben Using Soil Bioassays. Rakesh S. Chandran and Jeffrey F. Derr
- Impact of Timing and Frequency of In-Row Cultivation for Weed Control in Dry Bean (*Phaseolus vulgaris*). Mark J. Vangessel, Edward E. Schweizer, Robert G. Wilson, Lori J. Wiles, and Phil Westra
- Interaction of Bromoxynil and Postemergence Graminicides on Large Crabgrass (*Digitaria sanguinalis*). A. Stanley Culpepper, Alan C. York, Katherine M. Jennings, and Roger B. Batts

### • INTRIGUING WORLD OF WEEDS \_\_\_\_\_

560 Pale Smartweed (Polygonum lapathifolium L.) and Other Polygonums. Larry W. Mitich

## WSSA COMMUNICATION

563 WSSA Undergraduate Research Award

#### 

564 Glyphosate, a Unique Global Herbicide by J. E. Franz, M. K. Mao, and J. A. Sikorski. William T. Molin

#### • TECHNOLOGY NOTES \_\_\_\_\_

- 566 Formulations Forum '99
- 566 Publications
- 566 Schedule of Dates and Events

**EDITOR** Chester L. Foy

MANAGING EDITOR Sheila M. Rake

ASSOCIATE EDITORS

**David Monks** Randy L. Anderson Philip A. Banks Tim R. Murphy Robert H. Callihan Robert F. Norris Jerry M. Green M. D. K. Owen W. James Grichar Thomas F. Peeper James L. Griffin Edward P. Richard, Jr. K. Neil Harker Reid Smeda William H. Vanden Born

John Masiunas

Robert A. Masters Leslie Weston Patrick McMullan Gail Wicks

Malcolm D. Devine, Ex Officio Chair, Reviews of Weed Science Committee

#### 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), 785-843-1235; fax: 785-843-1274; email: wssa@allenpress.com]. Executive Secretary: David Wiley (dwiley@allenpress.com); Business Manager: Gina Black (gblack@allenpress.com).

#### Directions for Submission to Weed Science

Send two copies of the manuscript and all illustrations to Sheila M. Rake, Managing Editor, Allen Press, 810 East 10th St., PO. 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 Submission 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.



## Weed Science Society of America Membership Application

Name	MINERAL CONTRACTOR CON
Employer	
Department	NAME
Address	
City	
State/Zip/Country	
Phone (Office) (Fax)	(E-mail)
% of Time devoted to Weed Science related activities	:
Mark all of the appropriate areas of involvement:	
a) Administration/Management	g) Registration
b) Contract Research	h) Regulatory/Legal
c) Extension	i) Research
d) Graduate Student	j) Sales/Technical Services
e) Private Practice	k) Teaching
f) Products Development/R&D	l) Other
If appropriate, indicate areas of specialization:	
1) Agent	11) Non-cropland
2) Application Technology	12) Physiology
3) Aquatic Weeds	13) Plant Biotechnology/Genetics
4) Biological Control of Weeds	14) Residue Chemistry
5) Field Crops	15) Soil
6) Forage Crops	16) Specialists
7) Forestry	17) Sustainable Agriculture
8) Fruit and Vegetables	18) Toxicology
9) Integrated Pest Management	19) Turf/Ornamental
10) Modeling	20) Weed Biology/Ecology
Type of membership: Regular (\$75)	Student (\$30) (Advisor must sign)
	Advisor's Signature

#### Remit in U.S. funds to:

Weed Science Society of America

P.O. Box 1897, 810 East 10th St., Lawrence, KS 66044-8897. Ph: (800)627-0629 (U.S. and Canada), (785)843-1235; Fax: (785)843-1274; E-mail: wssa@allenpress.com