



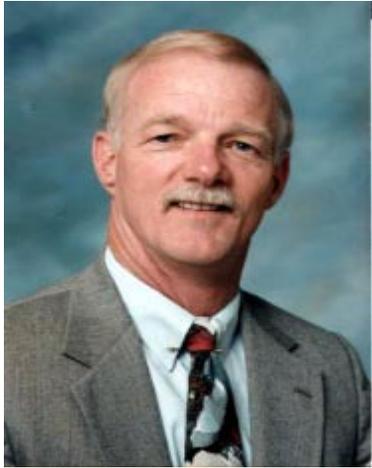
The Meristem

Department of Botany and Plant Pathology
2003 Annual Newsletter

PURDUE
UNIVERSITY

An equal access/ equal opportunity university

Excellence Through Diversity



As we finish another year I am pleased to say that the department continues to grow and improve. Our goal is preeminence and I believe we are closing in on it. University President, Dr. Martin Jischke, has set an aggressive agenda for Purdue, and we are actively pursuing it in the Department of Botany and Plant Pathology. We will hire another new faculty member in 2004 in the area of plant evolutionary biology. That will make 10 new faculty in the last six years. The influence that these young faculty have on the department is astounding. External grants reached another record high in 2003 and 2004 will likely be even higher again. Our graduate student numbers are hovering around 40-45 and the quality continues to increase. As a measure of this, four of our most recent Ph.D. graduates all have assistant professorships at universities. In addition, a number of students have received recognition for their research presentations at national and international meetings. Several of these students are featured on pages 36-39. The number of post-doctoral research associates has reached 17, up from six only a few years ago. Our undergraduate student numbers also are up, back in the mid-twenties. And quality certainly isn't an issue with our undergraduates. The average 4-year grade point index for our graduating seniors is 3.5 and Matt Eckerle, one of our plant biology majors was recognized as the recipient of the 2003 Ross Award. This is the university's highest student honor and recognizes Matt as Purdue's Outstanding Male graduate for 2003. You can read more about Matt on page 32. We also completed our first, very successful undergraduate summer research program in the department. We had five outstanding undergraduates from around the country participate in a eight-week research program, along with three students in the MARC/AIM program. The program concluded with a poster session and reception where each student highlighted their summer research. You can learn more about this program on page 31.

In 2003, the department established a new faculty award, "The Sustained Achievement in Excellence Award." This is a department head discretionary award and is meant to recognize a faculty member who excels in each of our missions: discovery, learning, and engagement, year-in and year-out. I am pleased to say that Dr. Charles Woloshuk was the first

recipient of this honor at our annual graduate student and post-doc poster reception in the fall. Similarly, many of our other staff received recognition awards. Dr. Karen Rane and Gail Ruhl were honored with the Purdue Extension Special Team Award as part of the team that first diagnosed the introduction of the pathogen *Ralstonia solanacearum* race 3 biovar 2 in the United States and helped mitigate its impact to commercial greenhouse owners. Dr. Fred Whitford, Director of the Purdue Pesticide Program, received an Award of Excellence from Monsanto and the Distinguished Service Award from the Indiana Arborist Association, and Dr. Merrill Ross, Professor Emeritus, was inducted into Purdue's "Book of Great Teachers." You can read more about all of these outstanding individuals inside. I am pleased also to say that Dr. Jin-Rong Xu and Dr. Guri Johal were both promoted to associate professor with tenure, effective July 2004. As you can tell, we have a great group of people that help make this department and University great.

Lastly, I would like to give a special thanks to all who have supported our department with their contributions. The number of individuals, as well as total amount of giving, is increasing, and we greatly appreciate your support. Gifts to the department ensure that the legacy many of you helped build will continue well into the future. Your gifts are used to support a number of initiatives, including undergraduate scholarships, graduate student travel grants, outstanding undergraduate and graduate student awards, and student recruiting.

As I write this we are well into 2004 and it is shaping up into another banner year. I invite you to stop by for a visit whenever your travels bring you back to the Midwest. If it has been a while since you were last on campus, you would be quite amazed at all the changes. We would be pleased to show you around.

Warm regards,

Ray Martyn, Head

Ray D. Martyn, Department Head
Department of Botany and Plant Pathology
Purdue University
915 W. State Street
West Lafayette, IN 47907-2054
Phone: 765-494-4615
FAX: 765-494-0363

<http://www.btpy.purdue.edu/>



Welcome

Your Door to Discovery

What's Inside

Welcome	2	International Spotlights	26
Faculty Spotlight	4	• Study Abroad	
• William Johnson		• Spring break in Honduras	
• Gurmukh Johal		• Maymester Course in Costa Rica	
• Andreas Westphal		• Peace Corps Volunteer	
		• Travel to the Land Down Under	
Research Highlights	10	Departmental Support	29
Extension Highlights	11	2003 Seminars	30
Awards and Recognitions	12	Summer Research Programs	31
• Book of Great Teachers		Academics	32
• WSSA Award		• Outstanding UG Student	
• United Soybean Board Award		• Current UG Students	
• Achievement in Excellence Award		• 2003 Graduates	
• Monsanto Excellence Award		• Melhus Symposium Speaker	
• Distinguished Service Award		• Outstanding Teaching Assistant	
• PUCESA Special Award		• Sigma Xi Competition	
• Years of Service		• Aquatic Plant Mgmt. Award	
• IPM Award		• APS Travel Award	
• NSF Appointment		• Gamma Sigma Delta	
• Faculty Positions Accepted		• BCPC International Congress Award	
Grants	16	• Outstanding GS Awards	
Publications	18	• Department Travel Awards	
Post-Doctoral Researchers	20	• Graduate Student Organization	
P&PDL	22	Alumni	41
SWPAC	23	• Look Where They Are Now!	
The Year in Pictures	24	Outreach Programs	42
		• Regional Science Fair	
		• Spring Fest	
		Departmental Activities	44



The Meristem Editor
Ms. Pam Mow
Administrative Assistant
Phone: 765-494-4615

<mowp@purdue.edu>

Excellence Through Diversity



Dr. William Johnson

Assistant Professor of
Weed Science

B.S. – Western Illinois University
M.S. – University of Arkansas
Ph.D. – University of Arkansas

Dr. Johnson's
Extension and research
efforts described in
this article are focused on
applied weed management
issues faced by
Indiana farmers.

Bill Johnson joined the Department in October of 2002 as an Assistant Professor of Weed Science with Extension and research responsibilities. He was raised on a grain and livestock farm in northwest Illinois and received a B.S. in Agricultural Science from Western Illinois University in 1987, a M.S. in Weed Science from the University of Arkansas in 1989, and a Ph.D. in Pesticide Environmental Fate from the University of Arkansas in 1994. Bill started his professional career as a Field Research Scientist with Cenex/Land O'Lakes in Fort Dodge, IA (1994–1995). From 1995 until 2002, he was employed at the University of Missouri in Columbia, first as an Extension Assistant Professor of Agronomy (1995-1998), then as an Assistant Professor of Weed Science (1998-2002).

In 2003 more than 90% of soybean acres in Indiana were planted with Roundup Ready varieties and no-till production practices were utilized on 60% of the soybean acres. However, adoption of no-till practices and increased reliance on glyphosate have resulted in a serious concern for long-term use of this valuable weed management tool.

Glyphosate resistant horseweed (a.k.a. marestalk) was discovered in 2002 at a few sites in southeast Indiana and southwest Ohio. Horseweed is naturally tolerant of many herbicides, and resistance has been reported for many of our best alternatives to glyphosate. In addition, seed is easily moved by wind, facilitating spread across a large area. Current efforts are designed to assess the distribution of glyphosate-resistant horseweed in cropped and non-cropped areas in Indiana and evaluate the biology, management, and fitness of this weed. Dr. Johnson is working closely with Dr. Kevin Gibson, Dr. Steve Weller, and Dr. Bob Pruitt in this research.

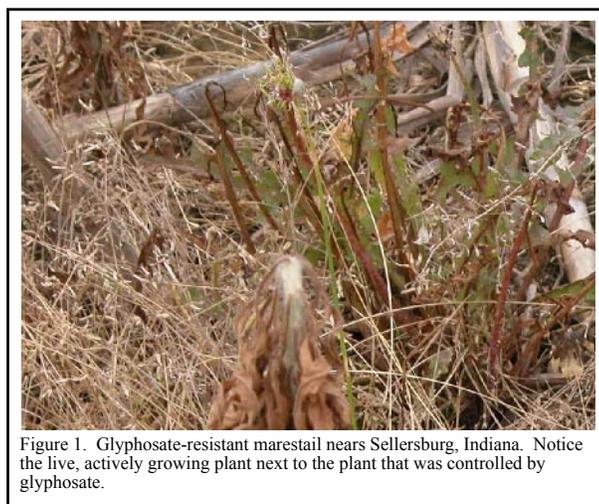


Figure 1. Glyphosate-resistant marestalk near Sellersburg, Indiana. Notice the live, actively growing plant next to the plant that was controlled by glyphosate.

Dr. Jeff Barnes, a Post-Doctoral Research Associate working with Dr. Johnson and Dr. Gibson, is coordinating much of the effort to assess the distribution of this weed in Indiana. Mr. Vince Davis, a M.S. student, is conducting field studies to evaluate emergence, growth, and winter mortality characteristics of a population of glyphosate-resistant horseweed at the Southeast Purdue Agricultural Center. Mr. Glenn Nice, an Academic Professional in Weed Science and Ph.D. student, is conducting lab and greenhouse studies to determine fitness and genetic characteristics of resistant and susceptible populations.

Soybean cyst nematode (SCN) is a viable threat to profitable soybean production. Winter annual weed populations in production fields have been increasing due to the widespread adoption of conservation tillage practices and reduced reliance on herbicides with soil residual activity. Among the many negative impacts of winter annual weeds is that a number of these species can serve as alternate hosts for SCN. Current integrated pest management (IPM) systems for SCN include rotation to a non-host crop and use of SCN resistant soybean varieties. However, these management recommendations may be inadequate if SCN is able to reproduce on winter annual weeds when soybean is not present.

Your Door to Discovery

The specific objectives are to (1) determine the level of infestation of winter annual weeds in fields known to be infested with SCN and document the association of SCN with these winter annuals, (2) determine the temperature requirements under which SCN juveniles can survive and reproduce in the roots of winter annual weed hosts, and (3) determine the influence of winter annual weed management practices and crop rotation on weed and SCN population density. Mr. Earl Creech, a Ph.D. student with Dr. Johnson, has initiated field and greenhouse studies to investigate interactions between winter annual weeds and SCN. Dr. Johnson is collaborating with Dr. Andreas Westphal, Dr. Virginia Ferris, and Dr. Jamal Faghihi in this research.



Figure 2. No-till field with an abundant population of purple deadnettle and henbit. Both of these weeds have been observed to serve as alternative hosts for SCN.

Broadleaf weed interference and its impact on nitrogen accumulation is poorly understood. Giant ragweed is poorly controlled by all soil-applied herbicides currently labeled in corn and soybean. Giant ragweed also serves as a host for a number of stalk boring insects including the common stalk borer and European corn borer. In addition, control of insect infested plants with postemergence herbicides such as glyphosate is occasionally compromised.

The goals in this area are two fold. One goal is to study the relationship between removal timing, nitrogen accumulation in both corn and weed biomass and corn yield, and determine if remote sensing technology can be used to detect weed patches and nitrogen stress due to weed interference. The second goal is to evaluate the influence of application timing, carrier volume, and herbicide rate on control of giant ragweed with glyphosate. Mr. Eric Ott, a M.S. student with Dr. Johnson, is conducting the studies associated with these objectives. Dr. Johnson is collaborating with Dr. Gibson on the weed interference project and entomologists Dr. Corey Gerber and Dr. John Obermeyer on the stalk boring insect project.



Figure 3. Giant ragweed, arguably the most problematic broadleaf weed in Indiana soybean and corn production.

No-tillage systems allow a unique complex of winter weeds to develop. Dense infestations of certain weeds can negatively influence spring soil characteristics and overall field productivity. Weeds of specific interest include glyphosate-resistant horseweed (mentioned earlier), purple deadnettle and henbit because of their ability to serve as hosts for SCN, and the perennial weed common dandelion, because of its ability to interfere with planting and crop emergence, and lack of in-crop tools for its control.

Dr. Reece Dewell, a Post-Doctoral Research Associate, is coordinating field research studies at four sites throughout Indiana to determine 1) the influence of in-crop, residual herbicide use on winter annual weed emergence after crop harvest, 2) the effectiveness of fall and spring applied herbicides on winter annual weeds, and 3) management systems for control of common dandelion.

In addition to his Extension and research efforts, Dr. Johnson has collaborated with Dr. Gibson to develop a special problems course to prepare undergraduate students for the NCWSS Summer Weed Science Contest and Drs. Gibson and Hallett on developing a graduate level course on Advanced Weed Biology and Ecology.



Figure 4. Giant ragweed plant regrowing from basal buds. This plant was infested with European corn borer larvae approximately two weeks before glyphosate was applied. It was not controlled by glyphosate because insect tunneling reduced the amount of glyphosate translocated to basal buds and roots.

Excellence Through Diversity



Dr. Gurmukh Johal

Assistant Professor of
Plant Pathology

B.S. – GND University, India

M.S. – Punjab Agricultural
University, India

Ph.D. – Simon Fraser University

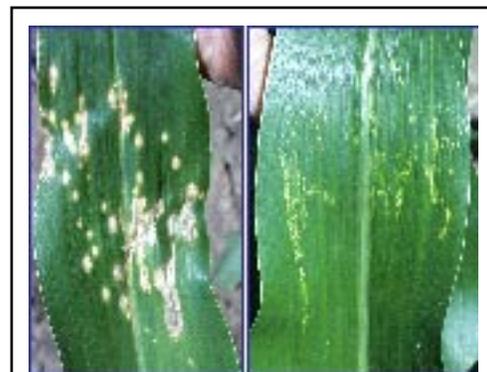
Dr. Johal's research expertise is in maize genetics and pathology and he uses a combination of genetic, genomic, and molecular approaches to investigate how maize plants grow and cope with stresses imposed by an ever-changing environment.

Faculty
Spotlight

Dr. Johal joined the Department of Botany and Plant Pathology in June 2002 as an Assistant Professor of Plant Pathology. Prior to coming to Purdue, Dr. Johal was a senior scientist in the Plant Disease Group at Pioneer Hi-Bred International Inc., Iowa (1999 to 2001), and an assistant professor of maize genetics in the Department of Agronomy at the University of Missouri (1993 to 1998).

Dr. Johal's research expertise is in maize genetics and pathology, and he uses a combination of genetic, genomic, and molecular approaches to investigate how maize plants grow and cope with stresses imposed by an ever-changing environment. His long-term premise is to generate biological tools and knowledge that may be used to produce crops in a beneficial yet environmentally friendly and sustainable manner. Presently, the Johal lab is engaged in two distinct but overlapping areas of research in maize pathology.

The first area concerns the maize leaf blight and ear rot disease caused by *Cochliobolus carbonum*, a fungal pathogen that employs a host-selective toxin (HC-toxin) to accomplish host infection. Dr. Johal's research on this pathosystem has led to some major milestones in the discipline of plant pathology. These include: the first ever cloning of a disease resistant gene in plants, elucidation that this resistant gene (called *Hm1*) provides protection by inactivating HC-toxin, and the revelation of genetic and molecular events that led to the genesis of the leaf blight and ear rot disease (first witnessed at Purdue in 1938). In addition to providing major advances in the area of plant disease and resistance, these contributions put to rest a long and unpleasant debate about the importance of host-selective toxins in plant disease.



Maize leaves susceptible (L) and resistant (R) to *C. carbonum* race 1.

Dr. Johal's ongoing research on this pathosystem focuses on three aspects. The first seeks to elucidate the mechanism(s) by which HC-toxin facilitates the colonization of maize tissues by *C. carbonum*. From its name, one might think that HC-toxin aids in disease development by somehow damaging maize tissues, however, this is not the case. To the contrary, HC-toxin has been shown to enhance the life of maize cells in cultures. Interestingly, it was found recently that, like most cyclic tetrapeptides, HC-toxin inhibits histone deacetylases (HDACs), which are known to modulate the transcriptional accessibility of genes within the chromatin. Since HDACs are known to dictate the inducible expression of genes in responses to diverse stimuli, one possibility is that HC-toxin induces host susceptibility by preventing maize tissue from mounting an effective defense response during *C. carbonum* attack. While this hypothesis appears to have wide acceptance among pathologists, two pieces of data from the Johal lab cast doubts on it. First, exogenously applied HC-toxin is able to promote the growth of the toxin-minus isolate of *C. carbonum* regardless of whether it is administered to infection sites before or after the induction of defense responses. Second, none of the other HDAC inhibitors was found to significantly promote colonization of the maize tissue by the toxin-minus isolate, suggesting that interference with the induction of defenses may not be the only mechanism by which HC-toxin renders maize tissues susceptible to colonization by the pathogen. To gain an insight into how HC-toxin works, Dr. Johal has initiated a project that relies on both chemical mutagenesis and transposon-tagging approaches to generate and identify maize mutants (from susceptible lines) that fail to support the growth of the toxin-producing isolate even in the absence of the resistance gene *Hm1*, or its duplicate *Hm2*. Successful isolation of such mutants and their characterization can provide a huge opportunity for unlocking the secrets of genes and mechanisms that underlie the maize defense response.

None of the cereals outside maize are susceptible to colonization by *C. carbonum*, and understanding why this is so constitutes the second focus on this pathosystem. Since all cereals have been found to harbor functional genes homologous to *hm1*, one possibility is that the HCTR activity encoded by these genes is responsible for the inability of *C. carbonum* to cause disease. Dr. Johal plans to address this question in rice by developing transgenics in which the activity of genes homologous to *hm1* is suppressed by a technique based on RNA interference.

Your Door to Discovery

Another unique opportunity provided by the interaction between maize and *C. carbonum* is the operation of adult plant resistance in this pathosystem. Two alleles have been identified at two different loci that confer full protection against *C. carbonum* race 1 only in mature tissues. These alleles are *Hm1^A* and *Hm2*; their characterization is likely to reveal whether their behaviors derive from the way their promoters operate or if there are novel mechanisms that impact their expression or activity.

Johal's second area of research, with relevance to maize pathology, involves mutants that form disease-like symptoms in the absence of pathogens. Called disease lesion mimics, these mutants are proving to be excellent tools for unraveling how plants cope with diverse stresses and how programmed death of cells is regulated and executed in plants. Johal was one of the first to recognize this potential of lesion mimic mutants, and he has contributed enormously to advance this area. Thus far his group has cloned three lesion mimic genes, with many more in the pipeline for isolation and characterization.

Lls1 (*lethal leaf spot-1*) was the first lesion mimic gene to be cloned. *Lls1* encodes a novel suppressor of cell death and appears to protect leaf cells by guarding the integrity of chloroplasts. The *Arabidopsis* and sorghum equivalents of *lls1* are *accelerated cell death-1* (*acd1*) and *drop dead-1* (*ddl*), respectively. The second lesion mimic gene cloned is *Les22*; plants defective in this gene form tiny bleached lesions on leaves by a process that results from an error of porphyrin metabolism. The same mechanism has been found responsible for human porphyria, one manifestation of which is the blistering of skin on exposure to bright sunlight. Recent data from Johal's lab indicate that, although the pathway blocked in *Les22* is localized to chloroplasts, the demise of *Les22* cells is somehow mediated by a breach of mitochondrial integrity. The third lesion mimic gene to be cloned is *Rm1* (*rust mimic-1*). It encodes a protein with substantial homology to the human SNARE protein SNAP25, suggesting that an aberration in vesicular traffic in plant cells forces them to enter a death pathway.

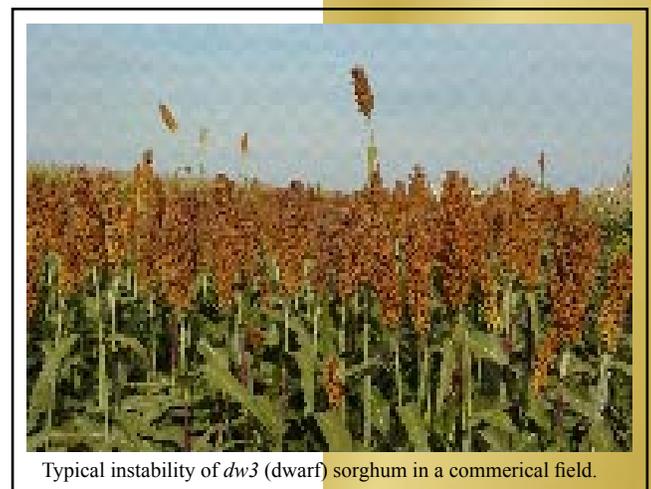


C. carbonum lesions of a leaf containing *Les9* lesions.

Lesion mimic mutations are easily influenced by the genetic background of the host plant. Dr. Johal exploited this behavior of lesion mimics to identify and map a key suppressor of cell death (*S-hsl*) that exists naturally in maize. Elucidating what *S-hsl* encodes and how it works to suppress cell death is presently being pursued under a grant funded by the USDA-NRI. Even more importantly, this project has allowed Dr. Johal to conceive a novel idea likely to have major implications for breeding. Dubbed 'mutant-aided breeding', it reli□

To provide proof of principle, Dr. Johal has used this strategy to make significant improvements in three key maize traits - stalk height, stalk strength, and resistance to *C. carbonum*. An additional and equally exciting benefit of this approach is that it promises to reveal the molecular basis of natural variation, which is an extremely important but largely underexploited source of genetic information in plants.

Another research interest of Dr. Johal's is gene discovery in maize, especially the genes that have agronomic appeal and potential. This interest led him to clone the maize *brachytic-2* (*br2*) gene, which is characterized by semi-dwarf mutations reminiscent of 'green revolution' genes in rice and wheat. In collaboration with Dr. Angus Murphy (Department of Horticulture and Landscape), Dr. Johal demonstrated that encoding a multi-drug resistance transporter *br2* facilitates polar auxin transport across lower stalk internodes. Furthermore, it was shown that the genetic defect that underlies *br2* is also responsible for the dwarfing stature of sorghum *dw3*, an unstable mutation of long-standing interest and concern among sorghum breeders. This discovery allowed Dr. Johal to address what was wrong with the gene in *dw3*, why it exhibited an unstable phenotype, and how it could be corrected to confer a stably dwarf trait. This work was recently published in *Science* as a research article along with an accompanying perspective, testifying to the enormous implications this work has for both basic and applied research.



Typical instability of *dw3* (dwarf) sorghum in a commercial field.

Dr. Johal is also actively involved in graduate teaching. He, along with Dr. Tesfaye Mengiste, has updated the curriculum on the genetics, molecular, and biochemical aspects of plant-pathogen interactions and has sought approval to teach it under two courses, one dealing with the host side of the interaction and the other with the pathogen.

Excellence Through Diversity



Dr. Andreas Westphal

Assistant Professor of
Plant Pathology

B.S. – University of Göttingen,
Germany

M.S. – University of Göttingen,
Germany

Ph.D. – University of California,
Riverside

Dr. Westphal's research focuses on soil-borne diseases, such as sudden death syndrome (SDS) of soybeans and mature watermelon vine decline (MWVD).

Andreas Westphal is a native of Germany where he received his B.S. and M.S. in Agricultural Sciences at the University of Göttingen. His first exposure to applied Plant Pathology was with the Extension Service in Germany where he helped to convey Plant Pathology information to wheat and sugar beet growers. In 1994, he moved to southern California to study the biological control of sugar beet cyst nematode for his Ph.D. dissertation at the University of California, Riverside. After a brief postdoctoral appointment at the University of California, Davis, he accepted a position as Extension Plant Pathologist with Texas A & M University at Weslaco, TX. Work on vegetable and field crop diseases and plant-parasitic nematodes were the focus of his responsibilities in south Texas. In 2001, Dr. Westphal joined the Department of Botany and Plant Pathology at Purdue University where he shifted the focus of his work to soil-borne diseases. His research is supported by the United Soybean Board, the North Central Soybean Research Program, the Indiana Soybean Board, the School of Agriculture at Purdue University, and the United States Department of Agriculture.

Soil-borne plant pathogens and pests persist in a myriad of interactions in the soil environment. Management of these yield-reducing organisms is highly dependent upon a thorough understanding of their ecology. Westphal's program has set out to study these interactions as they relate to the soybean cyst nematode, sudden death syndrome of soybean (SDS), root knot nematodes in watermelon and soybean, and an unidentified soil-borne disease of watermelon.

The soybean cyst nematode, *Heterodera glycines*, is one of the major yield-reducing agents in soybean throughout the United States. Although efforts for resistance breeding have been ongoing for many years, the management of the nematode remains challenging because it occurs in populations that can overcome specific sources of resistance. Virulence patterns of the nematode are laborious to determine and probably too costly to be conducted for every field under soybean production. Integrated management of this nematode problem includes the use of crop rotation and natural population density regulation. Cases of specific soil suppressiveness of other cyst nematodes have been studied, and the hope remains that certain agronomic inputs will support the development of soil suppressiveness against this obligate parasite. In various regions of the U.S., the shift to no-tillage practices has been beneficial in reducing soybean cyst nematode reproduction. Similar observations have been made in long-term tillage plots at Purdue University. The aim of Westphal's program is to determine whether specific soil suppressiveness similar to the one found in related cyst nematodes is present in soybean cyst nematode and to investigate if the reduced population densities under no-tillage are based on biological phenomena. This work is done in collaboration with Dr. Virginia Ferris, Dr. Tony Vyn, and Dr. Terry West.

Sudden death syndrome of soybean (SDS), a fungal disease of soybean, is causing major damage to soybean in the North Central Region. The disease has been damaging soybean yield for several years and still is increasing. SDS is characterized by its sporadic occurrence and unpredictable pattern. While the causal organism has been known for some time, conditions that favor infection in the greenhouse and in the field have not been fully described. Westphal's program investigates the interaction of the fungus with other soil-borne organisms. In particular, the interaction with the soybean cyst nematode appears to be of major importance, together with the effects of high moisture content during early soybean reproductive stages. Due to the difficulties with predicting SDS development in field hot spots, the development of currently used inoculation methods are refined under fumigation plot conditions at Throckmorton Purdue Agricultural Center. This work is done in close collaboration with Dr. Scott Abney and Dr. Ellsworth Christmas.

Your Door to Discovery

Southern Indiana growers take advantage of light soils for growing vegetable crops. In Knox and adjacent counties, sandy soils permit earlier warming soils than other areas of Indiana. This benefit comes with the risk of plant-parasitic nematodes that infect vegetable and field crops. These nematodes thrive in sandy soils and interfere with plant growth. Unfortunately, crop sequences in southern Indiana depend almost exclusively on host crops of the nematode. Dr. Westphal confirmed that root knot nematodes infect soybean and corn, and rotational crops for watermelon in southern Indiana. He incorporates information on plant-parasitic nematodes into Extension activities and implements beneficial cover crops into crop sequences. Additional research includes efforts to identify resistant soybean cultivars to replace currently used susceptible ones. Dr. Westphal works with Dr. Dan Egel on these watermelon problems and with Dr. Allen LeRoy on the soybean question.

A number of late-season wilts or vine declines threaten the profitable production of the high-value commodity watermelon throughout production areas of the United States and worldwide. While the etiologies of several root rots and vine declines are well established, a new late-season disorder of watermelon, mature watermelon vine decline (MWVD) of yet unknown etiology, has been observed in Indiana. In MWVD, typically at the end of the season, watermelon vines collapse and wilt rapidly. At that time, exposure of mature watermelon fruit to the sun results in sunburn of the fruit. The direct yield reduction is accompanied by a quality reduction in diminished sugar content and decreased fruit surface quality. Preliminary tests demonstrate the biological nature of MWVD by using biocide treatments (Fig. 2) and heat treatments $\leq 60^{\circ}\text{C}$ (Fig. 1).

Dr. Westphal's program is made possible by the dedicated work and commitment of his Post-Doctoral Researcher Dr. Lijuan Xing, his technician Ms. Farah Heraux, and undergraduate students, Mr. Reuben Pillsbury and Mr. Dragan Muvceski. A number of graduate students will join his program in 2004.

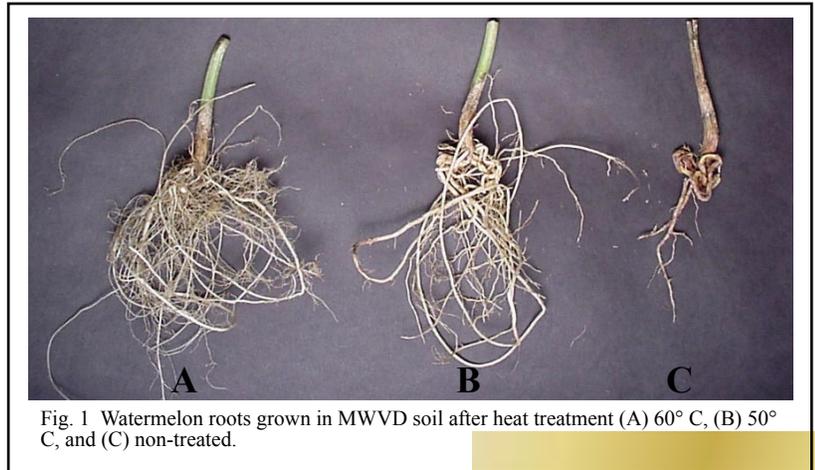


Fig. 1 Watermelon roots grown in MWVD soil after heat treatment (A) 60°C , (B) 50°C , and (C) non-treated.



Fig. 2 Watermelon plants in MWVD soil: (1) non-treat soil; (3) Methyl bromide - fumigated at 390kg/ha .

Excellence Through Diversity



Dr. Bob Pruitt's research on *Arabidopsis thaliana* was highlighted in the Summer 2003 issue of *Agricultures*. Pruitt, along with many like-minded colleagues in Purdue agriculture, have a fascination for *Arabidopsis*. In late 2002, scientists sequenced the complete genome for *Arabidopsis thaliana*. Now that they have the blueprint, Pruitt says it's up to researchers to figure out how the genes are used to build the organism.



Dr. Tesfaye Mengiste has identified the gene responsible for halting the growth of the gray mold fungus that attacks fruits, such as strawberries and tomatoes. Dr. Mengiste says gray mold disease destroys about 10 percent of the grape crop and 25 to 30 percent of tomato and strawberry crops in some seasons. It also infects many varieties of flowers including petunias, geraniums, and chrysanthemums.



Dr. Guri Johal inspects a dwarf mutant of corn. Johal and his colleagues have recently identified the genetic mechanism responsible for this dwarfed appearance.



Dr. Nick Carpita and his research team recently received a grant of nearly \$6 million from the National Science Foundation to investigate the formation, development, and growth of plant cell walls.



Dr. Stephen Goodwin's wheat research may lead to a reduction in the amount of grain lost to leaf blotch.

Our department's research emphasis is on understanding and solving fundamental and applied problems in plant and fungal growth and development, and disease and weed management in crop production systems.

Research programs cover a broad range of activities, including virology, plant and fungal biochemistry, molecular biology, cell and developmental biology, physiology, genetic engineering of crop plants, plant-microbe interactions, disease management, aquatic biology, and integrated weed management.

The five research programs on this page were highly recognized in 2003.

Research Spotlights

Your Door to Discovery

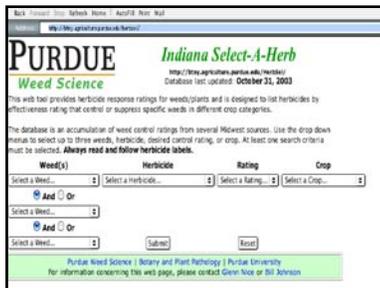
Purdue Weed Science Website - <http://www.btny.purdue.edu/weedscience/>.

Contains frequently updated newsworthy articles for agronomic crops, horticulture crops, turf and lawn, and other general items of interest. Also contains links to sites on weed identification, herbicide injury, weed science faculty, staff, and students at Purdue, and weed management tools from Purdue and other Universities.



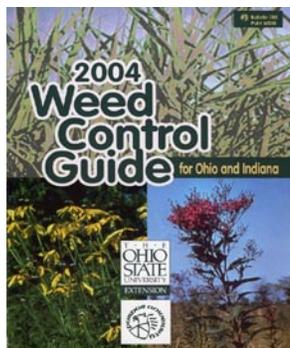
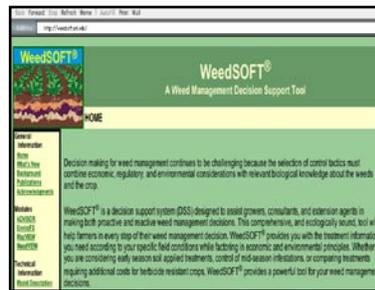
Indiana Select-A-Herb Website

<http://btny.agriculture.purdue.edu/herbssel/index.cfm>. This web-based tool provides herbicide response ratings for weeds in various cropping systems. The database is an accumulation of weed control ratings from several Midwest sources and allows the user to utilize drop down menus to find herbicides that provide good to excellent control of over 200 weeds in 15 crops.



WeedSOFT 2004 for Indiana <http://weedsoft.unl.edu/>

WeedSOFT® is a decision support system designed to assist growers, consultants, and extension agents in making both proactive and reactive weed management decisions. WeedSOFT® provides the treatment information needed, according to specific field conditions, while factoring in economic and environmental principles.



2004 Weed Control Guide for Ohio and Indiana (WS16)

In 2004, we collaborated with Extension Weed Scientists at Ohio State University to produce a single guide for both states. This guide contains over 150 pages of information on weed management tactics in corn, soybean, grain sorghum, wheat, alfalfa, and grass pastures. It is available on the web at (<http://www.btny.purdue.edu/Pubs/WS/WS-16/>) or in print for \$6.50 per copy from Ohio State Publications Distribution Service (Phone. 614-292-1607).

Weeds to Watch Poster

– Weed communities continually shift in response to management practices. The weeds included on this full color poster pose an increasing threat to agronomic fields. The poster also contains maps that provide information regarding current distribution of each species in Indiana, Illinois, Iowa, Minnesota, Wisconsin, and Michigan. Production of the poster was funded by a NCR-IPM grant and copies are available at no charge. Poster can be viewed online at:

<http://weeds.cropsci.uiuc.edu/extension/Other/WeedstoWatch.pdf>



The Extension Weed Science Team of Dr. Bill Johnson, Mr. Glenn Nice, and Dr. Tom Bauman have developed a few new tools for managing weeds.

tbauman@purdue.edu
wgjohnso@purdue.edu
gnice@purdue.edu

Extension Spotlights

Excellence Through Diversity



Emeritus Professor Inducted into The Book of Great Teachers

The Book of Great Teachers was dedicated on April 23, 1999. The inaugural group boasts 225 past and present faculty members who have devoted their lives to excellence in teaching and scholarship.

Professor Emeritus Merrill Ross was inducted into the Book of Great Teachers on August 28, 2003. Induction of new members takes place only every five years.

Dr. Ross served our department and the university for 36 years as professor of weed science. During those years he touched the lives of over 4,000 students. He was involved with six different courses ranging from introductory undergraduate classes to advanced graduate classes. In 1992, he was honored as the Outstanding Teacher in the United States by the Weed Science Society of America.

To say Dr. Ross has spent his entire professional career in the classroom is quite an understatement. He taught the Introductory Weed Science (BTNY 304) course for 57 straight semesters! During that time over 3,000 students learned to identify and manage noxious weeds in a variety of settings.

Dr. Ross's effectiveness as a teacher is legendary. He consistently received extremely high marks on student evaluations. But his teaching goes far beyond the traditional classroom. He taught a weed control short course since 1984 to commercial applicators, county educators, and crop advisors. Beginning in 1985, Dr. Ross organized and sponsored the Purdue University Undergraduate Weed Science Contest each spring.

During his tenure at Purdue, Dr. Ross was the senior co-author of the textbook, "Applied Weed Science." Within the first year after its publication, it was adopted in over 30 colleges and universities nationwide. It is still the leading weed science textbook used across the country. To complement his "non-classroom teaching," Dr. Ross also authored "The Herbicide Mode-of-Action Summary" which is used in numerous field and short courses in weed management.

Dr. Merrill Ross has been a true friend and mentor to the many thousands of students that have come his way in the last 30+ years. It is fitting and appropriate to honor and recognize him by inducting him into Purdue's Book of Great Teachers. It is an honor that is well-deserved.

"Dr. Ross's effectiveness as a teacher is legendary"

"It is fitting and appropriate to honor and recognize him by inducting him into Purdue's Book of Great Teachers"



President Martin Jischke recognizing Dr. Merrill Ross at the August 2003 induction ceremony of Purdue Book of Great Teacher's recipients.



Merrill Ross with a group of family and friends at the awards ceremony.

Your Door to Discovery

Weed Science Society of America Awards Outstanding Extension Award

At the Weed Science Society of America (WSSA) annual meeting in early February in Jacksonville, Florida, Dr. Robert Hartzler was presented with the 2003 Outstanding Extension Award.

The recipient of this award must have been active in extension work four out of the past five years and must devote at least 75 percent of their extension activities to weed science work. This award is sponsored by Dow AgroSciences.

Robert Hartzler attended Purdue University, receiving a B.S. in plant protection from the Department of Botany and Plant Pathology in 1978. After working in industry for two years, Robert returned to graduate school at Virginia Polytechnical Institute where he earned a M.S. in Plant Physiology. He obtained his Ph.D. from Iowa State University in 1987. He returned to Iowa State in 1989 as an Assistant Professor/Extension Weed Management Specialist.

Dr. Hartzler has a very productive and successful Extension program at Iowa State and has been recognized by the North Central Weed Science Society with the Distinguished Achievement Award in 1993, Distinguished Young Scientist in 1993, and received the Raymond and Mary Baker Early Career Achievement Award at Iowa State University in 1996. He has developed a highly successful Extension program, using both traditional and innovative delivery techniques. In his educational efforts, Dr. Hartzler strives to provide Extension clients with an understanding of the biological processes that lead to the weed problems faced by Iowa growers. He believes that this knowledge will provide the base needed by growers and industry personnel to develop and implement efficient weed management systems.

Dr. Hartzler also has developed a productive research program that supports his Extension efforts. His research efforts focus on the impact of management systems on weed population dynamics and development of integrated weed management systems. He is committed to the success of Iowa State University Extension and Iowa agriculture.



Outstanding Alumni

Two Alumni
Receive
Industry
Sponsored
Awards



Meritorious Service Awards presented by The United Soybean Board

On February 28, 2003, The United Soybean Board (USB) honored Dr. James Wrather as one of 13 winners of its 2002 Meritorious Service Awards for their superior dedication and contributions to the soybean industry during a special ceremony at the 2003 Commodity Classic in Charlotte, North Carolina. Individuals and organizations were recognized in the categories of International Marketing, Domestic Marketing, Production, New Uses, and Producer Communications.

James Wrather began his education at Central Methodist College where he earned a B.S. in biology and chemistry. **In 1972, he received a M.S. degree in plant pathology from the Department of Botany and Plant Pathology at Purdue University.** He finished his graduate education at the University of Missouri where he completed his Ph.D. in plant pathology.

The Production award for Extension Education was given to Dr. Wrather, professor of plant microbiology and pathology at the University of Missouri-Columbia for his efforts to educate growers on soybean cyst nematode biology and its management that have helped lower damage by 66 percent in the southern United States over the past 20 years. "Each winner has made a direct, positive impact on the soybean industry and U.S. soybean producers," said USB Chairman David Durham. He also went on to state that the USB appreciates Dr. Wrather's exceptional dedication to the soybean checkoff program and looks forward to his future accomplishments.

Dr. Wrather has focused his research and Extension efforts to prevent U.S. soybean farmer yield losses to disease. He has compiled disease-loss estimates for major diseases in each soybean-producing state and has published results of this effort to establish priorities to reduce disease losses through state research and Extension programs in both the public and private sectors, including the soybean checkoff. Dr. Wrather's disease-loss estimate publication is among the most cited in the United States. His career has also led to teamwork in extension education among states to reduce losses to soybean cyst nematode (SCN).

Awards and Recognitions

Excellence Through Diversity



Dr. Charles Woloshuk

Professor of Plant Pathology

B.S. - Valdosta State University
M.S. - University of Maryland
Ph.D. - Washington State University

The Sustained Achievement in Excellence Award was created to recognize excellence in each of the Discovery, Learning, and Engagement missions of the University.

Awards and Recognitions

Dr. Charles Woloshuk Receives First Award for “Sustained Achievement in Excellence”

In 2003, the department established a new discretionary award named the “Sustained Achievement in Excellence Award.” It is to recognize excellence in each of the Discovery, Learning, and Engagement missions of the University over a sustained period of time, approximately five years. Many of our faculty achieve excellence in one or more of these missions, but it is truly the outstanding faculty member that excels in all three, year after year.

The first recipient of the Department of Botany and Plant Pathology’s “Sustained Achievement in Excellence Award” is **Dr. Charles Woloshuk**. Charles was awarded this honor at the 4th Annual Graduate Student and Post-Doctoral Poster Session in November 2003. He received a personally engraved plaque, a name plate on the departmental plaque, a \$500 cash award, and a one-time departmental allocation of \$5,000 to his research and Extension programs.

Dr. Woloshuk joined our department in 1993 after spending several years as a research associate at North Carolina State University and several years with MODGEN International in the Netherlands. He has a split appointment of research and Extension. He was promoted to associate professor in 1997 and to professor in 2002.

The first area in which Dr. Woloshuk has excelled is research. His area of research is the genetics of mycotoxin biosynthesis in *Fusarium*. In the last five years, Charles has received close to \$1.5 million in external grant support, almost all of it directly to his program. Included in this are four consecutive rounds of USDA, NRI grants. He has also published 13 refereed articles during this five-year period, bringing his total to 35 and has mentored three post doctoral fellows.

The second area of excellence is learning. While most of us associate this with classroom teaching, it is much broader than that. While Charles does not have a formal teaching appointment, he clearly is involved in classroom teaching. A few years ago he helped develop the graduate class, BTNY 610, “Genetics and Molecular Basis of Host-Pathogen Interactions,” which he then co-taught for two semesters. He also has given numerous lectures on mycotoxins in classes in fungal biology, animal sciences, and food science. Charles has mentored six undergraduate students in special research programs and has participated in our department’s undergraduate summer research program. But it is in the area of graduate student education that Dr. Woloshuk has really excelled. In the last five years he has mentored seven graduate students; three M.S. and four Ph.D., and serves on another 15 advisory committees. Charles challenges his students and has a very high bar in terms of expectations. He gets his students to perform at levels far beyond their own expectations. For example, his last five students have a combined 11 refereed journal articles, and most of these were published or in press by the time the students graduated. In fact, that is a basic requirement in his lab; students must publish as part of the degree requirements. But perhaps the most telling part of his success as a mentor is that his students average only four years for the Ph.D. and just a little more than two years for a M.S. His last two Ph.D. students

now have assistant professor faculty positions, one in Illinois, and one at Texas A & M.

The last area of excellence is engagement. To most, engagement is just a new word for Extension, but as defined by universities today, it is far more than Extension. It is the combined efforts of traditional Extension activities, educational and community outreach, and service to one’s profession, university, and department. Dr. Woloshuk has Extension responsibilities in the area of post-harvest quality of stored grain and mycotoxins. In this role he has explored multiple technologies for preserving grain quality, including grain chilling, ozone fumigation, and CO₂ detection. He and his collaborators in the Departments of Ag and Biological Engineering and Entomology have developed extension educational materials, websites, and numerous publications related to grain quality. In recognition of their efforts they received the 1997 PUCESA Team Award, the 1999 PUCESA Team Award, and the 1999 School of Agriculture Team Award.

Dr. Woloshuk’s professional activities are equally impressive. He is a regular participant in APS, having served on both the Postharvest Pathology Committee and the Biochemistry, Physiology, and Molecular Biology Committee. He has served on the editorial boards for three journals, *Applied and Environmental Microbiology*, *Plant Disease*, and *Food Protection*, and is currently an associate editor of *Mycologia*. He has served as an ad hoc reviewer for 23 different journals, including *Science* and *PNAS*. He serves on the NC-129 Regional Mycotoxin Committee, served as the chair in 2001, and developed and maintains the website for the committee.

Charles’ service to the school and the department is also excellent. He has served on the University’s Grain Quality Task Force, the University Grievance Committee, several faculty search committees, the department awards committee, and as chair of the Graduate Programs Committee. He is a regular participant at departmental seminars, department social events, and student recruiting events. He is truly a good department citizen that does all the things that make an outstanding faculty member and is very deserving of this award.



Dr. Ray Martyn presents Dr. Charles Woloshuk with the first “Sustained Achievement of Excellence Award” in November of 2003.

Your Door to Discovery

Monsanto Excellence Award presented to Fred Whitford

The Monsanto Excellence Awards were created to recognize employees for outstanding performance in the areas of social responsibility, technology, environment, safety and health, sustainable development, and for delivering on business objectives.



Whitford receives Distinguished Service Award

In January 2003, **Dr. Fred Whitford**, Director of the Purdue Pesticide Programs, was awarded the Indiana Arborist Association's Distinguished Service Award for his invaluable service in advancing the goals of the Indiana Arborist Association.



In 2003, Monsanto presented Excellence Awards in eight categories. **Fred Whitford** and the Purdue University Cooperative Extension Service were selected to receive one of the \$15,000 grants at the May 15th awards ceremony at Union Station in St. Louis, Missouri. Dr. Whitford was selected because of his long history of taking difficult technical issues about pesticides and making them understandable to Extension agents and the farming community. Each winner of the award received the \$15,000 grant to further the aims of the Farm Family Exposure Study (FFES). This study is being used as a basis for educational outreach to help farm families minimize pesticide exposure.

PUCESA Special Award Recognizes Extension Specialists' Outstanding Efforts

The 2003 PUCESA Special Award was given in recognition of the efforts of four individuals in handling the outbreak of *Ralstonia solanacearum* in Indiana greenhouses in the spring of 2003. This disease outbreak was a very serious threat to U.S. and Indiana agriculture. Their teamwork, combined efforts, and professionalism enabled this serious pathogen to be contained and eliminated from Indiana agriculture.



Group photo of the team recognized with the PUCESA Special Award in October 2003. (L to R - Robert Waltz, Gail Ruhl, Karen Rane, and Allen Hammer)

The team was comprised of the following individuals: **Dr. Karen Rane**, Plant Disease Diagnostician, Department of Botany and Plant Pathology, **Ms. Gail Ruhl**, Interim Director, Plant and Pest Diagnostic Laboratory (P & PDL), Department of Botany and Plant Pathology, Dr. P. Allen Hammer, Professor, Department of Horticulture and Landscape Architecture, and Dr. Robert Waltz, State Entomologist, and Director, Indiana Department of Natural Resources.

Ralstonia solanacearum Race 3 Biovar 2 is the pathogen that causes southern bacterial wilt of geraniums. This pathogen is cited on the USDA Agricultural Bioterrorism Act of 2002 Select Agents and Toxins List. It is a serious pathogen of potatoes, tomatoes, and other Solanaceous plants and is one of ten pathogens that USDA considers hazardous to U.S. food and plant crops. This pathogen was identified in a geranium specimen sent to the Purdue Plant and Pest Diagnostic Laboratory in January 2003. Due to the hard work of this group, Purdue University was on the leading edge of identifying this pathogen and documenting its presence in U.S. greenhouses in 17 states. Their efforts to communicate the threat via fax memos, web sites, news articles, publications, and personal communications kept Indiana growers informed of the threat and limited the damage to Indiana and Midwest agriculture. Greenhouses in which the pathogen was identified were quarantined. Plants within facilities that tested positive for the disease had to be destroyed and thoroughly disposed of using special protocols. The greenhouses had to be sanitized and the equipment sterilized. This group worked tirelessly to help these greenhouses operate through these difficult times and provided guidance to help growers resume normal operations. Their dedication and perseverance deserved this recognition. Congratulations to these four outstanding individuals.

Extension Specialists receive distinguished recognition for their "Excellence in Extension"

Awards and Recognitions

Excellence Through Diversity

Faculty and Staff honored for years of service

Purdue University and the Department of Botany and Plant Pathology are pleased to recognize six faculty and staff members for their years of service. They are:

Charles Woloshuk, Professor of Plant Pathology, 10 years

Mark McClenning, USDA Lab Technician, 10 years

Arlene Blessing, Administrative Assistant, Purdue Pesticide Programs, 20 years

Larry Dunkle, USDA Adjunct Professor of Plant Pathology, 25 years

Paul Pecknold, Professor of Plant Pathology, 30 years

Greg Shaner, Professor of Plant Pathology, 35 years

Congratulations and a special thank you to all of these dedicated individuals for their many years of contributions to the department and Purdue University.

Whitford Received IPM Award Recognition from EPA

The U.S. EPA Region 5 Pesticide Program Section honored **Dr. Fred Whitford** in September 2003 for his past and continuing efforts to promote and implement school Integrated Pest Management (IPM) programs. Fred works throughout Indiana in order to protect children's health from pests and pesticides within schools and day care environments. Fred was selected as an outstanding contributor to school IPM implementation within Indiana by unanimous decision of the U.S. EPA Region 5 Pesticides Program Section and the Pesticides Program Manager of the Office of the Indiana State Chemist.

Lolle Appointed Director for the Plant Biology Program at NSF

Dr. Susan Lolle, research scientist, has accepted a temporary 13-month position as the Director of the Plant Biology Program for the National Science Foundation in Arlington, Virginia.

Susan is involved with the Developmental Mechanism Cluster as the program director of plant and microbial development.

Faculty Positions Offered to Two Former Graduate Students

Ahmad Fakhoury was named assistant professor of plant microbial toxicology at Southern Illinois University at Carbondale in the fall of 2003. As part of the expanding plant and soils science program at Southern Illinois, his research will focus on food and feed safety, mycotoxicology, and biosecurity. Ahmad received his Ph.D. in 2001 under the direction of Dr. Charles Woloshuk.

Philip Harmon accepted a position with the University of Florida at Gainesville as assistant professor of plant pathology. He will be working on diseases of turfgrass. Phil received his Ph.D. in 2003 under the direction of Dr. Rick Latin.

2003 Grants

T. S. Abney, University of Wisconsin-Madison, \$11,000, March 1, 2003 through February 29, 2004. "Indiana white mold of soybeans."

T. S. Abney, Indiana Soybean Board, \$30,000, May 1, 2003 through April 30, 2004. "Phytophthora Root Rot: 2003 - Identify role of new and predominant races of soybean phytophthora."

T. S. Abney, Ohio State University, NCSRP, \$12,312, March 1, 2003 through February 29, 2004. "Indiana *Phytophthora sojae* losses."

T. S. Abney Southern Illinois University, NCSRP, \$14,000, March 1, 2003 through February 29, 2004. "Indiana sudden death syndrome of soybean research."

T. S. Abney and **A. Westphal**, Indiana Soybean Board, \$40,000, May 1, 2003 through April 30, 2004. "Sudden Death Syndrome: 2003 - Root infection/foliar response of soybean varieties and influence of moisture regimes, microbial communities, and infestation levels of SDS pathogen on disease."

J. A. Banks and **D. E. Salt**, U.S. Department of Energy, \$450,000, September 1, 2003 through August 31, 2006. "Genetic and molecular dissection of arsenic hyperaccumulation in the fern *Pteris vittata*."

J. A. Banks, National Science Foundation, \$36,000, 2003-2006. "Collaborative research: The green plant BAC library project."

J. A. Banks and **R. E. Pruitt**, National Science Foundation, \$10,000, 2003. "Conference on gametophyte development."

N. C. Carpita, U. S. Department of Energy, \$106,000, August 15, 2003 through August 14, 2004, "Mechanism of biosynthesis of cereal mixed-linkage β -glucans."

N. C. Carpita, Purdue Research Foundation Trask Trust Fund, \$17,961, June 1, 2003 through December 31, 2003. "Characterization of a chemically inducible promoter system from *Aspergillus niger* for use in crop plants."

Z. Chen, National Science Foundation, \$1,190,000, October 1, 2002 through September 30, 2006. "Functional analysis of the WRKY transcription factor gene family from Arabidopsis."

Z. Chen, USDA, NRI, \$175,000, September 15, 2003 through September 14, 2005. "RNA-dependent RNA polymerases in plant antiviral defense and gene silencing."

"We have a great group
of people that help make
this department and
University great"

Awards and
Recognitions

Your Door to Discovery

Z. Chen, National Science Foundation, \$10,000, May 1, 2003 through September 30, 2004. "Arabidopsis 2010: Functional analysis of the WRKY transcription factor gene family from Arabidopsis."

R. C. Coolbaugh, Cooperative State Research Service, \$100,000, March 1, 2003 through February 28, 2008. "Multicultural undergraduate scholars in agriculture at Purdue University."

D. S. Egel and **R. X. Latin**, US-EPA, Region 5, \$15,000, March 1, 2003 through March 31, 2005. "Delivery of a weather-based spray advisory program to Illinois and Indiana."

D. S. Egel, Mary Rice Foundation, \$10,000, 2003-2005. "Management of mature watermelon vine decline, an important new disease in Indiana."

S. C. Weller and **K. D. Gibson**, Cooperative State Research Service, \$100,000, July 1, 2003 through June 30, 2006. "Seed bank dynamics in alternative vegetable cropping systems."

K. Banks, D. Salt, B. Applegate, A. Murphy, P. Schwab, J. Morgan, P. Goldsborough, **K. Gibson**, and L. Csonka, 21st Century Fund, \$2,000,000, 2003-2005. "Center for phytoremediation research and development."

S. Broussard, A. DeWoody, V. Dunning, R. Howard, M. Levy, J. Lucas, D. Minchella, G. Parker, K. Rabenold, G. Rhodes, A. Spacie, T. Sutton, R. Swihart, **K. Gibson**, P. Waser, and H. Weeks, GAAN Program, \$625,254, 2003-2005. "Fellowship program in multidisciplinary ecology."

K. Gibson, S. Weller, and J. Masiunas, IPM-NC Region, \$98,000, April 2003 through August 2006. "Seedbank dynamics in alternative vegetable cropping systems."

S. G. Hallett, University of Nebraska-Lincoln, \$103,623, July 1, 2003 through June 30, 2006. "Microbial processes underlying the natural weed suppressiveness of soils."

G. S. Johal, USDA, NRI, \$235,000, July 1, 2003 through June 30, 2006. "Harnessing *S-hsl*, a naturally occurring suppressor of a maize lesion mimic mutation."

W. G. Johnson, J. Faghihi, V. R. Ferris, and **A. Westphal**, Indiana Soybean Board, \$11,504, April 1, 2003 through March 31, 2004. "The impact of winter weed management and crop rotation on winter annual weeds and soybean cyst nematode."

R. Edwards, **W. G. Johnson**, S. Weller, and C. Alexander, Monsanto, \$176,400, 2003-2005. "Investigations of *Diabrotica* and weed species in stacked-trait BtCRW: Glyphosate-resistant hybrids."

C. A. Lembi, Army Engineer Research and Development Center, \$37,542, May 1, 2003 through April 30, 2005. "Aquatic plant management research."

C. A. Lembi, Army Engineer Research and Development Center, \$42,200, March 18, 2003 through December 30, 2003. "Effects of military smokes and obscurants on aquatic plants."

R. E. Pruitt, Purdue Research Foundation, \$13,263, March 14, 2003 through January 12, 2004. "Improving herbicide efficacy through better understanding of plant cuticle structure and function."

R. E. Pruitt and **J. A. Banks**, National Science Foundation, \$15,000, June 1, 2003 through May 31, 2004. "Conference: Gametophytics, evolution development function."

R. E. Pruitt and **S. J. Lolle**, National Science Foundation, \$660,000, August 1, 2003 through July 31, 2006. "Analysis of a novel mechanism of genetic reversion in Arabidopsis."

C. Y. Oseto and **K. K. Rane**, Indiana Department of Natural Resources, \$79,702, January 1, 2003 through December 31, 2003. "FY2003 Indiana caps program core project."

G. Shaner, National Wheat and Barley Scab Initiative, \$97,661, 2003-2004. "Epidemiology and management of fusarium head blight of wheat by chemical and genetic means."

A. Westphal, Southern Illinois University, \$14,000, March 1, 2003 through February 28, 2004. "The application of new technologies to the control of sudden death syndrome."

J.-R. Xu, BARD, \$310,000, 2003-2006. "Comparative studies in two hemibiotrophic pathogens *Magnaporthe grisea* and *Colletotrichum*."

J.-R. Xu, USDA, NRICGP, \$180,000, September 1, 2003 through August 31, 2006. "Identifying virulence factors in the wheat scab fungus *Fusarium graminearum*."

J.-R. Xu, North Carolina State University, \$19,300, June 1, 2003 through September 30, 2003. "Whole genome analysis of the rice blast pathosystem."

J.-R. Xu, Cooperative State Research Service, \$180,000, September 1, 2003 through August 31, 2006. "Molecular mechanisms of fungal pathogenesis in the wheat scab fungus *Fusarium graminearum*."



In 2003

the Department of Botany and Plant Pathology ranked "1st" in three of the four quarters in sponsored program dollars in the School of Agriculture.

2003
Grants

Excellence Through Diversity

Gower, S. A., M. M. Loux, J. Cardina, S. K. Harrison, P. L. Sprankle, N. J. Probst, **T. Bauman**, W. Bugg, W. S. Curran, R. S. Currie, R. G. Harvey, **W. G. Johnson**, J. J. Kells, M. D. K. Owen, D. L. Regehr, C. H. Slack, M. Spaur, C. L. Sprague, M. VanGesel, B. G. Young. Effect of postemergence glyphosate application timing on weed control and grain yield in glyphosate-resistant corn: Results of a 2-year multistate study. *Weed Technology* 4:821-828.

Buckeridge, M. S., C. Rayon, B. R. Urbano-wicz, M. A. S. Tiné, **N. C. Carpita**. The

mixed-linkage (1→3), (1→4)-β-glucans of grasses. *Cereal Chemistry* 81:115-127.

Zhu, Y., J. Nam, **N. C. Carpita**, A. G. Matthyse, and S. B. Gelvin. 2003. Agrobacterium-mediated root transformation is inhibited by mutation of an Arabidopsis cellulose synthase-like gene. *Plant Physiology* 133:1000-1010.

Madson, M., C. Dunand, R. Verma, G. F. Vanzin, J. Caplan, X. Li, D. A. Shoue, **N. C. Carpita**, and W.-D. Reiter. 2003. *Xyloglu-can galactosyltransferase*, a plant enzyme in cell wall biogenesis homologous to animal exostosins. *Plant Cell* 15:1662-1670.

Dong, J., C. Chen, and **Z. Chen**. 2003. Expression profiles of the WRKY gene superfamily from Arabidopsis during plant defense responses. *Plant Molecular Biology* 51:21-37.

Yu, D., **B. Fan**, S. MacFarlane, and **Z. Chen**. 2003. Involvement of an inducible Arabidopsis RNA-dependent RNA polymerase in plant antiviral defense. *Plant-Microbe Interaction* 16:206-216.

Chen, K., L. Du, and **Z. Chen**. 2003. Sensitization of defense response and activation of programmed cell death by a pathogen-induced receptor-like protein kinase from Arabidopsis. *Plant Molecular Biology* 53:61-74.

Lapaire, C. L., and **L. D. Dunkle**. 2003. Microcycle conidiation in *Cercospora zae-maydis*. *Phytopathology* 93:193-199.

Shim, W.-B., and **L. D. Dunkle**. 2003. CZK3, a MAP kinase kinase kinase homolog in *Cercospora zae-maydis*, regulates cercosporin biosynthesis, fungal development, and pathogenesis. *Molecular Plant-Microbe Interaction* 16:760-768.

Harmon, P. F., **L. D. Dunkle**, and **R. Latin**. 2003. A rapid PCR-based method for the detection of *Magnaporthe oryzae* from infected perennial rye grass. *Plant Disease* 87:1072-1076.

Gibson, K. D., A. J. Fischer, T. C. Foin and J. E. Hill. 2003. Crop traits related to weed suppression in water-seeded rice. *Weed Science* 51:87-93.

Goodwin, S. B., C. Waalwijk, G. H. J. Kema, **J. R. Cavaletto**, and G. Zhang. 2003. Cloning and analysis of the mating-type idiomorphs from the barley pathogen *Septoria passerinii*. *Molecular Genetics and Genomics* 269:1-12.

Grünwald, N. J., **S. B. Goodwin**, M. G. Milgroom, and W. E. Fry. 2003. Analysis of genotypic diversity data for populations of microorganisms. *Phytopathology* 93:738-746.

Adhikari, T. B., J. M. Anderson, and **S. B. Goodwin**. 2003. Identification and molecular mapping of a gene in wheat conferring resistance to *Mycosphaerella graminicola*. *Phytopathology* 93:1158-1164.

Multani, D. S., S. P. Briggs, M. A. Chamberlin, J. J. Blakeslee, A. S. Murphy, and **G. S. Johal**. 2003. Loss of an MDR transporter in compact stalks of maize *br2* and sorghum *dw3* mutants. *Science* 302:81-84.

Dewell, R. A., **W. G. Johnson**, K. A. Nelson, J. D. Wait, and J. Li. 2003. Weed removal timings in no-till, double-crop, glyphosate-resistant soybeans grown on claypan soils. Online. *Crop Management* DOI:10.1094/CM-2003-1205-01-RS.

Sellers, B. A., R. J. Smeda, **W. G. Johnson**, J. A. Kendig and M. R. Ellersieck. 2003. Comparative growth of six *Amaranthus* species in Missouri. *Weed Science* 51:329-333.

Johnson, W. G., J. Li, and J. D. Wait. 2003. Johnsongrass control, regrowth, and total non-structural carbohydrates in rhizomes following postemergence herbicides used in herbicide-resistant corn. *Weed Technology* 17:36-41.

Hellwig, K. B., **W. G. Johnson**, and R. E. Massey. 2003. Weed management in no-tillage herbicide resistant corn (*Zea mays* L.). *Weed Technology* 17:239-248.

Sellers, B. A., R. J. Smeda, and **W. G. Johnson**. 2003. Influence of leaf angle on glufosinate efficacy on velvetleaf (*Abutilon theophrasti*). *Weed Technology* 17:302-306.

Donald, W. W., and **W. G. Johnson**. 2003. Interference effects of weed infested bands in or between crop rows on corn yield. *Weed Technology* 17:755-763.

In science,
no matter how
spectacular the results are,
the work is not complete
until the results are
published.

2003
Publications

Your Door to Discovery

Lin, C. H., R. N. Lerch, H. E. Garrett, **W. G. Johnson**, D. Jordan, and M. F. George. 2003. The effect of five forage species on transport and transformation of atrazine and isoxaflutole in lysimeter leachate. *Journal of Environmental Quality* 32:192-2000.

Harmon, P. F., and **R. Latin**. 2003. Gray leaf spot of perennial ryegrass. Online. *Plant Health Progress* DOI:10.1094/PHP-2003-12XX-01-DG.

Choi, J., B.-S. Kim, X. Zhao, and **L. S. Loesch-Fries**. 2003. The importance of alfalfa mosaic virus coat protein dimers in the initiation of replication. *Virology* 305:44-49.

Mengiste, T., X. Chen, J. Salmeron, and R. Dietrich. 2003. The BOTRYTIS SUSCEPTIBLE1 gene encodes an R2R3MYB transcription factor protein that is required for biotic and abiotic stress responses in *Arabidopsis*. *Plant Cell* 15:2551-2565.

Kolikowski, K. A., **J. L. Victor**, **T. Nussbaum Wagler**, **S. J. Lolle**, and **R. E. Pruitt**.

2003. Isolation and characterization of the *Arabidopsis* organ fusion gene HOTHEAD. *The Plant Journal* 35:501-511.

Pruitt, R. E., J. L. Bowman, and U. Grossniklaus. 2003. Plant genetics: A decade of integration. *Nature Genetics* 33:294-304.

Westphal, A., and J. R. Smart. 2003. Depth distribution of *Rotylenchulus reinformis* under different tillage and crop sequence systems. *Phytopathology* 93:1182-1189.

Flaherty, J., A. Pirttila, **C. P. Woloshuk**, and **B. Bluhm**. 2003. Pac1, a pH regulatory gene from *Fusarium verticillioides* necessary for growth and repression of fumonisin biosynthesis at alkaline pH. *Environmental Microbiology* 69:5222-5227.

Narasimhan, M. L., H. Lee, L. Damsz, N. K. Singh, J. I. Ibeas, T. K. Matsumoto, **C. P. Woloshuk**, and R. A. Bressan. 2003. Over expression of a cell wall glycoprotein in *Fusarium oxysporum* increases virulence and resistance to a plant PR-5 protein. *The Plant Journal* 36:390-400.

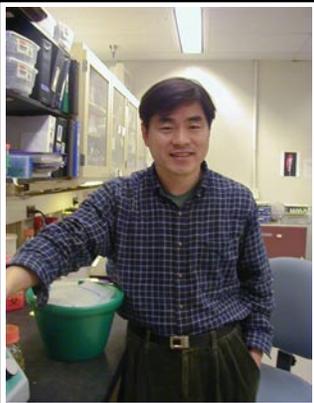
Trail, F., **J.-R. Xu**, P. San Miguel, R. G. Halgren, and H. C. Kistler. 2003. Analysis of expressed sequence tags from *Gibberella zeae* (anamorph *Fusarium graminearum*). *Fungal Genetics and Biology* 38:187-197.

Nishimura, M., **G. Park**, and **J.-R. Xu**, 2003. The G-beta subunit *MGB1* is involved in regulating multiple steps of infection-related morphogenesis in *Magnaporthe grisea*. *Molecular Microbiology* 50:231-243.

This journal cover is one of over 30 selected from work published from faculty, post-docs, and students from the Department of Botany and Plant Pathology in the last 40 years.



Excellence Through Diversity



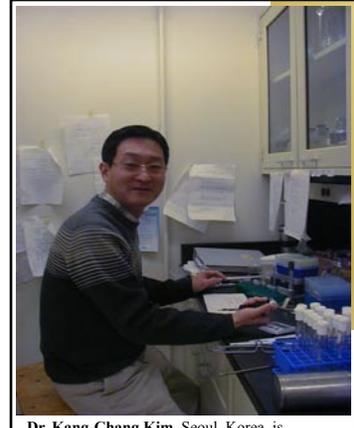
Dr. Kye-Yong Seong, Seoul, Korea, is working in the lab of Dr. Jin-Rong Xu conducting research experiments on the rice blast fungus *Magnaporthe grisea*.



Dr. Jeff Barnes, Fayetteville, Arkansas, is working with Dr. Bill Johnson to coordinate the effort to assess the distribution of glyphosate resistant horseweed in cropped and non-cropped areas in Indiana and to evaluate the biology, management, and fitness of this weed.



Dr. Danielle Ellis, Lafayette, Indiana, is working on the genetics of arsenic accumulation in *Pteris vittata* in the laboratory of Dr. Jody Banks.



Dr. Kang-Chang Kim, Seoul, Korea, is conducting research in the laboratory of Dr. Zhixiang Chen on the molecular basis of plant disease resistance.

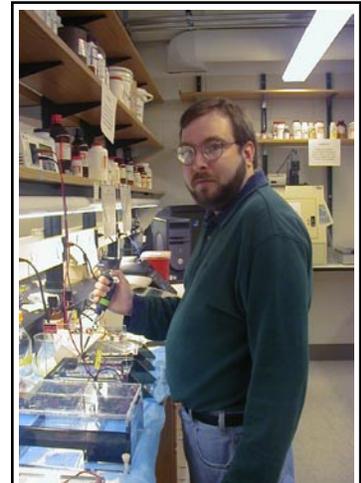
The primary purpose of the postdoctoral experience is to broaden the individuals research skills and knowledge that are important for contributions to science and satisfying professional development.



Dr. Anoop Sindhu, Rohtak, India, is working with Dr. Guri Johal and conducting research on how race 1 of *Cochliobolus carbonum*, a fungal pathogen responsible for causing severe leaf blight and ear rot disease in maize, succeeds in establishing a successful relationship with its host.



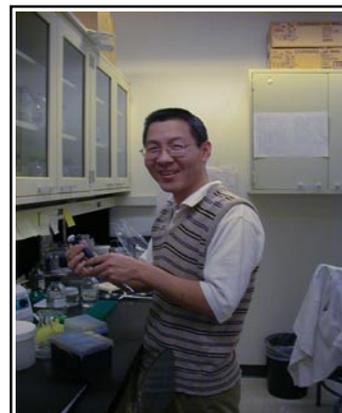
Dr. Gyungsoon Park, Seoul, Korea is conducting research in the laboratory of Dr. Jin-Rong Xu on signal transduction pathways regulating appressorium formation and infectious growth in the rice blast fungus *Magnaporthe grisea*.



Dr. Bryan Penning, Lafayette, Indiana, is working in the laboratory of Dr. Guri Johal to characterize further the maize suppressor of cell death using the QTL mapping approach.



Dr. Lijuan Xing, Beijing, China, is working with Dr. Andreas Westphal conducting research on the ecology and biocontrol of sudden death syndrome in soybeans.



Dr. Denghui Xing, Nanjing, China, is conducting genetic, molecular, and biochemical experiments on pathogen-induced plant transcription factors on their mechanisms of regulation during the activation of plant defense responses in the laboratory of Dr. Zhixiang Chen.



Dr. Kenneth Bruno, Lafayette, Indiana, is involved in the research of molecular basis of plant disease resistance in the laboratory of Dr. Jin-Rong Xu.

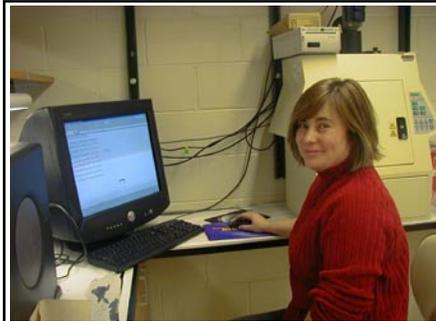


Dr. Weidong Yong, Shaanxi, China, is working with Dr. Nick Carpita developing alternative methods for the genetic transformation of wheat.

Your Door to Discovery



Dr. Joe Flaherty, Raleigh, North Carolina, is working in the laboratory of Dr. Larry Dunkle to conduct research on light-repressed genes involved in sporulation in the fungal pathogen, *Exserohilum turcicum*.



Dr. Paola Veronese, Rome, Italy, is working in the lab of Dr. Tesfaye Mengiste conducting research to investigate the molecular basis of host resistance to fungal pathogens using the *Arabidopsis-Botrytis* interaction as a model.



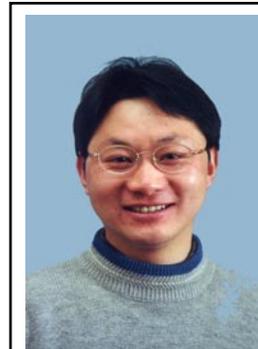
Dr. Reece Dewell, Lawrenceville, New Jersey, is working in the lab of Dr. Bill Johnson conducting basic and applied research projects investigating the distribution, biology, and management of herbicide resistant weeds, and interactions between winter annual weeds and soybean cyst nematode.



Dr. Sribash Roy, New Delhi, India, is conducting research in the laboratory of Dr. Zhixiang Chen on the molecular basis of plant disease resistance.

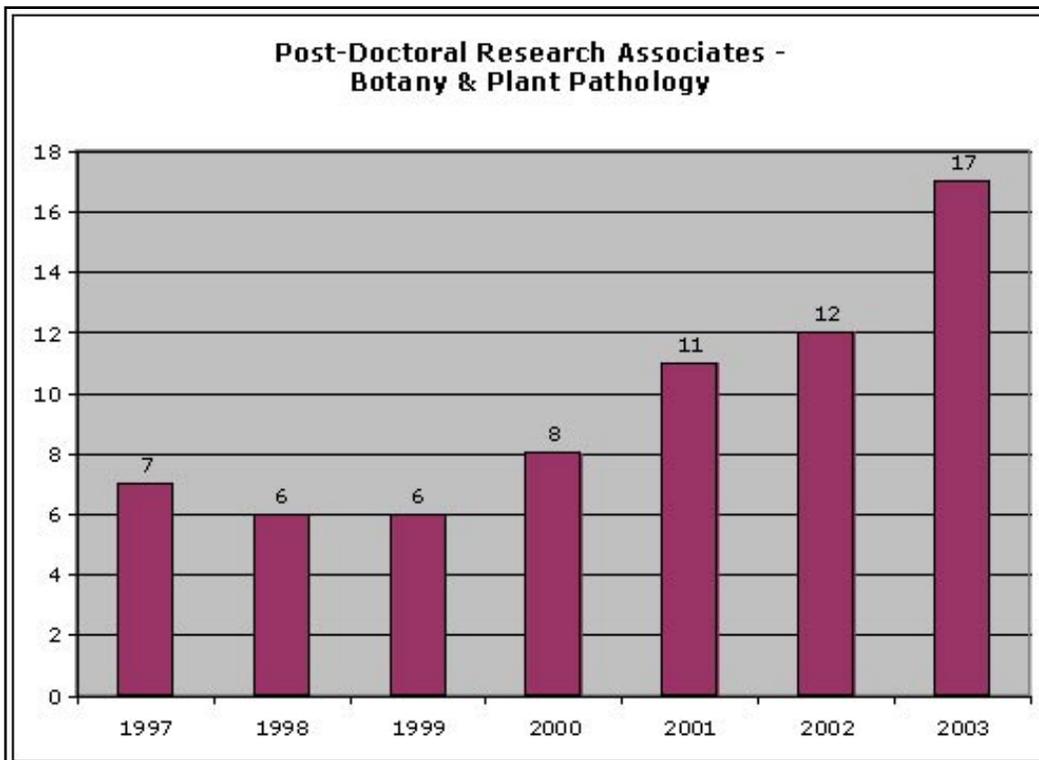


Dr. Tika Adhikari, Los Banos, Philippines, is working in the laboratory of Dr. Steve Goodwin where he is focusing on finding molecular markers that are linked to resistance genes and studying the patterns of gene expression during the response of wheat to the fungal pathogen *Mycosphaerella graminicola*.



Dr. Chaoyang Xue, Zhejiang, China, is conducting research in the laboratory of Dr. Jin-Rong Xu on the rice blast fungus *Magnaporthe grisea*.

Post-docs are playing an increasingly vital role in research programs at universities across the country.



Excellence Through Diversity

Not only was the staff of the Plant and Pest Diagnostic Laboratory called upon to diagnosis 1872 samples this past year, **Gail Ruhl**, Interim Director of the P & PDL and senior plant disease diagnostician and **Dr. Karen Rane**, plant disease diagnostician, found themselves involved in many additional projects in 2003.

As a result of the 9-11 terrorist attacks on the World Trade Centers and the Pentagon, Congress created a new U.S. Department of Homeland Security. This, in turn, raised the level of concern for bioterrorism with plant pathogens directed at the U.S. Food

and Agricultural System and increased responsibilities of both state and university personnel in detecting and responding to new disease outbreaks. USDA/CSREES funded a program to develop a National Plant Diagnostic Network (NPDN), in which the land grant plant diagnostic laboratories comprise the backbone of the system. **Ms. Gail Ruhl** and **Dr. Karen Rane**, as P&PDL plant disease diagnosticians, and **Mr. Bob Mitchell**, as departmental IT coordinator, have been working with their counterparts at other land grant institutions within the North Central Plant Diagnostic Network (NCPDN) region to prepare against plant diseases and pests that might pose a threat to American agriculture. Part of this response includes providing training protocols for threat pathogens for the "first detectors." First detectors typically include individuals such as county extension educators, growers, crop consultants, and regulatory field inspectors. Once trained, first detectors will be on the lookout for unusual or new diseases to submit to the diagnostic laboratories. This will greatly reduce the time between introduction and detection and subsequently, remediation.

In light of this national initiative, Gail provided a training session to ANR educators on Homeland Security and the threat of bioterrorist attacks on agriculture. The training included information on the NPDN, the NCPDN, soybean rust, and how the newly formed National Plant Diagnostic Network will help provide real-time diagnostics and training opportunities through the Plant Diagnostic Information Service (PDIS).

Gail and Karen also provided plant disease diagnostic training at a variety of Purdue University sponsored events and educational programs including Garden Day, Turf and Ornamentals Workshops, Pesticide Applicator Training, and Certified Crop Advisor Training.

The P & PDL is used by the Indiana Department of Natural Resources (IDNR) for plant problem diagnosis. Thus, the expertise provided by Ruhl and Rane, as disease diagnosticians, is an integral part of the regulatory function performed by the IDNR. The IDNR and the Purdue Plant and Pest Diagnostic Laboratory worked together during the outbreak of *Ralstonia solanacearum* Race 3 Biovar 2 (RsR3B2) in geraniums in February

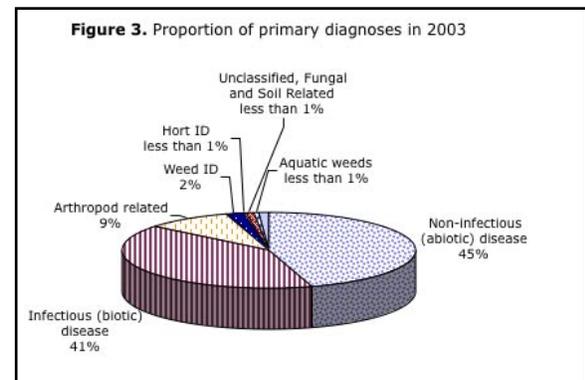
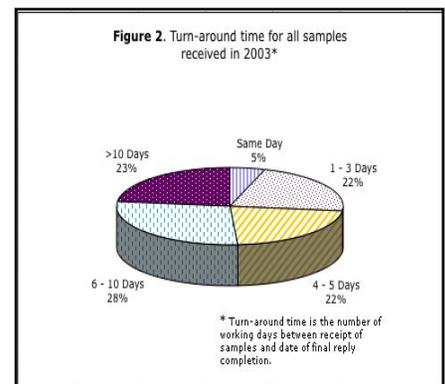
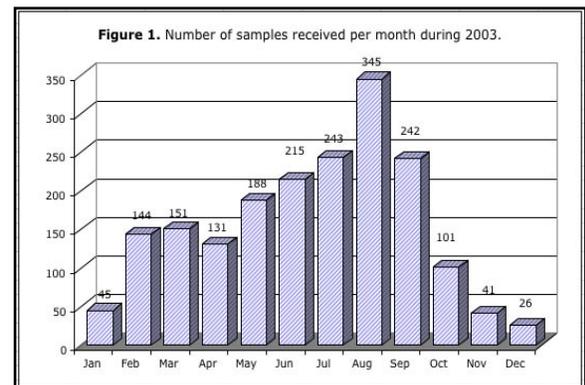
2003. This pathogen causes southern bacterial wilt in potatoes and other solanaceous crops, and is listed on USDA Agricultural Bioterrorism Act of 2002 Select Agents and Toxins List. The pathogen was unintentionally introduced to numerous greenhouses in the U.S. in 2003 during the routine and normal importation of geranium cuttings from Kenya by a U.S. company. (For more information, see article on page 15)

The P & PDL also provided disease diagnosis on 180 fields for the IDNR Phytosanitary Certification Program as well as disease diagnosis on 68 corn field samples for entry into the National Agricultural Plant Information System (NAPIS) database.

Plant and Pest Diagnostic Laboratory



2003 A Year in Review



Your Door to Discovery

A visitor who braves the drive to SWPAC today will find things a bit different than they were a year ago. The facilities have been expanded by a new addition.

Last spring there was a just big hole in the ground and some plans on paper. Now, however, the big hole has given way to concrete, lumber, and drywall. Plans have given way to a meeting room, offices, and a laboratory. When the dust finally settles, the Southwest Purdue Ag Center will have three additional offices, a new plant nutrition laboratory, and a state of the art meeting facility.

This spring, workers began construction on the addition. First a basement was dug and foundations were poured. Next prefabricated buildings arrived on two trailers. On the big day, a super sized crane lowered the two halves of the prefabricated building onto the foundations (Figure 1). Along with their normal farm operation duties, SWPAC Superintendent Meb Lang and Assistant Dennis Nowaskie have been kept busy painting, building containment walls, burying drainage tiles, and a myriad of other tasks to help make the addition a reality.

The new addition is already home to three Purdue staff members: Southwest District Director Janet Allen, New Ventures Ag Educator Jerry Nelson, and Secretary Barb Joiner. These staff members moved from their location in nearby Bicknell to this centralized location in Vincennes.

Purdue staff present at the center, as well as around the state, will benefit from the new facilities. Dr. Tom Jordan, Assistant Director of the Cooperative Extension Service, is one of the Purdue University administrators pleased

with the progress: "The addition to the Research/Extension Building will allow us to double our laboratory space, and also double our meeting facilities." Once completed, the meeting rooms will be "fully equipped with computer and video conferencing equipment to allow distance delivery of educational programs from the Purdue campus or any other distance site across the nation. The expanded meeting area will allow classes of up to 75 plus people to learn in a modern classroom environment."

Dr. Chris Gunter, Horticulturist, has a special interest in the new laboratory facility (Figure 2). Chris says he hopes to "study the mineral nutrition of vegetable crops" and "develop and demonstrate best management fertility practices in an area close to the vegetable producers it is designed to help."

How close is SWPAC to the vegetable producers it is designed to help? SWPAC is located in Knox County, the center of a vital muskmelon and watermelon growing area. In most years, Indiana is 5th in muskmelon production and 7th in watermelon production nationally. The SWPAC location in Vincennes also is not far from a concentration of processing tomato growers.

The addition of the plant nutrition laboratory to the facilities at SWPAC increases the work the research and extension specialists are able to accomplish. The existing laboratory facilities allow Vegetable Disease Specialist, Dr. Dan Egel, to diagnose fungal and bacterial diseases and support related plant pathology research.

An insect rearing room at SWPAC is being used by Entomology Specialist Frankie Lam to address questions master gardeners and school children often have about insects. Greenhouse facilities exist to support all three specialists in order to produce transplants for summer field research as well as off-season greenhouse research.

All of these facilities and specialists are a only 3-hour drive from the West Lafayette campus. And with the completion of the new meeting room, the Southwest Purdue Ag Center is only a click away.



Figure 2. Dr. Chris Gunter stands beside a new flame absorption unit. When fully installed, Dr. Gunter will use the unit to study the fertility and nutrition of vegetable crops under Indiana conditions.



Figure 1. Workers lower the second half of a prefabricated addition onto concrete foundations. The basement will become a state of art meeting room with video streaming capabilities, while the prefabricated first floor already has offices, storage and a plant nutrition laboratory.

A New Addition
for the Southwest
Purdue Agriculture
Center in 2003



Excellence Through Diversity



Your Door to Discovery



Excellence Through Diversity



Sarah Kessans in Dublin, Ireland during her study abroad in the Summer of 2003.

Undergraduates Enjoy Study Abroad Experiences

In today's global environment, the most successful leaders of tomorrow will be those with international experience, those who are comfortable crossing national and cultural boundaries. Study abroad provides an unparalleled opportunity for such preparation.

In fall 2002 and summer 2003, four of our undergraduate students participated in the Study Abroad Program.

Fall 2002

David Doll - Canterbury, New Zealand, Lincoln University

Summer 2003

Sarah Kessans - Ireland, University of Dublin

Christian O'Brien - Japan, Iwate University

Reuben Pillsbury - England, Oxford University



David Doll biking through New Zealand in the Fall of 2002 during his semester abroad.

Paul Pecknold Participates in Maymester Organic Agriculture Study Abroad Trip

A total of 15 students, representing seven departments were accompanied by Professors **Paul Pecknold**, Al York, George VanScoyoc, and John Graveel to England, Wales, and the Netherlands to study organic and conventional farming. The course involved visiting various sites in those countries and attending lectures from local educators, researchers, and farmers. Farm visits and interactions with the farmers was a fascinating and integral part of the trip. Both students and professors agreed they gained a better insight into the current state of organic farming in Europe and had a great time doing it. Professor Pecknold states, "The trip was a blast; the students were a real class act and made it a fun trip with a lot of great memories...just please don't talk about calcareous soils or compost heaps, I've seen enough of both for awhile."

Steve Hallett Enjoys Spring Break in Honduras

In March 2003, Steve Hallett traveled to Honduras with a group of students from the School of Agriculture to visit Zamorano College. This program was sponsored by the International Programs in Agriculture Office. The visit was very successful and a great international experience for all the students and instructors.

The goal of these experiences is to stimulate further interest in international activities for these students. Dr. Hallett developed a pictorial/musical record of the trip on CD from the students' photographs.

Maymester Course in Costa Rica Being Developed

Over half (more than 3 billion) of the world's population lives in the tropics and subtropics, which are home to an astonishingly rich flora and fauna as well as ecosystems that range from deserts to rainforests. Farmers in the tropics face challenges brought about by rapid population growth, competition on a global marketplace, shifting consumer demands, an increasing emphasis on environmental stewardship, as well as many insect, weed, and disease problems. **Dr. Kevin Gibson**, a member of our department along with faculty from the departments of Entomology and Forestry and Natural Resources will teach a Maymester course in 2004 designed to expose Purdue students to approaches being taken by Costa Rican farmers to meet these difficult and sometimes conflicting challenges. Specific course objectives include:

- Exposing students to life in Costa Rica,
- Cultivating an appreciation for tropical eco-systems and agriculture,
- Promoting an awareness of connections between farmers, consumers, and foreign policy in the U.S. and farming systems in the tropics,
- Seeing how biodiversity issues are integrated into tropical agriculture,
- Developing an appreciation for the goals and practices of sustainable agriculture in the tropics relative to the U.S.

For more information, see the course web page at <http://www.btny.purdue.edu/courses>.

Spending my summer as an intern at University College, Dublin was both an amazing research experience and cultural experience.

-Sarah Kessans

In lieu of the negative happenings around the world that have impacted our lives, it is becoming ever more apparent that we, as a global community, need to further educate ourselves about cultural differences. Studying abroad provides an opportunity to learn a lifetime of lessons within a few months.

-David Doll

International Spotlights

Your Door to Discovery



Former Graduate Student is a Peace Corps Volunteer

Sam Phillips
M.S. 1998

Major Professor: Dr. Tom Bauman

Sam Phillips arrived in Cochabamba, Bolivia in early February 2003 to begin his three months of Peace Corps training. He moved in with a very nice Bolivian family. The father is a dairy farmer with ten cows on his land, where he grows alfalfa and corn to feed the cows. During Sam's second week with the family he witnessed the birth of a new calf. This happened at two in the morning, but was worth getting up to see. There is a mountain range just behind the house and when Sam would get up in the morning and shave (outside), he would have a wonderful view. The water only works from 6:00am to 6:00pm and most nights Sam didn't return until 7:00pm from training. He learned to appreciate the small things and enjoy the amazing country at the same time.

During the training period it was Sam's goal to improve his Spanish and learn a lot about Bolivian culture and the techniques he would need to do his job as an agricultural extension agent at the end of the training period. During this time his host family tried to teach him the local language and, at the same time, Sam tried to teach them English, which proved to be very humorous.

Sam was sworn in as an official Peace Corps Volunteer on April 25, 2003, and his two years of service began. His Spanish had improved to the level of a low advanced speaker, which was his goal from the start. He then traveled to Tarija by plane, but had to travel by burro to his new host family's home.

Living in a different culture certainly takes some adjusting. Sam worked for Monsanto before joining the Peace Corps and was very safety conscious and punctual, but days in Bolivia didn't always go as planned. One day he was scheduled to meet a bee specialist to transplant bees to the bee hives at 9:00am, and Sam waited 2 1/2 hours for the specialist to arrive. Then they took a long lunch and only had time to transplant one bee hive before it got dark. Also, if you don't dance well in a Latin culture, you are in trouble. Sam said one



Sam Phillips (center) with his host family during his three month training period in Cochabamba, Bolivia.

evening he went to a disco with a couple of new friends and his dancing ability resembled Peter Boyle as the monster in "Young Frankenstein" or Steve Martin in "The Jerk." Sam honestly admits he just doesn't have any rhythm.

In October of 2003, Bolivia experienced political unrest and violence. The violence wasn't directed at U.S. citizens, but at the Bolivian military. The Peace



Moving Sam's belongings to his new host family. This bridge is the only way there during the rainy season when the river is high.

Corps always monitors situations and makes sure the volunteers aren't in harms way. The situation ended quickly and peacefully and life returned to normal.

Sam learned to appreciate the beautiful culture in Bolivia, even though Bolivia is the poorest country in South America.



This was a lunch on the day they had their first harvest of honey from the bee hive project. The clothes and hair style of the women are very typical of the rural areas of the department of Tarija. The women's hats are a different style in each department (similar to a state) of Bolivia.

Even with some daily frustrations and cultural differences, Sam says this was the most amazing experience he has ever had. For anyone who may have ever thought about the Peace Corps as a possible adventure, Sam advises you to seriously consider it. It is definitely not just for recent college graduates, in fact, Sam was 37 when he joined. The Peace Corps highly values life and work experience. The opportunity to live and work in a different culture is amazing, sometimes frustrating and difficult, but always interesting. Also learning a second language, in Sam's case, Spanish, is a valuable asset.

"It is an American ideal to believe that one can advance their life by working hard. But it is a Peace Corps Volunteer who will actually give their time to help others improve their lives."



International Spotlights

Excellence Through Diversity



L to R: Dr. Ray and Carol Martyn, Dr. Ralph and Heather Nicholson, Terri Lathe, Ralph's niece, and Dr. Cheryl McRae, a former post-doc in the Nicholson lab at the ISPP banquet in New Zealand.

Plant Pathologists Travel to the Land Down Under

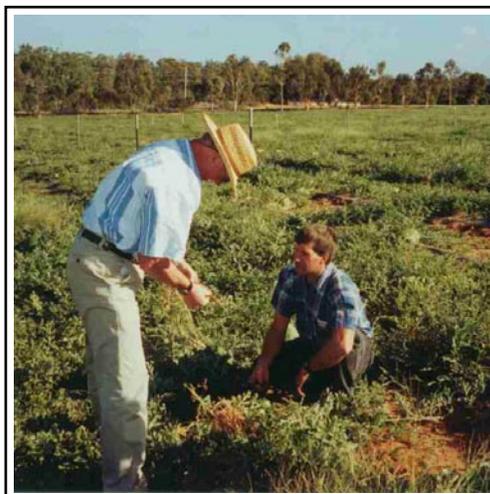
The 8th International Congress of Plant Pathology was held in Christchurch, New Zealand from February 2 through February 8, 2003. Four of our plant pathologists attended this meeting: department head, **Dr. Ray Martyn**, **Dr. Ralph Nicholson**, **Dr. Steve Goodwin**, and **Dr. Andreas Westphal**.

This event attracted almost 1,300 delegates from over 70 countries from around the world. There were 150 invited speakers at keynote and concurrent sessions and 1,200 offered poster papers, some of which were presented at 29 poster discussion sessions. There were 22 evening sessions including a public forum on global food security, with invited speakers from the Philippines, Malaysia,

China, India, and the United Kingdom. The Congress offered a busy and exciting range of presentations, which covered all disciplines within the field of plant pathology.

Dr. Goodwin and Dr. Westphal each presented posters oral presentations. Dr. Goodwin presented two posters titled, "Phylogenetic analyses of *Magnaporthe grisea* reveal probable rapid speciation and placement relative to the order Diaporthales" and "Transcriptional profiling of defense responses in wheat." Dr. Westphal presented a poster titled, "Evidence for biological nature of mature watermelon vine decline." Dr. Westphal also traveled to Australia and visited with Graham Stirling, a member of the Department of Primary Industries, which is a state research institution. While there, Andreas gave a presentation about his Purdue research program.

Prior to attending the ISPP Congress in New Zealand, Dr. Martyn spent a week in Australia where he presented an invited seminar "Late season vine decline diseases of melons" at the University of Sydney and consulted with melon farmers in various areas of New South Wales.



Ray Martyn consults with a melon farmers in NSW, Australia

Your Door to Discovery

Thank You For Your Support in 2003!

Dr. Rita Barr
Dr. and Mrs. Glenn Bergeson
Mr. and Mrs. Ronald J. Brinker
Dr. Ronald Coolbaugh
Mr. Gregory R. Davidson
Mr. and Mrs. DeWeese
Dr. Steven A. Fennimore
Dr. Layton and Dr. Hahn
Mr. Larry W. Hansel
Mr. Richard D. Hart
Dr. and Mrs. Robert E. Holm
Dr. and Mrs. John Hunter
Dr. W. Wynn John
Dr. Lowell B. Johnson
Dr. Lloyd A. Jones
Dr. Tom Jordan
Mr. and Mrs. Jeffrey K. Joslin
Mr. Daniel Kluchinski
Mr. Matthew J. Kraus
Mr. and Mrs. Matthew A. Langdon
Mr. and Mrs. Michael K. Lehe
Dr. and Mrs. Jeffrey Lehman
Dr. and Mrs. Raymond Martyn
Dr. Philip D. Maxfield
Mr. James L. Moon
Dr. Ralph Nicholson
Dr. and Mrs. Philip L. Orwick
Dr. and Mrs. Panaccione
Dr. Jianying Peng
Ms. Elizabeth Ann Popowski
Dr. Karen K. Rane
Dr. and Mrs. Howard Rines
Drs. Merrill Ross and Carole Lembi
Dr. Ronald E. Schroll
Dr. and Mrs. Gregory Shaner
Dr. and Mrs. Paul Smith, Jr.
Mr. John A. Stromberger
Dr. Samuel S. Thompson, Jr.
Dr. Sue A. Tolin
Mr. Mark A. Vizvary
Mr. and Mrs. Daniel White
Dr. Fred Whitford
Dr. and Mrs. Gerald Wiley
Mr. and Mrs. Steven Wolf
Dr. and Mrs. Charles Woloshuk
Dr. Zhixiang Chen
Dr. Cathy Wu
Mrs. Victoria L. Zismann

Donations totaled almost \$12,000.00

Botany and Plant Pathology Can Use Your Help!

The University and all academic departments depend on support from alumni, friends, and industry. This assistance is essential to Purdue's and Botany and Plant Pathology's success. Support from alumni and industry has helped contribute to the success of our faculty and students. How can you help?

1. **Volunteer your time** to speak to one of our BTNY Department classes. We are always looking for alumni to return to the classroom to share their experiences and insight into today's job market.
2. Do you own your own business or work for a company who is interested in our graduates? **Field trips to working facilities** are a great experience for our graduate and undergraduate student organizations.
3. Do you or your employer have equipment that could be used by the department? **Gifts of lab equipment** help defray teaching and research costs for the department.
4. **Make a financial gift** to the department. Every gift, no matter the size, helps the department support research, teaching, equipment, and scholarships for our students, faculty, and staff.

There are many opportunities for you to support the Department of Botany and Plant Pathology. If you are interested in helping out the department you can:

— contact Ray Martyn at (765) 494-4615 or Rmartyn@purdue.edu;

— or complete the tearout card in the middle of this publication.

We look forward to hearing from you!



We are investing in the future of our students and the scientific future of America's food and agricultural system.

Tomorrow's discoveries will be made by today's students, and with your help, we can ensure that many of those students will be Purdue Boilermakers.

Check out our website to see what our faculty, staff, and students are doing!

www.btny.purdue.edu

Excellence Through Diversity

Dr. M. Katherine Banks, Professor of Civil Engineering, Civil Engineering Department, Purdue University. "*Phytoremediation of organic contaminants*"

Dr. Dan Szymanski, Agronomy Department, Purdue University. "*Growth control mechanisms in plants*"

Dr. Charles Woloshuk, Botany and Plant Pathology Department, Purdue University. "*Regulation of fumonisin biosynthesis: The corn kernel holds the key*"

Dr. Ken Keegstra, Director of the DOE-Plant Research Laboratory, Michigan State University. "*Biosynthesis of plant cell wall polysaccharides: Using new tools to study an old problem*"

Dr. Shou-Wei Ding, Department of Plant Pathology, University of California-Riverside. "*RNA silencing - An adaptive antiviral defense in plants and animals*"

Dr. Albert Fischer, Weed Science Program, Department of Vegetable Crops, University of California-Davis. "*Strategic components of weed management in rice*"

Dr. Isgouhi Kaloshian, College of Natural and Agricultural Sciences, University of California. "*Nematode and aphid resistance in tomato: Signal transduction and resistance mechanism*"

Mr. Burt Bluhm, Department of Botany and Plant Pathology, Purdue University. "*Differential detection of mycotoxigenic groups of fusarium by real-time PCR*" (M.S. Research Seminar)

Ms. Lauren Schellenberger, Department of Botany and Plant Pathology, Purdue University. "*Sensitivity of isolates of Sclerotinia homoeocarpa to three fungicides*" (M.S. Research Seminar)

Mr. Stephen Jordan, Department of Botany and Plant Pathology, Purdue University. "*Subcellular localization of Arabidopsis cytochrome P450 reductases*" (M.S. Research Seminar)

Ms. Iris Perez Almeida, Department of Botany and Plant Pathology, Purdue University. "*The biological functions of β -galactosidases in the plant cell wall*" (Ph.D. Research Seminar)

Mr. Philip Harmon, Department of Botany and Plant Pathology, Purdue University. "*Winter survival and rapid PCR-based detection of Magnaporthe oryzae, the gray leaf spot pathogen of perennial ryegrass*" (Ph.D. Research Seminar)

Ms. Keri San Miguel, Department of Botany and Plant Pathology, Purdue University. "*Effects of modifications of the N-terminal amino acid sequence on chloroplast-localized cytochromes P450*" (M.S. Research Seminar)

Dr. Yulin Jia, USDA/ARS, Dale Bumpers National Rice Research Center, Stuttgart, Arkansas. "*Development of molecular strategies to control the rice blast and sheath blight diseases*"

Dr. Scott Jackson, Department of Agronomy, Purdue University. "*Comparative genomics in the genus Oryza (rice)*"

Dr. Gurdev Khush, IRRI, Plant Breeding, Davis, CA. "*Green revolution: The way forward*"

Dr. Ken Reardon, Department of Chemical Engineering, Colorado State University. "*Plant-microbe interactions for enhanced bioremediation of PAH-contaminated soils*"

Dr. Jean Greenberg, Department of Molecular Genetics and Cell Biology, University of Chicago. "*Host-pathogen interactions in the Arabidopsis-Pseudomonas model system*"

Dr. Dean Riechers, Department of Crop Sciences, University of Illinois. "*Utilizing the diploid wheat Triticum tauschii as a model grass to understand function and regulation of safener-inducible glutathione S-Transferase proteins in the Coleoptile*"

Ms. Jennifer Victor, Department of Botany and Plant Pathology, Purdue University. "*Unusual genetic behavior at the HOTHEAD locus of Arabidopsis*" (M.S. Research Seminar)

Dr. Guri Johal, Department of Botany and Plant Pathology, Purdue University. "*A novel dwarfing trait in plants with gargantuan potential*"

Mr. Joe Flaherty, Department of Botany and Plant Pathology, Purdue University. "*Identification and characterization of regulatory genes involved in fumonisin biosynthesis during colonization of the maize kernel by Fusarium verticillioides*" (Ph.D. Research Seminar)

Dr. Charles Bacon, USDA, ARS, Toxicology and Mycotoxin Research Unit, Russell Research Center, "*Biological control: Bacterial endophytes, Fusarium verticillioides, and fusaric acid*"

Dr. Gary Payne, Department of Plant Pathology, North Carolina State University. "*Genetic regulation of aflatoxin biosynthesis*"

Mr. Michael VanOosten, Department of Botany and Plant Pathology, Purdue University. "*The expression profiling and activity assay of ARA hydroxylases in Arabidopsis thaliana*" (M.S. Research Seminar)

Dr. Bruce Hamaker, Department of Food Science, Purdue University, "*Starch structure and interactions related to digestibility and texture of foods*"

Mr. Brian Foss, Department of Botany and Plant Pathology, Purdue University. "*Influence of tillage on sudden death syndrome of soybeans*" (M.S. Research Seminar)

For the year 2003,

the department hosted 12

guest speakers from outside

of Purdue University, three

on-campus guests, two depart-

mental presentations, and 10

graduate student research

seminars for a total of 25

seminars.

2003
Seminar Series

Your Door to Discovery

Summer Research Program a Huge Success!

The department hosted five undergraduate students in the 2003 Summer Research Program and three students in the MARC/AIM Program. The goal of this program is to expose students to research with the some of the best faculty in the country and to pique their interest in pursuing a graduate degree, hopefully with Purdue University. The program was a great success. The students and faculty had a very rewarding, challenging, and successful summer.

The department would like to acknowledge the following people for aiding in the success of this year's program: Ron Coolbaugh for his direction and leadership; Muthu Balasubramaniam for being a wonderful friend and mentor to all of the students; Tonya Byrd for keeping the bookkeeping and paperwork coordinated; and the students and faculty who participated in this program. Below is the list of students and their faculty mentors:

Department Summer Research Program

- Erik Brockman**, Purdue University - Dr. Jin-Rong Xu
- Lindsay Enders**, Earlham College - Dr. Jin-Rong Xu
- Kenya Lemon**, Albany State University - Dr. Bob Pruitt and Dr. Susan Lolle
- Allison Stitsworth**, St. Olaf College - Dr. Mary Alice Webb
- Mary Elva Wilson**, Brigham Young University - Dr. Zhixiang Chen

MARC/AIM Program

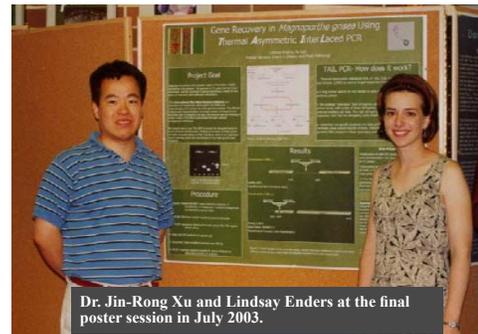
- LaTonya Mills**, Voorhees College - Dr. Charles Woloshuk
- Sulimar Morales**, University of Puerto Rico - Dr. Guri Johal and Dr. Tesfaye Mengiste
- Tracey Ross**, Alcorn State University - Dr. Zhixiang Chen



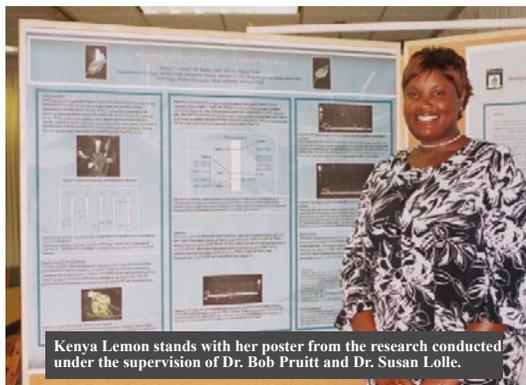
First day orientation included meeting with the head of the department, Dr. Ray Martyn. (L to R) Muthu Balasubramaniam, graduate student coordinator, Mary Elva Wilson, Kenya Lemon, Eric Brockman, Allison Stitsworth, Lindsay Enders, and Dr. Ray Martyn.



(F to B) Tracey Ross and Mary Elva Wilson conducting experiments in laboratory of Dr. Zhixiang Chen.



Dr. Jin-Rong Xu and Lindsay Enders at the final poster session in July 2003.



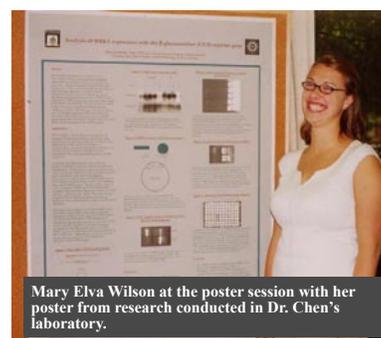
Kenya Lemon stands with her poster from the research conducted under the supervision of Dr. Bob Pruitt and Dr. Susan Lolle.



Allison Stitsworth's final poster of the research she conducted in the laboratory of Dr. Mary Alice Webb.



Mary Elva Wilson, Kenya Lemon, Ron Coolbaugh, Muthu Balasubramaniam, Allison Stitsworth, and Lindsay Enders pose together at the final poster session.



Mary Elva Wilson at the poster session with her poster from research conducted in Dr. Chen's laboratory.

Plant science is in the forefront of research and today's students will make tomorrow's discoveries. The undergraduate summer research internship program in the Department of Botany and Plant Pathology at Purdue University is designed for the serious undergraduate student interested in graduate school and who wishes to capture the excitement of research in the plant sciences.

Excellence Through Diversity



Matt Eckerle Named Top Male Senior at Purdue

The G.A. Ross Award honors the graduating man who best demonstrates high standards of academic achievement, evidence of outstanding leadership, strength of character, and overall contributions to the university.

Each spring, students are nominated by deans, department heads, school counseling directors, and staff in the Office of the Dean of Students for the G.A. Ross Award. A university-wide committee of students selects the winner.

The 2003 winner of this prestigious award was **Matt Eckerle**. Matt finished his B.S. degree in May 2003 with a double major in plant science (Department of Botany and Plant Pathology) and machine systems (Department of Ag and Biological Engineering). His overall GPA of 3.7 coupled with special research projects in plant molecular biology and machine systems qualified him for Honors recognition in both programs. In addition, he spent a semester in New Zealand as part of the university's study abroad program. He also had two summer internships with Dow AgroSciences, one in bioinformatics and one in computer programming.

For his outstanding academic accomplishments, Matt has been recognized in various ways, including numerous scholarships. These included the School of Agriculture Freshman Award of Excellence, the School of Agriculture Sophomore Scholarship, the Rex Hall Scholarship, the Elsie Gruel Scholarship, the Agricultural Research Fund Scholarship, an Honors Research Grant, the Crank Horticultural Scholarship, and the Department of Botany and Plant Pathology Freshman, Sophomore, Junior, and Senior Scholarships. Matt is truly a gifted and hard working young man.

Throughout his high school and Purdue days, Matt has been involved in numerous extracurricular activities. In 2003, he finished his term as President of the Purdue Triathlon Club and was also an Ironman finisher. He was a member of the Solar Car Racing Team for several years, the Purdue Cycling Team, the Purdue Outing Club, and the Purdue Ski Club. He is a member of the American Society of Mechanical Engineers and served as an officer in the Botany Option Club. He also gave his time generously to his community serving as an adult advisor to the Parkside Elementary Odyssey of the Mind Program. He served as a volunteer at Camp Meneto, a Methodist youth camp in Brown County and as a Purdue Resident Hall Counselor in Shreve Hall.



L to R - Dr. Dale Whitaker, Dr. Carole Lembi, Matt Eckerle, Dr. Ron Coolbaugh, Ms. Betsy Smithka, and Dr. Ray Martyn at the departmental presentation of the G. A. Ross Award.

In late March 2003, Matt was asked by his academic advisor, Dr. Ron Coolbaugh, to accompany him to Dr. Ray Martyn's office with no explanation as to why. Matt thought he had done something wrong, especially when he entered the office and Dr. Dale Whittaker, Director of Academic Programs in the School of Agriculture, Dr. Carole Lembi, Academic Advisor in Department of Botany and Plant Pathology, and Ms. Betsy Smithka, Associate Dean of Students were all waiting on him. Matt was clearly surprised when Ms. Smithka presented him with a letter stating that he was the 2003 recipient of the G. A. Ross Award. "I have a hard time believing, that out of so many graduates, I'm deserving of this award," Eckerle says. The Ross Award is about doing a lot of things right.

In fall of 2003, Matt began his graduate career at the University of California at Berkeley to pursue his master's and doctoral degrees in biomedical engineering. Matt's goal is to become a biological engineer in the strictest sense of the term, so that he will not have to make a choice between his passions for biology and engineering.

Matt Eckerle is the seventh agricultural student in the past nine years to have his name engraved on the obelisk on the Purdue Mall as a recipient of the G.A. Ross Award.



Your Door to Discovery

Fredrick Beckman, Air Force ROTC
 Hebron, Indiana
 Major: Plant Biology

Janelle Donahue
 Evansville, Indiana
 Major: Plant Biology

Lauren Greig
 Evansville, Indiana
 Major: Environmental Plant Studies

Diana LaRiva, Varsity Softball
 Tustin, California
 Major: Environmental Plant Studies

Jason Taranowski, Varsity Football
 Wheaton, Illinois
 Major: Plant Biology

Jennifer Dudash
 Kokomo, Indiana
 Major: Environmental Plant Studies

Sarah Kessans, Varsity Crew
Ag Research Fund Scholarship Recipient
 Salem, Indiana
 Major: Plant Biology



Denis Lowe
 Munster, Indiana
 Major: Crop Protection



Reuben Pillsbury
 Indianapolis, Indiana
 Major: Environmental Plant Studies

Antonio Troche
 Fremont, Indiana
 Major: Environmental Plant Studies

Elizabeth Vucolo
 Flemington, New Jersey
 Major: Environmental Plant Studies

David Doll, Grand Prix Driver
Ag Research Fund Scholarship Recipient
 Batesville, Indiana
 Major: Plant Biology

Sarah Knapke
Ag Research Fund Scholarship Recipient
 Rockville, Indiana
 Major: Plant Biology

Michaela Permann (Study Abroad)
 Austria
 Major: Plant Biology

Franz Stabauer (Study Abroad)
 Austria
 Major: Plant Biology

2003-04 Undergraduate Students

The number of undergraduate students in our department may be small, but they are a gifted, disciplined, and hard working group of students.



Excellence Through Diversity



2003 Graduates



Purdue University
is one of the
highest ranked
institutions in the
country.

A degree from
Purdue
presents unlimited
opportunities.

Academics

May 2003

Matt Eckerle

Bachelor of Science
Double Major: Plant Science and
Machine Systems
*Matt is continuing his academic career
at the University of California at
Berkeley to pursue his M.S. and Ph.D.
in biomedical engineering.*

August 2003

Mauricio Antunes

Doctor of Philosophy
Major Professor: Nick Carpita
Thesis Title: "Characterizing a benzoic
acid inducible promoter system from
the fungus *Aspergillus niger*"
*Mauricio is working as a post-
doctoral researcher at Colorado State
University.*

Burton Bluhm

Master of Science
Major Professor: Charles Woloshuk
Thesis Title: "Differential detection
of mycotoxigenic groups of *Fusarium*
species by traditional and real-time
PCR" *Burt is continuing his studies
towards a Ph.D. under the direction
of Dr. Charles Woloshuk here in the
Department of Botany and Plant
Pathology.*

Lauren Brownback Schellenberger

Master of Science
Major Professor: Rick Latin
Thesis Title: "Sensitivity of isolates
of *Sclerotinia homoeocarpa* to three
fungicides" *Lauren is continuing
her studies towards a Ph.D. under
the direction of Dr. Rick Latin here in
the Department of Botany and Plant
Pathology.*

December 2003

Kristen Roseberry

Bachelor of Science
Major: Plant Science

Margaret Olek Esler

Master of Science/Non-Thesis
Major Professor: Ray Martyn
*Margaret is pursuing a law degree at
the Indiana University School of Law in
Indianapolis, Indiana.*

December 2003

Joseph Flaherty

Doctor of Philosophy
Major Professor: Charles Woloshuk
Thesis Title: "Identification and
characterization of regulatory genes
involved in Fumonisin biosynthesis by
Fusarium verticillioides"
*Joe is working as a post-doctoral
researcher with USDA here at Purdue
in the laboratory of Dr. Larry Dunkle.*

Philip Harmon

Doctor of Philosophy
Major Professor: Rick Latin
Thesis Title: "Winter survival and rapid
PCR-based detection of *Magnaporthe
oryzae*, the gray leaf spot pathogen on
perennial ryegrass"
*Phil is an Assistant Professor of Plant
Pathology at the University of Florida,
Gainesville.*

Stephen Jordan

Master of Science
Major Professor: Ron Coolbaugh
Thesis Title: "Subcellular localization
of the cytochrome P450 reductases in
Arabidopsis thaliana"
*Stephen is continuing his studies
towards a Ph.D. in plant pathology at
Michigan State University.*

Keri Colvin San Miguel

Master of Science
Major Professor: Ron Coolbaugh
Thesis Title: "Effects of modification
of the N-terminal amino acid sequence
on chloroplast-localized cytochrome
P450"
*Keri is continuing her studies towards
a Ph.D. in plant physiology at
Washington State University.*

Jennifer Victor

Master of Science
Major Professor: Bob Pruitt
Thesis Title: "Unusual genetic
behavior observed at the *HOTHEAD*
locus of *Arabidopsis*"
*Jennifer is working as a technician for
Dr. Paula Pijut in the Hardwood Tree
Improvement and Regeneration Center
at Purdue University.*

Your Door to Discovery

Synan Abu Qamar (Ph.D.)
Amman, Jordan

Mitchell Alix (Ph.D.)
Valparaiso, Indiana

Muthu Balasubramaniam (Ph.D.)
Chennai, India

Burton Bluhm (Ph.D.)
Starksville, Mississippi

Cameron Cooley (M.S.)
Normandy, Tennessee

J. Earl Creech (Ph.D.)
Lewiston, Utah

Vince Davis (M.S.)
Macomb, Illinois

Braham Dhillon (Ph.D.)
Luhhiana, India

Richard Dirks (Ph.D.)
West Lafayette, Indiana

Chad Dyer (M.S.)
Freedom, Indiana

Brian Foss (M.S.)
Morris, Illinois

John Gum (M.S.)
North Judson, Indiana

Luke Gumaelius (Ph.D.)
Salem, Indiana

David Hillger (Ph.D.)
Peebles, Ohio

Amber Hopf (Ph.D.)
Petersburg, Indiana

Amr Ibrahim (Ph.D.)
Giza, Egypt

Yangseon Kim (Ph.D.)
Suwon, South Korea

Valerie Kinney (Ph.D.)
Kildeer, Illinois

Preekamol Klanrit (Ph.D.)
Mueng Udonthani, Thailand

Ryan Lee (Ph.D.)
Bedford, Indiana

Lei Li (Ph.D.)
Shanghai, China

Zhenghua Luo (Ph.D.)
Guangzhou, China

Glenn Nice (Ph.D.)
Winnipeg, Manitoba, Canada

Eric Ott (M.S.)
Prairie Du Sac, Wisconsin

Iris Perez Almeida (Ph.D.)
S Antonio De Los Altos, Venezuela

Holly Ruess (M.S.)
Owosso, Michigan

Lauren Schellenberger (Ph.D.)
Ashland, Illinois

David Smith (M.S.)
Bremen, Indiana

Milos Tanurdzic (Ph.D.)
Novi Sad, Yugoslavia

Ian Thompson (Ph.D.)
Lytle Creek, California

Michael VanOosten (M.S.)
Fort Collins, Colorado

Janani Varadarajan (Ph.D.)
Chennai, India

Jeremy Weber (M.S.)
Brookville, Indiana

Kathryn Wilkinson (Ph.D.)
South Lyon, Michigan

Hugh Young (Ph.D.)
Bellefonte, Pennsylvania

Xinhua Zhao (Ph.D.)
Zhejiang, China

Zuyu Zheng (Ph.D.)
Beijing, China



2003-04 Graduate Students

We currently have
37 graduate students seeking
advanced degrees in our
department.

Where are they from:

Indiana - nine students
Other U.S. states - 13 students
International - 15 students

States and International Countries Represented

California, Colorado, Illinois,
Indiana, Michigan, Mississippi,
Ohio, Tennessee, Utah, Wisconsin,
Canada, China, Egypt, India,
Jordan, South Korea, Thailand,
Venezuela, and Yugoslavia

Excellence Through Diversity



Student Chosen to Present Research at APS Melhus Symposium

Dr. Joseph Flaherty, a former Ph.D. student under the direction of Dr. Charles Woloshuk, was chosen to present his thesis research at the Melhus Symposium in Charlotte, NC at the annual American Phytopathological Society (APS) Meetings in August 2003. Joe was one of five students from across the nation selected as a Melhus Symposium speaker. His presentation was titled "Identification and subsequent characterization of regulatory genes involved in fumonisin biosynthesis during colonization of the maize kernel by *F. verticillioides*."

Joe received a monetary award of \$600 to help offset expenses while attending the annual meetings.

Joe was born and raised in North Carolina where he completed his undergraduate degree in zoology at North Carolina State University in 1993. As an undergraduate at NCSU, he began working for Professor Gary Payne in the Department of Plant Pathology and it was under his direction that Joe completed an M.S. degree based on the regulation of aflatoxin biosynthesis by *Aspergillus flavus*. After two years working in the laboratories of Dr. Jeffrey Jones and Brent Harbargh at the University of Florida, Joe came to Purdue University to pursue his doctoral degree. His dissertation research focused on elucidating regulatory mechanisms that govern fumonisin biosynthesis during maize kernel colonization by *Fusarium verticillioides*.

Joe was awarded his Ph.D. degree in December 2003 commencement exercises at Purdue. He is currently a post-doctoral researcher in the USDA laboratory of Dr. Larry Dunkle here at Purdue.

Dr. Joseph Flaherty

B.S. – North Carolina State University

M.S. – North Carolina State University

Ph.D. – Purdue University



Being chosen as a Melhus Speaker shows recognition for outstanding research in plant pathology.

Outstanding Teaching Assistant Selected for 2003

Muthukumar Balasubramaniam, affectionately known as "Muthu," was selected as the Department of Botany and Plant Pathology's Outstanding Teaching Assistant for 2003.



Muthu has been a teaching assistant for four consecutive semesters. Two semesters in BTNY 210, Introduction to Plant Science and two semesters in BTNY 301, Introductory Plant Pathology, while working towards his Ph.D. under the direction of Dr. Sue Loesch-Fries.

On Thursday, April 17th, 2003, Muthu and sixty-one fellow honorees were recognized at the annual banquet held in the Purdue Memorial Union. Each received an engraved plaque in recognition of their excellence in

Bluhm Receives APS Travel Award

Burt Bluhm, a graduate student under the direction of Dr. Charles Woloshuk was awarded the Gustaaf A. and Ineke C. M. de Zoeten Student Travel Award, one of 24 such named travel awards, to attend the Annual APS Meetings in Charlotte, North Carolina in July 2003. Burt presented a poster titled, "Multiplex real-time PCR detection of fusmonisin-producing and trichothecene-producing groups of *Fusarium* species."

Dr. Gus de Zoeten had a highly productive career at the University of Wisconsin doing research on plant viruses. In 1989, he accepted the position of chair of the Department of Botany and Plant Pathology at Michigan State University until he retired in 2000. Currently Dr. de Zoeten resides in East Lansing, Michigan, and is a Professor Emeritus both at the University of Wisconsin-Madison, and at Michigan State University.

Your Door to Discovery

Graduate Student Receives Recognition in Sigma Xi Research Poster Competition

In February 2003, **Kathryn “Katie” Wilkinson** participated in the Sigma Xi Graduate Student Poster



Competition here at Purdue University. Katie entered her research poster titled “*Biology and Control of Mat-Forming Cyanobacteria with Bacterium SG-3*” in the Life Sciences division. Due to the large number of entries in the Life Sciences category, four posters were recognized. Two first place awards were given, as well as two honorable mentions. Katie received a first honorable mention. Katie, along with her advisor, Dr. Carole Lembi and department head, Dr. Ray Martyn, attended an awards banquet on April 1, 2003 where Katie was presented her award. This is a great honor and recognizes the high quality of her research and the leadership of her mentor, Dr. Carole Lembi.

Wilkinson Receives Award at Aquatic Plant Management Society Meetings

In July 2003, **Katie Wilkinson** participated in a graduate student oral competition at the Aquatic Plant Management Society Meetings. Three students were presented the “Outstanding Presentation” Award, and Katie was one of them. The title of her talk was “Sensitivity of mat-forming cyanobacteria to a potential biological control agent, bacterium SG-3.”

Weed Science Teams Very Successful at North Central Regional Meetings

The graduate and undergraduate weed science teams were very successful at the North Central Regional Meetings in Champaign, Illinois in July 2003. The graduate student team of **Vince Davis, Earl Creech, Eric Ott, and David Smith** received second place honors. **Eric Ott**, Kevin Stier, and **Chad Dyer** competed individually as undergraduates with **Eric** and Kevin taking 1st and 3rd place, respectively. **Vince Davis** tied for 1st place in the graduate student unknown herbicide identification contest.

Congratulations to these students and to the weed science faculty and staff of Dr. Bill Johnson, Dr. Kevin Gibson, Dr. Steve Hallett, Dr. Tom Bauman, and Glenn Nice for mentoring and helping prepare the team.

Students Inducted into Gamma Sigma Delta Honor Society

At the 32nd Annual Recognition and Initiation Program of the Purdue Chapter of Gamma Sigma Delta, seven of our graduate students were inducted into the honor society. Gamma Sigma Delta recognizes academic



L to R - Ray Martyn, Lauren Schellenberger, Richard Dirks, Michael VanOosten, Stephen Jordan, and Ryan Lee.

achievement and accomplishments of students, faculty, and alumni. The department is pleased that the following students accepted membership into this prestigious society: **Burton Bluhm, Richard Dirks, Joseph Flaherty, Stephen Jordan, Ryan Lee, Michael VanOosten, and Lauren Schellenberger**. We offer our congratulations to these students and wish them continued success.

Student Receives First Place for Poster at BCPC International Congress

In November 2003, **David Smith**, a M.S. student under the direction of Dr. Steve



Hallett, attended the BCPC International Congress-Crop Science & Technology where his poster titled “Compatibility of the candidate bioherbicide *Microsphaeropsis amaranthi* with chemical herbicides and adjuvants in tank mixture” received first place in the graduate student contest.

The president of the BCPC, Hugh Oliver-Bellasis, presented Dave a book, “The Pesticide Manual” and a cash award for his first place poster presentation. This year’s event was held in Glasgow, United Kingdom.

Excellence Through Diversity



Dr. Ray Martyn reads the plaque as he makes the presentation to Burt Bluhm as the 2003 Outstanding M.S. Student in the Department of Botany and Plant Pathology.

The outstanding graduate student awards were once again presented at the Annual Graduate Student and Post-Doctoral Poster Social in November 2003. Students are nominated by their major professors, and the awards committee reviews and selects the recipients.

The outstanding M.S. student for 2003 was awarded to **Burt Bluhm**. Burt completed his M.S. degree in August of 2003. During his master's program Burt's thesis research focused on developing PCR methodologies for detecting mycotoxigenic *Fusarium* species. In the course of his research, he developed both traditional and real-time PCR protocols for detecting fumonisin and trichothecene-producing strains of *Fusarium* in grain crops. His protocol now makes it possible to analyze up to 906 grain samples in only a few hours. Because of his expertise in PCR, he has been sought out by other students in our department and the Department of Food Science for assistance, and he readily assists others in the technique.

From his master's work, Burt published two senior-authored manuscripts in the *Journal of Food Protection* and is a co-author on a third paper in the *Journal of Applied and Environmental Microbiology*.

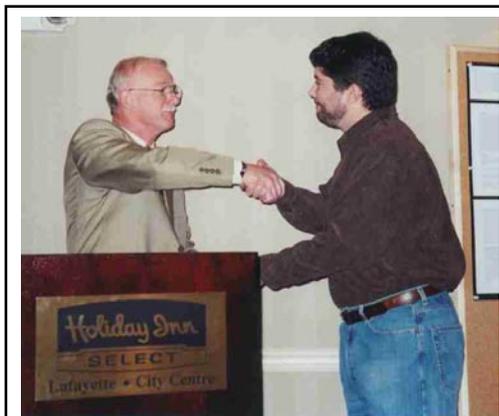
Burt was an Andrews Fellow for one year here at Purdue, a member of Gamma Sigma Delta Honor Society, he has served as an ad hoc reviewer for the journal *Mycologia*, and he received the Gustaaf A. and Ineke C. M. de Zoeten APS Travel Award to attend the 2003 APS meetings. He has also served as a APS Foundation volunteer and has presented five poster and oral talks at both APS and ASPB. He also has been an active member of the department Graduate Student Organization and participates in all department functions, socials, and activities.

Burt received an engraved plaque, a cash award of \$200 and his name has been engraved on a departmental plaque. Burt is continuing on for his Ph.D. with Dr. Charles Woloshuk.

The recipient of the 2003 Outstanding Ph.D. Student was **Joe Flaherty**. Joe enrolled in our department as a Ph.D. student in 2000 when he began his work with Dr. Charles Woloshuk. Joe completed his degree in December of 2003 with a cumulative GPA of 3.6. He is currently working in the laboratory of Dr. Larry Dunkle as a post-doctoral researcher.

Joe's dissertation research focused on the genetic regulation of the biosynthesis of the mycotoxin, fumonisin, in the fungus *F. verticillioides* while growing on corn kernels. Joe has uncovered the reason that endosperm tissue in corn kernels supports higher fumonisin production than germ tissue - the fungus causes a reduction in the pH of tissue. He has subsequently used molecular techniques to disrupt the PAC1 gene in *Fusarium*, which is in a class of genes that regulate pH-expressed genes. Joe's work has shown that PAC1 is essential for growth under alkaline conditions and is involved in the repression of fumonisin production at high pH. Joe also characterized the relationship between the gene ZFR1, putative zinc-finger DNA binding domain protein similar to several fungal transcription factors, and another regulatory gene, FCC1. This could be a downstream event that completes the circuit for fumonisin biosynthesis.

Upon graduation, Joe already had three refereed journal manuscripts published from his dissertation and a fourth in the works. In addition, he has six other refereed journal articles from his previous work at North Carolina (where he received his B.S. and M.S. degrees). He has presented his research at six different venues in the last three years, including the Melhus Symposium at this year's APS meetings in Charlotte. This is a special invited graduate student symposium, where participants are selected by a team of judges in a nationwide competition. In addition to the Melhus Award, Joe received the "Graduate Fellowship Study Award" from the Indiana Seed Industry in 2002. This award consisted of a \$2,000 cash award and is presented annually to the one student in the School of Agriculture whose research is most relevant to the seed industry. (continued on page 39)



Dr. Ray Martyn congratulates Joe Flaherty as he is named the 2003 Outstanding Ph.D. Student in the Department of Botany and Plant Pathology.

Your Door to Discovery



Burt Bluhm, Dr. Charles Woloshuk, and Joe Flaherty pose with their awards. Dr. Woloshuk is major professor and mentor to both students. Charles received the "Sustained Achievement in Excellence Award" following the student presentations.

Students receive departmental travel awards

The following students were awarded departmental travel grants in 2003. Each applicant receives \$250 to attend a regional, national, or international meeting where they presented either a poster or oral presentation of their research. These awards are made possible by gift money from alumni and friends.



Joe is a member of Sigma Xi, and has received several travel grants, including one from the Genetics Society of America to attend the 2001 Fungal Genetics Conference in Asilomar. He is a member of the Botany and Plant Pathology Graduate Programs Committee and the Distinguished Visitor and Guest Committee. He is also a member of the APS Biochemical and Molecular Biology Committee. He has served as a graduate teaching assistant in Dr. Jin-Rong Xu's Fungal Biology class and has been a huge supporter of all the departmental activities, socials, receptions, and graduate student recruitment activities.

Congratulations to both Burt and Joe and best wishes for their continued success.

Luke Gumaelius, Plant Gametophyte Conference, Ascona, Switzerland, June 8-14, 2003. "Utilizing seed-free gametophytes as models for arsenic tolerance and hyperaccumulation."

Milos Tanurdzic, Plant Gametophyte Conference, Ascona, Switzerland, June 8-14, 2003. "Targeting gene silencing in fern gametophytes."

Kathryn Wilkinson, Phycological Society of America, Glendon, Oregon, June 14-19, 2003. "Sensitivity of mat-forming cyanobacteria to a potential biological control agent, Bacterium SG-3."

Muthu Balasubramaniam, American Society of Virology, July 12-16, 2003, Davis, California. "Using epitope-tagged recombinant AMV proteins to study virus-host interactions."

Iris Perez Almeida, American Society of Plant Biology, Honolulu, Hawaii, July 25-30, 2003. "The function of plant β -galactosidases."

Burton Bluhm, American Phytopathological Society, August 9-13, 2003, Charlotte, North Carolina. "Multiplex real-time PCR detection of toxigenic *Fusarium SPP.*"

David Smith, The BCPC International Congress, November 10-12, 2003, Glasgow, United Kingdom. "Compatibility of the candidate bioherbicide *Microsphaeropsis amaranthi* with chemical herbicides and adjuvants in tank mixture."

Ph.D. student receives NSF-IGERT Fellowship



Ryan Lee, a Ph.D. student working under the direction of Dr. Robert Pruitt, was awarded the NSF-IGERT Fellowship from the National Science Foundation.

This fellowship allows Ryan to participate in the Purdue Innovation Realization Laboratory (IRL) Program. Only a select few receive this award through a competition that spans all departments in the Schools of Engineering, Agriculture, and Science. Ryan and Dr. Pruitt have been teamed up with faculty and Master of Business Administration students from the School of Management to engage in collaborative technical and market research concerning potential market applications of their research. This experience is to provide "learning by doing" in commercialization and behavioral aspects of project management and to prepare Ryan for varied entrepreneurial or intrapreneurial careers as a leader in the realization of innovation.

The department recognizes the value of graduate students attending and participating in scientific meetings.

Excellence Through Diversity

Graduate Student Organization Travels to St. Louis

The Botany and Plant Pathology graduate student organization traveled to St. Louis to celebrate the end of the semester on May 23, 2003. Many graduate students, as well as staff, attended. On Friday they were treated to a “behind the scenes” tour of the Monsanto facility, which gave them the opportunity to witness state of the art technology being used to solve important research questions in the plant sciences. Everyone was amazed by their facilities (especially the greenhouses) and they were assured that Monsanto loves to hire Purdue graduates!

Saturday they got up bright and early so they could spend the entire day at the Missouri Botanical Garden. Opened to the public in 1859, the Missouri Botanical Garden was established by Henry Shaw as a center for education, scientific research, and horticultural display. They spent the day wandering around the extensive gardens and the Climatron. They also learned about research conducted at the gardens and research conducted by botanists from the Missouri Botanical Garden that are stationed throughout the world. Sunday they visited the St. Louis Arch and the St. Louis Zoo. Everyone had a great time and the GSO is hoping to plan many more botany related trips!



www.btny.purdue.edu/GSO/

Botany and
Plant Pathology
Graduate Student
Organization

Current Officers

President:
Lauren Schellenberger

Vice President:
David Hillger

Treasurer:
Hugh Young



The group at the Arch (F to B) Joerg Boellman, Glenn Nice, Jessica Rosevear, Lauren Schellenberger, Holly Ruess, Carrie Lapaire, Katie Wilkinson, Hugh Young, Dave Hillger, and Phil Harmon.



Monsanto Visit - (L to R) Katie Wilkinson, Lauren Schellenberger, Phil Harmon, Carrie Lapaire, Monsanto Host, Holly Ruess, Joerg Boellman, Jessica Rosevear, Dave Hillger, and Hugh Young.



A tired group at the end of the day at the St. Louis Zoo - (L to R) Dave Hillger, Glenn Nice, Lauren Schellenberger, Joerg Boellman, Holly Ruess, Jessica Rosevear, and Hugh Young.

Your Door to Discovery

Alumni - Look where they are now!

Leland House (B.S. 1951/Plant Science, Ph.D. 1956) Executive Director and Program Leader of the Southern African Development Corporation Committee/Institute for the Semi-Arid Tropics CSADCC/ICRISAT.

Robert Romig (M.S. 1955, Ph.D. 1957/ Major Professor, Ralph Caldwell) Retired as Vice President of Research at Northrup King Company in 1992. Then started a family operated wheat breeding business for the U.S. and Argentina called Trigen Seed L.L.C. in 1993.

Sue Tolin (B.S. 1960/Agriculture) Professor of Plant Pathology, Virginia Polytechnic Institute and State University, and past president of the American Phytopathological Society

Larry Vanderhoef (Ph.D. 1969/Major Professor, Joe Key) Chancellor, University of California, Davis.

Robert Hartzler (B.S. 1978/Plant Protection) Professor of Agronomy, Iowa State University.

Francis DeGennaro (B.S. 1981) Manager, DuPont Biosolutions Strategy and New Business Development, E.I. duPont de Nemours Company.

Mark Atwater (M.S. 1984/Major Professor, Tom Bauman) President of Weed Control Unlimited, Inc., Donaldsonville, Georgia.

Daniel Ploper (Ph.D. 1987/Major Professor, Scott Abney) Director, Tucumán Research Station, Argentina.

Theodore Kroeger (B.S. 1991/Plant Science) Owner of Kroeger Greenhouses, Newburgh, Indiana.

Kathy Evans (M.S. 1992/Major Professor, Rick Latin) Senior research fellow and plant pathologist at the University of Tasmania, working in perennial horticulture crops (grapevines, stonefruit, pome fruit, and more).

Brent Tharp (B.S. 1993/Plant Science) Research Agronomist at Gold Harvest Seeds, Iowa.

Matthew Langdon (B.S. 1995/Crop Protection) Board of Directors of the Indiana Soybean Board.

Sally Yost (B.S. 1995/Crop Protection) U.S. Army Corp of Engineers, Vicksburg, Mississippi.

Jeffrey Rollins (Ph.D. 1996/Major Professor, Bob Hanau) Assistant Professor of Plant Pathology, University of Florida, Gainesville.

Victoria Upton-Zismann (B.S. 1996/Plant Science) Research Technician at The Institute for Genomic Research, Rockville, Maryland.

Chi-Kuang Wen (Ph.D. 1997/Major Professor, Jody Banks) Assistant Professor of Plant Physiology, Shanghai Institute, China

Andrew Larson (B.S. 1998/Plant Science) Biology teacher at Columbus North High School, Columbus, Indiana.

Joe Marencik (M.S. 1999/Major Professor, Carole Lembi) Aquatic Plant Specialist, Chicago Botanical Gardens, Chicago, Illinois.

Brian Bush (B.S. 1999/Plant Science) Recruiter for Pioneer Hybrids in Windfall, Indiana.

Philip Harmon (B.S. 1999/Plant Science, Ph.D. 2003/Major Professor, Rick Latin) Assistant Professor of Plant Pathology, University of Florida, Gainesville.

Won-Bo Shim (Ph.D. 2000/Major Professor, Charles Woloshuk) Assistant Professor of Plant Pathology, Texas A & M University, College Station, Texas.

Fidel Mendez (M.S. 2001/Major Professor, Charles Woloshuk) Microbiology Lab Manager, EMSL Analytical, Inc., Atlanta, Georgia.

Ahmad Fakhoury (Ph.D. 2001/Major Professor, Charles Woloshuk) Assistant Professor of Plant Pathology, Southern Illinois University, Carbondale, Illinois

Amelia Hammond-West (B.S. 2001/Plant Science) Currently working for the Hudson Institute in Indianapolis, Indiana.

Loree Johnston (M.S. 2002/Major Professor, Kevin Gibson) Agronomy Production Specialist, Agrilience, Fon du Lac, Wisconsin.

Carrie Lapaire Harmon (M.S. 2002/Major Professor, Larry Dunkle) Assistant-In Extension, Department of Plant Pathology, University of Florida, Gainesville, Florida.



The 2003 edition of Kaplan's "The Unofficial, Unbiased Insider's Guide to the 320 Most Interesting Colleges" listed Purdue as one of the nation's best in career services and best in value.

Purdue is recognized for its large-sized college with small-sized feel, and its standout majors in Agriculture and Engineering.



High School Students Receive Science Fair Awards

The 52nd Annual Lafayette Regional Science and Engineering Fair was held at the Stewart Center on campus in March 2004. The Department of Botany and Plant Pathology sponsors two awards in the Plant Sciences Senior Division each year.

Two freshman from West Lafayette Junior/Senior High School were selected as the recipients of our awards. **Monika Freiser** received first place honors for her project titled "The effect of pepper extracts on lettuce seed germination and root growth." **Matt Wan** was awarded second place for his project titled "The effect of UV light on chloroplast's ability to produce oxygen by means of photosynthesis." Each student received a monetary award, a departmental T-shirt, mouse pad, pen, and an engraved pocketknife.

Dr. Andreas Westphal, Outreach Coordinator, invited the students to the department and gave them both a tour of the greenhouse and his laboratory. Both of these students were extremely excited to be chosen for these awards and were very pleased to have their projects showcased at Spring Fest.

A special thanks goes out to our judges, **Dr. Joe Flaherty** and **Ms. Lauren Schellenberger** for volunteering their time to be judges at the science fair.

Purdue University, Eli Lilly, and Great Lakes Chemicals sponsor this annual competition for students from grades 5 through 12 in schools in Benton, Carroll, Cass, Clinton, Fountain, Jasper, Montgomery, Newton, Pulaski, Tippecanoe, Warren, and White counties.



Monika Freiser receives her first place prize of \$50 from Outreach Coordinator, Dr. Andreas Westphal.



Dr. Andreas Westphal presents Matt Wan with his second place prize of \$25.



The Department of Botany and Plant Pathology actively participates in many events throughout Indiana to promote plant science and plant disease education and increase awareness of the research that we do.

Your Door to Discovery



Spring Fest 2003 was a huge success. More than 30,000 visitors enjoyed the food and festivities on the Purdue campus this warm April weekend.

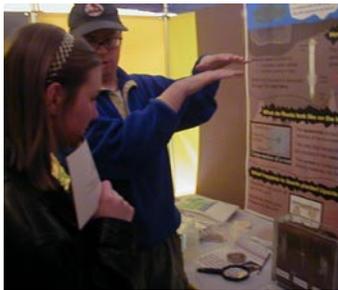
Outreach coordinator, **Dr. Andreas Westphal**, was responsible for planning and coordinating the Botany and Plant Pathology exhibits.

Visitors came from all around the area to see how botany, plant pathology, and weed science impact their everyday lives. Everyone enjoyed hands-on activities and learned about common plant parts you eat everyday, fungi, and other microbes that cause plant disease, genetic resistance, weeds in your lawn and garden, and much more.

Our department also drew large crowds to the ever popular face painting tables, free balloon give-away, and the graduate student food tent.

A new addition to Spring Fest this year were the posters from BTNY 390E: Plants and the Environment. This was a new course in spring 2003 and was taught by Dr. Carole Lembi. As one of their class projects, each student had to make a poster on a topic that involved plants and how they effect the environment. The posters were reviewed by judges from outside the class and four were selected to be showcased at Spring Fest. All students volunteered to man the exhibit and pass out stickers on Saturday and Sunday.

Many thanks to all the volunteers in our department who help make this popular event so successful each year.



Future Spring Fest Dates

April 16 & 17, 2005
April 8 & 9, 2006



Excellence Through Diversity

5th Annual TEXAS BARBECUE



2003 "Killer Dart" Champions!!

Vince Davis & Reece Dewell

Each fall Ray and Carol Martyn host the graduate students and post-docs for the "Annual Texas Barbecue."

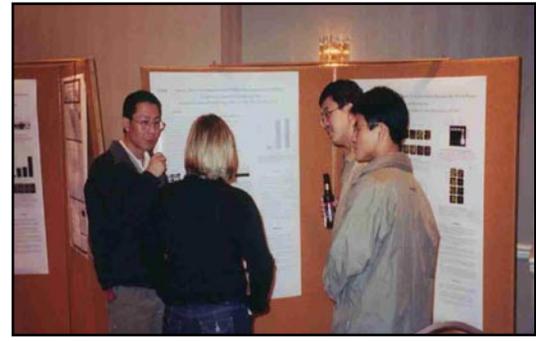
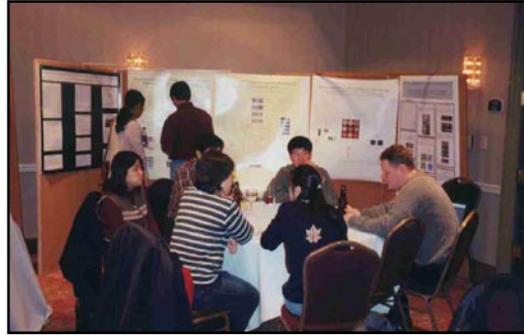
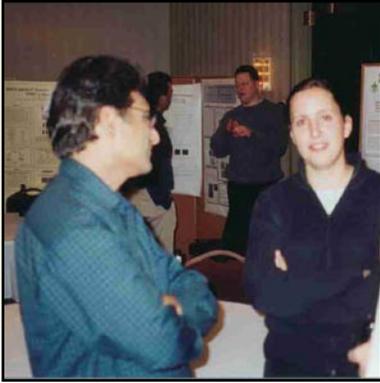


It's a Sunday afternoon of good food, fellowship, and, of course, the annual "Killer Dart" championships.



Departmental Activities

Your Door to Discovery



Annual Social/Poster Session Continues to Grow

The 4th Annual Social/Poster Session showcasing departmental research was once again a successful affair. This is an excellent event in which to share the on-going research being conducted by our students, post-docs, and professors in a relaxed atmosphere. The new Holiday Inn Select in downtown Lafayette hosted the popular event in one of their beautiful conference rooms.



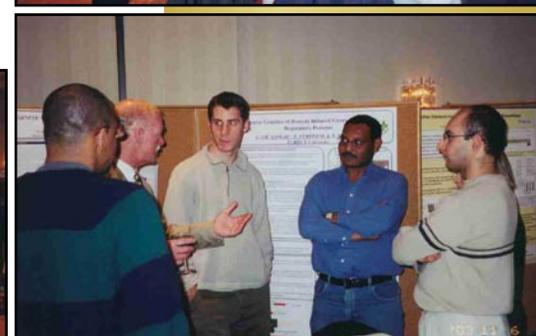
Thirty-nine posters were displayed for viewing as the evening began with drinks and hors d'oeuvres. Everyone mingled and discussed their posters and research.



The highlight of the evening was the announcement of the 2003 Outstanding Graduate Students Awards. This year's M.S. award was presented to **Burt Bluhm** and the Ph.D. award went to **Joe Flaherty** (see articles on page 36). Both of these students were mentored by Dr. Charles Woloshuk.



Dr. Ray Martyn also made a special presentation of a newly created faculty award. "The Sustained Achievement in Excellence Award" recognizes excellence in each of the Discovery, Learning, and Engagement missions of the University over a sustained period of time, approximately five years. The first recipient of this award was **Dr. Charles Woloshuk** (see article on page 14). As the name of the award implies, Charles strives for excellence in all areas and expects the same from his students. Burt and Joe are great examples of his teaching and mentoring excellence.



Excellence Through Diversity

4th Annual Botany and Plant Pathology Fall Picnic

On a wonderful October Saturday, the department held its annual fall picnic. Again this year, we all met at Murdock Park in Lafayette. The crowd enjoyed a nice carry-in lunch.

Unfortunately the annual softball game matching the graduate students against the faculty/staff team had to be postponed until next year. The playing field was not available for the annual rivalry. But, that didn't stop the diehard athletes in our department. They decided instead to have friendly game of basketball. After all, this is Indiana!

So it was the faculty men against the graduate student/post doc men. It was a fierce battle all afternoon long. Up and

down the court, made baskets, missed shots, rebounds, fouls (surely not intentional), and finally a winner was decided.

One would think that this group of young guys would have the advantage of youth on their side, but in the end it was the skill and finesse of the older, wiser faculty who gave the graduate students a whooping. The faculty may have had a slight height advantage with Bill Johnson at 6'4", whom managed to get 80% of the rebounds.

The question now is, does the graduate student/post doc team want a rematch in 2004 or will they insist on going back to the softball rivalry? Hey, Bill Johnson won't be here forever, he is set to retire in another 25 years or so. Nothing to worry about. The graduate student team better have a rematch soon, since they don't stay around as long as the faculty.

The following Monday, when you walked in the halls and passed one of the basketball players, a hint of sports creme seemed to be in the air and some seemed to be walking a little slower than usual.

Until the next picnic, the faculty men's basketball team has the bragging rights. See you all next fall!



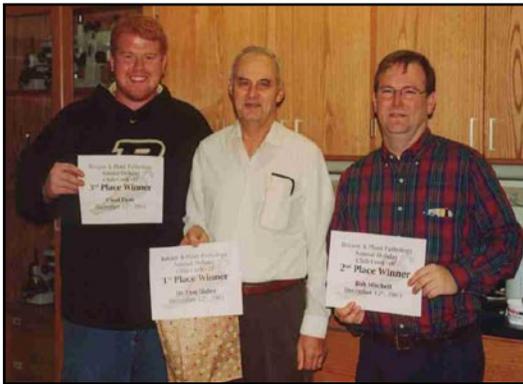
The Reigning Champions!! L to R: Charles Woloshuk, Kevin Gibson, Bill Johnson, Ray Martyn, and Steve Hallett.



Even in defeat, the ever pleasant graduate student/post doc team. L to R: Earl Creech, Vince Davis, Jeremy Weber, Dave Hillger, Jeff Barnes, and Dave Smith.

Win together,
lose together,
play together,
stay together!

Your Door to Discovery



Annual Chili Cook-Off and Holiday Party

The 2003 Chili Cook-Off is always a great gathering for the department. It's a festive time of the year and a time for us to gather as a group at the end of the fall semester.

After several years of competing, Don Huber placed 1st in our Chili Cook-Off. After placing third last year, Bob Mitchell received second place honors, and new graduate student, Chad Dyer took the third place award.

Again this year the department participated in the Boiler Network's Giving Heart Angel Tree Project. With the generous donations of faculty, staff, and students, we were able to provide gifts for 14 needy children in the community.



Matthew Eckerle

2003 G.A. Ross Award Recipient
Top Male Student at Purdue University



**G. A. ROSS
AWARD**
Presented to the
outstanding senior man.

- 1959 Weidon Annable
- 1960 William Leber
- 1961 Melvin Chlogioff
- 1962 Larry Beck
- 1963 Robert Sorenson
- 1964 Charles Armstrong
- 1965 J. B. Silvers
- 1966 Thomas Adams
- 1967 Nels Ackerson
- 1968 Stuart Stock
- 1969 Kenneth Schwab
- 1970 Tim Foley
- 1971 Francis Lueten
- 1972 Keith Casteel
- 1973 Ronald Johnson
- 1974 Robert Dittus
- 1975 Michael Wells
- 1976 Jay Townsend
- 1977 Mark Lubbers
- 1978 Terry Taylor
- 1979 Michael Jackson
- 1980 Kenn Dahl
- 1981 Ted McKinney
- 1982 Wayne Turner
- 1983 James Dodson
- 1984 John Wagner
- 1985 Gregory Boyer
- 1986 Steve Bishop
- 1987 Jack Cathoun
- 1988 F. Howard Halderman
- 1989 Timothy Douglas Jones
- 1990 Myron Devere White
- 1991 David A. Ehle
- 1992 Andrew John Miller
- 1993 Todd Jason Ripberger
- 1994 Jeffrey Scot Hackleman
- 1995 James Daniel Bishop
- 1996 Jamie David Thomton
- 1997 Travis Dale Park
- 1998 Andrew Benjamin Watson
- 1999 David Wayne Hcfty
- 2000 Ryan John Casteel
- 2001 Benjamin Joseph Hasse