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PURDUE UNIVERSITY
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U. S. DEPARTMENT of
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West Lafayette, Indiana 47907

Department of Botany & Plant Pathology • Lilly Hall of Life Sciences

P.D.Q.

PLANT DIAGNOSTICIAN'S QUARTERLY

SEPTEMBER 1981 VOL. 2 NO. 3



It is the policy of the Cooperative Extension Service of Purdue University that all persons shall have equal opportunity and access to its programs and facilities without regard to race, religion, color, sex or national origin.

Sept 1981

Editor's Note:

Greetings!

I apologize for the delay of this issue of PDQ. I guess I just let my samples and other activities get the best of me - and am now finally putting my priorities into order.

This issue of PDQ does not have a Feature Discussion Topic. It more or less includes a summation of what transpired at our clinic meeting in New Orleans, a calendar of Discussion Topics and Coordinators for 1982, and other odds and ends.

Please take time to look over the Feature Discussion Topics for 1982. Now is a good time to begin to assemble your thoughts and materials on these topics. Feature coordinators are responsible for coordinating your information - thus it is very important that you send information to them. To make these Discussions worthwhile, we need YOUR INPUT. The quality of PDQ depends on all of us! I want this newsletter to be your sounding board and to act as a means of communication between clinics. So, let me know what your needs are - what questions you have, what answers you have to give, clinic news, job openings, new techniques, clinic frustrations, etc. Send all correspondence, except for Discussion Topic information to me - whenever you have something to share!

Looking forward to hearing from you ALL!!

Respectfully yours,



Gail E. Ruhl
Extension Assistant

Highlights of the Diagnosticians' Meeting
National APS - New Orleans
Meetings

Attendance:

The following people were recorded as having attended the diagnosticians' meeting. My apology to any of you whom I have forgotten.

Bob Mulrooney-Univ. of Delaware	Bill Brown-Colorado State
B.P. Singh-New York	Jim Sherald-Nat. Park Svc. Washington, DC
Ethel Dutky-Univ. of Maryland	M.S. Khan-Univ. of District of Columbia
Charles Averre-North Carolina State U.	Harlan E. Smith-Washington, DC
Margery Daughtery-L.I., N.Y. (Cornell)	Seong H. Kim-PA Dept. Agr.
Sherman Thomson-Utah State Univ.	George Hudler-Cornell Univ.
S.Wickes Westcott III-Cornell Univ.	Jackie Mullen-Auburn Univ.
Cheryl (Smith) Kaiser-Univ. of Kentucky	Mark Andrews-Oklahoma State Univ.
Stanley Kostka-Nat. Park Svc. Wash, DC	Ron Jones-North Carolina State Univ.
Sandy Perry-Michigan State	Bill Dolezal-Pioneer Hybrid, TN
Jim Mertely-Kansas State	Gary W. Moorman-Univ. of Massachusetts

We had a good discussion concerning the future of PDQ. It was decided that we will continue with the same format for another year - and I will act as editor. We were most productive with choosing Feature Discussion Topics for 1982. Thank you to all who volunteered to coordinate!!

FEATURE DISCUSSION TOPIC
CALENDAR (with coordinator(s) and addresses)

December 1981: Computers-Capabilities of several systems for use in clinic situations (including equipment, programs, cost, etc.)
Coordinators: Bob Mitchell and Carl Geiger (send info to Bob)
Department of Botany and Plant Pathology
Purdue University
West Lafayette, Indiana 47907
Bob and Carl are computer programmers in the Purdue Plant Pathology and Entomology Departments, respectively.

March 1982:
- Clinic training for graduate students
- Use of the clinic for training graduate and foreign students
- How to set up a clinic
- The development of clinics abroad
Coordinator: Bill Brown
Department of Plant Pathology
Colorado State University
Fort Collins, Colorado 80523

June 1982: The Master Gardener Program
How, where, when, what, why, and who
Coordinator: Margery Daughtery
Long Island Horticulture Research Lab
39 Sound Avenue
Riverhead, New York 11901

September 1982: Operation of a clinic
- forms, procedures, equipment
- diagnosing and answering abiotic problems
Coordinators: Mark Andrews and Jacqueline Mullen
Plant Diagnostic Clinic Plant Diagnostic Lab
Life Sciences East 101 Extension Hall
Oklahoma State Univ. Auburn University
Stillwater, OK 74074 Auburn, AL 36849

December 1982: Integration of Clinics
Coordinator: Sandy Perry
Plant Disease Diagnostic Clinic
Botany and Plant Pathology Department
Michigan State University
East Lansing, MI 48823

FUNDING FOR THE NEWSLETTER

Copying and mailing for PDQ presently costs me approximately \$240.00/year (about \$60 per issue). This does not include the costs that the Regional Coordinators have for their copying.

Most people favored a \$5.00 subscription to PDQ. This is fine with me - but I shudder to think of a subscription fee, thus I would like to propose a \$5.00 (or more) voluntary contribution. That way, I can receive monetary help to keep PDQ going without additional bookwork. Please make checks payable to Purdue University and send them to me: Gail E. Ruhl
Department of Botany and Plant
Pathology
Purdue University
West Lafayette, IN 47907

NEW PHONE NUMBERS (or corrections)

Sandy Perry - Diagnostician - Michigan State University - 517-355-4536
Gail (Evans) Ruhl - Diagnostician - Purdue University - 317-494-4641

WHAT'S COOKING IN DIAGNOSTIC CLINICS?

The Plant Disease Diagnostic Laboratory - Oklahoma State University
Mark W. Andrews - Diagnostician
Dr. G.L. Barnes - Supervisor

The Plant Disease Diagnostic Laboratory is part of the Department of Plant Pathology and the Cooperative Extension Service of Oklahoma State University. The purpose of the lab is to provide accurate plant disease and nematode identification and control recommendations. We charge \$5.00 per sample submitted, and this money is the sole source of operational funds for the lab.

The laboratory receives approximately 1500 samples each year, which are either mailed or walked in. In general, the samples are sent to us through the County Extension Directors. The majority of the samples are flowers, trees, and ornamentals (50%), followed by field and forage crops (40%), and vegetables (10%). We keep a log book of all samples received and the diagnoses. Our response forms consist of an original that is sent to the grower and four copies. One of the copies is sent to the County Extension Director, while the other three are for our files. We have a sample number file, a pathogen file, and a host file. At the end of the year, a host index of Oklahoma Plant Diseases is compiled.

At the present time, the diagnostic lab's staff includes Dr. G.L. Barnes, Supervisor, Mark W. Andrews, Senior Agriculturist Diagnostician and a 1/2 time lab technician. Graduate students can work in the diagnostic lab during the summer by taking a 1-3 credit special problems course. A clinical Plant Pathology course may be offered in the near future.

The Oklahoma Plant Disease Report is sent out at bi-weekly intervals listing the samples received in the lab by host and the diagnoses. The Oklahoma Plant Disease Advisory is a monthly newsletter written by the department's Extension Plant Pathologists.

University of Arkansas

The following publications can be obtained from:

University of Arkansas
State Extension Office
P.O. Box 391
Little Rock, AR 72203

The following publications on plant disease are available in the form of circulars, miscellaneous publications, and leaflets which may be obtained free of charge from county Extension offices and the state Extension office.

EC 540, Control of Diseases and Pests in the Plant Bed
EC 526, Pest Control of Trees and Shrubs
EL 565, Root Knot Nematodes and Their Control
EL 149, Control of Strawberry Diseases in Arkansas
EL 150, Control of Tomato Diseases in Arkansas
EL 152, Control of Diseases of Cucurbits
EL 168, Control of Cotton Diseases
EL 198, Rice Diseases and Their Control
EL 217, Dusting and Spraying Tomatoes
EL 239, Spraying Apples and Pears
EL 292, Soybean Diseases and Their Control
EL 227, Spraying Peaches
EL 246, Spraying Grapes
EL 265, Spraying Plums and Cherries
EL 272, Control of Diseases and Insects of Pecans
EL 358, Turf Grasses for Golf Courses
EL 414, Insects and Diseases of Lawns
EL 467, The Dutch Elm Disease
EL 594, Chemical Control of Nematodes
Arkansas, 1981 Vegetable Plant Disease Control Guide
Soybean Disease Atlas

The Ohio State University
PLANT DISEASE KNOW AND CONTROL SHEETS

Trees and Shrubs

T & S	1	Prepared	1980	-- Powdery Mildews on Ornamentals
T & S	2	Revised	1980	-- Anthracnose or Leaf Blight of Shade Trees
T & S	3	Prepared	1980	-- Fireblight on Ornamentals
T & S	4	Revised	1980	-- Winter or Frost Injury on Ornamentals
T & S	PP2-5	Revised	1974	-- Leaf Scorch on Trees and Shrubs
T & S	6	Prepared	1980	-- Controlling Diseases on Firethorn
T & S	7	Revised	1980	-- Verticillium Wilt
T & S	9	Prepared	1980	-- Bacterial Crown Gall
T & S	10	Prepared	1980	-- Cedar Rusts
T & S	11	Revised	1980	-- Juniper Twig Blight
T & S	13	Revised	1980	-- Diseases of Ground Covers
T & S	14	Revised	1980	-- Noninfectious Problems of Narrow-leafed Evergreens
T & S	PP2-15	Revised	1977	-- Lawn Herbicide Damage on Ornamentals and Vegetables
T & S	16	Prepared	1980	-- Diseases of Taxus
T & S	17	Revised	1980	-- Common Needle Diseases on Conifers in Ohio
T & S	18	Prepared	1980	-- Diseases of Russian Olive
T & S	PP2-19	Prepared	1977	-- Using Fungicide Sprays Effectively
T & S	20	Prepared	1980	-- Leaf Blight of Hawthorn
T & S	21	Revised	1980	-- Shade Tree Decline

Lawn and Grasses

L & G	PP6-1	Revised	1975	-- Slime Molds on Turf
L & G	PP6-2	Revised	1975	-- Dollar Spot on Turf
L & G	PP6-3	Revised	1975	-- Brown Patch on Turf
L & G	4	Revised	1981	-- Leaf Spots of Bluegrass
L & G	5	Revised	1981	-- Mushrooms, Puffballs & Fairy Rings
L & G	6	Revised	1980	-- Fusarium Blight on Turf
L & G	PP6-7	Revised	1975	-- Flag and Stripe Smut on Turf
L & G	PP6-8	Revised	1975	-- Nematodes on Turf
L & G	PP6-9	Revised	1975	-- Powdery Mildew on Turf

Vegetables

V	PP7-1a	Revised	1975	-- Late Blight of Potato
V	PP7-1b	Revised	1975	-- Early Blight of Potato
V	PP7-1c	Revised	1975	-- Rhizoctonia Disease on Potato
V	PP7-2a	Revised	1975	-- Late Blight of Tomato
V	PP7-2b	Revised	1975	-- Early Blight of Tomato
V	PP7-2c	Revised	1975	-- Anthracnose of Tomato
V	PP7-2d	Revised	1975	-- Septoria Leaf Spot of Tomato
V	PP7-2e	Revised	1975	-- Bacterial Spot of Tomato
V	PP7-2f	Revised	1975	-- Gray Leaf Spot of Tomato
V	PP7-2g	Revised	1974	-- Bacterial Canker of Tomato
V	PP7-2h	Revised	1974	-- Tomato Wilts I, Fusarium and Verticillium
V	PP7-2i	Revised	1974	-- Tomato Wilts II, Bacterial, Walnut and Lightning
V	PP7-3a	Revised	1972	-- Black Rot of Crucifers
V	PP7-3b	Revised	1975	-- Clubroot of Crucifers
V	PP7-3c	Revised	1972	-- Herbicide Injury on Vegetables
V	PP7-4a	Revised	1975	-- Stewart's Bacterial Wilt and Leaf Blight of Corn
V	PP7-4b	Revised	1975	-- Helminthosporium Leaf Blights of Sweet Corn
V	PP7-4c	Revised	1972	-- Sweet Corn Smut

Plant Disease Know & Control Sheets - cont.

Vegetables - cont.

V	PP7-5a	Revised	1975	-- Root Knot Nematode
V	PP7-6a	Revised	1975	-- Alternaria Leaf Spot or Blight of Cucurbit
V	PP7-6b	Revised	1975	-- Angular Leaf-Spot of Cucurbit
V	PP7-6c	Revised	1975	-- Bacterial Wilt of Cucurbit
V	PP7-6d	Revised	1974	-- Fusarium Wilt of Cucurbit
V	PP7-7a	Prepared	1977	-- Potato Virus and Virus-Like Diseases
V	PP7-7b	Prepared	1977	-- Ozone Injury of Potato
V	7c	Revised	1980	-- Ring Rot on Potato
V	7d	Revised	1980	-- Potato Leak and Pink Rot
V	7e	Revised	1980	-- Blackleg of Potato
V	7f	Revised	1980	-- Common Scab on Potato Tubers
V	PP7-7g	Prepared	1977	-- Early Blight of Potato
V	PP7-7h	Prepared	1977	-- Fusarium Tuber Rot and Seed Piece Decay of Potato
V	7i	Revised	1980	-- Potato Wilts (Early Dying Disease)
V	PP7-7j	Prepared	1977	-- Rhizoctonia Disease of Potato

Fruit

F	PP 1	Prepared	1977	-- Apple Powdery Mildew
F	2	Revised	1980	-- Fire Blight of Apples and Pears
F	PP 3	Prepared	1977	-- Apple Scab
F	PP 4	Prepared	1977	-- Grape Black Rot
F	PP 5	Prepared	1977	-- Peach Canker
F	PP 6	Prepared	1977	-- Peach Leaf Curl
F	PP 7	Prepared	1977	-- Anthracnose of Raspberries
F	PP 8	Prepared	1977	-- Spur Blight of Red Raspberries
F	9	Revised	1980	-- Brown Rot of Stone Fruits
F	10	Prepared	1980	-- Cane Blight of Raspberry
F	11	Prepared	1980	-- Verticillium Wilt of Raspberry
F	12	Prepared	1980	-- Orange Rust of Brambles
F	13	Prepared	1980	-- Virus Diseases of Raspberries
F	14	Prepared	1980	-- Black Knot of Plums and Cherries
F	15	Prepared	1980	-- Verticillium Wilt of Strawberry
F	16	Prepared	1980	-- Downy Mildew of Grape
F	17	Prepared	1980	-- Red Stele Root Rot of Strawberry
F	18	Prepared	1980	-- Leaf Variegation of Strawberry
F	19	Prepared	1980	-- Strawberry Leaf Diseases
F	20	Prepared	1980	-- Black Root-Rot of Strawberry
F	21	Prepared	1980	-- Botrytis Fruit Rot "Gray Mold" of Strawberry, Raspberry and Blackberry
F	22	Prepared	1980	-- Powdery Mildew of Grape
F	23	Prepared	1980	-- Bacteria Spot of Stone Fruit
F	24	Prepared	1980	-- Scab of Peach, Nectarine, Plum and Apricot
F	25	Prepared	1980	-- Cherry Leaf Spot
F	26	Prepared	1980	-- Sooty Blotch and Flyspeck of Apple
F	27	Prepared	1980	-- Apple Collar Rot
F	28	Prepared	1980	-- Botryosphaeria Canker and Fruit Rot of Apples
F	29	Prepared	1980	-- Black Rot and Frogeye Leaf Spot of Apple
F	30	Prepared	1980	-- Rusts of Apple and Crabapples

Plant Disease Know & Control Sheets - cont.

Agronomic Crops

AC- 1	Prepared	1980	--	Take-All Disease of Wheat
AC- 2	Prepared	1980	--	Septoria Leaf and Glume Blotch of Wheat
AC- 3	Prepared	1980	--	Wheat Spindle Streak Mosaic Virus
AC- 4	Prepared	1980	--	Head Blight or Scab of Small Grains
AC- 5	Prepared	1980	--	Barley Yellow Dwarf of Wheat, Oats, and Barley
AC- 6	Prepared	1981	--	Leaf Rust of Wheat
AC- 7	Prepared	1981	--	Common Bunt or Stinking Smut of Wheat
AC- 8	Prepared	1981	--	Tan Spot or Yellow Leaf Spot of Wheat
AC- 9	Prepared	1981	--	Cephalosporium Stripe of Wheat
AC-10	Prepared	1981	--	Powdery Mildew of Wheat
AC-11	Prepared	1981	--	Sharp Eyespot of Wheat
AC-12	Prepared	1981	--	Loose Smut of Wheat, Spelt and Barley

These publications can be obtained from:

The Ohio State University
 Cooperative Extension Service
 2120 Fyffe Road
 Columbus, OH 43210

HEALTHY PLANTS - HEALTHY PEOPLE
A CURRICULUM SUPPLEMENT FOR SCIENCE TEACHERS (could be adapted
for 4-H/Youth programs as well)

The Extension Dutch Elm Disease Office in the Department of Botany and Plant Pathology at Colorado State University (CSU) is responsible for educational outreach pertaining to Dutch elm disease (DED) and its control, and proper care and maintenance of urban trees. In order to stimulate a greater understanding of the economic and aesthetic importance of plant diseases, specifically DED, by Colorado's youth, the Extension DED office, in coordination with science curriculum committee members from two Colorado high schools, initiated the development of a teachers' curriculum supplement addressing basic botany and plant pathology.

While the curriculum supplement was in early stages of planning, a need was established for combining plant materials with human health awareness. With a human health component, the supplement is more versatile in the classroom, students learn about themselves while learning about plants, applications of materials are easier to make, and due to increased usage, a greater number of students will be stimulated to continue in the plant sciences.

Two health educators from CSU Department of Microbiology, Institute of Rural Environmental Health, and Boulder County Health Department, were enlisted to develop the human health materials, and the supplement was named "Healthy Plants - Healthy People."

Healthy Plants - Healthy People consists of three units containing lessons covering specific topics. The first unit contains lessons discussing the role of plant and human systems in support of the organism's life. Unit two presents disease and the disease process with primary emphasis on prevention, and unit three addresses specific examples of human and plant diseases. The program is designed so that teachers can either present the lessons in sequence, or use lessons to supplement existing classroom materials. Lessons consist of a lecture guide and an activity; additional activities and homework assignments are provided, but their use is optional. The lecture component is a minimum 35 minutes, maximum 70 minutes, and consists primarily of concepts and important points that the teacher can develop a formal lecture around. Each lesson contains reproducible illustrations or other educational tools, and ends with several thought stimulating discussion questions. Activities are designed to support lesson concepts and are adapted for use in poorly equipped high schools. A list of references teachers can use for supplemental or background information is provided.

Plant lessons were written by department faculty, staff, and graduate students; human health lessons by the health educators. The human and plant lessons are currently being integrated by the Extension DED office and the health educators.

Materials are written to the level of a college bound science student so that teachers have information for the advanced classes. However, due to flexibility of design, lessons can easily be adapted to other level classes.

Anticipated completion date is fall of 1981. The supplement will be piloted in the Denver Public Schools, high school science courses, beginning in January 1982; our goal is to implement the program state-wide. For more information on the "Healthy Plants - Healthy People" curriculum supplement for science teachers, please contact Wayne A. Fithian, Dept. of Botany & Plant Pathology, CSU, Ft. Collins, CO 80523, (303)491-6950.

TAXONOMIC LITERATURE FOR IDENTIFICATION OF
FUNGAL PLANT PATHOGENS

by D. D. Brunk & G. W. Simone
University of Florida
Gainesville, Florida 32611

GENERAL TEXTS

1. Ainsworth, G. C. and G. R. Bisby. 1971. 6th ed. A Dictionary of Fungi. The Commonwealth Mycological Institute. Kew, Surrey, England. 663 pp.
2. Alexopoulos, C. J. and C. W. Mims. 1979. Introductory Mycology. John Wiley & Sons, New York. 632 pp.
3. Arx, J. A. von. 1974. The Genera of Fungi Sporulating in Pure Culture. Cramer, Vaduz. 316 pp.
4. Commonwealth Mycological Institute Descriptions of Plant Pathogenic Fungi and Bacteria 1-520. Commonwealth Agricultural Bureaux, Kew, Surrey, England.
5. Domsch, K. H., W. Gams and Traute-Heide Anderson. 1980. Compendium of Soil Fungi. Vol. I. Academic Press, New York. 859 pp.
6. Gilman, Joseph C. 1945. A Manual of Soil Fungi. The Iowa State College Press, Ames. 392 pp.
7. Hepting, G. H. 1971. Disease of Forest and Shade Trees of the United States. USDA Forest Service Ag Handbook 386. 658 pp.
8. Holliday, Paul. 1980. Fungus Diseases of Tropical Crops. Cambridge University Press, Cambridge. 607 pp.
9. Hughes, S. J. 1953. Conidia, Conidiophores and Classification. Canadian Journal of Botany 31:577-659.
10. Kendrick, Bryce (ed.) 1979. The Whole Fungus Vols. 1 & 2. National Museums of Canada, Ottawa. 793 pp.
11. Snell, Walter H. and Esther A. Dick. 1971. A Glossary of Mycology. Harvard University Press, Cambridge. 181 pp.

MYXOMYCETES

12. Ainsworth, G. C. et al. 1973. The Fungi, An Advanced Treatise. Vol. IVB. A Taxonomic Review With Keys: Myxomycetes Chapter. Academic Press, New York. 621 pp.
13. Martin, G. W. and C. J. Alexopoulos. 1969. The Myxomycetes. The University of Iowa Press, Iowa City. 560 pp.

PLASMODIOPHOROMYCETES

14. Ainsworth, G. C. et al. 1973. The Fungi, An Advanced Treatise. Vol. IVB. A Taxonomic Review With Keys: Plasmodiophoromycetes Chapter. Academic Press, New York. 621 pp.
15. Karling, J. S. 1968. "The Plasmodiophoromycetes", 2nd. rev. ed. Hafner, New York. 144 pp.

16. Ainsworth, G. C. et al. 1973. The Fungi, An Advanced Treatise. Vol. IVB. A Taxonomic Review With Keys: Oomycetes Chapter. 504 pp.
17. Anastasiou, C. J. and L. M. Churchland. 1969. Fungi on decaying leaves in marine habitats. *Can. J. Bot.* 47(2):251-257.
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19. Fell, Jack W. and I. M. Master. 1975. Phycomycetes (*Phytophthora* spp. nov. and *Pythium* sp. nov.) associated with degrading mangrove (*Rhizophora mangle*) leaves. *Can. J. Bot.* 53(24):2908-2922.
20. Fitzpatrick, Harry Morton. 1930. The Lower Fungi: Phycomycetes. McGraw-Hill Book Co., Inc., New York. 331 pp.
21. Hendrix, F. F. and W. A. Campbell. 1973. Pythiums as Plant Pathogens. *Ann. Rev. Phytopathology* 11:77-98.
22. Hendrix, F. F. and W. A. Campbell. 1974. Taxonomic Value of Reproductive Cell Size in the Genus *Pythium*. *Mycologia* 66(4):681-684.
23. Leonian, L. H. 1925. Physiological Studies on the Genus *Phytophthora*. *Ag. Exp. Sta. Pub.* 11, W. Va. Univ.
24. Leonian, L. H. 1934. Identification of *Phytophthora* Species. *Ag. Exp. Sta. Bull.* 262, W. Va. Univ.
25. Middleton, J. T. 1943. The Taxonomy, Host Range and Geographic Distribution of the Genus *Pythium*. *Mem. Torrey Bot. Club* 20(1): 1-171.
26. Sparrow, Frederick K. Jr. 1943. Aquatic Phycomycetes: Exclusive of the Saprolegniaceae and *Pythium*. The University of Michigan Press, Ann Arbor. 785 pp.
27. Tucker, C. M. 1931. Taxonomy of the Genus *Phytophthora* de Bary. *Research Bulletin* 153. Verlag von J. Cramer. 208 pp.
28. Tucker, C. M. 1933. The Distribution of the Genus *Phytophthora*. *Res. Bulletin* 184. Univ. of Missouri.
29. Waterhouse, G. M. 1956. The Genus *Phytophthora*, Diagnoses (or Descriptions) and Figures From the Original Papers. Commonwealth Mycological Institute. Kew, Surrey, England. 120 pp.
30. Waterhouse, G. M. 1967. The Genus *Pythium*. Diagnoses (or Descriptions) and Figures From the Original Papers. *Mycological Papers*, No. 110. Commonwealth Mycological Institute. Kew, Surrey, England.
31. Waterhouse, G. M. 1964. The Genus *Sclerospora*. Commonwealth Mycological Institute. Kew, Surrey, England. 30 pp.
32. Waterhouse, G. M. 1967. Key to *Pythium* Pringsheim. *Mycological Papers*, No. 109. Commonwealth Mycological Institute. Kew, Surrey, England. 15 pp.
33. Waterhouse, G. M. 1963. Key to the Species of *Phytophthora* de Bary. *Mycological Papers*, No. 92. Commonwealth Mycological Institute. Kew, Surrey, England. 22 pp.

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FUNGI IMPERFECTI

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45. Raper, K. B. and Dorothy I. Fennell. 1973. The Genus Aspergillus. Robert E. Krieger Publishing Co., New York. 686 pp.
46. Raper, K. B. and Charles Thom. 1949. A Manual of the Penicillia. The Williams & Wilkins Co., Baltimore. 875 pp.
47. Sutton, B. C. 1981. The Coelomycetes. The Commonwealth Mycological Institute. Kew, Surrey, England. 650 pp.
48. Toussoun, T. A. and Paul E. Nelson. 1968. A Pictorial Guide to the Identification of Fusarium Spores. Pennsylvania University Press, University Park. 51 pp.
49. Tubaki, K. 1980. Hyphomycetes - Their Perfect-Imperfect Connexions. J. Cramer. A. R. Gantner Verlag K. G., FL - 9490 Vaduz Germany. 138 pp.

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52. Hammett, K. R. W. 1977. Taxonomy of Erysiphaceae in New Zealand. *New Zealand Journal of Botany* 15:687-711.
53. Luttrell, E. S. 1951. Taxonomy of the Pyrenomycetes. *University of Missouri Stud.* 23:3. 120 pp.
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BASIDIOMYCETES

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57. Coker, Wm. Chambers and Alma Holland Beers. 1943. *The Boleti of North Carolina.* Dover Publications Inc., New York. 165 pp.
58. Coker, Wm. Chambers and John Nathaniel Couch. 1974. *The Gasteromycetes of the Eastern United States and Canada.* Dover Publications, Inc., New York. 82 pp.
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60. Cummins, G. B. 1971. *The Rust Fungi of Cereals, Grasses and Bamboos.* Springer-Verlag, New York. 570 pp.
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University Related
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I apologize for any omissions. Please let me know if I left you out so that I can keep this list updated.

S.E.R.