

EDITOR: IRVIN E. LIENER

Associate Editors: G. Wayne Ivie
Marshall Phillips

Manuscript Office: Yvonne D. Curry,
Manager; Marie Crunkleton Wiggins,
Senior Associate Editor; Bryan D.
Tweedy, Associate Editor; Sharon A.
Dixon, Editorial Assistant

ADVISORY BOARD

Eric Block
Paul Hedin
Constance Kies
R. McGorin
Harold Pattee
G. D. Paulson
R. Petroski
Russ Rousseff
Richard Scanlan
Allan E. Smith
Willis B. Wheeler
Walter Wolf

Journal of Agricultural and Food Chemistry (ISSN 0021-8561) is published monthly by the American Chemical Society at 1155 16th St., N.W., Washington, DC 20036. Second-class postage paid at Washington, DC, and additional mailing offices. **POSTMASTER:** Send address changes to *Journal of Agricultural and Food Chemistry*, Member & Subscriber Services, P.O. Box 3337, Columbus, OH 43210. Canadian GST Reg. No. R127571347. Printed in the USA.

PUBLICATIONS DIVISION

Robert H. Marks, Director

Journals Department: Charles R. Bertsch,
Head

Editorial Office: Mary E. Scanlan, Manager; Kathleen E. Duffy, Anne C. O'Melia, Joseph E. Yurvati, Journals Editing Managers; Eileen M. Richardson, Assistant Editor

Advertising Office: Centcom, Ltd., 1599
Post Road East, P.O. Box 231, Westport,
CT 06881.

© Copyright 1994 by the American Chemical Society. **Copyright permission:** An individual may make a single reprographic copy of an article in this publication for personal use. Reprographic copying beyond that permitted by Section 107 or 108 of the U.S. Copyright Law is allowed, provided that the appropriate per-copy fee is paid through the Copyright Clearance Center, Inc., 222 Rosewood Dr., Danvers, MA 01923. For reprint permission, please write to the Copyright Administrator, Publications Division, at the ACS Washington address. Bulk reprints: for quotes and information on placing an order, please call (202) 872-4539 or write to the Distribution Office at the ACS Washington address.

The paper used in this publication meets the minimum requirements of

American National Standard for Information Sciences—Permanence of Paper for Printed Library Materials, ANSI Z39.48-1984.

Editorial Information

Guide for Authors and copyright transfer form appear in the first issue of each volume.

Manuscripts for publication should be submitted (six copies) to Manuscript Office, *Journal of Agricultural and Food Chemistry*, at the ACS Washington address.

Correspondence regarding **accepted papers and proofs** should be directed to the Journals Department, at the address below.

Page charges of \$40.00 per page may be paid for papers published in this journal. Payment does not affect acceptance or scheduling of papers.

The American Chemical Society and its Editors assume no responsibility for the statements and opinions advanced by contributors.

Registered names and trademarks, etc., used in this publication, even without specific indication thereof, are not to be considered unprotected by law.

Subscription and Business Information

1994 subscription prices, including postage. (For membership information, contact Office of Member Services at the ACS Washington address.)

	Canada and Mexico		Europe*	All Other Countries*
	U.S.			
Printed				
Members—1 yr	\$ 33	\$ 51	\$ 76	\$ 86
2 yr	\$ 59	\$ 95	\$ 145	\$ 165
Nonmembers	\$375	\$393	\$418	\$428
Microfiche				
Members—1 yr	\$ 33	\$ 33	\$ 44	\$ 44
2 yr	\$ 59	\$ 59	\$ 81	\$ 81
Nonmembers	\$375	\$375	\$386	\$386
Supplementary material (microfiche)	\$ 15	\$ 21	\$ 21	\$ 21

* Air service included.

New and renewal subscriptions should be sent with payment to American Chemical Society, Department L-0011, Columbus, OH 43268-0011. Subscriptions are available only on a calendar year

Journal of Agricultural and Food Chemistry

basis. Rates quoted do not apply to non-member subscribers in Japan, who must enter subscription orders with Maruzen Company Ltd., 3-10 Nihonbashi 2-chome, Chuo-ku, Tokyo 103, Japan. Tel: (03) 272-7211.

Printed edition single issue prices: current year, \$32.00; 1992–93, \$38.00; 1990–91, \$27.00; prior year, \$54.00. Foreign postage additional. Mail orders and requests for back volume prices should be sent to Microforms & Back Issues Office at the ACS Washington address.

Phone orders can be placed for printed, microfiche, and microfilm editions by calling the ACS toll free at (800) 333-9511 from anywhere in the United States and Canada; elsewhere call (614) 447-3776. Phone orders can be charged to Visa, MasterCard, or American Express accounts.

Changes of address must include both old and new addresses with ZIP code and recent mailing label. Send all address changes to Member & Subscriber Services. Please allow 6 weeks for change to become effective.

Claims for missing numbers will not be allowed if loss was due to failure of notice of change of address to be received in the time specified; if claim is dated (a) North America—more than 90 days beyond issue date, (b) all other foreign—more than 180 days beyond issue date. Claims are handled by Member & Subscriber Services.

Supplementary material is noted in the table of contents with a ■. It is available as photocopy (\$12.00 for up to 3 pages and \$1.50 per page for additional pages, plus \$2.00 for foreign postage) or as 24× microfiche (\$12.00, plus \$1.00 for foreign postage). Canadian residents should add 7% GST. See supplementary material notice at end of journal article for number of pages. Orders *must* state whether for photocopy or for microfiche and give complete title of article, names of authors, journal, issue date, and page numbers. Prepayment is required and prices are subject to change. Order from Microforms & Back Issues Office at the ACS Washington address. Supplementary material except structure factors also appears in the microfilm edition.

American Chemical Society
1155 16th St., N.W.
Washington, DC 20036
(202) 872-4600
TDD (202) 872-8733
FAX (202) 872-4615

Journals Department
American Chemical Society
2540 Olentangy River Road
P.O. Box 3330
Columbus, OH 43210
(614) 447-3600, Ext. 3171
TELEX 6842086; FAX (614) 447-3745

Member & Subscriber Services
American Chemical Society
P.O. Box 3337
Columbus, OH 43210
(614) 447-3776; FAX (614) 447-3671
(800) 333-9511