

# WEED TECHNOLOGY

A Journal of the Weed Science Society of America

VOLUME 6

JULY-SEPTEMBER 1992

NUMBER 3



ISSN 0890-037X

WETEE9 6(3) 503-782 (1992)

# 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 \$60 with \$20 student affiliate memberships on a calendar year basis only.

*Weed Technology*, subscriptions are \$60 per year (four issues per volume). New subscriptions begin with the January–March issue. Subscribers, including libraries and institutions, can obtain both *Weed Science* (volume of four issues per year) and *Weed Technology* for \$100 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, 309 W. Clark St., Champaign, IL 61820. 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 manuscripts to Chester L. Foy, Editor, *Weed Technology*, Dept. of Plant Pathology, Physiology, and Weed Science, Virginia Polytech. Institute & State Univ., 503 Price Hall, Blacksburg, VA 24061-0331. Authors are charged \$50 per page (nonmembers \$100) 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. Copyright 1990 by the Weed Science Society of America. Printed in USA. All rights reserved. Reproduction in part or whole is prohibited. Return POD Form 3579 to WSSA, 309 W. Clark St., Champaign, IL 61820 (AC/217-356-3182).

## WSSA OFFICERS

J. Antognini, President  
H. D. Coble, President Elect  
Alex G. Ogg, Jr., Vice President  
J. R. Abernathy, Past President  
Donald C. Thill, Secretary  
J. M. Chandler, Treasurer  
B. Truelove, Editor-in-Chief



## Sustaining Members

June 2, 1992

A & L Agricultural Laboratories  
ABC Laboratories Inc.  
ACDS Inc.  
Agri Diagnostics Associates  
Agrolinz Inc.  
Agvise  
Allen Machine Works  
ALMACO  
American Agricultural Services Inc.  
American Cyanamid Company  
The Andersons  
Asgrow Seed Company  
BASF Corporation  
Battelle  
Cenex/Land O'Lakes  
CIBA-GEIGY Canada Inc.  
CIBA-GEIGY Corporation  
Concord Inc.  
Deere & Company  
Dow Chemical USA  
DuPont Agricultural Products  
Environmental Technologies  
EPL Bio-Analytical Services  
FMC Corporation  
Farmland Industries  
Gandy Corporation  
Griffin Corporation  
Growmark Inc.  
Gylling Data Management, Inc.  
Heartland Technologies, Inc.  
Hoechst-Roussel Agri Vet  
ICI Americas, Inc.  
ISK Biotech Corporation  
Ishihara Sangyo Kaisha Ltd.  
Kincaid Equipment Manufacturers  
Lehigh Agric. & Biological Service  
LI-COR, Inc.  
Mandel Scientific Company Ltd.  
MARATHON Ag/Environmental  
Minnesota Valley Testing Lab  
Mobay Corp./Ag Chem. Div.  
Monsanto Company  
Mycogen Company  
Nissan Chemical America Corp.  
NOR-AM Chemical Company  
PBI/Gordon Corporation  
Plant Sciences Inc.  
R & D Sprayers Inc.  
Research Development Alternatives  
Rhone Poulenc Ag Company  
Ricera Inc.  
Rohm & Haas Company  
Sandoz Crop Protection  
O. M. Scott & Sons Company  
Stewart Agricultural Research Service Inc.  
Sumitomo Chemical America Inc.  
Terra International Inc.  
Uniroyal Chemical Corporation  
United Agri Products  
Valent USA Corporation  
Weed Systems Equipment Inc.  
Wintersteiger America Inc.

# WEED TECHNOLOGY

July–September 1992

Volume 6  
Number 3

A Journal of the Weed Science Society of America

## Table of Contents

### Technology Notes

503 News Notes of General Weed Science Interest

### ● Feature/Honorary Member Address

509 Addressing Real Weed Science Needs with Innovations. Jonathan Gressel

### ● Research

526 Application Rate and Timing of Acifluorfen, Bentazon, Chlorimuron, and Imazaquin. Charles A. King and Lawrence R. Oliver

535 Banded Herbicide Applications and Cultivation in a Modified No-till Corn (*Zea mays*) System. Allan G. Eadie, Clarence J. Swanton, James E. Shaw, and Glen W. Anderson

543 Safening of Corn (*Zea mays*) from Clomazone Injury with Naphthalic Anhydride. Ronald F. Krausz and George Kapusta

548 Phytotoxicity of Fumonisin B<sub>1</sub> on Weed and Crop Species. Hamed K. Abbas and C. D. Boyette

553 Integration of Cereal Cover Crops in Rodge-tillage Corn (*Zea mays*) Production. Allan G. Eadie, Clarence J. Swanton, James E. Shaw, and Glen W. Anderson

561 Species Differ in Response to Adjuvants with Glyphosate. John D. Nalewaja and Robert Matysiak

567 Corn (*Zea mays*) Response to Post-directed Sethoxydim Under Irrigated and Dryland Conditions. James R. Smart, David A. Mortensen, and Fred W. Roeth

573 Sericea Lespedeza (*Lespedeza cuneata*) Control with Selected Postemergence Herbicides. John V. Altom, Jimmy F. Stritzke, and David L. Weeks

577 Response Of Bermudagrass (*Cynodon* spp.) To CGA 163935. B. Jack Johnson

583 Influence of Various Soil Properties on the Adsorption and Desorption of ICIA-0051 in Five Soils. John S. Wilson and Chester L. Foy

●Peer reviewed papers.

#### Cover

Giant horsetail (*Equisetum telmateia* Ehrh.), family Equisetaceae, sometimes occurs as a weed in wet meadows and noncropland, particularly in alluvial soils along the north Pacific Coast. It is closely related to the more familiar field horsetail (*E. arvense* L.).

The fertile stems and vegetative stems of this spore-producing perennial plant are shown.

This photograph was entered as a slide in the 1991 WSSA Photography Contest, Louisville, KY by Larry C. Burrill, Oregon State University, Corvallis, OR 97331.

- 587 Resistance of Palmer Amaranth (*Amaranthus palmeri*) to the Dinitroaniline Herbicides. Billy J. Gossett, Edward C. Murdock, and Joe E. Toler
- 592 Influence of Adjuvants on the Efficacy, Absorption, and Spray Retention of Primisulfuron. Stephen E. Hart, James J. Kells, and Donald Penner
- 599 Recovery, Germinability, and Viability of Leafy Spurge (*Euphorbia esula*) Seeds Ingested by Sheep and Goats. John R. Lacey, Rosie Wallander, and Kathrin Olson-Rutz
- 603 An Integrated Weed Management Procedure for the Control of Dodder (*Cuscuta indecora*) in Alfalfa (*Medicago sativa*). D. W. Cudney, S. B. Orloff, and J. S. Reints
- 607 Environment Influences Green Foxtail (*Setaria viridis*) Competition with Wheat (*Triticum aestivum*). Dallas E Peterson and John D. Nalewaja

## ● Symposium ---

- 611 Preface: The Impetus for a Symposium on Herbicide-Resistant Crops. Orvin C. Burnside
- 613 Developing Herbicide-Tolerant Crop Cultivars: Introduction. Howard F. Harrison, Jr.
- 615 History of Identification of Herbicide-Resistant Weeds. Jodie S. Holt
- 621 Rationale for Developing Herbicide-Resistant Crops. Orvin C. Burnside
- 626 History of Herbicide-Tolerant Crops, Methods of Development and Current State of the Art – Emphasis on Glyphosate Tolerance. Ganesh M. Kishore, Stephen R. Padgett, and Robert T. Fraley
- 635 Concerns a Weed Scientist Might Have About Herbicide-Tolerant Crops. Steven R. Radesovich, Claudio M. Ghersa, and Gary Comstock
- 640 Concerns of Seed Company Officials with Herbicide-Tolerant Cultivars. Donald N. DuVick
- 647 Environmental Concerns with the Development of Herbicide-Tolerant Plants. Rebecca J. Goldberg
- 653 An Industry Perspective on Herbicide-Tolerant Crops. Robert T. Giaquinta
- 657 EPA's Response to Resistance Management and Herbicide-Tolerant Crop Issues. Diana M. Horne
- 662 Technology Transfer for Herbicide-Tolerant Weeds and Herbicide-Tolerant Crops. Ellery L. Knake
- 665 Future Impact of Crops with Modified Herbicide Resistance. Donald L. Wyse

## ● Symposium ---

- 669 Role of Modeling in Regulatory Affairs
- 670 Introduction to the Symposium. R. Don Wauchope and Michael J. Duffy
- 673 Models and Modeling in a Regulatory Setting: Considerations, Applications, and Problems. Mark H. Russel and Raymond J. Layton
- 677 Developing Computer Simulation Models for Estimating Risks of Pesticide Use: Research vs. User Needs. Anthony S. Donigian, Jr. and Robert F. Carsel
- 683 Use of Modeling in Developing Label Restrictions for Agricultural Chemicals. Russell L. Jones
- 688 Combining Computer Simulation with Physical Simulation: An Attempt To Validate Turf Runoff Models. James C. Lin and Robert L. Graney
- 696 Computer Models for Fate Assessment During the Registration Process: Data Needs. Elizabeth Behl
- 701 Screening Procedure for Soils and Pesticides for Potential Water Quality Impacts. Don W. Goss
- 709 Developing Models with More Detail: Do More Algorithms Give More Truth? Donn G. Decoursey
- 716 The Role of Sensitivity Analysis in Groundwater Risk Modeling for Pesticides. Don D. Fontaine, Patrick L. Havens, Gary E. Blau, and Patricia M. Tillotson

- 725 Pesticide Runoff Simulations: Long-Term Annual Means vs. Event Extremes? Ralph A. Leonard, Clint C. Truman, Walt G. Knisel, and Frank M. Davis
- 731 The Weather Factor: Incorporating Weather Variance Into Computer Simulation. J. R. Williams, C. W. Richardson, and R. H. Griggs
- 736 Site-Specific Pesticide Recommendations: The Final Step in Environmental Impact Prevention. Arthur G. Hornsby
- 743 The Use of Runoff and Surface Water Transport and Fate Models in the Pesticide Registration Process. Paul L. Zubkoff
- 749 The USDA-ARS Pesticide Properties Database: A Consensus Data Set for Modelers. Albert E. Herner
- 753 Environmental Risk Assessment of Pesticides: Improving Simulation Model Credibility. R. Don Wauchope

## WSSA Communications

- 760 Winds of Change. John R. Abernathy
- 765 International Organization for Resistant Pest Management(IOPRM) – A Step Toward Rational Resistance Management Recommendations. Homer M. LeBaron, Jonathan Gressel, Bernard C. Smale, and Diana M. Horne
- 771 WSSA Position Statements on Timely Issues

## Book Reviews

- 776 Plant Biochemical Regulation. Reviewed by David J. Parrish
- 778 Writing Papers in the Biological Sciences. Reviewed by Richard W. Rhoades

## Intriguing World of Weeds

- 779 Horsetail. Larry W. Mitich

## Helpful Hints for Technical Writing

- 782 Avoid Redundancy in Writing. J. H. Dawson

### EDITOR

Chester L. Foy

### TECHNICAL EDITOR

Richard W. Rhoades

### ASSOCIATE EDITORS

John Cardina  
 William W. Donald  
 Clyde C. Dowler  
 Joan Dusky  
 Robert G. Harvey, Jr.  
 George Kapusta  
 Kenneth J. Kirkland  
 James R. Martin  
 Robert F. Norris  
 Tim Obrigawitch

Thomas F. Peeper  
 Donald Penner  
 Fred Roeth  
 Walter A. Skroch  
 Phillip Stahlman  
 Joe Street  
 Clarence J. Swanton  
 Ronald E. Talbert  
 Donald C. Thill  
 Alan C. York