

WEED SCIENCE

JOURNAL OF THE WEED SCIENCE SOCIETY OF AMERICA



VOLUME 28

JANUARY 1980

NUMBER 1

Page

—CONTENTS—

- 1 Effectiveness of a New Safener for Protecting Sorghum (*Sorghum bicolor*) from Metolachlor Injury. J. F. Ellis, J. W. Peek, J. Boehle, Jr., and G. Müller
- 6 Laboratory Studies on the Behavior of the Herbicide Safener CGA-43089. A. Nyffeler, H. R. Gerber and J. R. Hensley
- 11 Enhancement of Gibberellic Acid Sensitivity in Corn (*Zea mays*) by Fluridone and R-40244. Robert M. Devlin, Marian J. Kisiel and Andrzej S. Kostuslak
- 13 Absorption, Translocation, and Metabolism of 2,4-D and Glyphosate in Hemp Dogbane (*Apocynum cannabinum*). M. E. Schultz and O. C. Burnside
- 21 Persistence of Several Controlled Release Formulations of Trifluralin in Greenhouse and Field. C. B. Coffman and W. A. Gentner
- 24 Competition Between Yellow Nutsedge (*Cyperus esculentus*) and Japanese Millet (*Echinochloa crus-galli* var. *frumentacea*). R. J. Thullen and P. E. Keeley
- 27 *Cucullia verbasci* an Agent for the Biological Control of Common Mullein (*Verbascum thapsus*). M. G. Maw
- 31 Interaction of Glyphosate with Aromatic Amino Acids on Transpiration in *Phaseolus vulgaris*. D. L. Shaner and J. L. Lyon
- 36 Bentazon for Canada Thistle (*Cirsium arvense*) Control in Peppermint (*Mentha piperita*). B. D. Brewster and C. E. Stanger
- 40 Influence of Herbicide Injury on the Yield Potential of Soybeans (*Glycine max*). E. S. Hagood, Jr., J. L. Williams, Jr., and T. T. Bauman
- 46 Control of Weeds in an Oat (*Avena sativa*)-Soybean (*Glycine max*) Ecofarming Rotation. O. C. Burnside, G. A. Wicks and D. R. Carlson
- 51 Control of Live Oak (*Quercus virginiana*) and Understory Vegetation with Soil-Applied Herbicides. R. E. Meyer and R. W. Bovey
- 59 Factors Affecting the Toxicity of Glyphosate Applied in the Recirculating Sprayer to Johnsongrass (*Sorghum halepense*) and Soybeans (*Glycine max*). C. G. McWhorter and J. R. Williford
- 64 Aspects of Seed Dormancy in Fall Panicum (*Panicum dichotomiflorum*). R. B. Taylorson
- 68 Sicklepod (*Cassia obtusifolia*) and Coffee Senna (*Cassia occidentalis*): Geographic Distribution, Germination, and Emergence. D. H. Teem, C. S. Hoveland and G. A. Buchanan
- 71 Potential Effects of Global Atmospheric CO₂ Enrichment on the Growth and Competitiveness of C₃ and C₄ Weed and Crop Plants. D. T. Patterson and E. P. Flint
- 76 Responses of *Ipomoea* spp. and Smallflower Morningglory (*Jacquemontia tamnifolia*) to Temperature and Osmotic Stresses. R. H. Crowley and G. A. Buchanan

Contents continued—inside front cover

Contents continued from front cover

- 83 Allelopathic Activity of Canada Thistle (*Cirsium arvense*) in Colorado. W. J. Stachon and R. L. Zimdahl
- 87 Dissemination of Weed Seeds by Surface Irrigation Water in Western Nebraska. R. G. Wilson, Jr.
- 93 Glyphosate Absorption and Translocation in Bermudagrass (*Cynodon dactylon*) and Activity in Horsenettle (*Solanum carolinense*). T. Whitewell, P. Banks, E. Basler and P. W. Santelmann
- 97 Some Effects of Buthidazole on Corn (*Zea mays*) Photosynthesis, Respiration, Anthocyanin Formation, and Leaf Ultrastructure. Kriton K. Hatzios and Donald Penner
- 101 Atrazine Dissipation as Affected by Surface pH and Tillage. J. J. Kells, C. E. Rieck, R. L. Blevins and W. M. Muir
- 105 Persistence of Three Dinitroaniline Herbicides on the Soil Surface. K. E. Savage and T. N. Jordan
- 110 Ecotypic Variation of *Tamarix pentandra* Epicuticular Wax and Possible Relationship with Herbicide Sensitivity. R. E. Wilkinson
- 113 Translocation of ¹⁴C-Glyphosate in Soybeans (*Glycine max*) and Johnsongrass (*Sorghum halepense*). C. G. McWhorter, T. N. Jordan and G. D. Wills
- 119 Clover Broomrape (*Orobancha minor*) in the United States. Cecil C. Frost and Lytton J. Musselman
- 122 Action of Selected Herbicides and Tween 20 on Oat (*Avena sativa*) Membranes. M. C. Watson, P. G. Bartels and K. C. Hamilton
- 128 Directions for Contributors to *Weed Science* Journal Articles
-

WEESA6 28(1) 1–130 (1980)

WEED SCIENCE

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

L. L. Danielson, *Editor*
University of North Carolina at Charlotte
Department of Biology, UNCC Station, Charlotte, NC 28223

Associate Editors

A. P. Appleby, Agronomy and Crop Science Department,
Oregon State University, Corvallis, OR 97331
D. E. Bayer, Botany Department, University of California, Davis, CA 95616
R. H. Hodgson, USDA, Weed Physiology and Growth Regulator Research Center,
Frederick, MD 21701
D. L. Klingman, USDA, Beltsville Agricultural Research Center, Beltsville, MD 20705
E. E. Schweizer, USDA, Crops Research Laboratory,
Colorado State University, Fort Collins, CO 80523
G. D. Wills, Delta Branch Experiment Station, Stoneville, MS 38776

Editorial Committee

P. J. Bartels	A. E. Hiltbold	C. G. McWhorter	A. R. Putnam
M. A. Cole	B. J. Johnson	R. M. Menges	D. N. Riemer
J. H. Dawson	T. N. Jordan	R. E. Meyer	R. B. Taylorson
W. B. Duke	W. O. Lee	D. P. Penner	B. Truelove
F. D. Hess			W. H. Vanden Born

Officers of the Weed Science Society of America

J. R. Hay, President
W. D. Carpenter, President-Elect
D. E. Davis, Vice-President
P. W. Santelmann, Past-President
J. D. Nalewaja, Secretary
J. L. Hilton, Editor-in-Chief
G. H. Bayer, Treasurer
C. J. Cruse, Executive Secretary

Weed Science (ISSN 0043-1745) is the official publication of the Weed Science Society of America, 309 West Clark Street, Champaign, IL 61820. It is published bi-monthly, one volume per year, six issues per year beginning in January.

Membership is \$15 per year, student affiliate membership \$7.50, which includes receipt of the *Weed Science*, *Weeds Today*, and *WSSA Newsletter*. Dues should be sent to WSSA, 309 West Clark Street, Champaign, IL 61820 not later than December 1 of each year. Membership in the society is on a calendar year basis only.

Subscriptions (institutions, libraries, etc.) are \$25 per year, one volume per year of six issues beginning January. New subscriptions and renewals begin with the first issue of the current volume and should be sent to WSSA, 309 West Clark Street, Champaign, IL 61820.

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, 309 West Clark Street, Champaign, IL 61820. Claims for copies lost in the mails 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, Charles R. Swanson, 219 Valley View Drive, Kerrville, TX 78028. Directions for contributors are published annually in the January issue of *Weed Science*.

Weed Science published by the Weed Science Society of America.
Second class postage paid at Champaign, IL and at additional mailing offices.
Copyright 1980 by the Weed Science Society of America. Printed in USA.
All rights reserved. Reproduction in part or whole prohibited.

Return POD form 3579 to WSSA, 309 West Clark Street, Champaign, IL 61820.

Sustaining Members
WEED SCIENCE SOCIETY OF AMERICA

Agway, Inc. Syracuse, New York	Farmland Industries Kansas City, Missouri	Nor-Am Agr. Products, Inc. Woodstock, Illinois
Amchem Products, Inc. Ambler, Pennsylvania	FS Services, Inc. Bloomington, Illinois	Pennwalt Chemical Corporation Tacoma, Washington
American Cyanamid Company Princeton, New Jersey	Fisons Corporation Bedford, Massachusetts	PPG Industries, Inc. Pittsburgh, Pennsylvania
American Hoechst Corporation Somerville, New Jersey	FMC Corporation Middleport, New York	Rhodia, Inc., Agricultural Division Monmouth Junction, New Jersey
Amoco Oil Company Chicago, Illinois	GAF Corporation Wayne, New Jersey	Rohm and Haas Company Philadelphia, Pennsylvania
Atchison, Topeka & Santa Fe Railway Company Chicago, Illinois	W. R. Grace & Co. Memphis, Tennessee	Sandoz, Inc. Homestead, Florida
BASF Corporation Parsippany, New Jersey	Great Western Sugar Company Longmont, Colorado	O. M. Scott & Sons Company Marysville, Ohio
R. H. Bogle Company Alexandria, Virginia	Gulf Oil Chemical Company Merriam, Kansas	Shell Development Company Modesto, California
Chemagro Corporation Kansas City, Missouri	Helena Chemical Company Memphis, Tennessee	Spraying Systems Company Wheaton, Illinois
Chevron Chemical Company Richmond, California	Hercules, Inc. Wilmington, Delaware	Stauffer Chemical Company Mountain View, California
CIBA-GEIGY Corporation Greensboro, North Carolina	ICI United States, Inc. Wilmington, Delaware	Thompson-Hayward Chemical Company Kansas City, Kansas
Deere & Company Moline, Illinois	Indiana Farm Bureau Coop. Assoc., Inc. Indianapolis, Indiana	U. S. Borax Research Corporation Anaheim, California
DeLavan Corporation West Des Moines, Iowa	3M Company St. Paul, Minnesota	Union Carbide Corporation South Charleston, West Virginia
Diamond Shamrock Corporation Cleveland, Ohio	Mallinckrodt, Inc. St. Louis, Missouri	Uniroyal Chemical Bethany, Connecticut
Dow Chemical Company Midland, Michigan	Mobil Chemical Company Richmond, Virginia	Universal Cooperative, Inc. Minneapolis, Minnesota
E. I. DuPont deNemours & Company Wilmington, Delaware	Monsanto Company St. Louis, Missouri	The Upjohn Co. Kalamazoo, Michigan
Edison Electric Institute New York, New York	Nalco Chemical Company Oak Brook, Illinois	Velsicol Chemical Corporation Chicago, Illinois
Eli Lilly & Company, Elanco Products Company Indianapolis, Indiana		Witco Chemical Corporation Houston, Texas