

THE AMERICAN PHYTOPATHOLOGICAL SOCIETY

Founded 1908

Incorporated 1915

The APS Council

President, JAMES F. TAMMEN, The Pennsylvania State University, University Park
President-Elect, ROBERT AYCOCK, North Carolina State University, Raleigh
Immediate Past President, RALPH J. GREEN, JR., Purdue University, Lafayette, Indiana
Vice-President, GEORGE W. BRUEHL, Washington State University, Pullman
Secretary, WILEY N. GARRETT, University of Georgia, Athens
Treasurer, LAURENCE H. PURDY, University of Florida, Gainesville
Editor-in-Chief, ALBERT R. WEINHOLD, University of California, Berkeley

Councilors:

DAVID W. ROSBERG, Texas A & M University, College Station (At Large)
JOHN F. SCHAFER, Washington State University, Pullman (At Large)
EDWARD BATEMAN, Cornell University, Ithaca, New York (At Large)
DUSTON B. COUCH, Virginia Polytechnic Institute, Blacksburg (Potomac)
BENJAMIN H. WAITE, AID/University of Florida, San Salvador (Caribbean)
A. BROWNING, Iowa State University, Ames (North Central)
EARL W. BOOTHROYD, Cornell University, Ithaca, New York (Northeastern)
B. HINE, University of Arizona, Tucson (Pacific)
ANTON H. GRAVES JR., Mississippi State University, State College (Southern)

Staff:

J. TARLETON, Executive Vice-President; The American Phytopathological Society, 3340 Pilot Knob Road, St. Paul, Minnesota 55121.

DIVISIONS OF THE SOCIETY

Caribbean: Pres. JORGE VICTORIA, Instituto Colombiano Agropecuario, ICA, Palmira, Colombia; Vice-Pres. RAÚL MUÑOZ, Compañía de Desarrollo Bananero de Guatemala, Ltd., Bandegua, Bananera, Izabel, Guatemala, C.A.; Sec'y.-Treas. GUILLERMO E. GALVEZ E., CIAT, Apartado aéreo 6713, Cali, Colombia, S.A.
Northeastern: Pres. R. J. CAMPANA, University of Maine, Orono; Vice-Pres. R. L. MILLAR, Cornell University, Ithaca, N.Y.; Sec'y.-Treas. J. S. BOYLE, The Pennsylvania State University, University Park.
North Central: Pres. JOHN TUIITE, Purdue University, West Lafayette, Indiana; Vice-Pres. JOSEPH E. HUGUELET, North Dakota State University, Fargo; Sec'y.-Treas. L. E. WILLIAMS, Ohio Agricultural Research & Development Center, Wooster.
Pacific: Pres. L. J. ASHWORTH, University of California, Berkeley; Vice-Pres. R. STACE-SMITH, Canada Department of Agriculture, Vancouver; Sec'y.-Treas. J. A. HOFFMAN, Utah State University, Logan.
Potomac: Pres. E. S. ELLIOTT, West Virginia University, Morgantown; Vice-Pres. W. L. KLARMAN, University of Maryland, College Park; Sec'y.-Treas. T. H. BARKSDALE, Agricultural Research Center, Beltsville, Maryland.
Southern: Pres. LOWELL L. BLACK, Louisiana State University, Baton Rouge; Vice-Pres. CARTER P. SEYMOUR, Florida Department of Agriculture and Consumer Services, Gainesville; Sec'y.-Treas. ROBERT W. TOLER, Texas A&M University, College Station.

EDITORIAL AND BUSINESS STAFF

TECHNICAL EDITOR, Robert J. Minter; BUSINESS MANAGER and ADVERTISING DIRECTOR, R. J. Tarleton; The American Phytopathological Society, 3340 Pilot Knob Road, St. Paul, Minn. 55121.

Subscriptions: Communications should be addressed to The American Phytopathological Society, 3340 Pilot Knob Road, St. Paul, Minn. 55121. **Subscription price:** \$60 per year domestic, foreign postage \$3.00/yr. extra (including Canada and Mexico). **Single current numbers** (within 60 days of publication): \$6. (Price of back volumes and separate numbers on request.) **Ten-Year Index** (Vol. 40, 1941-1950): paper cover, \$5.00. **Ten-Year Index** (Vol. 41-50, 1951-1960): paper cover \$5.00. Claims for copies lost in domestic mail must be received within 90 days from the date of issue, otherwise the replacement charge will be \$6. Deliveries overseas are not guaranteed; foreign mailings are made at the subscriber's risk. **Advertisement:** Rates may be secured from the Advertising Director. Endorsement of any statement of claims made in advertisements is assumed by this Journal or by The American Phytopathological Society. **Membership in The American Phytopathological Society:** Information concerning membership in The American Phytopathological Society and special publication rates for members will be supplied by the Secretary or the Business Manager.

Published monthly at The American Phytopathological Society
3340 Pilot Knob Road, St. Paul, Minn. 55121

Second class postage paid at St. Paul, Minn.
Subscription, \$60.00 per year

Phytopathology

EDITORIAL BOARD

- A. R. WEINHOLD, Editor-in-Chief, Department of Plant Pathology, University of California, Berkeley 94720
M. E. CORDEN, Senior Editor, Oregon State University, Corvallis 97331
B. W. KENNEDY, Senior Editor, University of Minnesota, St. Paul 55108
J. L. LOCKWOOD, Senior Editor, Michigan State University, East Lansing 48823

ASSOCIATE EDITORS

- L. J. ASHWORTH, JR., University of California, Parlier
C. W. AVERRE, North Carolina State University, Raleigh
J. A. BROWNING, Iowa State University, Ames
W. R. BUSHNELL, USDA, University of Minnesota, St. Paul
E. E. BUTLER, University of California, Davis
D. D. DAVIS, Pennsylvania State University, University Park
R. E. DAVIS, USDA, Beltsville, Maryland
P. R. DAY, Connecticut Agricultural Experiment Station, New Haven
G. DE ZOETEN, University of Wisconsin, Madison
J. E. DUFFUS, USDA, Salinas, California
W. H. ENGLISH, University of California, Davis
J. W. GERDEMANN, University of Illinois, Urbana
R. R. GRANADOS, Boyce Thompson Institute, Yonkers, New York
R. G. GROGAN, University of California, Davis
R. I. HAMILTON, Canada Agriculture, Vancouver
H. E. HEGGESTAD, USDA, Beltsville, Maryland
M. L. LACY, Michigan State University, East Lansing
C. LEBEN, Ohio Agriculture R & D Center, Wooster
E. S. LUTTRELL, University of Georgia, Athens
S. PATIL, University of Hawaii, Honolulu
Z. A. PATRICK, University of Toronto, Ontario, Canada
R. D. RIGGS, University of Arkansas, Fayetteville
A. P. ROELFS, University of Minnesota, St. Paul
R. P. SCHEFFER, Michigan State University, East Lansing
J. S. SEMANCIK, University of California, Riverside
J. F. SHEPARD, Montana State University, Bozeman
A. F. SHERF, Cornell University, Ithaca, New York
M. R. SIEGEL, University of Kentucky, Lexington
W. A. SINCLAIR, Cornell University, Ithaca, New York
D. H. SMITH, Texas A&M University, Yoakum
E. K. SOBERS, University of Georgia, Coastal Plain Station, Tifton
D. H. SPALDING, USDA, Miami, Florida
R. STACE-SMITH, Canada Agriculture, Vancouver
M. E. STANGHELLINI, University of Arizona, Tucson
P. H. TSAO, University of California, Riverside
H. VAN ETTEN, Cornell University, Ithaca, New York
J. L. VAN ETTEN, University of Nebraska, Lincoln
B. M. ZUCKERMAN, University of Massachusetts, East Wareham

GENERAL PUBLICATION POLICIES

At least one author must be a member of The American Phytopathological Society, except that any subscribing institution outside the United States or Canada may have published, by a staff member, one paper (in English) per volume. A letter of transmittal, signed by an official of the foreign institution, should accompany such manuscripts.

Submission of manuscripts: Submit all new manuscripts to The American Phytopathological Society, Editorial Office, 3340 Pilot Knob Road, St. Paul, Minnesota 55121. Do not submit new manuscripts to the Editor-in-Chief. Submission implies nonsubmission elsewhere and (if accepted) no publication elsewhere in the same form without consent.

Content: Contributions should fall into the following categories: 1) Original research on some aspect of plant pathology. Subject matter is not a criterion for judging the merit of an article for publication in *Phytopathology*. It is, however, the authors' duty to establish relevancy to the science of plant pathology. 2) Review papers developing a new concept, hypothesis, theory, or other integration of plant pathology. 3) Phytopathological Notes: These are accounts of techniques, original research, or phytopathological history of general importance, but sufficiently brief as not to exceed two published pages. 4) Letters to the Editor: These may explain, amplify, or otherwise comment upon research published in the journal or elsewhere. Letters to the editor are reviewed in the same manner as regular contributions, and the Editorial Board reserves the right to reject, or to publish, letters of rebuttal when appropriate.

Page charge: A charge of \$25 per published page will apply to all manuscripts submitted by authors, except obituaries and those submitted in response to invitation by the Society.

Separates: No free copies supplied. Reprints will be available at a nominal cost; quotation will be sent with proof.

For style details, follow: Author's Guide for Manuscript Preparation, *Phytopathology* 65:1-4, 1975, and CBE Style Manual (third edition, 1972), available from Amer. Inst. Biol. Sci., Washington, D.C. Authors are urged to have one or more colleagues read the manuscript *critically* prior to submission.

Use of material from this journal: *Phytopathology* is not copyrighted, but those who wish to borrow illustrations or data appearing in *Phytopathology* for use in other publications should obtain the permission of the author of the paper, and provide a line crediting *Phytopathology* as the source of the material.