



The Meristem

DEPARTMENT OF BOTANY & PLANT PATHOLOGY

1998 Annual Report



Purdue University

Welcome to the Department of Botany and Plant Pathology's Annual Report. A lot has happened since we last updated you. We have had numerous changes in personnel, many of our faculty, staff, and students have received regional and national awards, renovation and new construction of greenhouses and laboratories is in progress, and we are looking forward to several new faculty joining us this coming year.

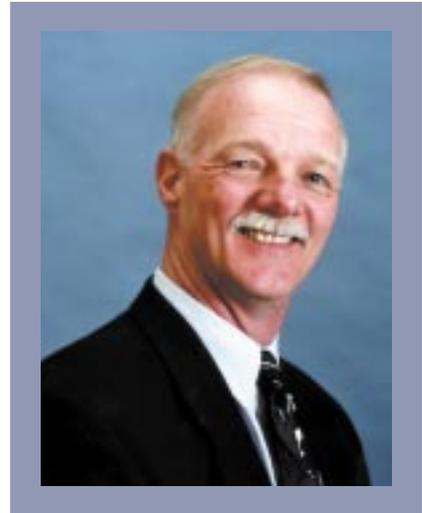
In June, 1997, after 10 years of dedicated service to the department, Dr. Ron Coolbaugh stepped down as department head to resume full-time teaching and research duties in the department. Effective July 1, 1997, I became department head. My background is in plant pathology and I came from Texas A&M University where I was on the teaching and research faculty for 20 years. It is indeed an honor and pleasure to have joined the faculty of Purdue University and the Department of Botany and Plant Pathology. This past year and a half has been a busy and transitional time for our department. Some key personnel changes include the retirement of Dr. Don Scott after 30 years of service and, sadly to report, the death of Dr. Richard Lister, Professor Emeritus in September. This past year also saw Dr. Richard Jones, Dr. Mike Foley, and Dr. Tony Swinehart leaving the department for other opportunities.

While personnel changes invariably create some gaps and voids, they also open up many opportunities for new people and changes in directions and emphasis within the department. As we approach the new millennium we

must have a well-planned and well-charted course to follow. As part of this visioning exercise for our department, we held a 2-day faculty retreat in southern Indiana. One of the results of that retreat was a bold faculty staffing plan that should carry us into the next decade. The first step in this plan is the hiring of three new assistant professors: one in weed science (extension/research); one in fungal biology (research/teaching); and one in plant molecular biology (research/teaching). We hope to have them all on board by the fall semester. In addition, we are in the process of hiring a new curator of the Arthur and Kriebel Herbaria. Each of these new people will add new strengths to our department and allow us to proceed in new directions.

As part of a master construction plan, we also are undergoing major renovations and construction to our greenhouses and laboratories. Construction of a new 10,000 sq.ft. greenhouse and growth chamber was completed in Spring of 1999. The rest of the Lilly Life Sciences greenhouses will be renovated following the completion of the new houses. In addition, four research labs and one classroom in Lilly Hall are scheduled for renovation this year. We also recently completed a major renovation of the department's main office and business office space. We are excited about all of these changes and I hope you will take the opportunity to come by and visit us as we continue to modernize our facilities.

We continue to have an excellent group of undergraduate and graduate students. Our classes are



increasing and the quality of our students remains high. Several of our graduate students received major regional and national awards at professional meetings last year and Amelia Hammond, a sophomore in our department, was appointed a School of Agriculture Ambassador. Many other students have excelled and been recognized in various ways. We are extremely proud of them all and invite you to read more about them in the following pages.

We are embarking on many new journeys which we believe will position the Department of Botany and Plant Pathology and Purdue University at the forefront of science, education, and service. I hope you will take the time to explore the many articles in this report and possibly stop by for a visit. We invite your comments about any issue in our department. You may send them to me or through our web site [<http://www.btny.purdue.edu>].

Thank you for your continual support and I look forward to working with all of you in the months and years to come.

A handwritten signature in black ink, appearing to read "R.D. Martyn, Jr." The signature is written in a cursive style.

Purdue University

The Meristem

Department of Botany and Plant Pathology

1998 Annual Report

Faculty/Staff

Faculty and Staff Awards 4
Carole Lembi – Outstanding Teacher

Invited Presentations and Seminars 7

Current Faculty Listing 9

Goodbyes 10
Don Scott Retires
Norman Sorenson Retires

Memorials 12
Richard Malcolm Lister
Stewart Lamar Kees

Mini Classes 13

Applied Weed Science 13
Textbook Revision

Academics

Student Awards 14
Clive Lo Award

Undergraduate News and Information 15

Graduate Students News and Information 16

Program Areas

Plant and Pest Diagnostic Laboratory 18

Purdue Pesticide Programs 19

Facilities

News From SWPAC 20

Collections

Herbarium Highlights 20

Miscellaneous

Going On . . . 21

Softball Team 23

Department Information

Ray D. Martyn, Department Head
Purdue University
Department of Botany and Plant Pathology
1155 Lilly Hall
West Lafayette, IN 47907-1155
Phone: 765-494-4614, FAX: 765-494-0363
<http://www.btny.purdue.edu/>
<http://www.ppdl.purdue.edu/ppdl/>
<http://www.btny.purdue.edu/PPP/pestprog.html>



Carole Lembi wins Award

In 1971, the Department of Botany and Plant Pathology hired a young aquatic plant specialist as one of the first women faculty members in the School of Agriculture. Carole Lembi wanted to prove herself in research but also found herself with a class to teach. After feeling like the first day of class was a disaster and having no confidence in her ability to teach, she decided she just had to get better. With plain hard work, she wrote and rewrote her notes, paid attention and listened to her students and remembered what she liked and disliked about her instructors when she was a student. Her efforts paid off. Dr. Lembi received the 1997 Outstanding Teacher in Agriculture. She is the first female professor to receive this honor in the School of Agriculture.

Lembi has a reputation of being hardworking, tough, and an instructor with very high standards that she holds her students to as well as herself. This reputation has

earned her the respect of her students, colleagues, and the administration.

Dr. Lembi tells her students stories that parallel her class discussions and explains situations that students might encounter on the job. She has a collection of saltwater seaweed from both coasts to show to her midwestern students. Dr. Lembi takes her classes to northern Indiana lakes for a weekend hip-wading expeditions. She feels that it is up to the teacher to put the information into context and to provide relevance and point out what's really important. Understanding lasts longer with students than plain memorization. Students will remember the concepts long after they forget most of the terms according to her experience.

Dr. Lembi never has curved grades in a course, because she believes that by adjusting the grades, it appears that the teacher did a

poor job and thus allowed the students to succeed at not learning. Dr. Lembi believes that being a good instructor means starting at the base level of the student, working from where they are and not where you think they should be. Many evaluations from her student's state that the course was tough, but they liked it more than any other class they had taken. Another example is one where a student stated their grade might not show it, but they really loved the class.

It's apparent that Dr. Lembi was very deserving of this award. She is a professor who constantly strives at being an outstanding leader in education. She is a credit to the Department of Botany and Plant Pathology, Purdue University, and to professors throughout the United States. All of us here in the department are very proud of her accomplishments.



Awards & Promotions

Dr. Rick Latin's research and extension efforts in the area of tomato disease management were recognized at the 1997 annual convention of the MidAmerica Food Processors Association. He was presented the 1997 Roman R. Romanowski Award for excellence and dedication in service to the industry. The award is named in honor of the late Dr. Romanowski, a Purdue Horticulture Professor, who is credited for his leadership in modernizing and revitalizing the industry during the 1970s.

Dr. Paul Pecknold, Professor of Plant Pathology, was awarded the Indiana Horticulture Society Certificate of Appreciation "in recognition of meritorious service to the Society." The award was presented in January 1997 at the Horticulture Winter Congress in Indianapolis.

Dr. Don Huber was made an Honorary Professor of the Ningxia Academy of Agricultural and Forestry Sciences at a special award ceremony in June 1997, at Yinchuan, Ningxia, China in recognition of his continuing contributions to the control of soilborne diseases in North Central China. He has active cooperative research programs in Ningxia, Gansu and several other Provinces in China for control of *Rhizoctonia* and Take-all of wheat. Cooperative programs for control of soilborne diseases of beans, peas, peppers, rice, and other crops have been ongoing for the past three years.

Dr. Larry D. Dunkle was recognized as an Honored Alumni

of the University of Northern Colorado. Dr. Dunkle received the William Ross Award for Science during homecoming ceremonies October 17-18, 1997. He received his B.S. degree from U. N. C. in 1965 and was the recipient of the Dean's Scholar-Athlete Award. Dr. Dunkle has had a distinguished research career in the area of fungal pathogens of corn and sorghum and host-specific toxins. He also is a Fellow of the American Phytopathological Society (APS) and the ARS Research Leader for the Crop Production and Pest Control Unit.

In January of 1998, **Dr. Greg Shaner** assumed the role of editor-in-chief of *Plant Disease* for the years 1998 – 2000. Dr. Shaner has served on various APS committees and was formerly associate editor, senior editor, and editor-in-chief of *Phytopathology*. He was also senior editor of *Plant Disease* for three years before being named editor-in-chief. Dr. Shaner holds the distinction of being the only person to ever serve as editor-in-chief of both journals.

On June 25, 1998, **Dr. Carole Lembi** was awarded the Commander's Award for Public Service by Dr. Robert Whalen and Dr. Edward Theriot of the U. S. Army Engineer Waterways Experiment Station in recognition of her efforts on behalf of Dr. Stewart Lamar Kees. Kees was a graduate student under the direction of Dr. Lembi. He was killed in June of 1997 from an accidental gunshot in his home. Dr. Lembi completed the thesis, feeling

that it was part of her responsibility as a major professor, and in this case, he was so close to completing it. Kees was awarded a posthumous degree at the May 1998 commencement ceremonies due to the efforts of Lembi.

The Commander's Award for Public Service is the second highest award that can be presented to a civilian. It is given to recognize service that contributes significantly to the mission of an Army activity, command, or staff agency.

The APS Distinguished Service Award for service to the science of Plant Pathology was awarded to **Dr. Donald H. Scott** at the 1998 North Central Division of the American Phytopathological Society meetings in Ames, Iowa. This award emphasizes superior achievements in service to Plant Pathology. Scott has spent his career solving agricultural problems and educating farmers and the general public about plant diseases and their management. His primary focus has been on agronomic field crop and turfgrass problems in Indiana, but his impact and service to the science of Plant Pathology have been extended regularly throughout the North Central Division of APS.

Dr. Carole Lembi, received the "Special Boilermaker" award from the Purdue Alumni Association in October 1998. Several representatives from the Alumni Association came to the monthly faculty meeting in disguises and played Wheel of Fortune. Ray Martyn and Jody Banks were picked as participants and each took a turn at spinning the wheel and guessing

letters. About halfway through the board, Carole figured out the puzzle and realized she was receiving this award. The official presentation was during halftime of the October 31 home football game.

Gail Ruhl, Senior Plant Disease Diagnostician in the Plant and Pest Diagnostic Lab, received the 1998 PUCESA Senior Award for her

extraordinary contributions to extension during the past 19 years. Gail received this award at the Annual Cooperative Extension Service Conference in November, 1998.

The departmental A/P advancement committee nominated 3 outstanding A/P's for promotion in 1998. All three were successful in

attaining their new rank. **Karen Rane**, Plant Disease Diagnostician in the Plant and Pest Diagnostic Lab, level 4 to level 5, **George Buechley**, Research Associate for Dr. Greg Shaner, level 5 to level 6, and **Mike White**, Weed Science Research Associate for Dr. Tom Bauman, level 4 to level 5.

Nobutaka Takahashi — Doctor of Agriculture *honoris causa*

Sunday, May 18, 1997, Dr. Nobutaka Takahashi was awarded the Honorary Doctorate degree from Purdue University for life-long service to his native Japan and his contributions to the field of plant science.

Dr. Takahashi earned undergraduate and doctoral degrees from the University of Tokyo. His academic career began there in 1957 with an appointment as an instructor on the Faculty of Agriculture. Early in his career (1959-60), he was a research fellow in the Department of Botany and Plant Pathology, working in the laboratory of Dr. Roy Curtis. Returning to the University of Tokyo, he subsequently served as lecturer, associate professor and professor. He became dean in 1986 and earned emeritus rank in 1990.

Concurrent with his faculty status have been appointments with the

Japanese Institute of Physical and Chemical Research (RIKEN), first as chief scientist, and from 1991-95, executive director. Today he heads RIKEN's Plant Homeostasis Research Group. RIKEN, supported by the Japanese government's Science and Technology Agency, does wide-ranging research in physical, chemical and biological science.

Dr. Takahashi's research and teaching has advanced knowledge on plant natural products chemistry. He is considered the world's leading expert on this class of biological chemicals, and is credited with nurturing the careers of young scientists and researchers. He is a past winner of the Japan Agricultural Chemical Society Award for Encouragement of Young Scientists.

He has served as president of the Association of Japanese Agricultural

Scientific Societies and the International Plant Growth Substances Association, which awarded him its Silver Medal in 1985. Dr. Takahashi's broad range of professional memberships include the Chemical Society of Japan and a corresponding membership in the American Society of Plant Physiologists. Among recent honors, the Japanese government bestowed its Medal with Purple Ribbon in 1993.

Dr. Takahashi's life and achievements are admired by his peers and have made him a role model to many. He has contributed substantially to the advancement of scientific knowledge, to the education and development of many young scientists, and to the internationalization of scientific research throughout his career. It is fitting that he was honored with the distinction of the Doctor of Agriculture *honoris causa*.

Don Huber spoke on “Plant Pathogen-Mineral Interactions” at a symposium on Plant Nutrition at the Iwate University, Morioka, Japan, September 26 to October 2, 1997. He was hosted by Dr. Suguru Saiga and was able to visit with other plant pathologists, breeders, and physiologists at Iwate University, Tohoku National Agricultural Experiment Station in Kuriyagawa, and the new Quadriotron Research Facilities. A cooperative research program is being developed between researchers at the University and Experiment Stations on “microbially-mediated nutrient-disease interactions affecting plant health.”

Richard Latin, Professor of Plant Pathology, presented an invited seminar to the Department of Plant Pathology at Iowa State University on September 23, 1997. His presentation, “Development and Delivery of a Melon Disease Forecaster,” summarized his work in the area of applied epidemiology during the past eight years.

Ralph Nicholson, Professor of Plant Pathology, presented an invited seminar to the Carlsberg Research Laboratories and the Royal Veterinary and Agriculture University in Copenhagen. The group was comprised of plant pathologists, plant physiologists, and plant molecular biologists. His presentation was titled, “Like a needle in a haystack! An approach to uncovering the route of sorghum phytoalexin biosynthesis.”

A delegation from the School of Agriculture traveled to Ain Shams University to participate in a Binational Workshop on Advanced Technologies for Utilization of Wild Egyptian Plants. Representing the department of Botany and Plant Pathology were **Professors Coolbaugh, Hodges, Carpita and Foley**. Members of the delegation presented seminars, interacted with their Egyptian colleagues, and discussed potential areas for collaboration. Professor Foley returned to Egypt in April, 1998, and developed a proposal to investigate the biology of Orobanche, a serious parasitic weed in the Middle East.

Ray D. Martyn, Department Head and Professor, presented an invited presentation entitled, Monosporascus root rot: An emerging disease of melons in temperate and tropical regions of the world, “Major Diseases of Melons in the Americas” symposium, at the Caribbean Division: APS, San Jose, Costa Rica in November 1997.

Rick Latin, Professor, presented an invited presentation entitled, Bacterial fruit blotch of watermelon, “Major Diseases of Melons in the Americas” symposium, also at the Caribbean Division: APS, San Jose, Costa Rica in November 1997.

Mary Alice Webb, Associate Professor, presented an invited seminar entitled, “Do plants have bones?” for the Biology Department at Central Michigan University, in October 1998.

During 1998, the Department of Botany and Plant Pathology Seminar Series was highlighted by several stimulating and enlightening speakers from other universities, industries, and agencies, in addition to contributions from the local talent at Purdue. The following guests were invited to present seminars in our departmental seminar series:

John Hamer, Dept. of Biology, Purdue University. *Advances in Understanding Signaling, Pathogenicity and the Defense Response in the Rice Blast Pathosystem.*

Karen Renner, Department of Crop and Soil Science, Michigan State University. *Weed Management Strategies in Michigan's Diversified Cropping Systems.*

Joe Anderson, Department of Agronomy, Purdue University. *Molecular Genetic Characterization of Wheatgrass-Derived Resistance to Barley Yellow Dwarf Virus in Soft Red Winter Wheat.*

Steve Weller, Department of Horticulture, Purdue University. *Multilevel Analysis Glyphosate Tolerance of Convolvulus arvensis Biotypes in Plants and Cultures.*

Peter Goldsbrough, Department of Horticulture, Purdue University. *Metal-specific Tolerance Mechanisms in Arabidopsis.*

Invited Presentations & Seminars

Ralph Dean, Department of Plant Pathology and Physiology, Clemson University. *Molecular Dissection of Appressorium Formation and Genome Reconstruction of the Rice Blast Fungus, Magnaporthe grisea.*

Clint Chapple, Department of Biochemistry, Purdue University. *Secondary Metabolism in Arabidopsis: Biochemistry and Biotechnology.*

Larry Grill, Biosource Technologies, Inc., Vacaville, CA. *TMV-derived Gene Expression Vectors for Commercial Production of Peptides, Proteins, and Biochemicals.*

Maurice Moloney, Department of Biology, University of Calgary. *Oil-body Proteins as Carriers in the Production of Recombinant Proteins in Oilseeds.*

Bruce Hemming, President and CEO, Microbe Inotech Labs, St. Louis, MO. *Emerging Trends in Microbial Identification.*

Zheng-Hua Ye, Department of Botany, University of Georgia. *Vascular Differentiation and Pattern Formation in Arabidopsis.*

John Ohlrogge, Department of Botany & Plant Pathology, Michigan State University. *Plants as Chemical Factories: Engineering the Quality and Quantity of Plant Oils.*

Morgan Vis-Chiasson, Department of Environmental and Plant Biology, Ohio University. *Integrating Molecular and Ecological Approaches in Phycolgical Research.*

Sally MacKenzie, Department of Agronomy, Purdue University. *Cytoplasmic Male Sterility in Common Bean: Lessons Learned About Taming a Mitochondrial Mutation.*

Stan Gelvin, Department of Biology, Purdue University. *Plant Genes Involved in T-DNA Transfer and Integration.*

Charles Bracker, Department of Botany and Plant Pathology, Purdue University. *Dynamics of Hyphal Tip Growth and Laser Microbeam Manipulation of Cell Morphogenesis in Fungi.*

Ann Simon, Department of Biochemistry & Molecular Biology, University of Massachusetts. *Kill or Cure: The Enigma of Small Viral RNAs.*

Ralph Nicholson, Department of Botany and Plant Pathology, Purdue University. *The Fungal Extracellular Matrix: Implications for Signal Perception.*

Christie Williams, Department of Entomology, Purdue University. *Biology and Genetics of Wheat/Hessian Fly Interactions.*

Jodie Holt, Department of Plant Sciences, University of California – Riverside. *Ecological Approaches to Weed Management.*

Morris Levy, Department of Biology, Purdue University. *Allelic Diversity of an Avirulence Gene Among Field Isolates of the Rice Blast Fungus.*

Richard Nelson, Nobel Foundation, Ardmore, OK. *Virus Movement in the Host: From the Macroscopic Level to the Molecular Level.*

JoAnn Burkholder, Department of Botany, North Carolina State University. *Impact of the Toxic Pfiesteria Complex on Fish and Human Health.*

Eric Mowen, Department of Botany & Plant Pathology, Purdue University. *Use of Glufosinate in Glufosinate-Resistant Corn Hybrids.*

Alex Cochran, Department of Botany & Plant Pathology, Purdue University. *New Challenges with Phytophthora sojae on Soybeans in the 1990s.*

Ji-Won Choi, Department of Botany & Plant Pathology, Purdue University. *Studies on the Functions of Alfalfa Mosaic Virus Coat Protein: Assembly and Replication.*





T. Scott Abney: Soybean Pathology. Disease of soybeans with emphasis on mycological and epidemiological aspects of fungal diseases.

Joseph Anderson: Plant Molecular Biology. Molecular and genetic analysis of virus resistance and virus-host interactions in small grain cereal crops.

Jo Ann Banks: Plant Molecular and Developmental Biology. Genetic and molecular basis of sex determination and differentiation in plants.

Thomas T. Bauman: Weed Science. Interaction between chemical and cultural methods of weed management systems.

Charles E. Bracker: Fungal Cell Biology. Various kinds of microscopy. Fungal growth and differentiation, especially the mechanism of hyphal tip growth, dynamics of living cells.

Nicholas C. Carpita: Plant Cell Enlargement. Biochemical and molecular aspects of plant cell growth and development; structure and biosynthesis of the plant cell wall.

Ronald C. Coolbaugh: Plant Hormones. Biochemical and molecular studies on the Biosynthesis of natural plant hormones such as gibberellins and abscisic acid.

Larry D. Dunkle: Host-Pathogen Interactions. Molecular and biochemical aspects of host-pathogen interactions; host-selective toxins.

Steve Goodwin: Plant Pathology. Molecular genetics of host-pathogen interactions; Population genetics, evolution and speciation of plant pathogenic fungi; Genetics and genomics of disease resistance in small grains.

Robert M. Hanau: Molecular Pathology. Study of gene expression involved in asexual and sexual reproduction, variability, and pathogenicity of filamentous plant pathogens.

Michael V. Hickman: Weed Science. Weed control in field crops with emphasis on controlled release formulations of herbicides.

Thomas K. Hodges: Cell and Plant Growth. Plant development with emphasis on transformation and regeneration of agronomic crops.

Don M. Huber: Soilborne Cereal Diseases. Biological and cultural control of soilborne diseases emphasizing mechanisms and ecological interactions. Along with Rhizosphere ecology and nutrient-disease interactions.

Thomas N. Jordan: Weed Science. Effect of the environment, solution additives, and plant growth on herbicide activity.

Richard Latin: Turfgrass and Vegetable Diseases. Epidemiology and management of bacterial and fungal diseases of turfgrass and vegetables.

Carole A. Lembi: Aquatic Biology. Aquatic weed science and phycology with emphasis on ecology, physiology, and management of aquatic algae.

L. Sue Loesch-Fries: Molecular Virology. Function of viral genes in virus replication, disease development, and virus control.

Ray D. Martyn, Department Head: Soilborne Diseases. Molecular evolution of pathogenic formae speciales and races of *Fusarium oxysporum*, and the epidemiology and control of soilborne diseases of cucurbits.

Case R. Medlin: Weed Science. Remote sensing and site-specific technologies for assessing spatial distribution of weeds and their control.

Ralph L. Nicholson: Disease Physiology. Phenolic compound biochemistry and metabolism of secondary plant products in disease interactions. The fungal extracellular matrix, adhesion, control of differentiation in the fungal infection process.

Paul C. Pecknold: Fruit Diseases. Diseases of ornamentals and fruit crops in Indiana, especially management of fire blight and apple scab.

Keith Perry: Plant Virology. Vector transmission of plant viruses and viral diseases of wheat.

Robert E. Pruitt: Plant Molecular Biology. Molecular and genetic regulation of growth and development of plants; fertilization and epidermal cell interactions.

Merrill A. Ross: Weed Science. Systems of control of johnsongrass, Canada thistle, and other perennial weeds.

Gregory E. Shaner: Field Crop Diseases. Epidemiology and management of diseases of corn, soybean, small grains. Disease resistance in small grains.

Mary Alice Webb: Plant Cell Biology. Plant cell and developmental biology; calcium oxalate accumulation in specialized cells.

Charles P. Woloshuk: Corn/Mycotoxin Pathology. Genetics, biochemistry, and physiology of mycotoxin biosynthesis.

Jin-Rong Xu: Fungal Biology. Characterization of fungal pathogenicity genes and signal transduction pathways in *Magnaporthe grisea* and *Botrytis cinera*.

Don Scott Retires After 30 Years

After serving on the faculty in the Botany and Plant Pathology Department for 30 years, Dr. Don Scott retired on June 30, 1998. On Thursday, June 17, he was honored by his fellow colleagues with an afternoon reception and a dinner at The Trails in Lafayette, Indiana. Dr. Ralph Green was the Master of Ceremonies. Dr. Green, along with Dave Petritz, Clark Throssell, Scott Abney, and Mauri Williamson shared many stories and memories of Dr. Scott's activities and achievements over the last 30 years.

Dr. Don Scott made extraordinary contributions to the well-being of Indiana Agriculture. His primary appointment and most of his activities throughout his career have been directed toward providing excellent educational programs in the area of crop and turf diseases. His commitment to extension programs is evident by the numerous extension-related activities that he participated in annually. He has also given numerous presentations and workshops on crop diseases and their management for County Educators and other citizens of Indiana. He regularly assessed disease problems throughout the state and provided written reports and updates on disease status through newsletters such as the Pest Management and Crop Production Newsletter, Botany and Plant

Pathology Extension bulletins, interdepartmental bulletins, reports at the Indiana Crop and Weather meetings, World Wide Web Disease Alerts, and timely radio, television, newspaper and popular magazine news releases.

Dr. Scott assisted in the Purdue Plant and Pest Diagnostic Laboratory in a number of ways. He was involved in clinical diagnosis and was responsible for disease control recommendations for



agronomic crops. In addition, he replied to inquiries through individual contacts and by telephone. He has authored over 230 extension and applied research publications. He gave an average of 35 presentations a year at extension meetings, training sessions, and field days. The average annual attendance at those meetings exceeded 3,000.

He was actively involved in establishing and maintaining integrated and multi-departmental

extension programs. These included Integrated Pest Management Programs, the Plant and Pest Diagnostic Laboratory, Commercial Pesticide Applicator Training, Certified Crop Advisor training, and the Purdue Crop Diagnostic Research and Training Center activities related to each of these major training programs.

Dr. Scott was not only outstanding in agricultural extension, but he conducted important research on diseases that affect corn, soybeans, and turfgrass. He was involved in many applied research programs during his 30 years at Purdue. Recent examples of these projects include work on the identification, efficacy, and management practices of soybean sudden death syndrome, surveys and analysis of fungal infection and mycotoxin accumulation in corn throughout the state, evaluation of fungicides and

other management procedures for the management of turf grass diseases, assessment of potential new races of pathogens on soybean, and survival of the gray leaf spot pathogen in corn residues.

He provided significant contributions to the teaching program in the Department of Botany and Plant Pathology. He developed new courses in Plant Disease Control, Diseases of Ornamental Plantings, and Clinical

Plant Pathology. He taught courses in Diseases of Agronomic Crops, and Field Diagnosis of Crop Diseases. He also contributed lectures and demonstrations to team-taught courses in Advanced Plant Pathology, Plant Disease Management, and Photography. He has maintained and further developed a collection of 7,000 color slides of plant diseases, developed a collection of preserved plant materials, and utilized research plots and inoculated plots to demonstrate disease symptoms. Dr. Scott has advised several graduate students at the M.S. and Ph.D. levels.

The majority of Dr. Scott's career has focused on plant diseases affecting Indiana agriculture. His successes regarding Indiana agriculture are numerous, including his most recent contribution, *Barns of Indiana*. As a native Hoosier, he has come full circle with his ties to agriculture in Indiana. During his travels throughout the state while fulfilling his Purdue responsibilities, Dr. Scott realized that the barns of Indiana were rapidly disappearing. He began to photograph these barns when he realized that they could be lost forever. Over the years he has photographed more than 700 barns from all 92 counties in Indiana. He has preserved a piece of Indiana agricultural heritage in this beautiful photographic memoir. Dr. Scott has stipulated that a portion of the proceeds from *Barns of Indiana* go

to the Purdue Ag Alumni Association to fund scholarships that will encourage young students to pursue careers in Agriculture.

Dr. Scott's exemplary service and accomplishments have been recognized through several awards. In 1990, he was awarded the Crop and Soils Merit Award from the Indiana Crop Improvement Association for his extension service to the industry. The Frederick L. Hovde Award for Excellence in Educational Service to the Rural People of Indiana was presented to him in 1996. Most recently he was awarded the American Phytopathological Society's Distinguished Service Award for his service to the science of Plant Pathology.

If Dr. Scott is only partially as active in retirement as he was during his time at Purdue, we may be in store for more great things from this gifted individual.

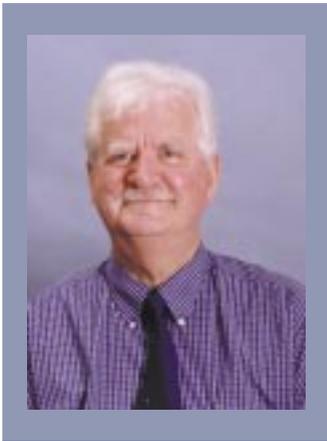
Norman Sorensen Retires

Norman Carl Sorensen was first employed as a technician at Purdue University with Dr. Oliver E. Nelson, internationally-recognized corn geneticist, in the Botany and Plant Pathology Department on June 30, 1969. When Dr. Nelson left with his pith helmet in August,

1969 to safari in Wisconsin, Norm joined Dr. Charles Tsai's program in Biochemical Genetics in the Botany and Plant Pathology Department. Norm's technical support of this program for the next 25 years was instrumental in the internationally recognized achievements of Dr. Tsai for his research on the biochemical genetics of high lysine corn, nutrient-hybrid response, nitrogen metabolism, potassium regulation of carbohydrate partitioning, zein genetics, and the biochemical genetics of yield.

In 1994, Charles Tsai accepted a position as Head of the Botany Department of the National Taiwan University and Norm continued the corn genetics, nutrient-disease project with long-time cooperator Dr. Don Huber. Norman Sorensen continued as a faithful employee and major contributor to these programs to improve the production efficiency of Indiana Agriculture through improved corn genetics, nutrient efficiency, and disease control until his well-earned retirement in August, 1998.

Norm is active with family and grandchildren. We all miss his daily interaction, but appreciate him stopping in periodically to share events of the day.



Richard Malcolm Lister 1928 –1998

Professor Emeritus Richard M. Lister died Sept. 10, 1998, in Yoevil, England, after a brief illness.

He was born on November 14, 1928, in Sheffield, England. He graduated from the University of Sheffield and obtained a diploma in agricultural science from Cambridge University. He received training in tropical plant agriculture at the Imperial College of Tropical Agriculture, British West Indies. He worked on the cocoa swollen shoot disease in West Africa as a plant pathologist with the West African Cocoa Research Institute. He then performed research at the Scottish Horticultural Research Institute, and in 1964 earned a Ph.D. from the University of St. Andrews. Dr. Lister investigated the transmission of a group of polyhedral viruses through seed and by nematodes in strawberry.

During 1964, he spent a sabbatical year in the Department of Botany and Plant Pathology at

Purdue and accepted an appointment to the faculty in 1966, where he continued to work until his retirement in 1994. He isolated and characterized major groups of filamentous viruses in tree fruits and was one of the early adopters of rapid serological methods for detection of viruses in apples. He showed that tobacco streak virus consisted of particles of different sizes, and showed how this information could be used to provide important understanding of virus structure.

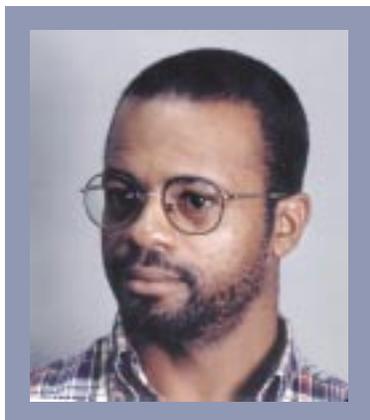
In 1966, Lister hypothesized that the RNA of short virus particles contained information required for synthesis of coat protein, but lacked the information required to infect. He validated this and laid the groundwork for recognition of the multicomponent phenomenon in plant viruses. This concept is considered a major contribution to the field. He worked extensively on barley yellow dwarf virus, and used ELISA to study the epidemiology of this important disease of small grain cereals, and to characterize genetic resistance in these crops.

Dr. Lister taught plant virology for many years and attracted students from several disciplines. He

served as the major professor for more than 35 graduate students. In 1973 he was named a Fellow of the American Phytopathological Society and in 1986 received the society's prestigious Ruth Allen Award. Among other positions, he served on the editorial committee for the Annual Review of Phytopathology, was Chairman of the Luteovirus Working Group, and Senior Editor for *Phytopathology*.

Dr. Lister and his wife traveled a great deal after his retirement. This included visits to children and grandchildren, and "overwintering" in the Tucson, Arizona area during the past few winters. During the summer of 1998, the Listers arranged an extended vacation in England, and it was during this visit that Richard was unexpectedly stricken with an aneurysm, which proved fatal.

Surviving are his wife Jean; one son, John Lister of Chicago; and three daughters, Rosalind Lister of Ellensburg, WA, Susan Madhavan of Morgantown, WV, and Christina Sanford of Reston, VA; two brothers, Wilfred Lister and Brian Lister; and four grandsons.



Stewart Lamar Kees 1958 – 1997

Stewart Lamar Kees, a Ph.D. graduate student, was killed in an accidental shooting in his home in Vicksburg, MS in June 1997.

Stewart leaves his wife, Janice, and two young sons, Joshua and Daniel. Kees had earned his B.S. degree from Alcorn State and M.S. from Tennessee State and was scheduled to receive his Ph.D. from Purdue University in August 1997. With the assistance of members of his committee (Bob Hanau, Ralph Nicholson, Steve Weller, and Ed Theriot from the Waterways Experiment Station, Army Corps of Engineers), Dr. Carole Lembi was

able to complete his thesis. Stewart Kees was awarded a posthumous Ph.D. degree at the May 1998 graduation ceremony. Janice stood in for him at the ceremony and received his diploma and hood. Janice worked for Mary Alice Webb during part of the time that Stewart was here taking his coursework.

If you wish to contact Janice, her address is 103 Robinhood Road, Vicksburg, MS 39180.

Miscellaneous

Dr.'s Paul Pecknold, Rick Latin, and Greg Shaner taught six new miniclasses for the first time this past year. Each class covers a five-week period and is designed for students who desire further study in their chosen crop area of specialization. Classes were taught in agronomic, fruit, vegetable, turf, greenhouse and landscape ornamental diseases. A primary purpose of these five-week courses is to better prepare students for their professional careers through an intensive study of the major diseases that affect crops they will be working with after graduation. Initial course evaluations have been very positive. As we begin our second year, enrollment has significantly increased for all six miniclasses.

Dr.'s Merrill Ross and Carole Lembi have completed the revision of the textbook *Applied Weed Science*. Since the first edition was published in the mid-80's much

has happened in the world of weed science, for example, weed resistance to herbicides, development of herbicide-resistant crops (e.g. Roundup Ready soybeans) and totally new classes, chemistries, and modes of action of herbicides, better understanding of weed seed bank dynamics, the incorporation of satellite and remote sensing technology into farming, and many other technological advances. The revision has turned out to be an almost total rewrite. After almost 2 years of writing, rewriting, and checking page proofs, the book was sent to the printer on June 12, 1998 and was available in the fall of 1998. The publisher is Prentice Hall. Dr. Ross extends his special thanks to Tom Bauman and Dan Childs who taught BTNY 304 one semester while he was slaving away on the book.

1999 marks the ten year anniversary that BTNY 210 (Introduction to Plant Science) has been taught. Carole Lembi first

taught the course in the fall semester, 1989, and had all of six students enrolled. The next time the course was offered (1991), Mike Foley and Lembi co-taught the course, with another six students enrolled. They wondered whether they would ever get this seed of an idea to germinate. Thanks to a lot of help that Lembi received from Mike Foley and Ron Coolbaugh in teaching and helping to develop laboratory exercises, from several former graduate students and postdocs (namely, Phil Lyons, James Jennings, Dave McGee, and others) early in the course's development, and from several faculty (Dunkle, Huber, and Tsai) who took on the burden to be TAs when the department did not have support for enough TAs, the seed has sprouted, flowered, and multiplied. In the fall semester of 1998 the enrollment was 110 and in the spring 1999 semester the enrollment was 192. Congratulations and thanks to everyone who has helped make the course a success.

Lo selected as I.E. Melhus Student Speaker

One of our graduate students, Sze-Chung Clive Lo, was recently selected as the I. E. Melhus Student Speaker for 1998 by the American Phytopathological Society (APS). This award recognizes outstanding graduate research in plant pathology. Clive received expenses (travel, lodging, meals, and registration) to attend the national 1998 APS meeting in Las Vegas, Nevada. He also presented a special guest lecture, **Physiological and Molecular Basis of Phytoalexin Biosynthesis in Sorghum**, in a symposium entitled “**Molecular Signaling in Plant Interactions with Pests and Pathogens.**”

Clive was born in Hong Kong and received his B.S. and M.S. degrees in Biology from the Chinese University of Hong Kong. Clive arrived at Purdue on the evening of January 6, 1995 when he experienced his first (but not his last) Indiana snowstorm. Clive has made considerable progress in his graduate program under the direction of Dr. Ralph L. Nicholson.

Clive's research is directed at the understanding of secondary metabolism in sorghum leading to disease resistance, with an emphasis

on the biosynthesis of 3-deoxyanthocyanidin phytoalexins. In his first semester in Dr. Nicholson's lab, Clive identified a new component in the sorghum phytoalexin complex, the 5-methoxyluteolinidin which exhibits higher toxicity to the anthracnose pathogen *Colletotrichum sublineolum* than do the other known phytoalexins. He also demonstrated that cultivars which did not produce



the phytoalexins were completely susceptible to the pathogen. Clive also looked at the plant-pathogen interactions using microscopy and discovered that pathogen growth in the plant was restricted by the accumulation of phytoalexins

He also showed that the phytoalexin response was accompanied by transcriptional activation of genes involved in the phenylpropanoid pathway and a

gene encoding a pathogenesis-related protein (PR-10). Interestingly, Clive demonstrated that there was a transcriptional repression of light-induced anthocyanin accumulation in plants which were actively synthesizing the 3-deoxyanthocyanidins in response to fungal inoculation.

Clive is currently working on a gene family in sorghum encoding chalcone synthase, which is a key branch point enzyme in the phenylpropanoid pathway leading to the formation of flavonoids, including anthocyanidins and 3-deoxyanthocyanidins. He suggests that individual members in the family may be regulated by different stimuli and have specific roles in the accumulation of different secondary metabolites.

The results of Clive's investigations will advance our knowledge of the regulation and expression of disease resistance in sorghum and lead to innovative modes of disease control in agriculture. He has published research articles in *Physiological and Molecular Plant Pathology* and *Plant Physiology* as a senior author and he has recently submitted a manuscript to *Molecular Plant-Microbe Interactions* for publication. Clive also received a student travel award from the Royal Society of Edinburgh to attend the 7th International Congress of Plant Pathology in Edinburgh.

“This award recognizes outstanding graduate research in plant pathology.”

Current Undergraduate Students

1998-1999 Academic Year:

(name - option/advisor)

Erin Berger - PS/Coolbaugh
Elizabeth Burkle - PS/Coolbaugh
Brian Bush - PS/Perry
Matthew Eckerle - PS/Coolbaugh
Clinton Fettig - CP/Lembi
Amelia Hammond - PS/Perry
Philip Harmon - PS/Perry
Stephen Jordan - PS/Coolbaugh
Sarah Kinder - PS/Perry
Mark Kinsey - PS/Perry
Joseph Knoll - PS/Lembi
Ryan Lee - PS/Coolbaugh
Heather Myers - PS/Lembi
Andrea Neal - PS/Lembi
David Smith - CP/Lembi
Matthew Tarver - PS/Coolbaugh
Erin Uhlemann - PS/Lembi
Melanie Uplinger - PS/Lembi
Quintin Wade - PS/Coolbaugh
Ryan West - PS/Coolbaugh
Jennifer Wichman - CP/Lembi
Kurt Wilhelm - CP/Coolbaugh
Jeffrey Wolheter - CP/Perry

Ag Ambassadors

Purdue University's Ag Ambassadors are an exciting link between Purdue Agriculture and Indiana agricultural organizations, Agricultural Alumni groups, civic organizations, and high school students. The Ag Ambassadors share information about the diverse academic programs within the School of Agriculture and the many opportunities for students. Ag Ambassadors represent the best and brightest of tomorrow's food, agricultural, and natural resource systems. They carry the message

that Purdue Agriculture is a leader in helping to shape the agricultural leaders of the future. We are pleased to have one of our plant science majors in this elite group. **Amelia Hammond**, from Waveland, Indiana was selected to serve with only a handful of top students in the School of Agriculture. The Department of Botany and Plant Pathology extends our congratulations to Amelia.

1998 Scholarship Recipients

Botany Freshman Scholarship

Matthew Eckerle
Ryan West
Matthew Tarver

Award of Excellence, Purdue Agricultural Scholarship

Matthew Eckerle

Botany Sophomore Scholarship

Devan Dillinger
Amelia Hammond

Elsie L. Gruel Scholarship

Amelia Hammond

Monsanto Junior Scholarship

Kurt Wilhelm

Dean's List & Semester Honors

Brian Bush
Matthew Eckerle
Amelia Hammond
Philip Harmon
Sarah Kinder
Joseph Knoll
Wendy McDowell
Heather Myers
Erin Uhlemann
Jennifer Wichman
Kurt Wilhelm

Botany Club News

The Botany Club elected officers toward the end of the spring semester of 1998. Those elected were Philip Harmon, President, and Sarah Kinder, Treasurer. During the fall 1998 semester, the Botany Club's main activities consisted of meetings and small study groups. At the meetings, students mainly from the Botany and Plant Pathology Department, gathered and discussed classes and professors. Students had the chance to talk with upperclassmen who shared their opinions of classes and the professors that taught them. Also, several students who were taking the same classes participated in small group study sessions to help prepare for major lab practicals and exams. The Botany Club also started organizing and researching the possibility of a group trip to Florida to take a behind the scenes look at the plant life exhibit of Walt Disney World. This, along with the organization of other small group trips to local gardens, parks, and other areas of interest, highlight the Botany Club's activities.



Current Graduate Students

1998-1999 Academic Year

(name, degree obj./maj. prof.)

Chase Akins - Ph.D./Hanau

Mitchell Alix - Ph.D./Lembi

Mauricio Antunes - Ph.D./Hodges

Alex Cochran - Ph.D./Abney

Katie Evers - M.S./Banks

Ahmad Fakhoury - Ph.D./
Woloshuk

Lee Ann Glomski - Ph.D./Lembi

Barbara Hass - Ph.D./Banks

Sze-Chung Lo - Ph.D./Nicholson

Joe Marencik - M.S./Lembi

Eric Mowen - M.S./Bauman

James Ng - Ph.D./Perry

Iris Perez - Ph.D./Hodges

Brent Sellers - M.S./Hickman

Won-Bo Shim - Ph.D./Woloshuk

Anibal Tapiero-Ortiz - Ph.D./
Shaner

Ian Thompson - M.S./Huber

Tony Tung - Ph.D./Hodges

Claudia Vergara - Ph.D./Carpita

1998 Gamma Sigma Delta Induction

Annually the Gamma Sigma Delta Membership Committee invites nominations from among faculty and graduate students for induction into this nationally recognized Honor Society of Agriculture, Consumer and Family Sciences, and Veterinary Medicine. In March 1998, masters student, Megan Gross, doctoral student, Won-Bo Shim, and Assistant Adjunct Professor Steve Goodwin were inducted into this honor society at the Gamma Sigma Delta banquet held in the Purdue Memorial Union ballroom. Dr's. Ray Martyn, Scott Abney and Ron Coolbaugh, attended the festivities

to participate in honoring our three inductees.

Meet Our Graduates

Bachelor of Science

Zonda Birge – PS - May 1997

Kathryn Evers – PS - May 1997

Andrew Larson – PS - May 1998

Christina Welch – PS - May 1998

Wendy McDowell – PS - December
1998

Master of Science

John Cavaletto, December 1997

Tammy Dehahn, December 1997

Megan Gross, May 1998

Vicki Racicot, May 1998

Sam Phillips, May 1998

Tong Zhai, August 1998

Alex Cochran, December 1998

Doctor of Philosophy

Steve Fennimore, August 1997

Jose Melgar, August 1997

Haiyin Wang, August 1997

Tso-Ching Lee, December 1997

Chi-Kuang Wen, December 1997

Stewart Kees, May 1998

Tina McCay, May 1998

Ji-Won Choi, December 1998

Highlights

Sze-Chung Clive Lo, was selected as the I.E. Melhus Student Speaker for 1998 by the American Phytopathological Society (APS). This is an award that recognizes outstanding graduate research in plant pathology. Clive received expenses to attend the national 1998 APS meeting in Las Vegas, Nevada. (see feature article on page 14).

Alex Cochran, a recent master's graduate in Plant Pathology, won first place in the Graduate Student Award competition at the 1998 North Central Division meeting of the American Phytopathological Society at Ames, Iowa for the oral presentation "Frequently isolated races of *Phytophthora sojae* identified in Indiana soybean fields" co-authored by his major advisor, T. S. Abney. Alex will continue work toward his Ph.D. under the direction of Dr. Abney.

Ian Thompson was awarded a \$150 APS Travel Scholarship to attend the North Central American Phytopathological Society Meetings in Ames, Iowa, June 21 - 23. This award is presented to one outstanding student from each plant pathology department in the North Central Region. Thompson received his B.S. in Botany from California State Polytechnic University. He is currently a master's student working on an interdisciplinary project involving both Dr. Don Huber and Dr. Darrell Schulze of the agronomy department.

Joe Marencik won first place in the graduate student presentations at the annual meeting of the Aquatic Plant Management Society held in Memphis, Tennessee in July. Marencik is currently a master's student under the direction of Dr. Carole Lembi.

Claudia Vergara, a Ph.D. student with Dr. Nick Carpita, received the Purdue University Ishmael International Travel Award to attend the international meetings on Plant Cell Walls in Norwich, UK where she was an invited symposium speaker in September 1998.

Annually, the Botany and Plant Pathology Award for Graduate Scholarship is awarded to one M.S. and one Ph.D. student nominated by their major professor based on their academic and research performance and their professional activities. **John Cavaletto** received a plaque and a check for \$200 as the recipient for the 1997 M.S. student award. **Steve Fennimore** received a plaque and a check for \$300 as the recipient for the 1997 Ph.D. student award.

John Cavaletto completed his undergraduate degree in Plant Science in 1994 and his master's degree in December, 1997, from our department under the direction of Dr. Mary Alice Webb. Cavaletto currently is the teaching lab coordinator for our department. His wife Jessica (Garner) Cavaletto also is a Plant Science graduate of our department and currently works as a technician in the lab of Dr. Steve Goodwin.

Steve Fennimore completed his Ph.D. in August 1997. His major professor was Dr. Mike Foley. Fennimore assumed a position with the USDA/UC Research Center in Salinas, California in September 1997.

Joe Marencik was awarded the 1998 Botany & Plant Pathology Award for Graduate Scholarship. As a master's student, Joe received a check for \$200 and a plaque from the department. Marencik was nominated by his major professor, Dr. Carole Lembi. He is scheduled to complete his degree and graduate in December 1999.

1998 Departmental Travel Awards

Claudia Vergara, Eighth International Cell Wall Meeting, Norwich, UK, September, 1998, *CelA and mixed linkage glucan synthase genes in maize and rice.*

Chik Kang James Ng, Annual Meeting of the American Phytopathological Society, Las Vegas, NV, November, 1998, *Stability of the aphid transmission phenotype in cucumber mosaic virus.*

Christy Watson, Fourth International Symposium on P450 Biodiversity and Biotechnology, Strasbourg, France, July, 1998, *Identification and cloning of the ga3 gene in Arabidopsis thaliana.*

Katie Evers, Ninth International Conference on Arabidopsis Research, June, 1998, Madison, WI, *Analysis of an antheridiogen-induced gene, AN11, in Ceratopteris richardii.*

Sze-Chung Clive Lo, Seventh International Congress of Plant Pathology, Edinburgh, UK, August, 1998, *Repression of Light-induced Anthocyanin Accumulation in Inoculated Sorghum Mesocotyls: Implications for a compensatory role in the defense response.*

Won Bo Shim, Annual Meeting of the American Phytopathological Society, Las Vegas, NV, November, 1998, *Fusarium moniliforme mutant affected in fumonisins biosynthesis and Nitrogen concentration affects fumonisins Bi biosynthesis in liquid culture by Fusarium moniliforme.*

Ahmad Fakhoury, Annual Meeting of the American Phytopathological Society, Las

Vegas, NV, November, 1998, *Alpha-amylase deficient mutant of Aspergillus flavus.*

Graduate Student Organization News

The Botany and Plant Pathology Graduate Student Organization was reformed in the fall semester of 1998. Brent Sellers was elected President; Ian Thompson, Vice President; Joe Marencik, Fundraising Chair and Treasurer; Won-Bo Shim, Seminar Chair; Alex Cochran, New Students Chair; and Christy Watson, Social Chair. A newly revised constitution from the last active graduate student organization was sent to the Office of Student Services for approval and the university now recognizes the organization. Meetings are held approximately once a month. Exciting developments in the future and include fund raising opportunities, graduate student web pages, and of course, social activities. Last semester social activities included a visit to the local microbrewery in Lafayette and Ian Thompson's for their Holiday gathering. The exchange of "white elephant" gifts took place after spirited beverages were served.

Candy was sold near the coffee machine in the media prep room and the GSO thanks all who gave up on their diets and bought candy. Dr. Lembi donated approximately 100 books to the organization, which were sold to faculty and staff. The GSO hopes to maintain their focus this year. Several of the elected officers will be finishing their degrees and moving on.

Plant and Pest Diagnostic Laboratory



During 1998, the staff of the Plant and Pest Diagnostic Laboratory (P&PDL) comprised of specialists from the departments of Botany and Plant Pathology, Agronomy, Entomology, Horticulture and Landscape Architecture, and Forestry and Natural Resources, diagnosed over 1,900 samples. The types of problems diagnosed during 1998 are presented in Figure 1.

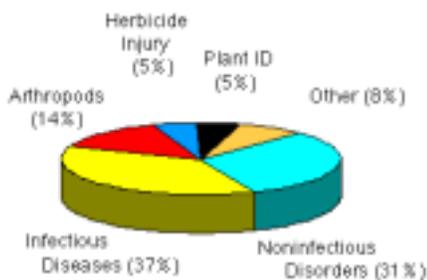


Fig. 1. Problem types diagnosed in 1998.

The P&PDL provides educational outreach in various ways. During the growing season a weekly update that includes suggestions for diagnosis and management of plant problems is electronically sent to Cooperative Extension Service county educators and state specialists. The newsletter, *Down the Garden Path*, is published 17 times per year and presents timely information to consumer horticulturists on home, yard, and garden issues such as identification and management of plant diseases and pests.

The P&PDL homepage <www.ppd.purdue.edu/>, the *Virtual Plant and Pest Diagnostic Laboratory*, was put on-line in June 1995. The website is a valuable educational tool that reaches not only the citizens of Indiana, but

also the United States and the world. During the first six months of operation, the *Virtual Plant and Pest Diagnostic Laboratory* had more than 1,500 visitors; in 1996, 6,000 visitors; and in 1997, more than 56,000.

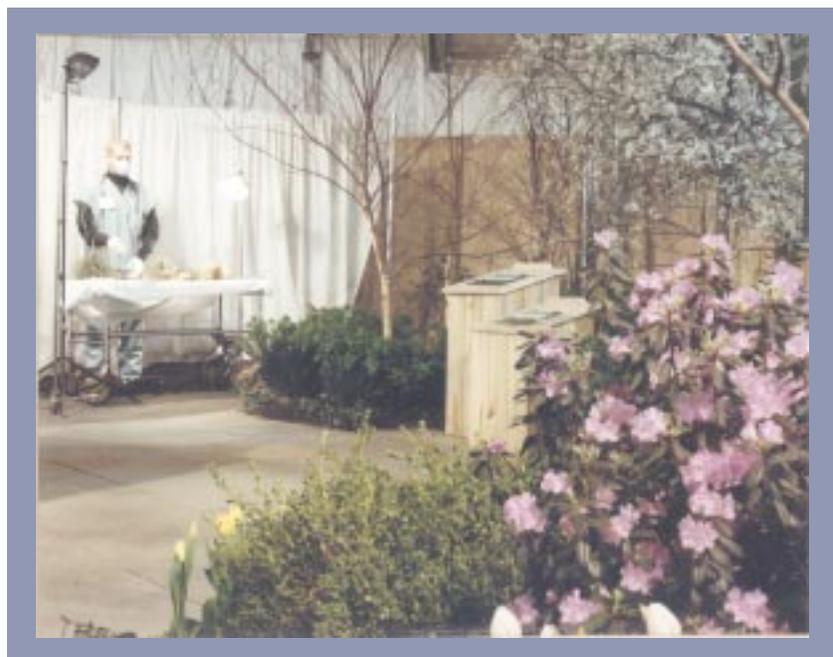
Statistical data for 1998 is not yet available. Its popularity ranks the P&PDL webpage as one of the most popular websites at Purdue. The "Ask Our Experts" section of the webpage is the most popular with visitors; more than 1,100 questions were submitted in 1998.

In 1998, the P&PDL was represented at the Tri-State Farm Progress Show, the Indiana State Fair, the Indiana Horticulture Congress, Indiana Flower and Patio Show, the Purdue University Spring Fest, and others. In addition, the staff of the P&PDL gave presentations or workshops to a variety of audiences throughout the state including Master Gardener Programs, Turf and Ornamentals Workshops, Pesticide Applicator

Training, Plant Science Workshop, 4-H Round-Up, Purdue Garden Day, Diagnostic Training Center, County Educator Training, and commercial grower and association meetings.

The P&PDL staff have developed and used several innovative displays to cater to intended audiences. One theme that has been extremely successful is *The Plant Wellness Center*. This display takes on the appearance of an operating room that deals with sick plants. Staff members become part of the display when they wear scrubs and carry stethoscopes and prescription pads.

This theme was used at the Indiana State Fair and the Farm Progress Show in 1998. *The Plant Wellness Center* theme has not only attracted the attention of the general public, but the scientific community as well. The American Phytopathological Society (APS) showcased *The Plant Wellness Center* in their December 1997 newsletter.



Purdue Pesticide Programs



Purdue Pesticide Programs (PPP) was involved in many educational endeavors in 1998, such as Spring Fest, FarmFest, the Pesticide Rodeo, and a mock pesticide spill.

FarmFest is an annual event hosted each year by one of seven counties surrounding Indianapolis, Indiana. Morgan County hosted the 1998 FarmFest to show off their best agricultural operations. PPP staff spent the day at the Valley Farm, giving nearly 1,000 visitors an opportunity to learn about the farm's aerial pesticide application business. Each child was given an individual lesson on the role that professional aerial applicators play in today's agriculture. Every 15 minutes, a similar short program on aerial applicators was offered to the parents.

The Pesticide Rodeo, hosted by Excel Co-op from Flora, saw seven great teams of four individuals from three states compete for the honor "Best of the Best." The competition was designed to test team members'

skills from the point of initial contact with the farmer to the actual pesticide application. Each team had 85 minutes to complete the task. This program reiterates how the university and industry can work together in promoting professional pesticide applicators.

One of the most popular presentations given by Purdue Pesticide Programs this year dealt with truck spills and fires that involved pesticides. Volunteers were asked to deal with a mock spill and an injured applicator. The audience was asked to critique the actions of the volunteers. Phone calls were made to report the spill to the Indiana Department of Environmental Management, to an insurance agent, and to Dow AgroSciences. The calls were placed by PPP staff on a two-way phone that allowed the audience to hear what questions were asked by the pesticide manufacturer, the insurance agent, and regulatory personnel.

One of the most difficult situations faced by pesticide application industries is answering questions asked by their customers. Purdue Pesticide Programs' staff helps pesticide applicators learn to deal with questions in an honest, intelligent, and open manner.

Persons interested in attending Indiana's commercial pesticide applicator training programs may now learn more about what is being offered by viewing Purdue Pesticide Programs' website at <<http://www.btny.purdue.edu/PPP/pestprog.html>>. An electronic version of the annual training announcement lists program dates and topics, registration fees, etc., and provides a registration form that may be printed. The document also includes links to the Office of the Indiana State Chemist, Purdue University Division of Conferences, and local road maps.

News from SWPAC

In July of 1995, Dr. Dan Egel joined the staff of Purdue University as a plant pathologist at the South-west Purdue Agriculture Center in Vincennes, Indiana. His research has centered on problems that he has observed since arriving three and one half years ago. He is currently working on three initiatives (1) **Host resistance** – one of the diseases Dr. Egel observes every growing

season does not have any source of complete resistance. **Alternaria leaf blight**, therefore requires chemical control measures. He has found that currently available muskmelon varieties vary widely in their disease reactions. This information may be used to help control this significant disease with fewer chemical inputs. (2) **Greenhouse sanitation** - Many vegetable diseases get their start at

the very beginning: the greenhouse. Egel has conducted several experiments on the value of sanitizing polystyrene transplant trays and presenting the results to growers. The result has been fewer greenhouse diseases and more healthy transplants. (3) **Application technology** - Fungicide application is a necessity for most vegetable

(Continued on next page, third column)

Herbarium Highlights

In January of 1997, Anthony Swinehart accepted the position of Curator of the Arthur and Kriebel Herbaria. During the past two years, Dr. Swinehart spent time reorganizing the Herbaria. He accomplished this with the help of several students. These students processed hundreds of collected plant specimens, cataloged nearly a thousand specimens of fungi, conducted research on seed longevity, and assisted with shipping and receiving of international loans.

These outstanding efforts have led to several significant scientific discoveries, as well as the addition of more than 1,100 specimens to the Kriebel Herbarium. Dr. Swinehart took several opportunities to showcase the research, education and service activities of the Herbaria. He traveled to and attended the meetings at the Indiana Academy of Science, met with other curators and participated in field collecting excursions, and was hosted by the herbaria of Indiana University, Ohio State University, Central Michigan University, and Goshen College.

The herbarium was a point of interest for nationally known soil scientist and author, Dr. Robert Lucas from Michigan State University. Dr. Lucas contacted the herbaria as a result of his interest in the Celery Bog research. After touring the herbaria and discussing preliminary findings on the history of the Celery Bog, Lucas and his son Richard joined Dr. Swinehart for a visit to the Celery Bog near Lindberg Road in West Lafayette.

Thanks to a grant from the West Lafayette Parks and Recreation Department, students and staff of

the herbaria are uncovering the interesting and often controversial history of the Celery Bog. Swinehart shared his work on the Celery Bog during the SpringFest 98 with a *Jurassic Bog* exhibit. The exhibit included illustrations of the Celery Bog drilling and research, demonstrations of coring equipment use to collect peat, specimens of Indiana plant fossils, and even the preserved gut contents of a mastodon collected in October 1997.

Dr. Swinehart wanted to emphasize both the pure and applied science of palaeobotany and to teach how agricultural practices affect natural communities, and how this might help to develop more environmentally friendly farming practices.

The herbaria has hosted several visitors since Dr. Swinehart's arrival. Many local, national, and international visitors along with seven sections of Botany 210, Introductory Plant Science, 20 master gardeners from throughout Indiana and several prospective students have toured and been presented with information regarding the collection techniques, collection ethics, design and construction of herbarium presses and other equipment, plant drying and spirit collections, as well as the history and importance of collections.

In August of 1998, Dr. Anthony Swinehart accepted a faculty position at Hillsdale College in Michigan.

The search for a new curator was

completed in January of 1999. Dr. Markus Scholler, Greiswald Germany has accepted the position of Curator and will begin his duties on August 1, 1999. Dr. Greg Shaner is the director of the herbarium. Dr. Jody Banks, Dr. Carole Lembi, along with Dr. Shaner comprise the faculty advisory board.



News from SWPAC (continued from previous page)

growers. However, there is little information on how best to apply fungicides. He has started research on what spray pressure and nozzle type is most effective. Although Dr. Rick Latin has done research and extension on cucurbit crops for several years, he has begun to pursue other goals leaving Dr. Egel to take over cucurbit responsibilities in Southwestern Indiana. Dr. Egel has been praised by local farmers and colleagues for his willingness to help diagnose, teach, promote, and coordinate educational activities.

Fern Development

A meeting entitled “Molecular and Genetic Approaches for the Analysis of Fern Development and Evolution” was held at Purdue University on July 28-30, 1997. The purpose of this meeting was to explore the diversity of questions in plant development and evolution that have been and can be addressed most effectively using ferns as model systems. This was accomplished by a series of presentations and workshops. The topics of these presentations ranged from the role of ferns in land plant evolution, to the cloning of photoreceptor genes in ferns.

Approximately 70 people attended the meeting, representing the U.S., Japan, and Germany. This meeting was supported with funds from the National Science Foundation and the Japanese Society for the Promotion of Science.

Cytochromes P450

The Midwest Cytochromes P450 Symposium was held September 10-11, 1998, at Purdue University. The symposium was sponsored by the Department's of Botany & Plant Pathology, Biochemistry and Entomology. This event was co-chaired by Professor's **Ron Coolbaugh**, Clint Chapple, Jonathan Neal and Craig Marcus

The purpose of this symposium was to provide a forum for the exchange of information among scientists who study cytochromes

P450 within a variety of disciplines utilizing a broad array of approaches. The symposium is intended as an informal and affordable session to share information, goals, and problems, and to seek solutions and collaborations. Graduate student and postdoctoral participation is strongly encouraged.

The 1998 symposium was a success with more than 75 participants. More information is available via the world wide web at <<http://www.btny.purdue.edu/P450/Symposium.html>>

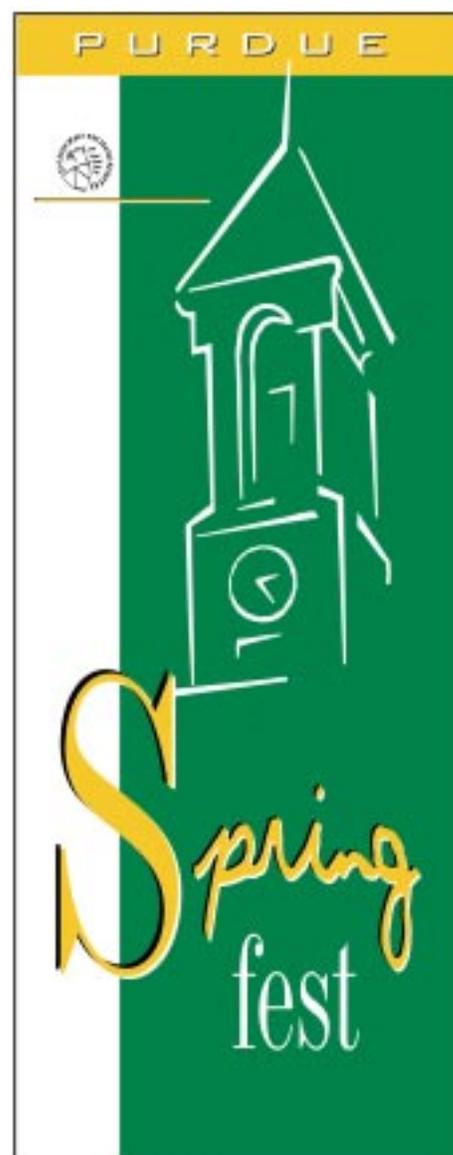
SpringFest '98

Thousands of people flocked to the Purdue campus for Spring Fest '98. The Department of Botany and Plant Pathology teamed up with eight departments in the School of Agriculture to show off several special programs at the annual event outside in the circus like atmosphere.

Under the Botany and Plant Pathology tent, many volunteers were inundated with hundreds of children wanting to participate in all the fun festivities. Along with the Bug Bowl, and the Horticulture show, the Department of Botany and Plant Pathology had exhibits that included “Fun with Mushrooms and Other Microbes” with Dr. Keith Perry and graduate student, James Ng; “Jurassic Bog” with Dr. Tony Swinehart; “Root Rot Soybean Discovery” with Dr. Scott Abney and graduate student, Alex Cochran; “Diagnosis of Plant Problems” with Dr. Greg Shaner

and research assistant, George Buechley; pesticide awareness games, face painting, balloons and other activities were sponsored by the Purdue Pesticide Programs (PPP) and the Plant and Pest Diagnostic Lab (PPDL).

Faculty, staff and students all joined together to provide this fun and informational weekend. Spring Fest '99 took place April 17 and 18.



1998 HASTI Convention

Our commitment to educational outreach and student recruitment has been demonstrated by our continued support of departmental participation at the Hoosier Association of Science Teachers, Inc. (HASTI) convention.

Each year, approximately 2,500 Indiana science teachers (elementary through high school) and administrators attend the HASTI convention. The Office of Academic Programs funds and supports a display at the HASTI annual convention and as a department

within the School of Agriculture, we are invited to participate in this outreach opportunity.

At the 1998 convention Bob Mitchell demonstrated the computer program he developed with Dr. Carole Lembi entitled "Chromosome Capers." Mitchell provided discs of the computer software to interested teachers.

Gail Ruhl expounded on the fun one can have with fungi as she demonstrated how to grow a fungus garden on vegetables and fruit enclosed in clear plastic boxes. She provided directions on preparing the 'gardens' as well as coloring pages on

fungi that she developed for elementary students.

Dr. Jodi Banks and her graduate student, Barbara Hass, used microscopes and a LCD panel to demonstrate the ever popular "Sex In A Dish" with fern gametophytes. A colorful three panel display depicting the Departments undergraduate plant science, weed science and plant protection programs was displayed and color posters promoting Plant Pathology (with the Departments website and address) were handed out.

This year's conference was held February 18 and 19 at the Indiana Convention Center in downtown Indianapolis.

International Information

Several international scholars visited the department during the past year in to collaborate with a variety of laboratories.

Janyce Akemi Sugui came to Purdue in the summer of 1996 to work with Ralph Nicholson on the fungal infection process. She was enrolled as a Ph.D. candidate at the State University of Parana in Curitiba, Brazil. Her major professor there was Dr. Breno Leite, a former Ph.D. student with Dr. Nicholson here in the department. Janyce gained many friends in the department because of her energetic personality and enthusiasm. Janyce spent approximately one and a half years in Nicholson's lab where she was carrying out research on identifying the material that allows fungi to adhere to a variety of surfaces both plant surfaces and artificial substrata. During her time here, she was successful in completing several research projects in addition to the one that she

originally came to investigate and has published several papers. A significant achievement was her cooperative work with Nicholson and Dr. Karl Wood of the campus mass spectrometry center. In that work, she was the first to demonstrate the successful use of matrix assisted laser desorption ionization mass spectrometry (also known as MALDI) to identify low molecular weight secondary plant metabolites present in crude mixtures of plant extracts.

Janyce returned to the department in May of 1998, during which time she worked on an international cooperative project between Nicholson, Tim Carver (IGER), Aberystwyth, Wales, and Hitoshi Kunoh, Mie University Tsu, Japan. The work was supported in part by a grant to Nicholson and Carver from the North Atlantic Treaty Organization (NATO).

She returned to Brazil and completed the requirements for the

Ph.D. in the fall of 1998. Janyce is now teaching at the University of Curitiba as part of a program to support new scientists by the state government of Parana, she intends to return.

Dr. Tom Hodges hosted several visiting scholars, all who were supported by grants from the Rockefeller Foundation. Dr. Vijay Chowdhury, a research scientist at the CCS Haryana Ag University in India, joined Hodges' lab for three months to collaborate in a study of agrobacterium-mediated transfer of useful genes in Basmati rice.

Dr. Tran Thi Cuc Hoa, a research scholar from Cuu Long Delta Rice Research Institute in Cantho, Vietnam, joined Hodges lab for advanced training in rice biotechnology. As part of his Ph.D. program, Mr. Tarun Kant, from the University of Rajasthan, Jaipur, India worked in Hodges' lab for 18 months on rice genetics.

The summer of 1998 found a diverse and inexperienced Botany Softball Team participating in the Purdue Staff Summer League. Team members hailed from many different nations and various parts of the United States including several native Hoosiers. The cultural diversity is one more reason why last summer's team will remain special. The season started with a group of people who had passed one another in the halls of Lilly on countless occasions, but finished with a team of softball players who now have more in common than an interest in the Plant Sciences.

Over the course of a season that was short on wins but long on fun, a true team of winners emerged.



From left to right, back row: W. Shim, W. Pmilla, R. Martyn, J. NG, I. Thompson, A. Zismann. Front row: M. Pena, T. Zismann, J. Cavaletto, C. Vergara, K. Matune.

Looking back at last summer's experience, those times in which the team felt the most unity was after the game, when they found themselves enjoying a cold drink, discussing the game's events and

watching the sun go down. The season culminated with a cookout at Ray and Carol Martyn's where they all further socialized and developed their competitive skills in darts and air hockey.

Alumni Information

Scott Monroe, M.S. '96, one of Dr. Richard Latin's former students, has returned to Sullivan County, Indiana, where he is the owner of Carlisle Farm Supply. His business involves agricultural product sales and service, and is especially geared towards melons and horticultural crops.

Future Boilermakers

Mary and James Jennings, Ph.D. '94, were blessed with an addition to their family on November 27, 1996. Taylor Jennings weighed 9 lbs. 7 ozs. James and Mary reside in St. Louis, Missouri, where James is a molecular biologist with Monsanto.

Christopher and Holly Adrian Berry, Ph.D. '94, became the proud parents of Megan Christina on January 1, 1998. Megan weighed 7 lbs. 4 ozs, and was 20 1/2 inches tall and was the first New Year's baby in the Fort Wayne area in 1998. Before she was even 24 hours old she was on three television stations.

Tracey and Jeff Lehman, Ph.D. '94, were also blessed with an addition to their family on February 20, 1998. Caleb Samuel weighed 8 lbs. 3 1/2 ozs, and was 19 inches tall. The Lehman family resides in Columbus, Ohio.

Stay In Touch...

Let us know what and how you are doing. Please update us on your current position, awards, special presentations, retirement, births, marriages, etc...

Contact Pam Mow at the Department of Botany and Plant Pathology, 1155 Lilly Hall, West Lafayette, IN 47907-1155 or by e-mail at:

mow@btny.purdue.edu with your updates. We look forward to hearing from you!

