

# Plant Pathology and Physiology

## Information Access Policy

### Clemson University Libraries

Plant Pathology and Physiology Librarian  
[Lois Sill](#)

Written by Lois Sill  
Plant Pathology and Physiology Librarian  
Fall, 2000

#### I. Mission of the Department of Plant Pathology and Physiology

This mission statement was taken from the web page of the department of plant pathology and physiology on November 9, 2000. "The Department of Plant Pathology and Physiology is committed to improving crop, turfgrass, and ornamental plant growth, production, and quality through environmentally sound plant health practices for production of food, fiber, esthetics and medicines. Teaching, Research and Extension are integrated to improve understanding of plant diseases, pathogen biology, epidemiology, pathogenesis, herbicides and physiological processes of plants. Molecular genetics techniques are used in basic research designed to understand mechanisms of fungal pathogenesis, virology, soil bacterial ecosystems, and pathogen diagnostics."

A. Purpose/Objectives. Description of the Curriculum from the Clemson University *1999-2000 Graduate Catalog*. There is no undergraduate degree in this discipline.

The graduate program in plant physiology is interdisciplinary. Students may select courses and a major area of research from the departments of Crop and Soil Environmental Sciences, Biological Sciences, Forest Resources, Horticulture, Plant Pathology and Physiology. Dissertation projects are available in the Food Science Department."

Programs offered lead to M.S. and Ph.D. degrees in plant pathology. Varied course offerings provide excellent opportunities for learning the principles and skills of plant pathology. Additional courses in related disciplines such as botany, plant physiology, genetics, agronomy, microbiology and biochemistry broaden each student's background in the plant sciences. The faculty bring to the classroom a wide variety of research areas and interests, including virology, nematology, mycology, bacteriology, micropropagation, plant medicine, fate and action of pesticides, epidemiology of pathogens, molecular genetics, and disease diagnosis.

#### B. Description of Primary and Secondary Users:

1. Students
  - the M.S. degree in plant pathology
  - the M.S. degree in plant physiology
  - the Ph.D. degree in plant pathology
  - the Ph.D. degree in plant physiology

Programs offered lead to M.S. and Ph.D. degrees in plant pathology and plant physiology. Varied course offerings provide excellent opportunities for learning the principles and skills of plant pathology and physiology. Additional courses in related disciplines such as botany, plant physiology, genetics, agronomy, microbiology and biochemistry broaden each student's background in the plant sciences. The faculty bring to the classroom a wide variety of research areas and interests, including virology, nematology, mycology, bacteriology, micropropagation, plant medicine, fate and action of

pesticides, epidemiology of pathogens, molecular genetics, and disease diagnosis. An undergraduate can have a minor concentration in plant pathology.

Candidates for the M.S. degree are required to complete research presented in a thesis form. A minimum of 24 semester hours of course work is required. Research presented as a dissertation is required of Ph.D. candidates. No specific number of credit hours of course work is required for the Ph.D. About 24 credit hours beyond the M.S. are suggested as a minimum. Undergraduate programs in a crop science or general biology provide a good background for graduate work in plant pathology.

Most graduate students are in a plant pathology program; but often students in genetics, plant physiology, microbiology and biological sciences study under one of the Plant Pathology and Physiology faculty. Special programs include a nematode identification short course and a plant medicine and toxicology initiative. Plant pathologists and physiologists are employed by universities, state, federal and international agencies, industry, and as private consultants and practitioners.

2. Fall, 1999

Number of undergraduates with a minor in plant pathology	3
Number of M.S. students in plant pathology	6
Number of Ph.D. students in plant pathology	8
Number of M.S. students in plant physiology	0
Number of Ph.D. students in plant physiology	14
Full-time faculty in plant pathology and physiology	13
Adjunct faculty	8
Post-doctoral faculty	3
Staff in the plant pathology and physiology department	13

3. Other users of the collection include non-plant pathology/physiology users and community library users who have an interest in plants, pests, or physiology. Those in horticulture would often use the same collection as those in plant pathology and physiology.

## II. Scope of the In-House Collection

### A. Formats

1. Types of material, language, publication date guidelines and formats excluded.

Material purchased will primarily be English language print sources: books, journals, handbooks, manuals, and encyclopedias. Electronic sources will be evaluated and decisions based individually case by case. Materials in languages other than English will be collected only upon specific request. Scholarly, technical, and professional treatments are emphasized but popular treatment of subjects is not excluded. Theses and dissertations will be purchased only when need is demonstrated.

The following materials will be excluded unless there is a specific and real need voiced by a faculty member or graduate student.

1. Workbooks
2. Computer software
3. Rare materials
4. Dissertations and theses from other universities

The material purchased will be current unless there is a specific request and need for historically important works.

## B. Geographic Guidelines

Materials purchased will have an emphasis on the United States but will also be purchased from Great Britain and Canada.

## C. Other

No subject in the arena of plant pathology or plant physiology is completely excluded.

## D. Journals

We need to add new journals to our collection and are beginning to do so with the addition of the Elsevier titles through ScienceDirect. We try to get the input of faculty and graduate students as this is done. Below is a core list of serials from the plant pathology theses citation study done in 1997.

Acta Hort *	J Invert Path	Phys Pl Path (title change)
Amer J Bot	J Nema	Phyt Z
Ann Appl Biol	J Virol Meth	Phytopathology
Ann Rev Phytopath	Mycologia	Plant Disease
Ann Rev Pl Phys	Nature	Pl Dis Rept (title change)
Ann Rev Pl Phys & Molc Biol	Nematologica (title change)	Pl Path
Can J Bot *	Nematropica *	Proc Nat Acad Sci
Can J Pl Path	Neth J Pl Path (title change)	Science
J Bact	Nucl Acid Res	Virology
J Gen Virol	Phys Molc Pl Path	

\* Journals we do not currently subscribe to in any format.

The following list is the core journals from the Plant Physiology theses citation study done in 1997

Acta Hort *	J Amer Soc Hort	Phytopathology
Amer J Botany	J Biol Chem	Pl Cell Phys
Ann Botany	J Exp Botany	Pl Cell Reports
Ann Rev Pl Phys	J Invert Path	Pl Cell Tis Org Cul
Arch Bioch Biophys	Lindleyana*	Pl Phys
Biochemistry	Mycologia	Planta
Botan Gaz (title change)	Nature	Proc Nat Acad Sci
Can J Botany *	New Phytol	Sci Hort
Cell	Nucl Acid Res	Science
Hortscience	Phys Plantarum	

\*Journals we do not currently subscribe to in any format.

## E. Weeding Guidelines

Monographic material, with an imprint of 1980 or earlier, which has not circulated for the last ten years, is being reviewed for weeding. Statistical reports have been run and printouts are available for review of all these titles. If a book has not circulated and is historically important, Special Collections will be asked to house it.

### III. Collection Analysis by Subject

- A. The following subject areas fall into plant pathology (SB 599-608, SB 621-998 with Agriculture) and plant physiology (QK 710-899 under Botany) under the Library of Congress subject headings.

SB 599-608 **Pest and Diseases \*\***

SB 621-795 Plant pathology

SB 818- 945 Economic entomology

SB 950-990 Pest control and treatment of diseases. Plant protection

SB 990.5-998 Economic zoology applied to crops. Agricultural zoology.

QK 710-715 **Plant Physiology**

QK 720-753 Physical Plant physiology

QK 754-845 Physical agents affecting plants

QK 861-866 Phytochemistry\*\*

QK 867- 899 Nutrition

\*\*Pests and diseases is one subject area showing the heaviest use. It is also heavily used by horticulture students and faculty as well as by the public. Biochemistry of plants (phytochemistry) is one of the most heavily used areas in plant physiology.

Use of these collections is fairly evenly spread over other subject areas in these LC ranges as evidenced by a use study run in November, 2000.

### B. Level of Collecting

R.M. Cooper Library serves as a depository for government documents distributed by the Government Printing Office. While we do not receive 100 percent of all GPO documents, we do receive 100 percent of those in the *As*, agriculture. The government documents staff also works to fill in gaps in the *As* and to keep a historical collection of government documents concerning agriculture.

We are also a depository for South Carolina state documents, South Carolina Experiment Station publications, and South Carolina Cooperative Extension Publications..

### IV. Access to Information Not On-site

#### A. Interlibrary Loan

R.M. Cooper Library provides free interlibrary loan service to students, faculty, and staff. There is no limit to the number of loans a person can request.

During the fiscal year 1999-2000, from the department of PI Path and Phys there were eleven faculty ILL requests; one for a book, one for a USDA report and the others were for journal articles. There were two undergraduate requests for articles, five staff requests for articles, and 223 requests from graduate students with four of those for USDA reports, one for a patent, one for a symposium, and one for a journal supplement, and the rest were for individual journal articles. The journals most often requested were:

Curr Biol

Curr Opin Gen Dev

Curr Opin Micro

Curr Opin Pl Biol

Genome Res

Genomics

J Ethnopharm

Trends Pl Sci

All these journals are now available through our e-journal subscriptions except for *Genomics* and *Genome Research*.

## B. Commercial Document Suppliers

We also provide access to Carl UnCover for undergraduates, graduates, staff, and faculty. If the article is available through Carl UnCover, it is usually faxed within two days. At the discretion of the head of resource sharing, other commercial suppliers are used as well.

## C. Databases

*AGRICOLA* is available on and off campus through CU Explorer. In addition to *AGRICOLA*, the Libraries, through CU Explorer, offer the Web of Science Citation Indexes, *BIOSIS* (through the Web of Science), *CABI Online*, *Current Contents*, and the Wilson product, *Biological and Agricultural Index*. The Libraries also have a DIALOG password that gives access to databases to which we do not have subscriptions.

The extension agents and employees across the state have access to CU Explorer from their offices also.

## D. Full-text databases

The Lexis/Nexis service--Academic Universe, is also available to students, staff, and faculty in the library and on campus. It is not available off campus, except to extension employees.

We have access to e-journals through subscriptions and have direct link to these full-text articles through Web of Science including *BIOSIS*. The complete list of e-journals is available at <http://www.lib.clemson.edu/ej/index.htm>

We also are providing Internet access to the Gale InfoTrac products, Expanded Academic, Business ASAP, General Reference, and including ISI's *Current Contents* and *Books in Print*. These databases are available off campus as well to students, staff, and faculty.

## E. Internet Access

Internet access is available to all students, faculty and staff from library terminals in the public area as well as from offices, dorms and labs across campus.

## V. Selection Tools

- A. The faculty, students, and staff in the department of plant pathology and physiology act as my most relevant "selection tool". By looking at the areas of research and teaching for the faculty in the department of plant pathology and physiology, I order those materials that reflect those interests. Listed below are the research interests.

### **Plant pathology and physiology Faculty and Their Areas of Interest, November, 2000**

#### N. D. Camper

Professor. Ph.D., 1967, North Carolina State University. Effects of chemicals on the growth and development of plants in native habitats and when grown in test tubes, vials, or other containers (plant biotechnology); fate of pesticides in the environment; rate and breakdown products of pesticides in the environment, organisms involved in pesticide degradation. Teaches Advanced Plant Physiology courses.

#### Charles E. Drye

Professor. Ph.D., 1976, Clemson University. Edisto Research and Education Center, Blackville. Conducts extension educational and IPM programs on peanuts and small grains. Diagnosis and disease control for soybeans, peanuts, small grains, sunflowers and lupines. Distribution of nematode species on these crops.

Bruce A. Fortnum

Professor. Ph.D., 1978, Clemson University. Pee Dee Research and Education Center, Florence. Etiology and epidemiology of tobacco diseases relating to control programs; evaluation of environmental factors such as soil moisture, light quality, and temperature on nematode ecology; influences of synthetic and organic mulches on nematode-induced diseases.

Jimmy K. Golden

Associate Professor. Ph.D., 1974, University of California at Riverside. Pee Dee Research and Education Center, Florence. Integrated management strategies for nematological and pathological problems of turfgrass cultivars for maintained landscapes.

Steven N. Jeffers

Assistant Professor. Ph.D., 1985, Cornell University. Diseases of ornamental crops in commercial nurseries and greenhouses; development and implementation of integrated disease management strategies; biology and ecology of fungus pathogens, particularly those in the genus *Phytophthora*; biological control; evaluation of fungicides for ornamental crops; extension programs for diseases of ornamental plants.

Anthony P. Keinath

Associate Professor. Ph.D., 1988, Cornell University. Coastal Research and Education Center, Charleston. Ecology, epidemiology and management of fungi causing diseases of vegetables, including gummy stem blight on watermelon and wirestem on crucifers; integrated pest management (IPM) and disease resistance for tomato. Extension specialist for diseases of vegetables.

Daniel A. Kluepfel

Associate Professor. Ph.D., 1984, University of Florida. Microbial ecology of the rhizosphere including population dynamics, competition, biological control, nodulation, gene flow in the environment, genetic determinants for competitiveness and bacterial gene expression in the rhizosphere; release and study of genetically engineered bacteria in the environment. Teaches Physiological Plant Pathology and Bacterial Plant Pathogens.

Stephen A. Lewis

Professor and Department Chair. Ph.D., 1973, University of Arizona. Ecology of plant-parasitic nematodes in mixed populations; identification of species and races using molecular genetics techniques; cultural management of plant-parasitic nematodes. Teaches Plant Parasitic Nematodes, Special Topics in Nematology, Nematode Identification Short Course for Professional Consultants, and portion of Advanced Plant Pathology.

S. Bruce Martin

Associate Professor. Ph.D., 1982, North Carolina State University. Pee Dee Research and Education Center, Florence. Biology and ecology of fungi in the genus *Rhizoctonia* associated with turfgrasses, identification and assessment of their potential to cause turfgrass diseases, turf disease management, and biological control.

John D. Mueller

Associate Professor. Ph.D., 1983, University of Illinois at Urbana-Champaign. Edisto Research and Education Center, Blackville. Control of diseases on cotton and soybean; selection and development of cotton and soybean cultivars resistant/tolerant to Columbia lance, reniform and root-knot

nematodes; biology and ecology of Columbia lance nematode; use of winter cover crops for nematode management; and the effects of nematodes on plant growth and development.

Melissa B. Riley

Research Associate/Associate Professor. Ph.D., 1990, Clemson University. Director of Multi-User Analytical Laboratory. Assists with analysis of pesticide residues and degradation in water, soil, and plants; analysis of plant constituents and hormones including biologically active components in plant-pathogen interactions; identification of organisms utilizing fatty acid analysis. Teaches Physiological Techniques in Plant Pathology and Introductory Plant Pathology.

Simon W. Scott

Professor. Ph.D., 1974, University of Wales, Aberystwyth, Great Britain. Manages the peach certification project to provide disease-free seeds and budwood to nurseries for production of certified trees; research to develop the most sensitive systems for detecting viral diseases in fruit trees; molecular taxonomy of the genus Ilarvirus and the molecular biology of viral infections in fruit trees. Teaches Advanced Plant Pathology and Plant Virology.

Guido Schnabel

Assistant Professor. Ph.D., 1997, University of Hohenheim, Stuttgart, Germany. Develops control strategies for fungal and bacterial diseases in pome fruit and stone fruit. Genetic diversity of pathogen populations and identification and characterization of genes involved in fungicide resistance and pathogenicity.

Adjunct Professors

James H. Blake

Adjunct Associate Professor. M.S., 1984, University of Arkansas. Director of Diagnostic Services (Plant Problem Clinic and Nematode Assay Laboratory) for the Agricultural Service Laboratory and Director of the Clemson Extension Home and Garden Information Center.

Mark A. Boudreau

Adjunct Associate Professor. Ph.D., 1991, Oregon State University. Professor (unranked) of Environmental Studies and Biology (Chair) at Warren Wilson College, Asheville, NC. Coordinates ENS Sustainable Agriculture concentration. Epidemiology, Disease Dynamics in Mixed-Species Communities, Agroecology. Effects of corn intercrops and density on early leaf spot of peanuts.

W. M. Dowler

Consultant. Ph.D., 1961, University of Illinois. USDA Laboratory Director (retired), Foreign Disease and Weed Science Research Unit in Frederick, MD. Field and fruit crop diseases, physiology of plant pathogens, and agriculture and the environment. Assists with proposal development, awards, graduate mentor, substitute instructor.

M. J. Kasperbauer

Adjunct Professor. Ph.D., 1961, Iowa State University. Research Plant Pathologist, USDA, ARS, Coastal Plains Research Center, Florence. Plant-light relations, especially phytochrome-mediated regulation of photosynthate partitioning; and use of tissue and anther culture in crop plant improvement.

A. P. Nyczepir

Adjunct Professor. Ph.D., 1980, Clemson University. Research Nematologist, USDA, ARS, S.E. Fruit and Tree Nut Research Laboratory, Byron, GA. Nematode-host and nematode-nematode interaction on peach emphasizing *Criconebella xenoplax* and peach tree short life and effects on cold hardiness; evaluating *Prunus* spp. for nematode resistance and characterizing mechanisms of resistance; and developing alternative management practices utilizing crop rotations and nonhost crops.

Valerie A. Paynter

Adjunct Professor. Ph.D., 1975, Clemson University. Research interests include: Use of diagnostic tools to examine host / pathogen interactions; Development of a specific antibody to syringomycin, a toxin implicated in Peach Tree Short Life; Tracking of carbohydrate profiles in pine needles of trees exposed to ozone and acid rain. Pectinases, cellulases, and other enzymes involved in degradation of plant material for recycling of waste products; Biodegradation.

Judy A. Thies

Adjunct Associate Professor. Ph.D., 1988, University of Minnesota. Nematologist, USDA, ARS, U.S. Vegetable Laboratory, Charleston. Resistance to root-knot nematodes in vegetable crops.

C. E. Thomas

Adjunct Professor. Ph.D., 1966, Clemson University. Research Leader, USDA, ARS, U.S. Vegetable Laboratory, Charleston. Resistance to foliar diseases of vegetable crops; and nature, mechanisms and inheritance of resistance to downy mildews, powdery mildews, and *Alternaria* leaf blight.

The undergraduate students also are helpful in suggesting resources to purchase. While working with undergraduates at the reference desk or through class contacts, one learns what topics are of interest. Fellow reference librarians are also extremely helpful in suggesting areas that may need more coverage.

## B. Review Sources

Plant pathology and physiology journals

Publishers Websites and Catalogs

Society Websites and Catalogs

*Choice*

GOBI service from YBP

*Books-in-Print* online

## VI. Evaluation Tools

- A. Statistical reports, run on our library's online catalog, show the areas of highest circulation in the plant pathology and physiology areas.
- B. ISI's *Journal Citation Reports* purport to pinpoint the most influential journals in any science discipline through a tracking and counting of citations.
- C. AGRICOLA, Biological and Agricultural Index, BIOSIS Previews, and CAB Online are indexes most frequently used by our plant pathology and physiology students. If the students are frequently requesting journal articles or books they have found using these databases and we do not own them,

this is a clue that these materials may need to be ordered or electronic access gained. Undergraduates usually do not have the time to wait on interlibrary loan or document delivery.

- E. By talking with faculty and students, one can determine if the material needed is available in a timely manner. This is one of the most helpful evaluation tools because this is direct feedback from the “customer”.

## VII. Collection Assessment and Planning

- A. Qualitative Measures. The information access policy for this department will be reviewed every five years.
  - 1. Appropriate bibliographies will be checked against our holdings.
  - 2. Benchmarking projects, to be determined.
- B. Quantitative Measures
  - 1. Interlibrary Loan Activities will be monitored to see what areas we are lacking and what type materials are being requested most and by whom.
  - 2. Circulation Statistics will be reviewed to see which areas of the collection are most heavily used.
  - 3. If Carl UnCover statistics are available, that would give information about which journals are needed more often.
- C. Keeping track of the new research grants undertaken and the new courses taught in the plant pathology and physiology department can also help determine what materials to purchase and helps in the planning.

The course offerings for these two departments may be viewed at the following website:

[http://www.grad.clemson.edu/p\\_current.html](http://www.grad.clemson.edu/p_current.html)

## VIII. Assessment

According to the GOBI service provided through YBP, to purchase all books from scholarly, trade, and professional publishers in the plant pathology LC range published during the 1999-2000 fiscal year, it would have taken \$ 5,331; each book (62 total) averaging \$ 101.24. And certainly Yankee is not reporting 100 percent of all the books that were published in that call number range. To purchase all the books for plant physiology with the same parameters as reported by YBP, it would have taken \$ 4,972; each book (35 total) averaging \$ 142.06. To buy all the books for both disciplines would have cost \$ 10,303. There was \$ 12,480.93 total spent during the fiscal year 1999-2000 on all disciplines in the college of agriculture excepting agricultural economics and toxicology.

This is not to imply that we needed to purchase all the books or that we would have, if funds were plentiful. The old books continue to circulate, many of these are considered classics in the field. As genetics and plant biotechnology come to the forefront in these subject areas, however, new books and new journal acquisitions will be very important.