

*The Kentucky
Agricultural Experiment Station*

118th

**Annual Report
2005**

UK
UNIVERSITY OF KENTUCKY
College of Agriculture

University of Kentucky • Lexington, Kentucky 40546

To His Excellency,
The Honorable Ernie Fletcher
Governor of Kentucky

I herewith submit the one hundred and eighteenth annual report of the Kentucky Agricultural Experiment Station for the period ending December 31, 2005. This is done in accordance with an act of Congress, approved March 2, 1887, titled "An act to establish Agricultural Experiment Stations, in connection with the Agricultural Colleges established in the several states under the provisions of an act approved July 2, 1862, and under the acts supplementary thereto," and also the act of Kentucky State Legislature, approved February 20, 1888, accepting the provisions of the act of Congress.

Very respectfully,

Nancy M. Cox

Nancy M. Cox, Associate Dean for Research
Director, Agricultural Experiment Station
Lexington, Kentucky
June 30, 2006

Contents

Purpose of the Kentucky Agricultural Experiment Station	7
Statewide Research.....	7
Livestock Disease Diagnostic Center	8
Regulatory Services.....	12
Kentucky Tobacco Research and Development Center	16
Tracy Farmer Center for the Environment.....	18
Kentucky Agricultural Experiment Station Projects	20
Collegewide Extramural Funding	22
Intellectual Property	27
Publications.....	29
Graduate Degrees.....	44
Financial Statement.....	46
Staff.....	47
Departments.....	48

Experiment Station Affiliated Departments and Centers

Agricultural Economics
Animal and Food Sciences
Biosystems and Agricultural Engineering
Community and Leadership Development
Entomology
Family Studies
Forestry
Horticulture
Kentucky Tobacco Research and Development Center
Landscape Architecture
Livestock Disease and Diagnostic Center
Merchandising, Apparel, and Textiles
Nutrition and Food Science
Plant and Soil Sciences (formerly Agronomy)
Plant Pathology
Regulatory Services
Robinson Station
Tracy Farmer Center for the Environment
USDA-Agricultural Research Service-Forage Animal Production Research Unit
Veterinary Science
West Kentucky Substation

Purpose of the Kentucky Agricultural Experiment Station

As a land-grant institution, the University of Kentucky is responsible for serving the people of the Commonwealth of Kentucky. The College of Agriculture, with its research, teaching, and extension activities, has developed a structure and organization to provide the mandated land-grant services in agriculture and related areas.

The Kentucky Agricultural Experiment Station has been providing research results to farmers and rural residents for more than 100 years. The continued advancement of Kentucky agriculture attests to the benefits of applying new knowledge and technology. Much of the research leading to increased quantity and improved quality of Kentucky's agricultural output was performed by the Experiment Station. College researchers also have successfully addressed problems of agribusiness, consumers, international trade, food processing, nutrition, community development, soil and water resources, and the environment.

Although much Experiment Station research has immediate application to agricultural and natural resource-related problems, scientists are also involved in basic research, generating new information to help solve present and potential problems. The ability of Kentucky producers to be competitive in domestic and world markets requires an expanded base of knowledge in emerging areas of research applicable to agriculture, food, and natural resources.

This Annual Report lists Experiment Station research projects and publications completed during 2005. A personnel list is also provided.

The research programs of the Kentucky Agricultural Experiment Station have benefited Kentucky's agriculture over the past century, and the results of present and future research will continue to serve Kentucky's primary industry.

Statewide Research

Research activities of the Kentucky Agricultural Experiment Station were conducted at Lexington, Princeton, Quicksand, and Owenton and in counties throughout the state in 2005.

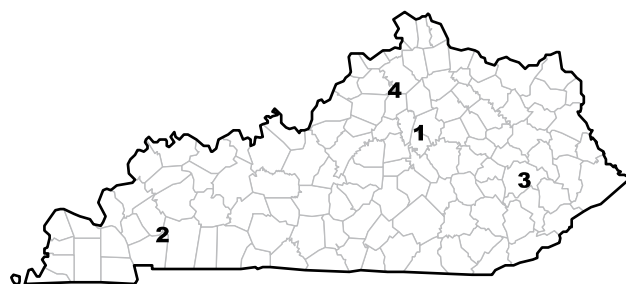
Efforts are constantly made to ensure that the research studies have application to the problems of all Kentucky farmers and other clientele groups. Locations of the experimental facilities provide conditions representative of most sections of the state.

Map Position 1

- **Campus**—Laboratories and specialized equipment for all research program areas.
- **Coldstream-Maine Chance-Spindletop Farms**—Beef and dairy cattle, poultry, horses, sheep, and swine; forages and grain crops, tobacco, and turf.
- **South Farm**—Fruits, vegetables, and ornamentals, including organic production.
- **UK Animal Research Center** (*Woodford County*)—This farm was purchased in late 1991 as a location for development of state-of-the-art food animal research programs.

Map Position 2

- At Princeton (*Caldwell County*), the **Research and Education Center** facilities and the **West Kentucky Substation Farm** are devoted to research on grain crops, beef cattle, swine, fruits and vegetables, forages, and tobacco.



Map Position 3

- At Quicksand (*Breathitt County*), the **Robinson Station** is the location of research on fruits and vegetables, ornamentals, forages, grain crops, tobacco, and wood utilization. Quicksand is also the headquarters of **Robinson Forest**, which spreads over parts of Breathitt, Perry, and Knott counties and is the site of forestry and watershed management research.

Map Position 4

- At the **Eden Shale Farm**, located in Owen County near Owenton, experimental and demonstration studies are conducted on forage crops, tobacco, fruits and vegetables, and beef management.

Livestock Disease Diagnostic Center

The Livestock Disease Diagnostic Center is charged with the diagnoses of animal diseases and performance of tests that safeguard the health of the animal population in Kentucky. The Livestock Disease Diagnostic Center helps identify infectious diseases, identifies chemical and toxic contaminants that may harm animals or humans, diagnoses nutritional diseases, identifies regulatory diseases, provides the means to meet export sales requirements, and provides an early warning system for impending epidemics.

The objective of the program is to provide veterinary diagnostic laboratory-based assistance to veterinary practitioners, farmers and agribusinesses, companion animal owners, wildlife specialists, and public programs. Also, laboratory support is provided to the animal disease control and eradication programs of the Animal Health Programs, Kentucky Department of Agriculture. An outcome of handling complex and difficult cases is consultation and continuing education for veterinarians in veterinary diagnostic medicine.

The program provides surveillance for emerging and endemic diseases such as West Nile virus (WNV) infection and for possible threats to Kentucky agribusiness such as foot and mouth disease. Also, for more than 17 years prior to the introduction of the USDA's National Surveillance Program, a stringent program to monitor for bovine spongiform encephalopathy (BSE), also known as mad cow disease, has been in place. LDDC routinely submits data as well as specimens to the USDA's National Surveillance Program.

Animal owners use the Livestock Disease Diagnostic Center's services through their veterinarians who have expertise in selecting, preparing, shipping, and submitting the proper specimens for testing when necessary. When reporting its findings, the laboratory will involve the submitter's veterinarian since this professional often is in the best position to recommend and administer treatment and preventative measures.

Professional and technical staff are specialists in essential scientific disciplines directly related to animal health. Disease diagnostic efforts are coordinated and handled by specialists in the appropriate disciplines. The Livestock Disease Diagnostic Center is organized into sections so that specialized workload/activities can be handled efficiently.

Highlights:

Faculty and staff continue to participate in the mare reproductive loss syndrome (MRLS) diagnostic and investigational efforts. The number of equine abortion accessions of all breeds are posted on a weekly basis for the winter and spring on the College of Agriculture Department of Veterinary Science Web site. This weekly posting of abortion accessions was done to help the equine industry manage concerns about the perceived long-term impact of MRLS. Identifying the cause(s) of equine abortion continues to be a major effort since the spring of 2001 when MRLS first occurred. Starting in the summer of 2001 and in cooperation with the Kentucky Department of Public Health and the Kentucky Department of Agriculture, the Livestock Disease Diagnostic Center conducted assays for statewide

surveillance and diagnosis of West Nile virus (WNV) in birds, horses, and mosquito pools. The Livestock Disease Diagnostic Center provides laboratory support for the Kentucky Department of Agriculture and the Kentucky Department of Fish and Wildlife Resources for surveillance of chronic wasting disease in the wild and farmed cervid population.

In last year's report, readers were informed that the American Association of Veterinary Laboratory Diagnosticians (AAVLD) had placed the LDDC on provisional accreditation because of major facility deficiencies. Following notification of the actions taken by the AAVLD, a capital improvement request was taken to the Kentucky General Assembly during the 2005 session, and the legislature approved \$8.5 million for Phase 1 to upgrade the LDDC. The actions taken by the legislature will provide essential changes and enhancements that include increased floor space to perform animal necropsies, install an alkaline tissue digester to handle carcass disposal, and improve the overall laboratory biosecurity. Phase 1 does not provide the funds to upgrade the other services essential for full accreditation; therefore, additional funds, Phase 2, have been requested to meet the level of support and the implementation of new technologies to promote animal health and productivity required by Kentucky's signature equine and cattle industries. The Kentucky General Assembly will be asked to fund Phase 2 of the upgrade during the 2006 legislative session.

During 2005, concerns about the potential spread of avian influenza type H5N1 to the United States drew intense national interest. In response to the requests from the local, state, and national poultry industries, the Kentucky Poultry Federation, Breathitt Veterinary Center at Murray State University, and LDDC have put into place a statewide surveillance and testing program to monitor for the introduction of the H5N1 strain as well as strains of lesser disease potential.

A veterinary epidemiologist was hired and joined the program on February 1, 2005. A section of veterinary epidemiology is being created with the goal that real-time reporting of disease outbreaks and occurrences will be routine as soon as a complete, reliable database has been created.

Quality Assurance Program

L.L. Brown

At the recommendation of our accrediting agency, the American Association of Veterinary Laboratory Diagnosticians, a quality manager was hired July 1, 2004, to organize and implement a laboratory quality assurance program. Embarkation of this systematic method of identifying and eliminating all forms of waste in work processes while improving performance and service delivery is a new program for the Livestock Disease Diagnostic Center. The Livestock Disease Diagnostic Center Quality Program goal is based on the university mission of improving service delivery while achieving excellent human relations, sound leadership, and effective communications. The program is being designed to focus primarily on standardization of work

procedures that allow improvement of the quality of service to our internal and external customers. It is a never-ending, long-term development that is evolutionary in implementation, yet revolutionary in vision, scope, and impact.

Integral to this process will be the participation of all Livestock Disease Diagnostic Center laboratory sections in quality assurance activities such as participation in intra-laboratory proficiency testing, standardization and documentation of test procedures, strong adherence to good laboratory practices, better documentation of testing, tracking customer complaints, and improved training and competency assessment of employees. The overall program goal is to continually improve service delivery.

Public Services

Pathology

L.R. Harrison

The Livestock Disease Diagnostic Center provides services in necropsy, histopathology, and surgical biopsy. Pathologists evaluate changes found at necropsy and correlate lesions with other laboratory test results, including light microscopic examination of tissues. A comprehensive report is prepared for every case requiring the services provided by the veterinary pathologists.

Necropsy: A postmortem examination is conducted to identify any injury or change in an organ that has resulted in impairment or loss of function.

Total Necropsy Cases	5,104
Avian	160
Bovine	1,149
Bovine fetus	136
Canine and feline	361
Caprine and ovine	451
Equine	2,100
Equine fetus	644
Porcine	26
Other species (exotic—zoo, wildlife)	77

Histopathology: Tissues are prepared for light microscopic examination to reveal changes in body tissues due to disease. Tissues of 8,719 cases were processed and examined. In addition to hematoxylin and eosin (H&E) stained tissue section, special and immunochemical stains were done on 370 tissue preparations for the purpose of identifying microscopic organisms/agents that cause diseases or tissue antigens that define cell structures.

Biopsy: Small tissue specimens are prepared for light microscopic examination for evidence of neoplasia or other diseases. Tissue samples representing 4,440 cases were processed and examined. A report was generated for each case.

Cytology: Preparations of cells denuded from tumors or other type lesions, recovered from secretions, and exudates for microscopic examination. Cytopathologic examinations were done and a report generated for 482 cases.

Bacteriology/Mycology

J.M. Donahue

The primary mission of the Bacteriology/Mycology Section is to detect or isolate and identify pathogenic bacteria or fungi present in animals. The section also determines the antibiotics that might be used for the treatment of specific bacterial infections. The section is also responsible for culture of bacteria for two federal/state regulatory programs: CEM in equine and brucellosis in bovine.

Highlights:

- 15,471 aerobic cultures were performed on samples submitted to the Livestock Disease Diagnostic Center; significant bacterial pathogens were found in over 50% of the samples.
- 1,203 milk samples from dairy cows were tested for microorganisms that cause mastitis; over 50% were positive for pathogenic microorganisms.
- 3,348 different bacterial isolates were tested to determine the antibiotics that could be used for their treatment in exposed animals.
- 6,269 samples from horses were cultured for contagious equine metritis organism (CEMO). All horses tested were negative for the bacterium, demonstrating that the disease no longer exists in horses in Kentucky.
- Approximately 2,400 samples from horses were tested for the presence of leptospire, and tissues from 15 fetuses were positive. These results indicated that leptospirosis was one of the more common causes of equine abortions in 2005, but less prevalent than in 2004 (37 cases).
- Using funding provided by the Grayson-Jockey Club Research Foundation Inc., the section provided data to prove that the bacteria responsible for the death of fetuses in natural and in experimentally induced cases of mare reproductive loss syndrome are identical to the bacteria found normally in the mouth and alimentary tract of horses.
- In conjunction with the Molecular Biology Section, we are evaluating a PCR method for detecting *Crossiella equi* and *Amycolatopsis* spp in equine placentas. These bacteria are the primary cause of nocardioform placentitis in equine.

Molecular Diagnostics

S. Sells

The Molecular Diagnostics Section uses assays designed to detect and identify the specific nucleic acids (DNA and RNA) of pathogenic bacteria and viruses. This application takes advantage of technologies in molecular science that have been developed during the last decade. Nucleic acid based tests are now used so that unknown organisms can be identified, closely related organisms can be differentiated, and small numbers of pathogens can be detected in complex samples.

Highlights:

The section offers specific assays for over 30 pathogens and has been increasingly used to confirm the identity of isolates cultured in the Bacteriology and Virology sections of the Livestock Disease Diagnostic Center and area veterinary clinics. During 2005 testing requests for *Streptococcus equi*, equine herpesvirus, and *Lawsonia intracellularis* increased substantially. The numbers of the most requested assays include:

<i>Streptococcus equi</i>	608 (63 positive)
Equine herpesvirus	603 (61 positive)
<i>Moraxella bovis</i>	37
<i>Mycoplasma bovis</i>	74
<i>Lawsonia intracellularis</i>	198 (56 positive)
<i>Clostridium perfringens</i>	58
Equine nocardioform placentitis	1,286 (8 positive)*
<i>Neorickettsia risticii</i>	62 (12 positive)
West Nile virus	103 (2 positive birds)

* Due to *Crossiella equi*; 7 due to *Amycolatopsis* (1 of these from Florida).

Serology

B.J. Smith

The Serology Section provides accurate and timely results for both diagnostic and regulatory testing. This provides veterinarians and regulatory personnel with data upon which to base their decisions. These tests also enable Kentucky to export animals internationally. Testing for animal diseases was available utilizing various testing techniques. A total of 189,514 tests were performed.

Highlights:

Anaplasmosis	278
Avian influenza	11,255
Bovine Leukemia Virus	769
Brucellosis	9,117
Contagious equine metritis	1,346
Equine infectious anemia	54,843
Johne's disease	1,250
Leptospirosis	4,728
<i>Mycoplasma gallisepticum</i>	45,258
<i>Mycoplasma synoviae</i>	45,251
<i>Neospora caninum</i>	516
Salmonella pullorum-typhoid	14,903

Virology

M.L. Vickers

The Virology Section of the Livestock Disease Diagnostic Center provides diagnostic virology support to the laboratory pathologists, veterinarians, regulatory officials, and the Commonwealth and Federal veterinarians.

Highlights:

This section provides 55 different tests, including 33 fluorescent antibody tests to detect antigens of viruses in tissues, 14 serology tests to detect antibodies of viruses, virus isolation for cattle, horses, sheep, pigs, goats, cat, dogs, birds, reptiles, etc., as well as electron microscopy and various tests for the detection of viral antigens such as influenza. In addition, this section

maintains 10 tissue culture cell lines that are used routinely.

The section performed 27,031 tests during 2005. Of this total, 13,526 were virus neutralization serology tests completed to meet regulatory requirements.

The section has recently initiated a pilot project testing for animals coming through the stockyards carrying the bovine viral diarrhea virus. Kentucky is one of the largest producers of calves east of the Mississippi River. Removal of a source of potential disease problems would give added value to one of our most important commodities.

This is the sixth year of funding from the Kentucky Department of Public Health by the Centers for Disease Control for West Nile virus (WNV) testing. The purpose of this grant is for surveillance/monitoring of WNV in wild birds, horses, and mosquitoes. West Nile virus is transmitted by mosquitoes. Mosquito trapping was carried out by county Public Health technicians, and pools of these insects were identified and submitted to the laboratory for testing for WNV and other viruses transmitted by mosquitoes to horses and humans. Birds have been the most important sentinel species to provide information on the earliest activity of the virus in a given locality. The public was encouraged to submit dead birds to the local Public Health Department for shipment to the laboratory. Testing of birds and mosquitoes for WNV was done as a cooperative effort of this section and Molecular Diagnostics which uses the polymerase chain reaction (PCR) to test for the RNA of the viruses.

Toxicology

A.F. Lehner

The principal purpose of the toxicology department is to contribute to the long-term profitability of primary producers of food animals and animal athletes in Kentucky by supporting the practitioners of veterinary medicine across the Commonwealth. The toxicology department supports the LDDC pathologists by making it possible to identify, investigate, and quantify elements and compounds that may contribute to observed organ or tissue abnormalities that may be relevant to the differential diagnosis. The toxicology department also performs analyses of samples submitted by veterinarians, Extension agents, and private owners to assist in diagnosing problems that affect herd health initiatives.

A variety of assays were routinely performed that identify poisonous substances in tissues taken at necropsy or from various samples submitted by veterinarians. Tests performed include analysis for heavy metals (mercury, lead, arsenic, chromium, etc.) and other elements, pesticides, plant toxins, and a variety of other toxic substances (cyanide, ethylene glycol, etc.). Blood, serum, and urine from live animals are assayed for mineral/element deficiencies or excesses and toxins. These assays are performed when a potential toxicological problem exists based on animal or herd symptomologies and when a pathologist identifies changes in tissues/organs that are consistent with specific toxic agents.

Highlights:

Tests performed in the toxicology department in the past year include:

Method/Substance	Number of Analyses Performed
GC/MS analysis (instrument used to identify organic toxicants)	492
Nitrate, nitrite, oxalates, and other anions	133
ICP analysis (instrument used to identify heavy metals and other elements)	1,503
Cyanide analysis	4
Ethylene glycol analysis	14
Ionophores	6
pH	69
Total dissolved solids	2
Urea	1
Miscellaneous analyses performed either in house or other laboratories	148
Total Number of Tests	2,372

The numbers below refer to the number of toxicity cases, not the number of animals involved. On some premises, numerous animals were involved.

Substance Detected	Number of Positive Cases
Acidosis	21
Acorn poisoning	2
Elevated aflatoxin levels	1
Antifreeze poisoning	14
Arsenic poisoning	4
Buckeye toxicosis	7
Cadmium toxicosis	1
Chromium toxicosis	1
Carbofuran poisoning	10
Cherry tree toxicosis	1
Copper deficiency	42
Copper toxicity	22
Endosulfan	2
Exposure to pharmaceutical agents	2
Elevated fumonisin levels	3
Iron toxicity (equine)	2
Ivermectin toxicity (canine)	2
Kentucky coffee tree toxicity	1
Lead poisoning	3
Nitrate at dangerous levels	12
Oak toxicosis	2
Organophosphate toxicosis	1
Oxalate poisoning	1
Petroleum hydrocarbons	1
Selenium deficiency	4
Selenium toxicity	3
Strychnine	1
Sulfate toxicity	1
Taxus (Japanese yew) poisoning	3
Elevated vomitoxin (DON) levels	7
Elevated zearalenone levels	1
Total Toxicoses Detected	178

Veterinary Epidemiology

C.N. Carter

A contemporary veterinary epidemiology program located at the Livestock Disease Diagnostic Center is in the early stages of development. The primary goal of this new service is to provide animal disease surveillance and early detection of animal disease outbreaks, assist veterinarians in the investigation of serious and unusual disease problems, and conduct relevant infectious disease research. The epidemiology program will be driven by state-of-the-art electronic data gathering systems that will allow for near real-time analysis and dissemination of diagnostic case information that will be useful to practitioners in treatment, prevention, and management of animal disease problems.

Highlights:

- USDA and Homeland Security grants were written and have been funded to overhaul the IT software infrastructure of the Lexington and Hopkinsville (Murray State's Breathitt Veterinary Center) laboratories and to provide seamless links to the Office of the State Veterinarian.
- Meetings occur regularly with staff at the State Veterinarian's office and the Breathitt Veterinary Center to help in planning and coordinating the flow of animal health information from the diagnostic laboratory.
- The epidemiologist is conducting epidemiological investigations on Kentucky farms and in veterinary hospitals.
- A research analyst will soon be added to the department to aid the epidemiologist in building and implementing animal health information systems and surveillance systems and to conduct research on relevant infectious disease topics.
- A Field Investigation Unit (truck outfitted with a Bowie Veterinary Unit) will soon be in service to conduct field investigations on Kentucky farms.

Regulatory Services

Our Mission

Regulatory Services is committed to service and consumer protection of Kentucky citizens, businesses, and industries. Our programs monitor and analyze feed, fertilizer, milk, seed, and soil and are administered using a cooperative, science-based approach.

The Division of Regulatory Services is charged with administering four state laws pertaining to the manufacturing, processing, labeling, and marketing of commercial feed, fertilizer, seed, and raw milk. The Division's primary objectives are to protect producers and other consumers from poor quality, mislabeled, or misrepresented products and to protect agricultural and other businesses from unfair competition.

Feed, fertilizer, and seed are monitored through manufacturing and retail channels for compliance with state laws. Label review and product and facility inspections as well as product sampling and analysis are important parts of this process. Raw milk is monitored during marketing to ensure an accurate and equitable exchange between dairy producers and processors and to ensure the integrity of milk from farm to processor.

Eleven regulatory inspectors and one auditor cover the state collecting samples, inspecting facilities, and auditing records. Two specialty product inspectors are dedicated to monitoring and sampling small-package and specialty pet food, fertilizer, and seed products throughout the state. This reflects the Division's commitment to provide consumer protection to the purchaser of non-agricultural products such as lawn seed, fertilizer, and dog, cat, and other pet food. One inspector is dedicated to the milk regulatory program: auditing records and monitoring activities of sampler-weighers, handlers, testers, and laboratory facilities.

In addition to regulatory programs of the Division, service testing is provided through the seed, soil, and milk laboratories. These and other activities in the Division are performed by a dedicated and professional staff who perform laboratory analyses, provide computer support, process and compile reports in addition to performing various duties necessary to carry out and administer effective programs.

Auditing Program

H.S. Spencer

Audits of sales and fee payments were made on 318 of 411 feed, fertilizer, seed, and milk firms in Kentucky to verify inspection fees. Fees are assessed to help defray costs of inspecting, sampling, and analyzing commodities in accordance with state laws. Fees are indicated below. Cash receivables were substantiated on 1,080 fertilizer reports, 3,056 feed reports, 784 seed reports, and 78 milk reports. Reports were checked for accuracy and compared to field audits of the submitting firms.

The 2005 inspection fees for industries regulated by the Division of Regulatory Services are as follows:

Industry	Fee Assessed/Unit
Feed	35 cents/ton
Fertilizer	50 cents/ton
Milk (handlers and producers)	0.5 cents/100 lb.
Seed tags	4-24 cents/unit

The Division of Regulatory Services 2005 income from fees, licenses and testing services was as follows:

Industry	2005 Income
Feed	\$996,896
Fertilizer	\$565,027
Milk	\$191,847
Seed tags, licenses, and service testing	\$391,857
Soil service testing	\$163,297
Total	\$2,308,924

Feed Regulatory Program

S. Traylor

The feed regulatory program provides consumer protection for purchasers of livestock feed and pet food products as well as monitoring a marketplace environment that promotes fair and equitable competition. The Kentucky Commercial Feed Law outlines standards of quality, safety, and efficacy of commercial livestock feed and pet food industries through specific labeling requirements. Labels should identify the purpose, a guaranteed composition, ingredient list, and directions as well as warning or caution statements required for proper use. A statewide inspection, sampling, and testing program monitors feed products for accurate labeling.

The feed program is also involved in ensuring safety and suitability of animal feed products fed to livestock and poultry producing meat, milk, and eggs for human consumption. This includes participation in a nationwide effort by state and federal agencies to ensure food safety and to promote consumer confidence in the food supply. The feed program and the FDA work cooperatively to inspect facilities for compliance with the ruminant-to-ruminant feeding ban, which was promulgated to prevent establishment and amplification of bovine spongiform encephalopathy (BSE, or "mad cow disease").

Highlights:

- Administered actions on 3,695 official and 225 unofficial samples of commercial feed involving 24,956 tests to monitor about 3 million tons of commercial mixed feed and feed ingredients distributed in Kentucky.
- Administered a cooperative program with the FDA to inspect 14 feed mills that mix restricted drugs in feed and to inspect these mills for compliance with FDA's national BSE rule. An additional 30 BSE inspections were contracted with FDA for mills not required to be licensed with FDA.
- Conducted 7,500 label reviews and maintained product registration for about 15,000 products from over 950 companies.

Fertilizer Regulatory Program*D.L. Terry*

The Kentucky Fertilizer Law ensures that fertilizers sold in Kentucky are clearly and accurately labeled so that consumers can make informed purchases of fertilizer with confidence in its quality. The law also protects the legitimate fertilizer industry from unfair competition.

Highlights:

- Administered actions on 3,459 official and 100 unofficial samples of fertilizer involving 10,676 chemical tests. The samples represented about 67,380 tons out of the approximately 861,600 tons of fertilizer distributed in Kentucky during 2005, or about 8%.
- Reviewed labels and registered 3,930 products from 536 firms, including 210 who manufactured custom-blended fertilizers.
- Conducted two Bulk Blend Workshops to train fertilizer blenders in proper blending techniques, use of soil tests recommendations, and environmental issues related to fertilizers.

Feed and Fertilizer Analytical Laboratory*M. Bryant*

The laboratory provided analytical support for the feed, fertilizer, and soil programs. Accurate and timely analyses of these materials were provided for the official fertilizer and feed regulatory programs and for the support of agriculture in Kentucky. In 2005, the laboratory analyzed 3,960 fertilizer samples and 3,934 feed samples. In addition, 33,000 agriculture-related samples were analyzed in the spectroscopy laboratory, i.e., soil, manure, greenhouse, water, litter, and research samples. The laboratory analyzed many materials from check sample programs and special sample requests from the College of Agriculture.

Regulated fertilizer materials were analyzed for metals of concern to determine if they were adulterated based on AAPFCO guidelines. AOAC collaborative laboratory work was performed to help establish a standard method for the non-nutritive metal analyses. The laboratory staff participates as a member of the Fertilizer Metals Forum, and the laboratory staff is currently working as part of a team on digestion and measurement of these materials to develop an AOACI standard method. Laboratory investigations of materials and coordination of an inter-labora-

tory study on digestion techniques are under way. A paper on laboratory results was presented at the International AOAC and ASFFPCO meetings.

Check sample materials were analyzed from regional, national, and international programs: AOCS, AAPFCO, Magruder[®], mycotoxins, UAN, AFPC phosphate rock, mineral, and other sample types. We continued participation in mycotoxin and microscopy check sample programs. The laboratory routinely provides program support using approximately 75 different analytical methods. Samples are also submitted to and analyzed by commercial and other regulatory programs to provide additional analytical method support and to ensure the quality of the Regulatory Services laboratory results. The laboratory participates monthly in an inter-laboratory aflatoxin share sample program.

Software program upgrades have improved electronic data transfer to the laboratory. The new Leco TruSpec thermal analyzer was implemented for protein analysis. A project to upgrade the laboratory to provide digestion of feed materials for the analysis of Se was initiated. Studies were conducted to improve the analysis of slow-release fertilizers. A new Antek nitrogen analyzer was added to the laboratory to support the slow-release fertilizer method development. A new compound microscope was added to the laboratory to improve the feed microscopy analytical support.

Inspection Program*S. McMurry*

The inspection program strives to promote industry compliance with consumer protection laws administered by the Division. Inspectors strategically located throughout the state carry out this responsibility in respective assigned areas. Their primary duty is to visit manufacturing plants, processing facilities, storage warehouses, and retail sites to collect official samples of feed, pet food, fertilizer, milk, and seed. While visiting these firms, inspectors also review records and offer assistance in improving operations to achieve compliance with the laws.

Highlights:

- 11 inspectors completed over 5,300 feed, fertilizer, and seed inspections of processing, manufacturing, and marketing firms in the state.
- Emphasis in the feed area included feed mill inspections for compliance with FDA's BSE regulations.
- Two inspectors visited and sampled small package specialty feed, fertilizer, and seed products in urban markets.
- Two inspectors made 256 visits to determine compliance with Kentucky's Farm Milk Handler Law.
- Inspectors collected the following official samples for laboratory verification of appropriate constituents and quality:

Feed	3,667
Fertilizer	1,769
Seed	2,466
Milk	4,910

Milk Regulatory Program

C. Thompson

The mission of the milk regulatory program is to ensure that raw farm milk produced and marketed in Kentucky is bought and sold using accurate weights and tests. The program's primary function is to monitor milk handling systems from the time a producer's milk is sampled and weighed, through delivery and laboratory testing, until producer payments are calculated. The program provides support to the producers and processors of Kentucky's \$240 million/year dairy industry. Industry participants are trained, licensed, and subsequently monitored to maintain compliance with the law.

In addition to regulatory functions, the milk program cooperates with other agencies in educational projects to provide a variety of services to Kentucky dairy producers and processors. The milk program also operates a laboratory that is available for Kentucky producer, processor, and handler service testing.

Highlights:

- Reviewed and issued licenses to five transfer stations, 21 milk handlers, 21 laboratories, 63 testers, and 338 sampler-weighers.
- Analyzed and administered action on 4,710 official samples.
- Administered a monthly milk laboratory quality control check sample program through the distribution of 3,024 check samples to the 21 licensed laboratories to ensure accurate component testing procedures.
- Conducted 16 pay-record and 19 raw milk receiving manifest audits.
- Conducted 34 milk laboratory inspections.
- Collaborated with Kentucky Cabinet for Health Services Milk Safety Branch to train sampler-weighers.
- Trained and examined 42 new sampler-weighers and three new testers.
- Conducted 21 inspections of raw milk transfer stations.
- Conducted 526 sampler-weigher inspections.
- Produced and developed a new sampler-weigher and milk receiver training DVD and accompanying training materials.
- Collaborated with other College of Agriculture units and other Kentucky universities to procure a \$1.5 million Homeland Security grant to develop an electronic security system for securing bulk milk during transport.

Seed Regulatory Program

D.T. Buckingham

The seed regulatory program ensures Kentucky farmers and urban consumers of quality seed while promoting fair and equitable competition among seed dealers and seedsmen through inspection and analysis of products found in the marketplace. The Division, which administers and implements the Kentucky Seed Law, promotes compliance through facility inspections, sampling, and analysis of seed offered for sale. The law requires proper labeling of seed which includes kind, variety, and lot designation, purity percentages, noxious weeds, origin, test date, and a germination guarantee. The Division is also responsible for maintaining registration of seed labelers and dealers in the state.

Highlights:

- Performed inspections and sampled agricultural, lawn, turf, and garden seeds at more than 600 wholesale and retail locations.
- Collected and tested 2,466 official seed samples.
- Issued stop-sale orders on 372 official seed samples and 444 violative seed lots at seed dealer and seed processor locations.
- Cooperated with the USDA-Seed Branch regarding shipments of seed into the state that were in violation of the Federal Seed Act.
- Reviewed and issued 211 agricultural permits and 40 vegetable and flower permits to label seed.
- Registered 401 seed dealers and 26 non-certified custom conditioners.
- Provided training to firms on labeling requirements, mixing procedures, and batching records.

Seed Testing Laboratory

C. Finneseth

The Division maintains the only seed testing facility in Kentucky. This laboratory conducts all official testing in the state and provides service testing for producers, dealers, retailers, researchers, and homeowners. In 2005, 99% of samples accepted into the laboratory were submitted by Kentucky firms or individuals. Improved services to customers in 2005 included electronic notification of sample activity and reporting of test results as well as real-time online access to service sample results.

Laboratory capabilities include purity testing, weed and crop seed identification, seed counts, accelerated aging, test weight, fluorescence testing for ryegrass, moisture content, tetrazolium, herbicide tolerance, endophyte, and germination as well as many other tests. Laboratory analysts participated in regional and national referee testing through the Association of Official Seed Analysts and the USDA Federal Seed Laboratory to ensure inter-laboratory and intra-laboratory quality of test results. All analysts are AOSA-certified in their respective areas. More than 20,000 different tests were performed by laboratory personnel in 2005.

In addition to routine laboratory activities, the seed program hosted an educational program, the "2005 Seed School: Selling and Buying Seed of Native Species in Kentucky." The program was well attended by seed vendors, landowners, county Extension personnel, and government agency representatives.

Highlights:

Sample Type	2005 Completed Samples
Official samples	2,466
Service samples	5,245
Tobacco	1,347
Other certified crops	160
Total Samples	7,711
<i>Service Tests Conducted</i>	
Germination	6,121
Purity	2,299
Vigor	209
Other	339
Total Service Tests	8,966

Soil Testing Laboratory

F.J. Sikora and D. Reid (Lexington)

P. Howe (UKREC, Princeton)

Soil testing provides farmers, homeowners, greenhouse operators, and others with scientific information about the fertility status of their soils or greenhouse media. In partnership with the Cooperative Extension Service, it also provides them with lime and fertilizer recommendations based on laboratory results. We also offer analyses of animal wastes, nutrient solutions, and special research solutions.

The soil test Web site contains information on our services and calculators for determining fertilizer, lime, and manure application rates. The site is at soils.rs.uky.edu.

The number of samples analyzed in 2005 were:

Type	Number	% Change
Agriculture	32,481	3
Home lawn and garden	6,237	-2
Commercial horticulture	792	20
Greenhouse media	64	-9
Research	8,628	-11
Atrazine residue in soil	14	-26
Animal waste	250	15
Nutrient solution	33	27
Special research solutions	1,597	81
Total	50,096	1

Kentucky Tobacco Research and Development Center

The Kentucky Tobacco Research and Development Center (KTRDC) conducts and supports unique research programs that examine new agricultural crop opportunities based on tobacco and other plants.

The Center's research projects explore the development and use of tobacco as a production system for plant-made pharmaceuticals and the discovery of new plant natural products having potential for commercialization. The KTRDC program emphasizes applications-oriented research designed to facilitate the development of new crop-based businesses and technologies for Kentucky agriculture.

Located in its own building on the University of Kentucky campus in Lexington, the Center is funded by a dedicated tax on cigarette sales in Kentucky.

Tobacco/Biotechnology

Plant biotechnology is a revolutionary new field that harnesses to practical advantage the knowledge gained over more than half a century of basic plant research. Agriculture is already realizing huge benefits from improved crops developed through biotechnology, which show remarkable resistance to insect damage, markedly reduced dependence on herbicides, etc.

A particularly exciting branch of this fast-moving field is the engineering of plants to produce new biological substances, enabling agricultural crops to be used as "production systems" to supply valuable materials such as medical drugs, industrial enzymes, specialty plastics, and novel food ingredients. These new applications for plants, including tobacco, have the potential to generate entirely new markets for farmers and growers. Such new opportunities are constantly in demand as traditional tobacco agriculture declines and the family farm seeks new agricultural opportunities.

Although the basic technology required to "engineer" tobacco and other plants to produce new substances has been available for more than 10 years, agricultural biotechnology initially concentrated on improvements to the performance and management of such crops as cotton, soybeans, corn, etc. However, the exciting prospect of new uses for tobacco and other plants is now attracting more attention, driven especially by the critical demand for protein pharmaceuticals. Recent progress in medical biotechnology has resulted in the ongoing development of literally hundreds of new protein-based medical drugs, the production of which will greatly exceed the capacity of current protein-manufacturing capacity. Plants such as tobacco have the potential to impact this manufacturing crisis, and the resulting new agricultural biotechnology sector is referred to as "plant-made pharmaceuticals," or PMP.

The primary goal of KTRDC research is to facilitate and encourage the use of tobacco in Kentucky as a production system for commercially useful proteins and for PMP applications. The Center is also developing new technologies to expand the discovery and use of non-protein substances which are made naturally by tobacco and other plants, collectively referred to as "plant natural products." Many plant natural products are familiar as flavors and fragrances, medicinals, and natural insecticides. The relatively new science of plant genomics offers the potential to enhance their production and diversity in the plant. Plants producing high yields of useful new natural products will also represent new crop and market opportunities for growers.

Research and Services

The overall objective of KTRDC research is to encourage and facilitate the development of new crop opportunities for Kentucky agriculture, based on new applications for the tobacco plant and new plant-derived "natural products." KTRDC-funded projects address this objective in several different ways:

- Optimizing the tobacco plant, and tobacco production, for molecular farming and PMP applications;
- Developing new technologies for enhanced gene expression, metabolic engineering, and discovery of novel natural products in plants;
- Discovering and developing new plant-product concepts having potential to create new markets;
- Assisting companies to explore the use of plants as manufacturing systems for new products; and
- Devising new "support" technologies for PMP and molecular farming commercialization, addressing bioprocessing, harvest-identity preservation, and regulatory compliance, etc.

KTRDC research is conducted by a team of scientists and faculty associates at the Center's facilities and also through grants to university faculty in Kentucky. KTRDC grants enable investigators to initiate new lines of research having relevance to the KTRDC program, such as improved gene-vector systems for high-level expression of proteins in tobacco and new strategies for extraction and purification of protein products from plants. In addition, KTRDC in-house research emphasizes longer-term projects and ongoing services, as illustrated by the following examples:

Developing prototype tobacco plants to explore the potential of a crop-based production system: Dr. Indu Maiti's research group uses promoter technology proprietary to the University of Kentucky to prepare transgenic plants for collaborators in the commercial and academic environments. By helping companies experience and evaluate the tobacco production strategy in this way, KTRDC researchers increase the opportunity for development of new applications for the tobacco plant.

Economic modeling of new applications for tobacco: Dr. Orlando Chambers' research includes detailed analysis of tobacco production strategies, as well as in-depth surveys of markets and the commercial potential for diverse product types that might be derived through tobacco farming. This research is used in the design of new tobacco varieties for molecular farming and plant-made pharmaceuticals (PMP) applications and to assist companies that may become future customers of the tobacco farmer.

Manipulation of plant "natural products": The enormous variety of medicinal substances, food ingredients, and structural materials obtained routinely from plants attests to the vast potential of plants to produce useful chemical compounds.

Dr. George Wagner's research explores novel materials produced on the surface of the tobacco leaf, which have potential use as pesticides and pharmaceuticals.

Dr. Ling Yuan is exploring the genetic regulation underlying the production of natural products in plant cells and aims to apply this knowledge to develop novel plants that make useful new substances.

Dr. Guiliang Tang investigates plant natural product pathways using gene silencing technology. He is currently exploring the gene silencing mechanisms to develop simple gene silencing technology for dissecting plant metabolic pathways.

Development of a new tobacco variety and optimized tobacco production system for PMP applications: KTRDC research conducted by Drs. David Zaitlin, Baochun Li, and Orlando Chambers is focused on the development of a new tobacco type that will be more economical to produce and better suited to the new applications of the plant as a protein-manufacturing system. The desired new "vehicle" variety will exhibit such characteristics as disease resistance (blue mold, black shank), more economical production through multiple (mechanized) harvesting, compatibility with all appropriate gene expression systems, and several features that will obviate any possibility of co-mingling with conventional tobacco ("identity preservation"). This research is conducted in close collaboration with the Plant and Soil Sciences Department at the University of Kentucky.

Facilities and Equipment

Director Dr. H. Maelor Davies is responsible for all research and services of the Center, including the KTRDC building which provides approximately 66,000 square feet of laboratory and office space. State-of-the-art growth rooms provide controlled, round-the-clock, monitored environments for propagation and maintenance of plants and cultured plant tissues. Greenhouse space is available nearby, and KTRDC has constructed two larger greenhouses at the university's Spindletop Research Farm in Lexington.

KTRDC has its own equipment for DNA sequencing and analysis, DNA microarray technology, automated liquid handling, most forms of chromatography, and basic mass spectrometry. All KTRDC offices and laboratories are equipped with high-speed data ports for computer networking.

Research Services

The KTRDC Plant Genetic Engineering Service develops prototype transgenic tobacco (or Arabidopsis) plants for university researchers or company collaborators. This service, which makes use of proprietary promoters and other technologies developed at KTRDC, is very helpful to investigators who have isolated genes of relevance to agricultural biotechnology but who lack the resources needed to explore their utility in plants. To inquire about this service, please contact principal investigator Dr. Indu Maiti by e-mail (imaiti@uky.edu) or telephone (859) 257-3296.

KTRDC continues to supply the research-reference cigarettes that were made for the former Tobacco and Health Research Institute. To obtain further details and to place orders, please contact Arthur Vaught by e-mail (art@uky.edu), telephone (859) 257-1657, or fax (859) 323-1077.

Tracy Farmer Center for the Environment

The Tracy Farmer Center for the Environment (TFCE) is the University of Kentucky's focal interdisciplinary center for the comprehensive integration of research, education, and public service dedicated to advancing our knowledge and understanding of environmental systems; the analysis and management of environmental problems and issues; the development of sustainable technologies and solutions to these environmental problems and issues; and the successful transfer and dissemination of these technologies to state, federal, and local governments, private organizations, businesses and corporations, and individuals.

The Tracy Farmer Center for the Environment exists under the stewardship of the University of Kentucky College of Agriculture. This arrangement affords opportunities to build upon a variety of existing synergies in research, outreach, and education, while presenting the Center with a leadership role in such projects as the Kentucky Wildlife Institute and the SB271 Groundwater Research and Education Program.

The College of Agriculture is committed to continuing the multidisciplinary role the Center plays within both the university and the broader commonwealth, while providing support in areas ranging from staffing to communication and development.

Affiliated Research

Bluegrass Restoration Program: TFCE, the Kentucky Chapter of the Nature Conservancy, Kentucky State Nature Preserves Commission, and a private landowner are working toward the restoration of this globally unique Bluegrass savanna-woodland ecosystem with its famous Griffith Woods. Multidisciplinary projects include experimentation on effects of fire and grazing; development of a native plant nursery for pharmacological, agricultural, and ecological applications; restoration of a historic tavern; archaeological and historical studies; and reconstruction of Silver Lake.

Environmental Research and Training Laboratory: The Environmental Research and Training Laboratory (ERTL) provides advanced analytical instrumentation and training to UK researchers and collaborators. Included in the 4,500 square feet of laboratory space are the Geo-Sciences Facility, the Inorganic/Organic Facility, the Microbial Facility, and the Computer Facility. By providing funding to this National Science Foundation initiative, TFCE supports a central mandate of quality control and assurance that includes training researchers to obtain results that will stand up in a court of law. UK graduate students and other UK researchers adopting the relevant methods, co-workers from other Kentucky institutions, and industrial partners are eligible to use ERTL.

Kentucky Wildlife Institute: Formed by a cooperative research agreement between the Kentucky Department of Fish and Wildlife Resources and the University of Kentucky, KWI provides research supporting the stewardship of the Commonwealth's natural resources, educates and mentors current and future agency biologists, and provides technical wildlife expertise in areas that are lacking at the state agency level.

SB271 Groundwater Research Program: By working with the SB271 Groundwater Program, TFCE will support groundwater research and education efforts.

Civic Partnerships

Bluegrass Partnership for a Green Community: The University of Kentucky, Lexington-Fayette Urban County Government, and Fayette County Public Schools have formed the Bluegrass Partnership for a Green Community, an initiative aimed at stimulating greater regional commitment to environmental issues by government, schools, businesses, private citizens, and young people.

Potential partnership benefits include environmental management cost savings for partners, more resources for joint research, sustainability-related business development opportunities, increased expertise for academic instruction, and improved environmental education possibilities for children and the broader community.

Education and Outreach

AWAKE: The All Wild About Kentucky's Environment (AWAKE) Web site provides visitors with information about Kentucky's native plants and wildlife, as well as the ecosystems that support them. The AWAKE site (www.kentuckyawake.org) features ready-for-the-classroom units of study designed by Kentucky educators that teach about Kentucky's natural resources. The Wild About Reading and Writing and Wild About Art portions of the site allow visitors to submit their own creative, nature-related writings, art pieces, and photography. The Web site has something for anyone wanting to learn more about Kentucky's biodiversity and the environments that support it.

Experiential Education: TFCE assists in the development of curricula and activities that allow middle-school and high-school students at Martin Luther King Jr. Academy to experience first-hand lessons that are taught in the classroom. The community-based projects depend on and emerge from the knowledge gained through experiencing education in the environment. TFCE will continue to promote experiential education through the Kentucky Natural Resources and Outdoor Recreation Academy for Minority Students, a four-week summer program with Jefferson County Public Schools.

Kentucky Universities Partnership for Environmental Education: The Kentucky University Partnership for Environmental Education (KUPEE) is a collaborative group of centers for environmental education located at all Kentucky state universities. The Partnership's mission is to increase the environmental literacy of all citizens of the Commonwealth through environmental education to assure the protection and sustainable development of Kentucky's natural and cultural resources.

Primary Partners

Eastern Kentucky University
Kentucky State University
Morehead State University
Murray State University
Northern Kentucky University
University of Louisville
University of Kentucky
Western Kentucky University
Kentucky Environmental Education Council

Mare Reproductive Loss Syndrome Program and Conference: Students from Tates Creek High School, West Jessamine High School, and Winburn Middle School studied and participated in hands-on research in the Mare Reproductive Loss Syndrome (MRLS) Project. The program culminated in a May 12, 2005, mini-conference on the University of Kentucky campus at which the students presented their work.

Professional Development for Educators: In cooperation with a wide variety of partners, TFCE provides professional development opportunities for formal and non-formal educators across the Commonwealth. These workshops have included such topics as water, air quality, and aquatic biodiversity.

Primary Partners

Bluegrass PRIDE
Campbellsville University
Eastern Kentucky University
Kentucky Department of Agriculture
Kentucky Division of Forestry
United States Forest Service
University of Louisville
University of Kentucky Cooperative Extension Service

TFCE Scholarships

TFCE supports university students conducting research and provides seed funding that enables federal grant submissions. This program encourages faculty participation in TFCE activities. The TFCE Scientific Advisory Board selects scholarship recipients from among the applicant pool. While students at all levels may submit applications, graduate students working on highly focused topics with defined outcomes are given priority. All selected projects require that a final report be submitted to the TFCE Scientific Advisory Board upon completion.

Units of Study Development

TFCE has assisted in the development of curriculum and units of study for formal and non-formal educators throughout the Commonwealth. Topics have included "What Is Forestry," "Outdoor Classrooms," "Energy Efficiency," "Endangered Species," and "The Living Stream."

Kentucky Agricultural Experiment Station Projects

Hatch, McIntire-Stennis, and Animal Health Projects

Hatch, McIntire-Stennis, and Animal Health projects for calendar year 2005, as reported in the USDA Current Research Information System (CRIS) database, follow.

Agricultural Economics

- Analyzing the Industrial Organization and Financial Economic Performance of the Global Agribusiness Sector—*Vickner, S.S.*
- Benefits and Cost of Natural Resources Policies Affecting Public and Private Lands—*Fleming, R.A.*
- Effects of Policy and Product Changes on the International Demand for U.S. Agricultural Products—*Reed, M.R.*
- Ex-Post Evaluations of Environmental Projects That Affect Kentucky Agriculture and Rural Communities—*Pagoulatos, A.*
- Impacts of Trade and Domestic Policies on the Competitiveness and Performance of Southern Agriculture—*Marchant, M.A.*
- Risk Management and Profit Potential of Alternative Production Practices, Enterprises, and Technologies—*Dillon, C.*
- Rural Labor Markets: Workers, Firms, and Communities in Transition—*Freshwater, D.*
- Technological Progress in Agriculture, Farmers, and Rural Communities—*Debertin, D.L.*

Animal and Food Sciences

- Animal Manure and Waste Utilization, Treatment, and Nuisance Avoidance for a Sustainable Agriculture—*Cromwell, G.L.*
- Antioxidative Properties of Hydrolyzed Protein in Muscle Foods—*Xiong, Y.L.*
- Assessment and Implications of Carbohydrate Utilization in the Small Intestine of Beef Cattle—*Harmon, D.L.*
- Assessment and Regulation of Sexual Behavior in Beef Bulls—*Schillo, K.K.*
- Calcium and Phosphorus Nutrition of Pregnant and Lactating Mares—*Lawrence, L.M.*
- Characterization of Enzyme(s) Associated with Sulfur Assimilation Type Reactions in Soy Protein Products—*Boatright, W.L.*
- Detection of Estrus in Gilts and Sows—*Edgerton, L.A.*
- Development of Peptides to Enhance Cheese Production and Bio-Active Probes—*Hicks, C.L.*
- Enhancing Food Safety through Control of Food-Borne Disease Agents—*Newman, M.C.*
- Genetic (Co) Variance of Parasite Resistance, Temperament, and Production Traits of Traditional and Non-*Bos indicus* Tropically Adapted Breeds—*Thrift, F.A.*

- Genetic Selection and Crossbreeding to Enhance Reproduction and Survival of Dairy Cattle—*Franklin, S.T.*
- Grading Up to Hair Sheep Genetics in a Low-Input Production System—*Aaron, D.K.*
- Inhibition of Lipid and Myoglobin Oxidation in Fresh and Value-Added Meat Products through Natural Antioxidants—*Alderton, A.L.*
- Interpreting Cattle Genomic Data: Biology, Applications, and Outreach—*Matthews, J.C.*
- Management Systems to Improve the Economic and Environmental Sustainability of Dairy Enterprises—*Amaral-Phillips, D.M.*
- Metabolic Relationships in Supply of Nutrients for Lactating Cows—*McLeod, K.R.*
- Methods to Increase Reproductive Efficiency in Cattle—*Silvia, W.J.*
- Modifying Milk Fat Composition for Improved Nutritional and Market Value—*Franklin, S.T.*
- Nitrogen Cycling, Loading, and Use Efficiency in Forage-Based Livestock Production Systems—*Vanzant, E.S.*
- Nutritional Modulation of the Vascular Endothelium—*Hennig, B.*
- Nutritional Systems for Swine to Increase Reproductive Efficiency—*Lindemann, M.D.*
- Proteomic Analysis of Anaerobic Bacterial Metabolism—*Strobel, H.J.*
- Regulation of Estrous Behavior in Dairy Cows—*Silvia, W.J.*
- Water Quality Issues in Poultry Production and Processing—*Cantor, A.H.*

Biosystems and Agricultural Engineering

- Characterization of Laboratory and Pilot Scale Foam Fractionation of Industrial Enzymes—*Crofcheck, C.L.*
- Demand-Controlled Ventilation (DCV) for Residential Indoor Air Quality Control—*Colliver, D.G.*
- Developing and Integrating Components for Commercial Greenhouse Production Systems—*Norikane, J.H.*
- Improvement of Thermal and Alternative Processes for Foods—*Payne, F.A.*
- Management of Grain Quality and Security for World Markets—*Montross, M.D.*
- NCR-101: Controlled Environment Technology and Use—*Norikane, J.H.*
- Optical Sensor Measurement of Food Composition Based on Light Scattering Distribution—*Payne, F.A.*
- Soil Productivity as Affected by Mechanical Influence—*Wells, L.G.*
- Stress Factors of Farm Animals and Their Effects on Performance—*Gates, R.S.*
- Systems for Controlling Air Pollutant Emissions and Indoor Environments of Poultry, Swine, and Dairy Facilities—*Gates, R.S.*
- The Science and Engineering for a Biobased Industry and Economy—*Nokes, S.E.*
- Water and Solute Transport in Subsurface Environments—*Workman, S.R.*

Community and Leadership Development

- Assessing Impacts of Welfare Reform on Individual, Family, and Community Well-Being in the Rural South—*Zimmerman, J.N.*
- How Do Structured Out-of-School Experiences Contribute to Positive Youth Development?—*Dyk, P.H.*
- Rural Low-Income Families: Tracking Their Well-Being and Function in an Era of Welfare Reform—*Dyk, P.H.*

Entomology

- A National Agricultural Program to Clear Pest Control Agents for Minor Uses—*Bessin, R.T.*
- Biological Control of Arthropod Pests and Weeds—*Yeagan, K.V.*
- Biology and Management of Insects Attacking Turf and Woody Landscape Plants—*Potter, D.A.*
- Consequences of Variation in Host Plant Resistance for the Evolution of Offspring Size in a Seed-Feeding Beetle—*Fox, C.W.*
- Development, Evaluation, and Safety of Entomopathogens for Control of Arthropod Pests—*Brown, G.C.*
- Dynamic Soybean Pest Management for Evolving Agricultural Technologies and Cropping Systems—*Yeagan, K.V.*
- Ecology and Management of European Corn Borer and Other Stalk-Boring Lepidoptera—*Brown, G.C.*
- Functional Implications of Polydnavirus Genome Organization—*Webb, B.A.*
- Herbivory in Deciduous Forests: Implications for Forest Regeneration and Restoration—*Rieske-Kinney, L.K.*
- Impacts of Interactions among Generalist Arthropod Predators in Two Complex Food Webs: Vegetable-Crop Gardens and Forest-Floor Leaf Litter—*Wise, D.H.*
- Molecular Analysis of Pest Development and Resistance to Insecticides—*Palli, S.R.*
- Potential for Evolution of Resistance to Synthetic Pheromone—*Haynes, K.F.*
- Research and Development Leading to an Integrated Mosquito Management Program for Kentucky—*Brown, G.C.*
- Sources, Dispersal, and Management of Stable Flies on Grazing Beef and Dairy Cattle—*Dobson, S.L.*
- Systematics and Biodiversity of Biological Control Agents with Special Reference to the Braconidae—*Sharkey, M.J.*

Forestry

- Computer Simulation and Numerical Methods for Financial Optimization of Central Hardwood Forest Management—*Pelkki, M.H.*
- Controls on Litter Decay and N Transformations: Effects of Tree Species, Microclimate, and Soil Mesofauna in Oak and Mixed Hardwood Stands—*Arthur, M.A.*
- Evaluating Streamside Management Zone Effectiveness in Forested Headwater Catchments of Central Appalachia—*Barton, C.*
- Prescribed Fire in the Southern Appalachians: Stand Structure, Oak Seedlings, and Fuel—*Arthur, M.A.*
- Restoration of the American Peregrine Falcon (*Falco peregrinus anatum*) to Cliff Habitats in Kentucky—*Lacki, M.J.*
- The Ecological Role of Large Mammals in the Forests of Kentucky and the Eastern United States: Implications for Conservation—*Maehr, D.S.*

Horticulture

- Botrytis cinerea* Development and Natural Volatile Compounds from Strawberry Fruit—*Kemp, T.R.*
- Environmental and Genetic Determinants of Seed Quality and Performance—*Downie, A.B.*
- Evaluation of Natural Products for Mediating Plant Resistance to Arthropods and for Use in Protecting Horticultural Crops from Insect Damage—*Snyder, J.C.*
- Marketing, Managing, and Producing Environmental Plants in a Technical and Economically Efficient Manner—*McNiel, R.E.*
- Mechanism and Significance of Post-Translational Modifications in the Large (LS) and Small (SS) Subunits of Rubisco—*Houtz, R.L.*
- Molecular Characterization of the Role of Raffinose in the Model Plants Corn and Arabidopsis—*Downie, A.*
- Multi-State Evaluation of Wine Grape Cultivars and Clones—*Kurtural, K.*
- Multi-State Evaluation of Wine Grape Cultivars and Clones—*Archbold, D.D.*
- Optimizing the Water and Air Relationship and Nutrient Concentration in a Controlled Water Table Irrigated Container Growing Medium—*Buxton, J.W.*
- Peptide Deformylase: A Novel Herbicide Target Amenable to Genetically Engineered Tolerance—*Williams, M.*

- Regulation of Sorbitol Dehydrogenase Activity during Apple Fruit Development: Genotypic Differences and the Impact of Cultural Practices—*Archbold, D.D.*
- The Role of Ethylene and Polyamine Interaction in the Time to Radicle Protrusion during Seed Germination—*Geneve, R.L.*
- Rootstock and Interstem Effects on Pome- and Stone-Fruit Trees—*Masabni, J.G.*
- Spider Mite Resistance Mechanisms in *Lycopersicon hirsutum* Accession LA2329—*Snyder, J.*
- Technical and Economical Efficiencies of Producing, Marketing, and Managing Environmental Plants—*McNiel, R.E.*

Landscape Architecture

- A Planning Model for Assessment of Agricultural Potential in Appalachia Using Information Technology Tools—*Nieman, T.J.*

Nutrition and Food Science

- Antioxidant Nutrients, Reactive Oxygen Species, and Oxidative Stress—*Chow, C.K.*
- Dietary Antioxidants, NF- κ B, and Carcinogenesis—*Glauert, H.P.*
- Mechanisms of Anti-Inflammatory Action of Eicosapentaenoic Acid (EPA)—*Chen, L.*

Plant and Soil Sciences (Agronomy)

- Breeding and Genetics of Forage Crops to Improve Productivity, Quality, and Industrial Uses—*Phillips, T.D.*
- Characterizing Mass and Energy Transport at Different Scales—*Wendroth, O.O.*
- Identification and Characterization of Genes Regulated by AGL15, an Embryo-Expressed MADS-Box Gene—*Perry, S.E.*
- Mineral Controls on P Retention and Release in Soils and Soil Amendments—*Karathanasis, A.D.*
- Plant Genetic Resources Conservation and Utilization—*Phillips, T.D.*
- Regulation of Isoprenoid Metabolism in Plant-Pathogen Interactions—*Chappell, J.*

Plant Pathology

- Biochemistry and Genetics of Plant-Fungal Interactions—*Vaillancourt, L.*
- Biological Control of Soilborne Plant Pathogens for Sustainable Agriculture—*Hendrix, J.W.*
- Characterization of R-Gene-Mediated Signaling and Cross Talk between Defense Signaling Pathways—*Kachroo, P.*

- Epidemiology, Genetic Diversity and Strategies to Control Bean Pod Mottle Virus—*Ghabrial, S.A.*
- Genetics and Biochemistry of Alkaloid Production by Endophytes—*Schardl, C.L.*
- Genomic Studies of the Model Phytopathogenic Fungus *Magnaporthe grisea*—*Farman, M.*
- Genomics, Molecular Biology and Cell Biology of Sonchus Yellow Net Virus, a Plant Rhabdovirus—*Goodin, M.M.*
- Molecular Genetics of the Interaction between Corn and Corn Stalk Rot Fungi (*Colletotrichum graminicola* and *Fusarium graminearum*)—*Vaillancourt, L.J.*
- Role of Promoter and Enhancer Elements in the Replication of Defective Interfering Tombusvirus RNA—*Nagy, P.D.*

Veterinary Science

- Cartilage-Specific Fibronectin Isoform—*MacLeod, J.N.*
- Development of Strategies to Increase Peripheral Insulin Responsiveness in Dietary-Induced Insulin-Resistant Horses—*Fitzgerald, B.P.*
- Evaluation of Bacterial Endophytes of Grass and Legume Forages as Emerging Causes of Reproductive Loss—*Swercezek, T.W.*
- Identification and Characterization of Immunodominant Antigens from the Coccidian Parasite *Sarcocystis neurona*—*Howe, D.K.*
- Molecular Mechanisms, Ecology, and Control of Natural Infections of Equids and Ruminants by Drug-Resistant Internal Parasites—*Lyons, E.T.*
- National Animal Genome Research Program (from NSRP-8)—*Bailey, E.*
- National Animal Genome Research Program Species Coordinator for the Horse—*Bailey, E.*
- Novel, Protectively Immunogenic, Surface Exposed, and Secreted Proteins of *Streptococcus equi*—*Timoney, J.F.*
- Pregnancy Maintenance in Mares—*McDowell, K.J.*
- Reactivation and Transmission of Latent Equine Herpesvirus-1 in Pregnant Mares: Role as Risk Factors for Equine Herpesvirus Abortion—*Allen, G.P.*
- The Effect of Aging on the Immune Response of Horses—*Horohov, D.W.*
- West Nile Virus Immunity in Horse Foals—*Chambers, T.*

Collegewide Extramural Funding

This information, generated from the Office of Sponsored Projects Administration database, includes any award with a start date within the reporting period (January 1, 2005—December 31, 2005) and any budgetary addition or reduction to existing projects processed within the reporting period.

Agricultural Economics

Total—\$433,337

Agrobiotechnology in China: Competitiveness Impacts on U.S. Soybean Export Markets, Cooperative State Research Education and Extension, \$302,000—*Marchant, M.*
SRRME: Precision Agriculture Decision Aids for Risk Reduction, Texas A&M University, \$39,976—*Dillon, C., Isaacs, S., Salim, J., Stombaugh, T.*
Sustainable Agriculture Research and Education (SARE) Professional Development Program (PDP) Plan of Work, University of Georgia, \$91,361—*Meyer, A.*

Agriculture Programs

Total—\$59,719

How the Tobacco Buyout Is Changing the Sustainability of Kentucky Farms—and How Should Extension Programs Change to Respond?, University of Georgia, \$6,000—*Henning, J.*
Southern Region SARE Professional Development Program, University of Georgia, \$10,000—*Deaton, P.*
University of Kentucky Cooperative Extension Service Liaison, Kentucky Natural Resources Environmental Protection Cabinet, \$43,719—*Henning, J.*

Animal and Food Sciences

Total—\$4,218,535

Continuous Health Monitoring and Lifetime Tracking of Beef Cattle, Eastern Kentucky University, \$694,923—*Vanzant, E., Akers, J., Carter, C., Cox, N.*
Editor of the Journal of Nutritional Sciences, Elsevier Science Inc., \$916,863—*Hennig, B.*
Hexanal Synthesis in Isolated Soy Proteins, Cooperative State Research Education and Extension, \$198,089—*Boatright, W.*
National Beef Cattle Evaluation Consortium, Cornell University, \$50,000—*Bullock, K.*
Nutrient Utilization in the Dog, Hills Pet Nutrition Inc., \$115,000—*Harmon, D.*
Nutrition and Superfund Chemical Toxicity, National Institute of Environmental Health Sciences, \$2,162,704—*Hennig, B., Bastin, S., Gaetke, L.*
Quality Attribute Characterization of Beef Long-Term Muscles, National Cattlemen's Beef Association, \$15,956—*Alderton, A., Mikel, W., Xiong, Y.*
Shared Faculty Position with CSREES/USDA, Cooperative State Research Education and Extension, \$45,000—*Cromwell, G.*
Understanding How Chlorotetracycline Improves the Carcass Quality of Finishing Beef Cattle Project (CTC Project), Kentucky Cattlemen's Association, \$20,000—*Matthews, J., Bullock, K., McLeod, K.*

Arboretum

Total—\$20,000

Maintaining Natural Ecosystems, Kentucky Natural Resources Environmental Protection Cabinet, \$20,000—*Farris, M.*

Associate Dean/Director

Total—\$896,351

Forage-Animal Production Research, Department of Agriculture, \$870,589—*Cox, N., Bush, L., Dougherty, C., Fitzgerald, B., Harmon, R., Lawrence, L., Matthews, J., McDowell, K., McLeod, K., Phillips, T., Schardl, C., Tobin, T., Vanzant, E., Webb, B., Witt, W.*
Support of Agricultural Research of Mutual Interest, Agricultural Research Service, \$25,762—*Cox, N.*

Biosystems and Agricultural Engineering

Total—\$3,863,610

2005 EnergyStar Equipment, Kentucky Natural Resources Environmental Protection Cabinet, \$20,000—*Fehr, R., Gates, R., Hash, G.*
A Cooperative Extension Program for Kentucky's Building Systems Energy Needs, Kentucky Office of Energy Policy, \$67,940—*Fehr, R., Gates, R.*
August 2005 EnergyStar State Fair Exhibit, Kentucky Natural Resources Environmental Protection Cabinet, \$25,000—*Fehr, R., Gates, R.*
Biosystems and Agriculture Engineering Training-Educational Consortium for Sustainable Plant and Animal Production Systems, Department of Education, \$61,830—*Gates, R., Montross, M.*
Cooperative Extension Radon and Indoor Air Quality Education, Kentucky Department for Public Health, \$115,000—*Piercy, L., Hash, G.*
Developing a Low-Cost Portable Vision Device for Inspecting Agricultural Products for Safety, Agricultural Research Service, \$45,600—*Gates, R.*
Development of Novel Technology for *in situ* Saccharification and Biomass Conversion, Consortium for Plant Biotechnology Research Inc., \$90,000—*Nokes, S., Strobel, H.*
Development of Robust, Automatic Calibration Algorithms for Online Detection of Diseased and Defective Poultry Carcasses, Agricultural Research Service, \$37,800—*Gates, R.*
Energy Efficiency/Renewable Energy Program Support, Kentucky Office of Energy Policy, \$48,625—*Colliver, D.*

Energy Efficiency/Renewable Energy Program Support, Kentucky Department of Environmental Protection, \$11,744—*Colliver, D.*
EnergyStar Energy Efficient 2005 State Fair Exhibit, Kentucky Natural Resources Environmental Protection Cabinet, \$25,000—*Fehr, R., Gates, R., Hash, G.*
Engaging KCES in Reducing Energy Use in Kentucky Agriculture, Southern States Energy Board, \$47,543—*Fehr, R., Overhults, D.*
Fabrication and Testing of a Mechanical Frame Harvesting System for Burley Tobacco, Philip Morris Inc., \$50,000—*Wells, L.*
Fabrication and Testing of a Mechanical Rail Harvesting System for Burley Tobacco, Philip Morris Inc., \$50,000—*Wells, L.*
Fabrication and Testing of a Mechanical System for Segmenting and Grading Cured Burley Tobacco, Philip Morris Inc., \$50,000—*Wells, L.*
Hometown Security: A Wireless Electronic Monitoring System for Securing Milk from Farm to Processor, Eastern Kentucky University, \$1,500,000—*Payne, F., Crist, W., Stombaugh, T., Thompson, C.*
Kentucky Lead Education and Outreach Project, University of Georgia, \$35,000—*Piercy, L., Henken, K.*
Kentucky Rural Energy Supply Program, University of Louisville, \$268,600—*Gates, R., Colliver, D., Montross, M., Nokes, S.*
KSEF: Developing a System to Reconstruct Severely Disturbed Soil, Kentucky Science and Technology Co. Inc., \$52,085—*Wells, L.*
Monitoring Ammonia Emissions, Iowa State University, \$92,121—*Gates, R., Overhults, D.*
Precision Agriculture: Precision Resource Management - Phase II, Cooperative State Research Education and Extension, \$629,672—*Stombaugh, T., Barton, C., D'Angelo, E., Egli, D., Fleming, R., Grove, J., Karathanasis, A., Kew, B., Lee, B., Maehr, D., Mueller, T., Nieman, T., Pena, E., Schwab, G., Shearer, S., Veal, M., Wendroth, O., Workman, S.*
Stream Restoration in Guy Cove, Kentucky Department of Fish and Wildlife, \$175,560—*Agouridis, C., Barton, C., Warner, R.*
Syneresis Sensor Technology Development for Curd Moisture Content Control, Cooperative State Research Education and Extension, \$350,000—*Payne, F., Castillo, M., Hicks, C.*
UK Renewable Energy Workshop and Web Page, Kentucky Natural Resources Environmental Protection Cabinet, \$9,890—*Nokes, S., Crofcheck, C., Montross, M.*
Using GPS and Spatial Technologies in Agriculture, Kentucky Department for Technical Education, \$4,600—*Stombaugh, T., Shearer, S.*

Community and Leadership Development

Total—\$723,411

- A Leadership Program to Stimulate the Entrepreneurial Culture in Tobacco-Dependent Counties of Northeast Kentucky, Kentucky Governor's Office of Agricultural Policy, \$576,986—*Hustedde, R., Jones, L.*
- Improving the UK Pre-Service Teacher Education Programs in Agriculture, Kentucky Department for Technical Education, \$7,250—*Horstmeier, R., Knight, C.*
- Is It Just Food? Geographic Differences in the Cost of Living, Mississippi State University, \$29,998—*Zimmerman, J., Ham, S.*
- Leadership Activities for Rural Youth, National FFA Organization, \$28,200—*Horstmeier, R., Nall, M.*
- Rebuilding Trust in Beef: The New Science-Based Food Safety Regime in Japan, National Science Foundation, \$72,827—*Tanaka, K., Schillo, K.*
- Refining the UK Agricultural Education Program through Faculty Professional Development, Kentucky Department for Technical Education, \$8,150—*Horstmeier, R.*

Entomology

Total—\$1,782,625

- 20 Hydroxyecdysone Suppression of Juvenile Hormone Response, National Science Foundation, \$116,890—*Palli, S.*
- Collaborative Research: Large-Scale Phylogeny of Hymenoptera, National Science Foundation, \$18,500—*Sharkey, M.*
- Cooperative Agricultural Pest Survey, Department of Agriculture, \$272,354—*Obyrcki, J., Bessin, R., Dillon, P.*
- Functional Analysis of Polydnavirus and Insect Immune Cell Genes, University of Georgia, \$374,230—*Webb, B.*
- Genetic Modification of Mosquito Populations to Make Them Incapable of Transmitting Dengue Virus, University of Queensland, \$131,025—*Dobson, S.*
- KSEF R&D Excellence: Somatic Cell Expression of Dengovirus Vectors for Gene Over-Expression and Suppression, Kentucky Science and Technology Co. Inc., \$53,981—*Webb, B.*
- Molecular Analysis of Juvenile Hormone Action, National Institute of General Medical Sciences, \$204,000—*Palli, S.*
- Monitor Gypsy Moth Populations for Slow the Spread Program, Slow the Spread Foundation, \$50,000—*Obyrcki, J., Collins, J., Harper, C.*
- MorphBank: Web Image Database Technology for Comparative Morphology and Biodiversity Research, Florida State University, \$20,006—*Sharkey, M.*
- Oriental Chestnut Gall Wasp Associates in Eastern North America, Northern Nut Growers Association, \$6,503—*Rieske-Kinney, L.*
- Potential of Pest Control by Insect Immunosuppression, Binational Agricultural Research & Development Fund, \$145,000—*Webb, B.*

- Progressive Investigation of Mare Reproduction Loss Syndrome, Kentucky Thoroughbred Owners and Breeders, \$20,000—*Webb, B., Donahue, J., Horohov, D., McDowell, K., Williams, N.*
- Recovery of Wood Vegetation Following Overstory Mortality from the Southern Pine Beetle—Phase I, Forest Service, \$42,142—*Rieske-Kinney, L.*
- Revegetation and Forest Succession of Southern Pine-Beetle Killed Shortleaf Stands in the Southern Appalachian/Cumberland Plateau Region, Forest Service, \$18,600—*Rieske-Kinney, L.*
- The Evolutionary Genetics of Sexual Size Dimorphism in a Seed-Feeding Beetle, National Science Foundation, \$6,000—*Fox, C.*
- Vector Population Modification Using Wolbachia Symbionts, National Institute of Allergy and Infectious Diseases, \$204,000—*Dobson, S.*
- Wolbachia Research Coordination Network, National Science Foundation, \$99,394—*Dobson, S.*

E-eXtension

Total—\$556,905

- ECOP/CSREES E-eXtension, University of Nebraska, \$556,905—*Wood, C., Craycraft, C.*

Family and Consumer Sciences

Total—\$2,674,165

- Cooperative Agreement with USDA/CSREES-CYFAR Technical Assistant Liaison, Cooperative State Research Education and Extension, \$39,000—*Kurzynske, J.*
- CYFERnet-Program, Cooperative State Research Education and Extension, \$180,200—*Kurzynske, J., Stivers, W.*
- Drug Endangered Child Training Network, Appalachian Regional Commission, \$362,128—*Hopper, H.*
- Future 4-H Millionaires Club, National Association of Securities Dealers, \$189,373—*Flashman, R.*
- Health Education through Extension Leadership, Cooperative State Research Education and Extension, \$809,472—*Tanner, B., Turner, L.*
- Healthy Homes in Kentucky: Focus on Mold and Home Safety, Department of Agriculture, \$4,400—*Henken, K., Adler, L.*
- Home Technology (Equipment & Utilities) Handbook, Cooperative State Research Education and Extension, \$2,500—*Badenhop, S.*
- Indoor Air for America's Homes Focusing on Kentucky Historic Buildings, Cooperative State Research Education and Extension, \$4,000—*Adler, L.*
- Kentucky Food Stamp Nutrition Program, Kentucky Families and Children Cabinet, \$1,075,092—*Sigler, P., Badenhop, S., Tanner, B.*
- Providing Healthy Homes for Kentucky Families and Children, Georgia Cooperative Extension, \$8,000—*Henken, K.*

Family Studies

Total—\$342,933

- Improve Technical Education Programs through Pre-Service Teacher Education Program in Family and Consumer Sciences, Kentucky Department for Technical Education, \$5,300—*Ellington, V.*
- Improving the UK Pre-Service Teacher Education Program in Agriculture through Faculty Professional Development, Kentucky Department for Technical Education, \$4,300—*Ellington, V.*
- The UK/BHMP Cooperative Relationship to Establish a Pro-Marriage/Pro-Family Initiative among Central Kentucky's Communities and Institutions, Kentucky Health Services Cabinet, \$333,333—*Hildreth, G., Bradford, K., Forgue, R., Thompson, S., Whiting, J.*

Forestry

Total—\$1,419,837

- Biotic Control of Calcium Supply: Distinguishing Sources to Regrowing Forests, State University of New York, \$19,611—*Arthur, M.*
- Black Bear Resource Selection in Eastern Kentucky, Kentucky Department of Fish and Wildlife, \$59,720—*Maehr, D.*
- Carbohydrate Response of Oak Regeneration Subjected to the Oak Shelterwood System, Forest Service, \$14,223—*Stringer, J., Dillaway, D.*
- Carbon Sequestration on Surface Mine Lands, Department of Energy, \$154,725—*Graves, D., Warner, R.*
- Cerulean Warbler and Golden Winged Warbler Status and Distribution in Kentucky, Fish and Wildlife Service, \$30,880—*Maehr, D.*
- Collaborative Research: Influences of Geology and Tree Species Composition on the Response of Forest Nutrient Dynamics to an Exotic Pest, National Science Foundation, \$37,362—*Arthur, M.*
- Colonization of Black Bear in Kentucky: Conflict and Tolerance between People and Wildlife, Kentucky Department of Fish and Wildlife, \$25,800—*Maehr, D.*
- Cooperative Cerulean Warbler Forest Management Project, University of Tennessee, \$12,000—*Maehr, D., Larkin, J.*
- Diet and Prey Abundance of the Ozark Big-Eared Bat in Northwest Arkansas, Arkansas Game and Fish Commission, \$26,000—*Lacki, M.*
- Effects of Meningeal (*Parelaphostrongylus tenuis*) Worm on Elk (*Cervus elaphus*) Survival in Southeastern Kentucky, Kentucky Department of Fish and Wildlife, \$109,000—*Maehr, D.*
- Enhancement of Disturbed Upper Coastal Plain Stream Systems: Establishing Restoration Criteria and Strategies for a Stream Mitigation Bank, Forest Service, \$168,304—*Barton, C.*
- Forestry Stewardship Public Awareness, Publicity and Training, Kentucky Natural Resources Environmental Protection Cabinet, \$10,000—*Stringer, J.*

Influence of Soil Physicochemical Properties on Hydrology in Carolina Bay Wetlands, Forest Service, \$7,257—*Barton, C.*

Monitoring of Best Management Practices, Kentucky Natural Resources Environmental Protection Cabinet, \$30,280—*Stringer, J.*

Population Estimation of Colonizing Black Bear (*Ursus americanus*) in Eastern Kentucky, Kentucky Department of Fish and Wildlife, \$45,200—*Maehr, D.*

Post-Mining Reforestation Demonstration Project V, Forest Service, \$490,000—*Graves, D., Warner, R.*

Restoration of Elk and Colonization of Black Bear in Kentucky, Kentucky Department of Fish and Wildlife, \$78,000—*Maehr, D.*

Status, Distribution, and Reproductive Characteristics of River Otters in Kentucky, Kentucky Department of Fish and Wildlife, \$32,975—*Lacki, M.*

Survey of Forest Bats in Managed Coniferous Forest of North-Central Idaho, Idaho State Department of Fish and Game, \$10,000—*Baker, M., Lacki, M.*

The Influence of Riparian Management Prescriptions on the Use of Upland and Riparian Habitats by Bats in Forests of the Pacific Northwest, Northwest Bat Cooperative, \$33,500—*Lacki, M.*

Timber Harvesting and Silvicultural Systems to Promote Forest Health in Kentucky, Kentucky Department for Natural Resources, \$25,000—*Stringer, J.*

4-H Central Operations

Total—\$280,962

Operation Military Kids, Auburn University, \$50,000—*Stivers, W.*

Positive Youth Development State and Local Collaboration Demonstration Project, Administration for Children and Families, \$220,000—*Delahanty, T., Kurth, J.*

Translating Air Quality Regulations for Extension Professionals, Environmental Protection Agency, \$10,962—*Hanley, C.*

Horticulture

Total—\$1,919,760

A Spatial Decision Support System for Expanding Viticulture in North-Central Kentucky and Southern Ohio, Cornell University, \$5,663—*Kurtural, S., Strang, J.*

Chloroplast-Localized N-Terminal Protein Processing by Peptide Deformylase, National Science Foundation, \$100,000—*Dirk, L., Houtz, R., Williams, M.*

Collaborative Research: Maintenance of a Functional Proteome through Dynamic Repair, National Science Foundation, \$289,900—*Downie, A.*

Development and Improvement of Grape and Wine Industry to Benefit the Agriculture Economy of Kentucky, Kentucky Department of Agriculture, \$539,750—*Strang, J.*

Engaging Agricultural and Non-Agricultural Students in Interdisciplinary Curriculum for Sustainable Agriculture, Cooperative State Research Education and Extension, \$141,274—*Williams, M., Grabau, L., Mullen, M.*

Enhancing the Native Tree Walk Web Site with Propagation Modules, Kentucky Natural Resources Environmental Protection Cabinet, \$6,200—*Geneve, R., Durham, R.*

KSTC R&D Voucher: Evaluation of Strawberry Growth and Yield in a Controlled Environment Growth Room, AgriGrow Technologies Inc., \$51,000—*Anderson, R.*

Mechanism and Significance of Post-Translational Modifications in the Large Subunit of Ribulose Biphosphate Carboxylase/Oxygenase, Energy Research, \$110,002—*Houtz, R.*

New Crop Opportunities, Kentucky, Phase VI, Cooperative State Research Education and Extension, \$675,971—*Ingram, D., Bale, S., Crofcheck, C., D'Angelo, E., Dillon, C., Dumwell, W., Fleming, R., Geneve, R., Hartman, J., Haynes, K., Isaacs, S., Jones, R., Lacefield, E., Lee, C., McNiel, R., Montross, M., Norikane, J., Pfeiffer, T., Potter, D., Rowell, A., Schwab, G., Van Sanford, D., Williams, M.*

International Programs

Total—\$454,385

Curriculum Development at the Cherkassy Institute of Management (Ukraine), Alabama A&M University, \$5,651—*Reed, M.*

Improving Agricultural Education in the Republic of Georgia, Foreign Agricultural Service, \$150,000—*Reed, M.*

Norman Borlaug International Agriculture Science Program, Department of Agriculture, \$11,462—*Reed, M.*

Scholarships for Thai Ministry of Agriculture Officials, Thai Ministry of Agriculture and Cooperatives, \$7,272—*Reed, M.*

Technical Assistance to Romanian Agriculture, Foreign Agricultural Service, \$200,000—*Reed, M.*

Technical Assistance to the Extension System in Serbia, Foreign Agricultural Service, \$80,000—*Reed, M.*

Kentucky Tobacco Research and Development Center

Total—\$867,333

Application of Plant Genomics to Alcoholic Brain Damage, Naprogenix, \$48,600—*Littleton, J.*

Development of Screens for Drugs in Alcohol Dependence, National Institute on Alcohol Abuse and Alcoholism, \$630,033—*Littleton, J.*

KSTC R&D Voucher: Application of NPG Technology to Alternate Plant Species, Naprogenix, \$88,800—*Littleton, J.*

Potential Anti-Relapse Drugs: A Plant Genomics Approach, Naprogenix, \$37,800—*Littleton, J.*

Transgenic Plant Cells as Sources of Hepatoprotective Drugs, Naprogenix, \$62,100—*Littleton, J.*

Landscape Architecture

Total—\$10,000

Smart Growth Land Use Planning for a Community at the Rural Urban Interface Utilizing Structured Public Involvement, Environmental Protection Agency, \$10,000—*Lee, B.*

Livestock Disease Diagnostic Center

Total—\$1,065,049

Animal Health and Grazing Systems, Cooperative State Research Education and Extension, \$363,913—*Carter, C., Aaron, D., Bush, L., Dougherty, C., Ely, D., Harrison, L., Taylor, N., Vanzant, E., Witt, W.*

Bovine Spongiform Encephalopathy (BSE) Surveillance Testing, Kentucky Department of Agriculture, \$23,036—*Harrison, L.*

Bovine Spongiform Encephalopathy (BSE) Testing, Kentucky Department of Agriculture, \$22,800—*Harrison, L.*

Development of "Chute-Side" Kits for Kentucky's Beef Quality Assurance Chute-Side Program, National Cattlemen's Beef Association, \$7,000—*Scharko, P., Amaral-Phillips, D.*

Diagnostic Laboratory Services for Farmers and Agribusinesses, Kentucky Department of Agriculture, \$587,000—*Harrison, L.*

Increase Kentucky Dairy Producers Awareness to Dairy/Beef Quality Assurance Recommendations, National Cattlemen's Beef Association, \$1,300—*Scharko, P., Amaral-Phillips, D.*

West Nile Surveillance of Horses and Birds, Kentucky Department for Public Health, \$60,000—*Harrison, L., Vickers, M.*

Merchandising, Apparel, and Textiles

Total—\$72,360

Quality Control Laboratory for NAIML, National Association of Institutional Linen Management, \$72,360—*Easter, E.*

Teaching Vulnerable Youth to Sew, Friends of Kentucky 4-H Incorporated, \$9,900—*Miller-Spillman, K., Michelman, S.*

Plant and Soil Sciences (Agronomy)

Total—\$2,737,447

26S Proteasome-Dependent Control of Cytokinin Signaling, Cooperative State Research Education and Extension, \$292,392—*Smalle, J.*

Accelerating the Development of FHB-Resistant Soft Red Winter Wheat Varieties, Department of Agriculture, \$56,367—*Van Sanford, D.*

Arabidopsis Polyadenylation Factor Subunits—Mutants and Protein Interaction Networks, National Science Foundation, \$427,000—*Hunt, A.*

- Assessing RNAi As a Reverse Genetic Tool for Global Analysis of NBS-LRR Gene Function in *Medicago truncatula*, Cooperative State Research Education and Extension, \$100,000—Zhu, H.
- CAREER: Microbial Population Dynamics during PCB Bioremediation in Soils, National Science Foundation, \$150,000—D'Angelo, E.
- CAREER: AGL15 during Embryogenesis, National Science Foundation, \$19,377—Perry, S.
- Mechanisms of Gene Expression by the Embryo MADS-Factor AGL15, and Roles in Glycine Max Somatic Embryogenesis, Cooperative State Research Education and Extension, \$250,000—Perry, S.
- Developing Higher Value Soybeans with Enhanced Disease Resistance, Kentucky Soybean Promotion Board, \$23,893—Hildebrand, D.
- Development of Higher Oil Soybeans, Owensboro Grain, \$20,000—Hildebrand, D.
- Development of Soybean as a Commercial Source of Epoxy Fatty Acids, United Soybean Board, \$40,000—Hildebrand, D.
- Economic and Agronomic Optimum Seeding Rates for Soybean, Kentucky Soybean Promotion Board, \$6,700—Herbek, J., Murdock Jr., L.
- Enhancing Water Quality Education in Kentucky, Texas A&M University, \$140,000—Thom, W.
- Epoxy Fatty Acid Accumulation in Seed Oil, Consortium for Plant Biotechnology Research Inc., \$109,555—Hildebrand, D.
- Epoxy Fatty Acid Accumulation in Seed Oil, Ashland Specialty Chemical Co., \$15,000—Hildebrand, D.
- Fate of 15n-Labeled Organic Nitrogen in Conventionally Managed and Organic Farming Systems, University of Georgia, \$3,500—Coyne, M.
- Indirect Benefit of No-Till Wheat: Enhanced Yield of Rotational No-Till Corn and Soybeans, Kentucky Small Grain Growers Association, \$4,000—Murdock Jr., L., Grove, J.
- Indirect Benefit of No-Till Wheat: Enhanced Yield of Rotational Corn and Soybean, Kentucky Soybean Promotion Board, \$4,000—Murdock Jr., L., Grove, J.
- Isolation and Characterization of Candidate Genes Involved in Nicotinic Biosynthesis, North Carolina State University, \$101,403—Siminszky, B.
- KSEF R&D Excellence: Development of a System for Producing Highly Purified Proteins on the Plant Surface, Kentucky Science and Technology Co. Inc., \$50,000—Wagner, G.
- KSEF R&D Excellence: Enhanced Production of Jasmonic Acid and Its Derivatives in Plant Tissues, Kentucky Science and Technology Co. Inc., \$48,733—Hildebrand, D.
- KSEF R&D Excellence: Selective Accumulation of Fatty Acids in Plant Oils, Kentucky Science and Technology Co. Inc., \$34,956—Hildebrand, D.
- KSEF R&D Excellence: Towards Understanding the Function of Rice Orthologs of Legume Genes Required for Both Nodulation and Arbuscular Mycorrhizal Symbioses, Kentucky Science and Technology Co. Inc., \$47,750—Zhu, H.
- KSTC R&D Voucher: Engineering Yeast for Terpene Production, Allylix Inc., \$2,000—Chappell, J.
- Molecular Regulation and Transport of Sterols in Plants, National Science Foundation, \$7,500—Chappell, J.
- Novel Approaches for Development of Soybeans with Improved Oil, Higher Oil Contents, and Enhanced Fungal Resistance, United Soybean Board, \$52,000—Hildebrand, D.
- Optimizing Soybean Seeding Rates for Kentucky's Major Soybean Production Regions, Kentucky Soybean Promotion Board, \$3,330—Grove, J., Lacefield, E., Lee, C.
- Physiological Basis for Yield Reduction in No-Till Wheat, Kentucky Small Grain Promotion Council, \$8,500—Van Doren, S., Grabau, L.
- Positional Cloning and Characterization of RCT1, an Anthracnose Resistance Gene in *Medicago*, Cooperative State Research Education and Extension, \$153,066—Zhu, H.
- Roundup Ready Alfalfa Established Stand Benefits, Monsanto Co., \$9,000—Slack, C.
- Seed Grant: Directed Evolution of Enzymes for the Conversion of Corn-Fiber for Biofuel Products, Kentucky Office of Energy Policy, \$35,087—Yuan, L.
- Simulations of Catastrophic Events and Associated Emergency Response Planning in Mid-America, Murray State University, \$19,868—Mueller, T.
- Soft Red Winter Wheat Breeding and Variety Development for Kentucky, Kentucky Small Grain Promotion Council, \$33,745—Van Sanford, D.
- Soil Morphology Training Course for On-Site Septic Systems, Kentucky Department for Public Health, \$45,000—Karathanasis, A.
- Soybean Genetic Engineering for Improved Vitamin E Content, Kentucky Soybean Promotion Board, \$16,000—Collins, G.
- Soybean Tissue Culture and Genetic Engineering Center, University of Georgia, \$89,534—Collins, G.
- Spatial and Temporal Development of Wheat Biomass in a Farmer's Field: Can We Predict the Spatial Grain Yield Pattern?, Kentucky Small Grain Promotion Council, \$4,000—Wendroth, O., Egli, D., Schwab, G.
- Yield Loss Prediction Tool for Field-Specific Risk Management of Asian Soybean Rust, Risk Management Agency, \$314,191—Van Doren, S., Lee, C.
- Plant Pathology**
Total—\$3,439,113
- Acquisition of a Laser Scanning Confocal Microscope for Plant Science Research, National Science Foundation, \$307,616—Nagy, P., Farman, M., Goodin, M., Perry, S.
- Advanced Genetic Technologies, Kentucky, Cooperative State Research Education and Extension, \$601,893—Scharld, C., Artiushin, S., D'Angelo, E., Downie, B., Timoney, J.
- Development of Management Strategies to Control Major Soybean Virus Diseases in the North Central States, Iowa State University, \$25,189—Ghabrial, S.
- Fatty Acid Signaling Pathway and Its Role in Plant Defense, National Science Foundation, \$118,511—Kachroo, P., Kachroo, A.
- Fungicide Management of Soybean Rust, Agricultural Research Service, \$20,000—Hershman, D.
- Gene Expression Profiles in a Grass-Endophyte Symbiosis, Cooperative State Research Education and Extension, \$390,000—Scharld, C.
- Genome of *Epichloe festucae*, a Model Endophyte of Grasses, National Science Foundation, \$771,075—Scharld, C., Farman, M.
- Glycerolipid Metabolism and Its Role in Plant Defense, Department of Agriculture, \$50,000—Kachroo, P.
- Host Factors Involved in Viral RNA Recombination, National Institute of Allergy and Infectious Diseases, \$68,000—Nagy, P.
- Identification of Genes Involved in Anthracnose Stalk Rot Pathogenesis, E. I. DuPont De Nemours & Company, \$18,500—Vaillancourt, L.
- Incidence, Epidemiology, and Resistance to Major Virus Diseases in Soybean in Kentucky, Kentucky Soybean Promotion Board, \$10,000—Ghabrial, S., Hershman, D.
- KSEF R&D Excellence: Protein Secretion by Fungal Pathogens: Delivery into the Host Cell Cytoplasm, Kentucky Science and Technology Co. Inc., \$49,651—Farman, M., Goodin, M.
- KSEF R&D Excellence: Understanding the Molecular Mechanisms Underlying Interactions of Plants with Hemibiotrophic Pathogens, Kentucky Science and Technology Co. Inc., \$101,634—Vaillancourt, L., Kachroo, P.
- Nuclear Membrane Dynamics in Rhabdovirus-Infected Cells, Cooperative State Research Education and Extension, \$100,000—Goodin, M.
- Role of an Essential RNA Chaperone in Virus Replication, National Institute of Allergy and Infectious Diseases, \$68,000—Nagy, P.
- Sentinel Plots to Monitor the Spread of Asian Soybean Rust in the U.S. Soybean Production Regions, North Central Soybean Research Program, \$27,000—Hershman, D.
- Southern Region Plant Diagnostic Laboratory Network Kentucky Cooperating National Plant, University of Florida, \$73,500—Vincelli, P., Townsend, L.

Studies on Quadris Fungicide and Warrior Insecticide Use on Soybean in Kentucky, Kentucky Soybean Promotion Board, \$10,000—*Hershman, D., Herbek, J., Johnson, D.*

Sudden Oak Death Kentucky Forest Survey, Kentucky Department for Natural Resources, \$50,000—*Hartman, J.*

Suppression of Viral RNA Recombination by Host Genes, National Science Foundation, \$424,277—*Nagy, P.*

Toxin Biosynthesis Genes in Ergot Alkaloid-Producing Fungi, West Virginia University, \$129,000—*Schardl, C.*

Whole Genome Analysis of Pathogen-Host Recognition and Subsequent Responses in the Rice Blast Patho-System, North Carolina State University, \$25,267—*Farman, M.*

Regulatory Services

Total—\$12,619

Medicated Feed Mill and BSE Rule Inspections, Food and Drug Administration, \$12,619—*Traylor, S., Miller, C.*

Tracy Farmer Center for the Environment

Total—\$198,848

Comprehensive Commonwealth Water Education Project, University of Louisville, \$36,610—*Hanley, C.*

Kentucky University Partnership for Environmental Education, Kentucky Natural Resources Environmental Protection Cabinet, \$19,500—*Hanley, C.*

Mare Reproductive Loss Syndrome (MRLS) in Central Kentucky Schools, Fayette County Public Schools, \$17,388—*Hanley, C.*

MOA No. OSP 2006-019, Murray State University, \$7,000—*Hanley, C.*

Natural Resource Academy for Urban Youth, Kentucky Department of Fish and Wildlife, \$10,000—*Hanley, C.*

Partnership for a Green City, Kentucky Department of Environmental Protection, \$3,000—*Hanley, C.*

Solid Waste, Kentucky Department of Military Affairs, \$72,000—*Hanley, C.*

The Living Stream Units of Study, University of Louisville, \$33,350—*Hanley, C.*

Veterinary Science

Total—\$894,745

14th North American Colloquium on Animal Cytogenetics and Gene Mapping, Cooperative State Research Education and Extension, \$12,500—*Lear, T.*

EIAV Envelope Variation and Vaccine Efficacy, University of Pittsburgh, \$205,316—*Issel, C.*

Evaluation of *Sarcocystis neurona* Antigens for Development of Subunit Vaccines against Equine Protozoal Myeloencephalitis, Fort Dodge Laboratories, \$49,343—*Howe, D., Horohov, D.*

Genetic Analysis of Wild Horse and Burro Blood Samples, Bureau of Land Management, \$27,000—*Cothran, E.*

Genetic Determinants of Equine Herpesvirus-1 Neurological Disease, Grayson Jockey Club Research Foundation Inc., \$30,000—*Allen, G.*

Horse Genomics: Linear Mapping and Microarray Development, Morris Animal Foundation, \$200,000—*Bailey, E., Lear, T., MacLeod, J.*

Immune Response of Young Foals Exposed to *Rhodococcus*, Grayson Jockey Club Research Foundation Inc., \$145,382—*Horohov, D.*

In vitro and *in vivo* Analysis of Zylexis in Horses, Pfizer Inc., \$49,334—*Horohov, D.*

KSEF R&D Excellence: Deuterated Internal Standards for Equine Forensic Chemistry: A Regulatory Requirement Title of Proposed Project and a Developing Niche Market, Kentucky Science and Technology Co. Inc., \$98,678—*Tobin, T.*

New Tools for Detection of *Leptospira* in Horses, Grayson Jockey Club Research Foundation Inc., \$34,892—*Artushin, S.*

Production of Antibodies to Selected Equine Cytokines, Grayson Jockey Club Research Foundation Inc., \$42,300—*Horohov, D.*

Multi-Disciplinary Grants Led by Other Colleges*

Total—\$4,147,402

Acquisition of an X-Ray Diffractometer for a Shared-Use Facility Serving the University and the Region, National Science Foundation, \$289,497—*Arthur, M.A.*

Brain Endothelial Cell TNF and Tat-Induced Cell Injury, National Institute of Mental Health, \$253,400—*Hennig, B.*

KSEF R&D Excellence: Expression of Antimicrobial Peptides in Plants to Treat Human/Animal Microbial Oral Infectious Diseases, \$49,999—*Nagy, P.*

Modeling and Monitoring Brucellosis in Yellowstone Bison, National Park Service, \$20,210—*Maehr, D.*

National Early Childhood Transition Center, Department of Education, \$1,074,627—*Hallam, R.*

New Product Development and Commercialization Center for Rural Manufacturers, Small Business Administration, \$542,654—*Maurer, R.C., Turner, L.*

Rural Health Bioterrorism and Emergency Preparedness, University of Louisville, \$491,528—*Henning, J.C., Hustedde, R.J., Nesmith, W.C., Newman, M.C., Priddy, K.T., Scharko, P.B., Vincelli, P.*

Southeast Center for Agriculture Health and Injury Prevention, Center for Disease Control and Prevention, \$36,282—*Alexander, L., Isaacs, S.G.*

Southeast Center for Agriculture Health and Injury Prevention, Center for Disease Control and Prevention, \$950,480—*Isaacs, S.G.*

State Water Resources Research Institute Grant, U.S. Geological Survey, \$92,412—*Coyne, M.S., Matocha, C.J.*

Tat-Mediated Brain Endothelial Cell Dysfunction, National Institute of Neurological Disorders and Stroke, \$286,406—*Hennig, B.*

Ultrasonic Process for Improved Biodiesel Production, Kentucky Soybean Promotion Board, \$59,907—*McNeill, S.G., Shearer, S.*

* Only College of Agriculture co-investigators are listed.

Intellectual Property

Patents Issued

Kentucky Tobacco Research and Development Center

Indu B. Maiti and co-inventor Nrisingha Dey received a patent for "Composition and Methods of Using the Mirabilis Mosaic Caulimovirus Sub-Genomic Transcript (SGT) Promotor for Plant Genetic Engineering." No. 6,930,182 August 16, 2005.

Plant and Soil Sciences (Agronomy)

Joseph Chappell (Agronomy) and co-inventors Kathleen R. Manna, Joseph P. Noel, and Courtney M. Starks received a patent for "Synthases." No. 6,890,752 May 10, 2005.

Genbank Register

Entomology

Webb, B.A. *Campoletis sonorensis* ichnovirus segment I2 vankyrin 3 mRNA, complete cds gi. ACCESSION AY953136.

Webb, B.A. *Campoletis sonorensis* ichnovirus segment I2 vankyrin 2 mRNA, complete cds gi. ACCESSION AY953135.

Webb, B.A. *Campoletis sonorensis* ichnovirus innexin Vnx-d1 gene, complete cds gi. ACCESSION AY197485.

Webb, B.A. *Campoletis sonorensis* ichnovirus segment I2 vankyrin 2 mRNA, complete cds gi. ACCESSION AY953135.

Webb, B.A. *Heliothis virescens* innexin 2 mRNA, complete cds gi. ACCESSION AY633755.

Bruce Webb had 134 additional ACCESSIONS.

Horticulture

Downie, B. *Zea mays* galactinol synthase 1 mRNA, complete cds. ACCESSION AF497507.

Downie, B. *Zea mays* galactinol synthase 2 mRNA, complete cds. ACCESSION AF497508.

Downie, B. *Zea mays* galactinol synthase 3 mRNA, complete cds. ACCESSION AF497509.

Downie, B. *Zea mays* alkaline alpha galactosidase 1 mRNA, complete cds. ACCESSION AF497510.

Downie, B. *Zea mays* alkaline alpha galactosidase 2 mRNA, complete cds. ACCESSION AF497511.

Downie, B. *Zea mays* alkaline alpha galactosidase 3 mRNA, complete cds. ACCESSION AF497512.

Downie, B. *Zea mays* alkaline alpha-galactosidase (AGA3a) gene, partial cds. ACCESSION AY705441.

Downie, B. *Zea mays* alkaline alpha-galactosidase (AGA3b) gene, partial cds. ACCESSION AY705440.

Plant and Soil Sciences (Agronomy)

Shepherd, R.W., W.T. Bass, R.L. Houtz, and G.J. Wagner. T-Phylloplanin from tobacco. Definition: *Nicotiana tabacum* phylloplanin precursor, gene, complete cds. ACCESSION No. AY705384.

Siangdung, W., Fukushige, H., and Hildebrand, D.F. *Nicotiana tabacum* fatty acid hydroperoxide lyase mRNA, complete cds. ACCESSION No. DQ129870.

Siminszky, B., L. Gavilano, S.W. Bowen, and R.E Dewey. Definition: *Nicotiana tabacum* cytochrome P450 monooxygenase CYP82E2 mRNA, complete cds. ACCESSION No. DQ131887.

Siminszky, B., L. Gavilano, S.W. Bowen, and R.E Dewey. Definition: *Nicotiana tabacum* cytochrome P450 monooxygenase CYP82E2 mRNA, complete cds. ACCESSION No. DQ131888.

Siminszky, B., L. Gavilano, S.W. Bowen, and R.E Dewey. Definition: *Nicotiana tabacum* cytochrome P450 monooxygenase CYP82E4v1 mRNA, complete cds. ACCESSION No. DQ131886.

Siminszky, B., L. Gavilano, S.W. Bowen, and R.E Dewey. Definition: *Nicotiana tabacum* cytochrome P450 monooxygenase CYP82E4v2 mRNA, complete cds. ACCESSION No. DQ131885.

Siminszky, B., L. Gavilano, S.W. Bowen, and R.E Dewey. Definition: *Nicotiana tabacum* cytochrome P450 monooxygenase 3D_C12-15 mRNA, pseudo gene. ACCESSION No. DQ131889.

Siminszky, B., L. Gavilano, S.W. Bowen, and R.E Dewey. Definition: *Nicotiana tabacum* cytochrome P450 monooxygenase 131A_A02 mRNA, pseudo gene. ACCESSION No. DQ131890.

Plant Pathology

Goodin, M.M. *Sonchus* yellow net virus truncated phosphoprotein gene. ACCESSION AY971951.

Schardl, C.L. The loline alkaloid biosynthesis gene clusters in fungal endophytes of grasses. ACCESSION AY7237493, AY7237503, AY7246861.

Schardl, C.L. Ergot alkaloid biosynthesis genes in ergot fungi. ACCESSION AY836771, AY836772.

Schardl, C.L. Phylogenetic analysis of *Xylella fastidiosa*, causative agent of scorch disease of shade trees and Pierce's disease of grapes. ACCESSION DQ021503-DQ021541, DQ022617-DQ022655, DQ022848-DQ022862, DQ026285-DQ02691.

Vaillancourt, L.J. Parameters affecting the efficiency of *Agrobacterium tumefaciens*-mediated transformation of *Colletotrichum graminicola*. ACCESSION DQ00536-DQ005637, DQ002814-DQ002845, DQ002847-DQ002869, DQ003083-DQ003101, DQ003103-DQ003123, DQ003125-DQ003133.

Veterinary Science

Brooks, S.A., and E. Bailey. *Equus caballus* sequences for KIT ACCESSION Nos. AY910688, AY874543, AY874542.

Gaji, R.Y., and D.K. Howe. *Sarcocystis neurona* major surface antigen 1 gene, promoter region and 5'UTR. Accession No. DQ286460.

Howe, D.K., M.R. Yeagan, D. Lindsay, B. Theising, S. Hou, and L. Fulton. *Sarcocystis falcatula* expressed sequence tags (ESTs). ACCESSION Nos. DV175471-DV181802 (6332 ESTs).

Lear, T.L. *Equus caballus* subclones MHC class I antigen pseudogenes, partial sequences. ACCESSION Nos. DQ083413-DQ083421.

Lear, T.L. *Equus caballus* subclones MHC class I antigen gene, exons 1 through 7 and partial cds. ACCESSION Nos. DQ083410, DA083412.

Lear, T.L. *Equus caballus* subclone MHC class I antigen genes, complete cds. ACCESSION Nos. DQ084307-DQ084309, DQ084311.

Lear, T.L. *Equus caballus* Ly49B mRNA for killer cell lectin-like receptor, complete cds, allele:Ly49B*003. ACCESSION No. AB120384.

Lear, T.L. *Equus caballus* 2'-5' oligoadenylate synthetase-like protein gene, promoter region and partial cds. ACCESSION No. AY577785.

Lear, T.L. *Equus caballus* 2'-5' oligoadenylate synthetase genes, promoter region and partial cds. ACCESSION Nos. AY577782-AY577784.

Lear, T.L. *Equus caballus* 2'-5' oligoadenylate synthetase 1 (Oas1) mRNA, complete cds. ACCESSION No. AY321355.

Lear, T.L. *Equus caballus* 2'-5' oligoadenylate synthetase 3 (OAS3) mRNA, complete cds. ACCESSION No. AY569128.

Lear, T.L. *Equus caballus* 2'-5' oligoadenylate synthetase-like protein (Oasl) mRNA, complete cds. ACCESSION No. AY463162.

Lear, T.L. *Equus caballus* 2'-5' oligoadenylate synthetase 2 short isoform mRNA, complete cds. ACCESSION No. AY509556.

Lear, T.L. *Equus caballus* LILRA mRNA for leukocyte immunoglobulin-like receptor, complete cds, allele:LILRA*001-002. ACCESSION Nos. AB120412, AB120413.

Lear, T.L. *Equus caballus* ILT11B mRNA for immunoglobulin-like transcript 11 protein, complete cds, allele:ILT11B*. ACCESSION Nos. AB120409-AB120411.

Lear, T.L. *Equus caballus* ILT11A mRNA for immunoglobulin-like transcript 11 protein, complete cds, allele:ILT11A*. ACCESSION Nos. AB120403-AB120408.

Lear, T.L. *Equus caballus* KIR3DL mRNA for killer cell immunoglobulin-like receptor with three domains and long cytoplasmic tail, complete cds, allele:KIR3DL*. ACCESSION Nos. AB120394, AB120395.

- Lear, T.L. *Equus caballus* Ly49F mRNA for killer cell lectin-like receptor, complete cds, alleles:Ly49A-F*. ACCESSION Nos. AB120377-AB120393.
- MacLeod, J.N. *Equus caballus* isolate EST from articular cartilage. ACCESSION Nos. CX592098-CX606061.
- Tiwari, R., A. Qin, S. Artiushin, and J.F. Timoney. *Streptococcus equi* Se18.9 gene. ACCESSION No. DQ068464.
- Verma, A., S. Artiushin, and J.F. Timoney. *Leptospira interrogans* serovar Pomona Lku20 (lku20) gene. ACCESSION No. AY803758.
- Verma, A., S. Artiushin, and J.F. Timoney. *Leptospira interrogans* serovar Pomona Lku57 (lku57) gene. ACCESSION No. AY803757.
- Verma, A., S. Artiushin, and J.F. Timoney. *Leptospira interrogans* serovar Pomona pL13 and LruB (lruB) genes. ACCESSION No. AY741530.
- Verma, A., S. Artiushin, and J.F. Timoney. *Leptospira interrogans* serovar Pomona LruA (lruA) gene. ACCESSION No. AY741529.
- Wagner, C.A.R., and E. Bailey *Equus caballus* sequences for TCRB. ACCESSION Nos. AY921357-AY921406, AY927792-AY4927805.

Publications

All publication dates in this section are 2005 unless otherwise noted.

Annual Report

One Hundred and Seventeenth Annual Report of the Kentucky Agricultural Experiment Station for 2004. College of Agriculture, University of Kentucky, Nancy M. Cox, Director. June.

Books and Book Chapters

Agricultural Economics

- Casavant, Kenneth L., Craig L. Infanger, and Deborah E. Bridges. Introduction to Applied Economics, Pearson Custom Publishing, copyrighted in 1999. Published 2005. This book was restructured for the Economics 101 course at Washington State University for 2006.
- Dillon, Carl, Sayed Saghaian, Juma Salim, and Murali Kanakasabai. Optimal water storage location and management zone delineation under variable subsurface drip irrigation. pp. 959-965. IN: J.V. Stafford, ed. Precision Agriculture '05. JTI—Swedish Institute of Agricultural and Environmental Engineering. Wageningen Academic Publishers, The Netherlands.
- Salim, Juma, Carl Dillon, Sayed Saghaian, and Denis Hancock. Economic Response of site-specific management practices on alfalfa production quantity and quality. pp. 241-247. IN: S. Cox, ed. Precision Livestock Agriculture '05. JTI—Swedish Institute of Agricultural and Environmental Engineering. Wageningen Academic Publishers, The Netherlands.
- Skees, Jerry, Panos Varangis, Donald Larson, and Paul Siegel. Can financial markets be tapped to help poor people cope with weather risks? Chapter 18. IN: Stefan Dercon, ed. *Insurance Against Poverty*. University of Oxford Press, WIDER Studies in Development Economics.
- Song, Baohui, and Mary A. Marchant. China's biotech policies and their impacts on U.S. agricultural exports to China. IN: *China's Agri-Food Value Chain: Opportunities and Challenges*. Proceedings, Assessing China as a Market and Competitor WCC-101 research project; Reno, Nev., April 25-26. Conference proceedings available at URL: <http://www.china.wsu.edu/>.

Animal and Food Sciences

- Cromwell, G.L. Phosphorus nutrition of swine. pp. 607-634. IN: J.T. Sims and A.N. Sharpley, ed. Phosphorus: Agriculture and the Environment. American Society of Agronomy, Crop Science Society of America, Soil Science Society of America, Madison, Wis.
- Hennig, B., M. Toborek, P. Ramadass, G. Ludewig, and L.W. Robertson. Polychlorinated biphenyls, oxidative stress and diet. pp. 93-128. IN: Preedy and Watson, ed. Reviews in Food and Nutrition Toxicity. CRC Press, Boca Raton, Fla.
- Kristensen, N.B., G.B. Huntington, and D.L. Harmon. Splanchnic carbohydrate and energy metabolism in growing ruminants. pp. 405-432. IN: D.G. Burrin and H.J. Mersman, ed. Biology of Metabolism in Growing Animals. Biology of Growing Animals Series. Elsevier, Boston.
- Matthews, J.C., and G.L. Sipe. Patterns and putative regulatory mechanisms of high-affinity glutamate transporter expression by ruminants. pp. 263-287. Proceedings, 10th International Symposium on Ruminant Physiology, Copenhagen, Denmark.
- Newman, M.C., and S.M. Scheuren-Portocarrero. Multiple antibiotic resistance: What is the cure? pp. 201-212. IN: Biotechnology in the Feed Industry. Nottingham University Press.
- Russell, J.B., and H.J. Strobel. Microbial bioenergetics. pp. 165-186. IN: J. Dijkstra, J.M. Forbes, and J. France, ed. Quantitative aspects of ruminant digestion and metabolism, 2nd ed. CABI Publishing, Wallingford, UK.
- Thrift, F.A., and T.A. Thrift. Rationale for evaluating alternative sources of subtropically adapted beef cattle germplasm. pp. 6-15. IN: A Compilation of Research Results Involving Tropically Adapted Beef Cattle Breeds. Southern Cooperative Series Bulletin 405.
- Wang, L.L., Y.L. Xiong, and B.H. Kong. Protein-derived natural antioxidants and bioactive peptides: protecting food quality and health. pp. 409-415. IN: Lyons, T.P., and Jacques, K.A., ed. Nutritional Biotechnology in the Feed and Food Industries. Nottingham University Press, Nottingham, UK.

Biosystems and Agricultural Engineering

- Tinôco, I.F.F., and R.S. Gates. Ambiente e construções para matrizes pesadas. Chapter 2. IN: Manejo de Matrizes de Corte. Fundação Apnco de Ciência e Tecnologia Avícolas, Campinas, SP, Brazil.
- Warner, R.C., and C.T. Agouridis. Stream channel construction. IN: Handbook of Western Reclamation Techniques. Section II: Hydrology. U.S. Department of Interior, Office of Surface Mining. 62 pp.

Community and Leadership Development

- Harris, R. P. The impact of violence, crime and gangs in the African American community. pp. 175-190. IN: Debra A. Harley and John M. Dillard, ed. Contemporary Mental Health Issues among African Americans. American Counseling Association, Alexandria, Va.
- Hustedde, R.J., R. Shaffer, and G. Pulver. Community Economic Analysis: A How-To Manual. North Central Regional Center for Rural Development, Ames, Iowa.

Entomology

- Obyrcki, J.J., and J.D. Harwood. Alfalfa insects: Ecology and management. 3 pp. IN: D. Pimentel, ed. Encyclopedia of Pest Management. Taylor and Francis Books, Oxford, UK. Doi: 10.1081/E-EPM-120041108. Published on 28 Nov.
- Webb, B.A., N.E. Beckage, Y. Hayakawa, P.J. Krell, B. Lanzrein, M.R. Strand, D.B. Stoltz, and M.D. Summers. Polydnaviiridae. pp. 253-259. IN: C. Fauquet et al., ed. Virus Taxonomy. Academic Press, New York.
- Webb, B.A., and M.R. Strand. The biology and genomics of polydnaviiruses: Comparative physiology and biochemistry. pp. 260-323. IN: L.I. Gilbert, K. Iatrou, and S.S. Gill, ed. Comprehensive Molecular Insect Science. Vol. 5. Elsevier Press, Oxford, UK.

Family Studies

- Bradford, K. Autism and related disorders. IN: C. Elias and L. Fameyfield, ed. The Therapist's Notebook: Resources for Working with Children. Binghamton, N.Y.: The Haworth Press.
- Ganong, L., Coleman, M., and Hans, J.D. Divorce as prelude to step-family living and the consequences of re-divorce. pp. 409-434. IN: M. Fine and Harvey, ed. Handbook of Divorce and Relationship Dissolution. Mahwah, N.J.: Lawrence Erlbaum.
- Garman, E. Thomas, and Forgey, Raymond E. Personal Finance, 8th ed. Boston: Houghton-Mifflin Company.
- Hans, J. D., ed. Graduate and undergraduate study in marriage and family (2005-2007): A guide to bachelor's, master's, and doctoral programs in the United States and Canada. Lexington, Ky.: Family Scholar Publications.

Forestry

- Fei, S., P.J. Gould, K.C. Steiner, and J.C. Finley. Forest regeneration composition and development in upland, mixed-oak forests. Tree Physiology 25:1495-1500.
- Maehr, D.S. Can the Florida panther provide insight into restoring the eastern cougar? pp. 169-177. IN: C. Bolgiano and J. Roberts, ed. The Eastern Cougar: Historic Accounts, Scientific Investigations, New Evidence. Stackpole Books, Mechanicsburg, Pa.

Maehr, D.S., M.A. Orlando, and J.J. Cox. Large carnivores, herbivores, and omnivores in South Florida: An evolutionary approach to conserving landscapes and biodiversity. pp. 293-314. IN: J. Ray, J. Berger, and K. Redford, ed. *Large Carnivores and the Conservation of Biodiversity*. Island Press, Washington, D.C.

Horticulture

Geneve, R.L. Vigor testing in flower seeds. pp. 311-332. IN: M.B. McDonald and F. Kwong, ed. *Flower Seeds: Biology and Technology*. CAB International, London.

Merchandising, Apparel, and Textiles

- Damhorst, M.L., Miller-Spillman, K., and Michelman, S. *Meanings of Dress*, 2nd ed. New York: Fairchild Publications.
- Michelman, S.O. *Clothing: Clothing and religion in the West*. pp. 1831-1834. IN: Lindsay Jones, ed. *Encyclopedia of Religion*. Vol. 3, 2nd ed. Detroit: Macmillan Reference USA.
- Michelman, S.O. *Reveal or conceal: Examining the meaning of modesty in postmodern America*. pp. 210-216. IN: M. Damhorst, K. Miller-Spillman, and S. Michelman, ed. *Meanings of Dress*, 2nd ed. New York: Fairchild Publications.
- Michelman, S.O. *From habit to fashion: Dress of Catholic women religious*. pp. 483-489. IN: M. Damhorst, K. Miller-Spillman, and S. Michelman, ed. *Meanings of Dress*. New York: Fairchild Publications.
- Michelman, S.O. *Is thin in? Kalabari culture and the meaning of fatness*. pp. 63-66. IN: M. Damhorst, K. Miller-Spillman, and S. Michelman, ed. *Meanings of Dress*. New York: Fairchild Publications.
- Spillman, K. *Playing dress-up: Childhood memories of dress*. pp. 274-283. IN: M. Damhorst, K. Miller-Spillman, and S. Michelman, ed. *Meanings of Dress*. New York: Fairchild Publications.

Plant and Soil Sciences (Agronomy)

- Baskin, C.C., and J.M. Baskin. Seed dormancy in wild flowers. pp. 163-185. IN: M.B. McDonald and F. Kwong, ed. *Flower Seeds: Biology and Technology*. CAB International, Wallingford, UK.
- Coyne, M.S., and J.A. Thompson. *Fundamental Soil Science*. 403 pp. Delmar Publishers Inc., Clifton Park, N.Y. (ISBN:0-7668-4268-1).
- Coyne, M.S., and J.A. Thompson. *Math for Soil Scientists*. 284 pp. Delmar Publishers Inc., Clifton Park, N.Y. (ISBN:07668-4266-5).
- Hildebrand, D., and L. Mamadou. Genetically engineered oils. IN: C. Akoh and O.M. Lai, ed. *Healthful Lipids*. AOCS Press, Champaign, Ill.
- Matocha, C.J. Oxidation-reduction of inorganic and organic contaminants. pp. 133-140. IN: D. Hillel, ed. *Encyclopedia of Soils in the Environment*. Vol. III. Elsevier Ltd., N.Y.

Matocha, C.J., K.G. Scheckel, and D.L. Sparks. Kinetics and mechanisms of soil biogeochemical processes. Chapter 6, pp. 309-342. IN: D.L. Sparks and M.A. Tabatabai, ed. *Chemical Processes in Soils*. SSSA Book Series, No. 8, Madison, Wis.

Plant Pathology

- Ghabrial, S.A., K.W. Buck, B.I. Hillman, and R.G. Milne. *Partitiviridae*. pp. 581-590. IN: C.M. Fauquet, M.A. Mayo, J. Maniloff, U. Desselberger, and L.A. Ball, ed. *Virus Taxonomy*, 8th Report of the International Committee on Taxonomy of Viruses. Elsevier/Academic Press, London.
- Ghabrial, S.A., D. Jiang, and J.R. Castón. *Chrysoviridae*. pp. 591-595. IN: C.M. Fauquet, M.A. Mayo, J. Maniloff, U. Desselberger, and L.A. Ball, ed. *Virus Taxonomy*, 8th Report of the International Committee on Taxonomy of Viruses. Elsevier/Academic Press, London.
- Ghabrial, S.A. and K.W. Buck. *Rhizidiovirus*. pp. 229-230. IN: C.M. Fauquet, M.A. Mayo, J. Maniloff, U. Desselberger, and L.A. Ball, ed. *Virus Taxonomy*, 8th Report of the International Committee on Taxonomy of Viruses. Elsevier/Academic Press, London.
- Jackson A.O., R.G. Dietzgen, M.M. Goodin, J.N. Bragg, and M. Deng. *Biology of plant rhabdoviruses*. pp. 623-660. IN: *Annual Review of Phytopathology*, Vol. 43. Annual Reviews, Palo Alto, Calif.
- Schardl, C.L., and A. Leuchtmann. *The Epichloë endophytes of grasses and the symbiotic continuum*. pp. 475-503. IN: J. Dighton, J. F. White, Jr., and P. Oudemans, ed. *The Fungal Community: Its Organization and Role in the Ecosystem*. CRC Press, Boca Raton, Fla.
- Schardl, C.L., and D.G. Panaccione. *Biosynthesis of ergot and loline alkaloids*. pp. 75-92. IN: C.A. Roberts, C.P. West, and D.E. Spiers, ed. *Neotyphodium in Cool-Season Grasses*. Blackwell, Ames, Iowa.

Veterinary Science

- Cook, R.F., and C.J. Issel. *Equine infectious anaemia*. pp. 747-751. IN: J.A.W. Coetzer, G.R. Thomson, and R.C. Tustin, ed. *Infectious Diseases of Livestock with Special Reference to Southern Africa*. Vol. II. Oxford University Press.
- Timoney, J.F. *Streptococcal infections*. pp. 75-81. IN: A.J. Higgins and J.R. Snyder, ed. *The Equine Manual*, 2nd ed. Saunders/Elsevier.
- Timoney, P.J. *Equine viral arteritis*. pp. 560-563. IN: C.M. Kahn. *The Merck Veterinary Manual*, 9th ed. Merck and Co. Inc.
- Timoney, P.J. *Hendra virus infection*. pp. 564-566. IN: C.M. Kahn. *The Merck Veterinary Manual*, 9th ed. Merck and Co. Inc.

Progress Reports

- PR-506: *2004 Alfalfa Report*. G.L. Olson, G.D. Lacefield, B. Sleugh, P.C. Vincelli, and S.R. Smith.
- PR-507: *2004 Orchardgrass Report*. G.L. Olson, T.D. Phillips, G.D. Lacefield, D.C. Ditsch, and S.R. Smith.
- PR-508: *2004 Red and White Clover Report*. G.L. Olson, N.L. Taylor, G.D. Lacefield, D.C. Ditsch, and S.R. Smith.
- PR-509: *2004 Timothy Report*. G.L. Olson, T.D. Phillips, and S.R. Smith.
- PR-510: *2004 Tall Fescue Report*. G.L. Olson, T.D. Phillips, G.D. Lacefield, D.C. Ditsch, and S.R. Smith.
- PR-511: *2004 Annual and Perennial Ryegrass Report*. G.L. Olson, T.D. Phillips, G.D. Lacefield, B. Sleugh, and S.R. Smith.
- PR-512: *2004 Cool-Season Grass Horse Grazing Tolerance Report*. G.L. Olson, L.M. Lawrence, G.D. Lacefield, T.D. Phillips, B. Coleman, D. Powell, and S.R. Smith.
- PR-513: *2004 Red and White Clover Grazing Tolerance Report*. G.L. Olson, G.D. Lacefield, N.L. Taylor, E. Vanzant, and S.R. Smith.
- PR-514: *2004 Alfalfa Grazing Tolerance Report*. G.L. Olson, G.D. Lacefield, E. Vanzant, and S.R. Smith.
- PR-515: *2004 Cool-Season Grass Grazing Tolerance Report*. G.L. Olson, T.D. Phillips, G.D. Lacefield, E. Vanzant, and S.R. Smith.
- PR-516: *2004 Native Warm-Season Perennial Grasses Report*. G.L. Olson, R.F. Spitaleri, J.C. Henning, S.R. Smith, T.D. Phillips, and G.D. Lacefield.
- PR-517: *2005 Small Grain Variety Performance Tests*. B. Bruening, C. Tutt, C.S. Swanson, J. Connelley, C. Knott, and D. Van Sanford.
- PR-518: *2005 Kentucky Hybrid Corn Performance Test*. W.L. Pearce, R.W. Curd, and C. Lee.
- PR-519: *2005 Kentucky Soybean Performance Tests*. E. Lacefield, R. Rhodes, and T. Pfeiffer.
- PR-520: *2005 Nursery and Landscape Report*. D. Ingram, ed.
- PR-521: *Fruit and Vegetable Research Report*. B. Rowell, J.C. Snyder, and C. Smigell, eds.
- PR-522: *2005 Alfalfa Report*. G.L. Olson, S.R. Smith, G.D. Lacefield, and B. Sleugh.
- PR-523: *2005 Orchardgrass Report*. G.L. Olson, S.R. Smith, T.D. Phillips, G.D. Lacefield, and D.C. Ditsch.
- PR-524: *2005 Tall Fescue Report*. G.L. Olson, S.R. Smith, T.D. Phillips, G.D. Lacefield, and D.C. Ditsch.
- PR-525: *2005 Timothy and Kentucky Bluegrass Report*. G.L. Olson, S.R. Smith, and T.D. Phillips.
- PR-526: *2005 Alfalfa Grazing Tolerance Report*. G.L. Olson, S.R. Smith, G.D. Lacefield, and E. Vanzant.
- PR-527: *2005 Red and White Clover Report*. G.L. Olson, S.R. Smith, N.L. Taylor, G.D. Lacefield, and D.C. Ditsch.
- PR-528: *2005 Annual and Perennial Ryegrass Report*. G.L. Olson, S.R. Smith, T.D. Phillips, G.D. Lacefield, and E. Vanzant.
- PR-529: *2005 Red and White Clover Grazing Tolerance Report*. G.L. Olson, S.R. Smith, T.D. Phillips, G.D. Lacefield, and E. Vanzant.
- PR-530: *2005 Cool-Season Grass Grazing Tolerance Report*. G.L. Olson, S.R. Smith, T.D. Phillips, G.D. Lacefield, and E. Vanzant.

- PR-531: 2005 Cool-Season Grass Horse Grazing Tolerance Report. G.L. Olson, S.R. Smith, L.M. Lawrence, G.D. Lacefield, T.D. Phillips, and B. Coleman.
- PR-532: 2005 Native Warm-Season Perennial Grasses Report. G.L. Olson, S.R. Smith, R. Spitaleri, J.C. Henning, T.D. Phillips, and G.D. Lacefield.

Regulatory Bulletins

- RB-299: *Commercial Feeds in Kentucky, 2005*. S.L. Traylor.
- RB-298: *Seed Inspection Report: 2001-2005*. D.T. Buckingham and C.H. Finneseth.
- RB-296: *Commercial Feeds in Kentucky, 2004*. S.L. Traylor.
- RB-295: *Seed Inspection Report, 2000-2004*. D.T. Buckingham and C.H. Finneseth.

Refereed Journal Articles

Agricultural Economics

- Barnett, Barry J., J. Roy Black, Yingyao Huh, and Jerry R. Skees. Is area yield insurance competitive with farm yield insurance? *Journal of Agricultural and Resource Economics* 30(2):285-301.
- Brown, R., and D. Zhang. Supply elasticity estimates for disaggregated paper products: A primal approach. *Forest Science* 51:570-577.
- Brown, R., and D. Zhang. The sustainable forestry initiative's impact on U.S. South stumpage markets. *Canadian Journal of Forest Research* 35:2056-2064.
- Freshwater, David, and Cameron Short. Pesticide regulation and pesticide prices. *Canadian Journal of Agricultural Economics* 53(2-3):193-220.
- Marchant, Mary A., and Baohui Song. Assessment of biotechnology policies and international trade in key markets for U.S. agriculture. *Journal of Agricultural and Applied Economics* 37(2):379-391.
- Marchant, Mary A., and Sanjeev Kumar. An overview of U.S. foreign direct investment and outsourcing. *Review of Agricultural Economics* 27(3):379-386. Available on the World Wide Web: <http://www.blackwell-synergy.com/doi/full/10.1111/j.1467-9353.00232>.
- Maynard, L.J. Food wars: The global battle for minds, mouths, and markets (Book Review). *Journal of Agribusiness* 23(1):109-111.
- Maynard, L.J., C. Wolf, and M. Gearhardt. Can futures and options markets hold the milk price safety net? *Policy Conflicts and Market Failures in Dairy Hedging*. *Review of Agricultural Economics* 27:273-286.
- Pagoulatos, A., and R.A. Fleming. The environmental quality incentives program in Kentucky: Does it address environmental quality problems? *Journal of Applied Economics and Policy* 24:33-61.
- Peng, Xuehua, Mary A. Marchant, Xiang Dong Qin, and Jun Zhuang. Chinese consumers' preferences for livestock products. *International Food and Agribusiness Management Review* 8(4):62-76. Available on the World Wide Web: <http://www.ifama.org/>.

- Poosiripinyo, Rangsit, and Michael Reed. Measuring market power in the Japanese chicken meat market. *Journal of International Agricultural Trade and Development* 1:135-48.
- Reed, Michael. Outsourcing and foreign direct investment: Boon or bane? Discussion. *Review of Agricultural Economics* 27(3):402-4.
- Veeramani, V.N, L.J. Maynard, and J.R. Skees. Assessment of the risk management potential of a rainfall based insurance index and rainfall options in Andhra Pradesh, India. *Indian Journal of Economics and Business* 4(1):195-208.
- Zeuli, Kimberly, and Jerry R. Skees. Rainfall insurance: A promising tool for drought management. *Water Resources Development* 21(4):663-675.
- Zhuang, Jun, Mary A. Marchant, Christopher L. Schardl, and Courtney Murrell Butler. Economic analysis of replacing endophyte-infected with endophyte-free tall fescue pastures. *Agronomy Journal* 97(3):711-716. Available on the World Wide Web: <http://agron.scijournal.org/cgi/content/full/97/3/711>.

In addition, members of the department published seven abstracts.

Animal and Food Sciences

- Agyare, K.K., K. Addo, Y.L. Xiong, and C.C. Akoh. Effect of structured lipid on alveograph characteristics, baking and sensory properties of soft wheat flour. *Journal of Cereal Science* 42:309-312.
- Bailey, J.D., L.H. Anderson, and K.K. Schillo. Effect of novel females and stage of the estrous cycle (estrus vs. diestrus) on mating behavior in mature beef bulls. *Journal of Animal Science* 83:613-624.
- Bailey, J.D., L.H. Anderson, and K.K. Schillo. Effects of sequential or group exposure to unrestrained estrual females on expression of sexual behavior in sexually experienced beef bulls. *Journal of Animal Science* 83:1801-1811.
- Bertram, H.C., N.B. Kristensen, A. Maldendal, N.C. Nielsen, R. Bro, H.J. Andersen, and D.L. Harmon. A metabolomic investigation of splanchnic metabolism using 1H NMR spectroscopy of bovine plasma. *Analytica Chimica Acta* 536:1-6.
- Bothun, G.D, B.L. Knutson, H.J. Strobel, and S.E. Nokes. Molecular and phase toxicity of compressed and supercritical fluids in biphasic continuous cultures of *Clostridium thermocellum*. *Biotechnology Bioengineering* 89:32-41.
- Bothun, G.D, B.L. Knutson, H.J. Strobel, and S.E. Nokes. Liposome fluidization and melting point depression by pressurized CO₂ determined by fluorescence anisotropy. *Langmuir* 21:530-536.
- Cromwell, G.L., B.J. Henry, A.L. Scott, M.F. Gerngross, D.L. Dusek, and D.W. Fletcher. Glufosinate herbicide-tolerant (LibertyLink) rice vs. conventional rice in diets for growing-finishing swine. *Journal of Animal Science* 83:1068-1074.
- Flora, G., H. Pu, Y.W. Lee, R. Ravikumar, A. Nath, B. Hennig, and M. Toborek. Proinflammatory synergism of ethanol and HIV-1 Tat protein in brain tissue. *Experimental Neurology* 191:2-12.
- Franklin, S.T., M.C. Newman, K.E. Newman, and K.I. Meek. Immune parameters of dry cows fed mannan Oligosaccharide and subsequent transfer of immunity to calves. *Journal of Dairy Science* 88:766-775.
- Hansen, L., M. Machala, L. Fischer, M. James, B. Hennig, H. Glauert, J.F. Narbonne, L. van Bree, T. Schultz, P. Grevatt, W. Suk, I. Holoubek, and L. Robertson. Research needs identified at the Second PCB Workshop in Brno, Czech Republic, May 7-11, 2002. *Toxicological and Environmental Chemistry* 87:261-265.
- Hatler, T.B., S.H. Hayes, L.H. Anderson, and W.J. Silvia. Effect of a single injection of progesterone on ovarian follicular cysts in lactating dairy cows. *The Veterinary Journal* 170 (accessible online).
- Hayashi, K., H. Pu, J. Tian, I.E. Andras, Y.W. Lee, B. Hennig, and M. Toborek. HIV-Tat protein induces P-glycoprotein expression in brain microvascular endothelial cells. *Journal of Neurochemistry* 93:1231-1241.
- Hennig, B., G. Reiterer, Z. Majkova, E. Oesterling, P. Meerarani, and M. Toborek. Modification of environmental toxicity by nutrients: Implications in atherosclerosis. *Cardiovascular Toxicology* 5(2):153-60.
- Hennig, B., G. Reiterer, M. Toborek, S.V. Matveev, A. Daugherty, E. Smart, and L. Robertson. Dietary fat interacts with PCBs to induce changes in lipid metabolism in LDL receptor deficient mice. *Environmental Health Perspectives* 113:83-87.
- Hester, P.Y., C.Z. Alvarado, S.F. Bilgili, J.H. Denton, A.M., Donoghue, A. Giesen, B. M. Hargis, J.W. Kessler, F.N. Madison, G.W. Malone, P. Mavrolas, S.L. Noll, A.J. Pescatore, C.A. Ricks, F.E., Robinson, R.B. Shirley, M. Sifri, M.O. Smith, R.H., Stonerock, J.L., Wilson, M.J. Wineland, M.M. Beck, and W.W. Saylor. Planning our future: The Poultry Science Association Strategic Plan. *Poultry Science* 84:814-815.
- Hollis, G.R., S.D. Carter, T.R. Cline, R.D. Crenshaw, G.L. Cromwell, G.M. Hill, S.W. Kim, A.J. Lewis, D.C. Mahan, P.S. Miller, H.H. Stein, and T.L. Veum. Effects of replacing pharmacological levels of dietary zinc oxide with lower dietary levels of various organic zinc sources for weanling pigs. *Journal of Animal Science* 83:2123-2129.
- Kong, B.H., J.Z. Wang, J.Z., and Y.L. Xiong. Antimicrobial activity of several herbal and spice extracts and their role in the preservation of vacuum-packaged chilled pork. *Proceedings, International Congress of Meat Science and Technology*, 51:87-88.
- Kristensen, N.B. and D.L. Harmon. Effect of adding valerate, caproate, and heptanoate to ruminal buffers on splanchnic metabolism in steers under washed-rumen conditions. *Journal of Animal Science* 83:1899-1907.

- Mahan, D.C., E.P. Berg, J.H. Brendemuhl, S.D. Carter, L.I. Chiba, T.D. Crenshaw, G.L. Cromwell, C.R. Dove, A.F. Harper, G.M. Hill, G.R. Hollis, S.W. Kim, M.D. Lindemann, C.V. Maxwell, P.S. Miller, J.L. Nelssen, B.T. Richert, G.C. Shurson, L.L. Southern, T.S. Stahly, H.H. Stein, E. van Heugten, and J.T. Yen. North Central Regional Committee on Swine Nutrition (NCR-42) and Southern Regional Committee on Nutritional Systems for Swine to Increase Reproductive Efficiency (S-1012). Comparison of dietary selenium fed to grower-finisher pigs from various regions of the United States on resulting tissue Se and loin mineral concentrations. *Journal of Animal Science* 83:852-857.
- Pescatore, A.J., K.D. Casey, and R.S. Gates. Ammonia emissions from broiler houses. *Journal of Applied Poultry Research* 14:635-637.
- Pierce, J.L., G.L. Cromwell, M.D. Lindemann, L.E. Russell, and E.M. Weaver. Effects of spray-dried animal plasma and immunoglobins on performance of early weaned pigs. *Journal of Animal Science* 83:2876-2885.
- Pratt, S., L.M. Lawrence, L.K. Warren, and D.M. Powell. The effect of exercise on acetate clearance in horses. *Journal of Equine Veterinary Science* 25:266-271.
- Ramirez-Suarez, J.C., K. Addo, and Y.L. Xiong. Gelation of mixed myofibrillar/wheat gluten proteins treated with microbial transglutaminase. *Food Research International* 38:1143-1149.
- Reiterer, G., R. MacDonald, J.D. Browning, J. Marrow, S.V. Matveev, A. Daugherty, E. Smart, M. Toborek, and B. Hennig. Zinc deficiency induces atherogenic events in LDL-R-deficient mice. *Journal of Nutrition* 135:2114-2118.
- Silvia, W.J., A.S. McGinnis, and T.B. Hatler. A comparison of adrenal gland function in lactating dairy cows with or without ovarian follicular cysts. *Reproductive Biology* 5:19-29.
- Thrift, F.A., and S.M. DeRouen. Impact of weaning productivity, as mediated through sire selection, on subsequent pregnancy rate of the cow herd. *Professional Animal Scientist* 21:81-87.
- Toborek, M., Y.W. Lee, G. Flora, H. Pu, I.E. Andras, E. Wylegala, B. Hennig, and A. Nath. Mechanisms of blood-brain barrier disruption in HIV-1 infection. *Cellular and Molecular Neurobiology* 25:181-199.
- Traylor, S.L., G.L. Cromwell, and M.D. Lindemann. Bioavailability of phosphorus in meat and bone meal for swine. *Journal of Animal Science* 83:1054-1061.
- Traylor, S.L., G.L. Cromwell, and M.D. Lindemann. Effects of particle size, ash content, and processing pressure on the bioavailability of phosphorus in meat and bone meal for swine. *Journal of Animal Science* 83:2554-2563.
- Tseng, Y.C., Y.L. Xiong, and C.D. Webster. The preservation of muscle quality of frozen Australian red claw crayfish (*Cherax quadricarinatus*) by antioxidant dipping treatments. *International Journal of Food Science and Technology* 40:841-848.
- Wang, L.L., and Y.L. Xiong. Inhibition of lipid oxidation in cooked beef patties by hydrolyzed potato protein is related to its reducing and radical scavenging ability. *Journal of the Agricultural and Food Chemistry* 53:9186-9192.
- Yamka, R.M., B.M. Hetzler, and D.L. Harmon. Evaluation of low-oligosaccharide low-phytate whole soybeans and soybean meal in canine foods. *Journal of Animal Science* 83:393-399.
- Yamka, R.M., S.E. Kitts, and D.L. Harmon. Evaluation of low-oligosaccharide low-phytate whole soybeans in canine foods. *Animal Feed Science Technology* 120:79-91.
- In addition, members of the department published 67 abstracts.*
- Biosystems and Agricultural Engineering**
- Agouridis, C.T., D.R. Edwards, S.R. Workman, J.R. Bicudo, B.K. Koostra, E.S. Vanzant, and J.L. Taraba. Streambank erosion associated with grazing practices in the humid region. *Transactions of the American Society of Agricultural Engineers (ASAE)* 48(1):181-190.
- Agouridis, C.T., S.R. Workman, R.C. Warner, and G.D. Jennings. 2005 livestock grazing management impacts on stream water quality. *Journal of American Water Resources Association* 41(3):591-606.
- Bridges, T.C., M.D. Montross, and S.G. McNeill. Aeration strategies and fan cost 3747 comparison for wheat in mid-South production regions. *Applied Engineering in Agriculture* 2(1):115-124.
- Castillo, M., González, R., Payne, F.A., Laencina, J., and López, M.B. Optical 4234 monitoring of milk coagulation and inline cutting time prediction in Murcian al Vino cheese. *Applied Engineering in Agriculture* 21:465-471.
- Castillo, M., Payne, F.A., López, M.B., Ferrandini, E., and Laencina, J. Optical sensor technology for measuring whey fat concentration in cheese making. *Journal of Food Engineering* 71:354-360.
- Castillo, M., Payne, F.A., López, M.B., Ferrandini, E., and Laencina, J. Preliminary evaluation of an optical method for modeling the dilution of fat globules in whey during syneresis of cheese curd. *Applied Engineering in Agriculture* 21(2):265-269.
- Castillo, M., Payne, F.A., López, M.B., and Laencina, J. Optical sensors to monitor and control the processing of goat cheese. *Special Issue of the International Dairy Federation 0501/Part4*. pp. 250-256.
- Crofcheck, C., I. Maiti, S. Pattanaik, and M. Jay. 2004. Effect of ion and surfactant choice on the recovery of a histidine-tagged protein from tobacco extract using foam fractionation. *Applied Biochemistry and Biotechnology* 119(1):79-92.
- Crofcheck, C., J. Wade, J.N. Swamy, M.M. Aslan, and M.P. Mengüç. Effect of fat and casein particles in milk on the scattering of elliptically polarized light. *Transactions of the ASAE* 48(3):1147-1155.
- Crofcheck, C.L., M.D. Montross, A. Berkovich, and R.J. Andrews. The effect of temperature on the mild solvent extraction of white and red oak. *Biomass and Bioenergy* 28(6):572-578.
- Darr, M.J., T.S. Stombaugh, and S.A. Shearer. Controller area network based distributed control for autonomous vehicles. *Transactions of the ASAE* 48(2):479-490.
- Dharmagadda V.S.S., M. Tandon, and P. Vasudevan. Biocidal activity of the essential oils of *Lantana camara*, *Ocimum sanctum*, and *Tagetes patula*. *Journal of Scientific and Industrial Research* 64:53-56.
- Dharmagadda V.S.S., S. N. Naik, P.K. Mittal, and P. Vasudevan. Larvicidal activity of *Tagetes patula* essential oil against three mosquito species. *Bioresource Technology* 96:1235-1240.
- Dharmagadda, V.S.S., S.N. Naik, P.K. Rout, and Y.R. Rao. Composition of essential oil of *Tagetes patula* growing in North India. *Journal of Essential Oil Research* 17:446-448.
- Ferrandini, E., A. Price, M. Castillo, J. Laencina, J., and M.B. López. Fatty acids of Murciano-Granadina goats' milk from the region of Murcia. Influence of the farming area. *Special Issue of the International Dairy Federation 0501/Part 3*. pp. 158-159.
- Fulton, J.P., and L.G. Wells. 2004. Evaluation of a mechanical system for reconstructing soil on surface-mined land. *Applied Engineering in Agriculture* 21(1):43-51.
- Fulton, J.P., S.A. Shearer, S.F. Higgins, D.W. Hancock, and T.S. Stombaugh. Distribution pattern variability of granular VRT applicators. *Transactions of the ASAE* 48(6):2053-2064.
- Fulton, J.P., S.A. Shearer, S.F. Higgins, M.J. Darr, and T.S. Stombaugh. Rate response assessment from various granular VRT applicators. *Transactions of the ASAE* 48(6):2095-2103.
- Gates, R.S., H. Xin, Y. Liang, K.D. Casey, and E.F. Wheeler. Method for measuring ammonia emissions from poultry houses. *Journal of Applied Poultry Research* 14:622-634.
- Green, A.R., R.S. Gates, and L.M. Lawrence. Measurement of horse core body temperature. *Journal of Thermal Biology* 30(1):370-377.
- Higgins, S.F., M.S. Coyne, S.A. Shearer, and J.D. Crutchfield. Determining nitrogen fractions in swine slurry. *Bioresource Technology* 96:1081-1088.
- Higgins, S.F., S.A. Shearer, M.S. Coyne, and J.P. Fulton. A rapid method for determining TN and TP concentrations in swine slurry. *Transactions of the ASAE* 47(5):1727-1737.
- Ingram, C.W., M.S. Coyne, and D. Williams. Effects of commercial diazinon and imidacloprid on microbial urease activity in soil and sod. *Journal of Environmental Quality* 34:1573-1580.
- Jordán, M. J., Kevin, L. Goodner, Castillo, M., and Laencina, J. Comparison of two HS-SPME fibers for the detection of volatile chemical concentration changes due to industrial processing. *Journal of the Science of Food and Agriculture* 85:1065-1071.

- Kim, H.-H., R.M. Wheeler, J.C. Sager, and J.H. Norikane. Photosynthesis of lettuce exposed to different light qualities. *Environment Control in Biology* 43(2):113-119.
- Li, H., H. Xin, Y. Liang, R.S. Gates, E.F. Wheeler, and A.J. Heber. Comparison of direct vs. indirect ventilation rate determinations in layer barns using manure belts. *Transactions of the ASAE* 48(1):367-372.
- Liang, Y., H. Xin, E.F. Wheeler, R.S. Gates, H. Li, J.S. Zajaczkowski, P.A. Topper, K.D. Casey, B.R. Behrends, D.J. Burnham, and F.J. Zajaczkowski. Ammonia emissions from U.S. laying houses in Iowa and Pennsylvania. *Transactions of the ASAE* 48(5):1927-1941.
- McNeill, S.G., M.D. Montross, and S.A. Shearer. Spatial variation of protein, oil, and starch in yellow corn. *Applied Engineering in Agriculture* 21(4):619-625.
- Molenda, M., M.D. Montross, S.G. McNeill, and J. Horabik. Airflow resistance of seeds at different bulk densities using Engun's equation. *Transactions of the ASAE* 48(3):1137-1145.
- Montross, M.D., and S.G. McNeill. Permeability of corn, soybeans, soft red and white wheat as affected by bulk density. *Applied Engineering in Agriculture* 21(3):479-484.
- Norikane, J.H., Jessica J. Prenger, Donna T. Rouzan-Wheeldon, and Howard G. Levine. A comparison of soil moisture sensors for space flight applications. *Applied Engineering in Agriculture* 21(2):211-216.
- Norikane, J.H., Scott B. Jones, Susan L. Steinberg, Howard G. Levine, and Dani Or. Porous media matric potential and water content measurements during parabolic flight. *Habitation* 10(2):117-126.
- Singh, A., and Bicudo, J.R. Dairy manure nutrient analysis using quick tests. *Environmental Technology* 26:471-478.
- Thomasson, J.A., S.A. Shearer, and R.K. Byler. Image-processing solution to cotton color measurement problems: Part II, Instrument testing and evaluation. *Transactions of the ASAE* 48(2):439-454.
- Thomasson, J.A., S.A. Shearer, and R.K. Byler. Image-processing solution to cotton color measurement problems: Part I, Instrument design and construction. *Transactions of the ASAE* 48(2):421-438.
- Wang, T., Lucey, J.A., Castillo, M., and Payne, F.A. Predicting cottage cheese cutting time using a light backscatter sensor. *Milchwissenschaft* 60:164167.
- Wells, L.G., S.A. Shearer, and T.S. Stombaugh. Crop yield response to precision deep tillage. *Transactions of ASAE* 48(3):895-901.
- Wilkerson, E.G., R.S. Gates, S. Zolnier, S.T. Kester, and R.L. Geneve. Transpiration capacity in poinsettia cuttings at different rooting stages and the development of a cutting coefficient for scheduling mist. *Journal of the American Society for Horticultural Science* 130(3):295-301.
- Wilkerson, E.G., R.S. Gates, S. Zolnier, S.T. Kester, and R.L. Geneve. Predicting rooting stages in poinsettia cuttings using a root zone temperature-based model. *Journal of the American Society for Horticultural Science* 130(3):302-307.
- R.S. Gates contributed to one publication with primary author in the Animal and Food Sciences Department.

Community and Leadership Development

- Garton, B.L., T. Kitchel, and A.L. Ball. University admission criteria and learning style: Predictors of academic success? *NACTA Journal* 49(2):10-14.
- Goetz, Stephan, A. Dasgupta, and J.N. Zimmerman. Spatial food stamp program participation dynamics in U.S. counties. *The Review of Regional Studies* 34(2):53-71.
- Jones, K.R., and D.F. Perkins. Determining the quality of youth-adult relationships within community-based youth programs. *Journal of Extension* 43(5). Available online at: <http://www.joe.org/joe/2005october/a5.shtml>
- Peiter, R.L., R. Terry Jr., and D.D. Cartmell II. Mentoring first-year agricultural educators: Examining a state-mandated induction program. *Journal of Agricultural Education* 52(1):11-19.
- Tanaka, Keiko. Redefining the moral responsibilities for food safety: The case of red meat in New Zealand. *Rural Sociology* 70(4):470-490.
- Wright, W., E. Ransom, and K. Tanaka. Constructing confidence: The "All-American Meal" and the United States' case of BSE. *Journal of Illness, Crisis and Loss* 13(1):95-115.
- Zimmerman, J. N., and A. Meyer. Building knowledge, building community: Increasing Internet access to secondary data as part of the community development process. *Community Development Journal* 36(1):89-97.

In addition, members of the department published seven abstracts.

Entomology

- Allard, C.M., and K.V. Yeargan. Effect of diet on development and reproduction of the harvestman *Phalangium opilio* (Opiliones: Phalangiidae). *Environmental Entomology* 34:6-13.
- Allard, C. M., and K.V. Yeargan. Diel activity patterns and microspatial distribution of the harvestman *Phalangium opilio* (Opiliones, Phalangiidae) in soybeans. *Journal of Arachnology* 33:745-752.
- Choate, B.A., and L.K. Rieske. Life history and age-specific mortality of the eastern tent caterpillar, *Malacosoma americanum* Fabricius (Lepidoptera: Lasiocampidae). *Annals of the Entomological Society of America* 98:496-502.
- Choate, B.A., and L.K. Rieske. *Sympiesis fragariae* (Hymenoptera: Eulophidae) parasitizes *Malacosoma americanum* (Lepidoptera: Lasiocampidae) in Kentucky: Host and geographic records. *Entomological News* 116:183-185.

- Dai, X., L.G. Willis, S.R. Palli, and D.A. Theilmann. Tight transcriptional regulation of foreign genes in insect cells using an ecdysone receptor-based inducible system. *Protein Expression and Purification* 42:236-245.
- Figueroa-De la Rosa, J.I., M.J. Sharkey, and V. Lopez-Martinez. First records of males and new distribution records for two species of *Agathirsia* Westwood (Hymenoptera: Braconidae). *Entomological News* 116:113-114.
- Fox, C.W. Problems in measuring among-family variation in inbreeding depression. *American Journal of Botany* 92:1929-1932.
- Harwood, J.D., and J.J. Obrycki. Quantifying aphid predation rates of generalist predators in the field. *European Journal of Entomology* 102:335-350.
- Harwood, J.D., W. Wallin, and J.J. Obrycki. Uptake of Bt-endotoxins by non-target herbivores and higher order arthropod predators: Molecular evidence from a transgenic corn agroecosystem. *Molecular Ecology* 14:2815-2823.
- Harwood, J.D., and J.J. Obrycki. Web-construction behavior of linyphiid spiders (Araneae, Linyphiidae): Competition and co-existence within a generalist predator guild. *Journal of Insect Behavior* 18:593-607.
- Hubbard, J.L., and D.A. Potter. Life history and natural enemy associations of calico scale, *Eulecanium cerasorum* (Homoptera: Coccidae), in Kentucky. *Journal of Economic Entomology* 98:1202-1212.
- Kellogg, S.K., and L.K. Rieske. Resistance to a fungal pathogen influences resistance to generalist herbivores. *Entomologia experimentalis et applicata* 117:209-219.
- Kethidi, D.R., Z. Xi, and S.R. Palli. Developmental and hormonal regulation of juvenile hormone esterase gene in *Drosophila melanogaster*. *Journal of Insect Physiology* 51:393-400.
- Krafsur, E.S., J.J. Obrycki, and J.D. Harwood. Comparative genetic studies of endemic and exotic Coccinellidae in North America. *European Journal of Entomology* 102:469-474.
- Kroemer J. A., and B.A. Webb. Ikb-related vankyrin genes in the *Campoplex somorensis* ichnovirus exhibit temporal and tissue-specific expression in parasitized *Heliothis virescens* lepidopteran hosts. *Journal of Virology* 79:7617-7628.
- Lensing, J.R., S. Todd, and D.H. Wise. The impact of altered precipitation on spatial stratification and activity-densities of springtails (Collembola) and spiders (Araneae). *Ecological Entomology* 30:194-200.
- Maier, R.M., and D.A. Potter. Factors affecting distribution of the mound-building turfgrass ant *Lasius neoniger* (Hymenoptera: Formicidae) and implications for management on golf course putting greens. *Journal of Economic Entomology* 98:891-898.
- Maier, R.M., and D.A. Potter. Seasonal mounding, colony development, and control of nuptial queens of the ant *Lasius neoniger* in turfgrass. *Applied Turfgrass Science Online*: doi:10.1094/ATS-2005-0502-01-RS. May.

- Palli, S.R., M.Z. Kapitskaya, and D.W. Potter. The influence of heterodimer partner ultraspiracle/retinoid X receptor on the function of ecdysone receptor. *Federation of European Biochemical Societies Journal* 272:5979-5990.
- Palli, S.R., R.E. Hormann, U. Schlattner, and M. Lezzi. Ecdysteroid receptors and their applications in agriculture and medicine. *Vitamins and Hormones* 73:59-99.
- Palli, S.R. Gene switches for regulated expression of biopesticide genes. *Biopesticides International* 1:1-12.
- Palli, S.R., C.M. Tice, V.M. Margam, and A.M. Clark. Biochemical mode of action and differential activity of new ecdysone agonists against mosquitoes and moths. *Archives of Insect Biochemistry and Physiology* 58:234-42.
- Perera, S.C., S. Zheng, Q.L. Feng, P.J. Krell, A. Retnakaran, and S.R. Palli. Heterodimerization of ecdysone receptor and ultraspiracle on symmetric and asymmetric response elements. *Archives of Insect Biochemistry and Physiology* 60:55-70.
- Pitz, K.M., and M.J. Sharkey. *Cenocoelius huggerti*, the first record of the subfamily Cenocoeliinae (Hymenoptera: Braconidae) from Africa. *Journal of Hymenoptera Research* 14:92-95.
- Potter, D.A., L. Foss, R.E. Baumler, and D.W. Held. Managing eastern tent caterpillars, *Malacosoma americanum* (F.), on horse farms to reduce risk of Mare Reproductive Loss Syndrome. *Pest Management Science* 61:3-15.
- Potter, D.A., D.W. Held, and M.E. Rogers. Natural organic fertilizers as a risk factor for *Ataenius spretulus* (Coleoptera: Scarabaeidae) infestation on golf courses. *International Turfgrass Society Research Journal* 10:753-760.
- Potter, D.A. Prospects for managing destructive turfgrass insects without protective chemicals. *International Turfgrass Society Research Journal* 10:42-54.
- Rieske, L.K., and L.H. Townsend. Orientation and dispersal patterns of the eastern tent caterpillar, *Malacosoma americanum* F. (Lepidoptera: Lasiocampidae). *Journal of Insect Behavior* 18:193-207.
- Sanogo, Y.O., A. Eitam, and S.L. Dobson. No evidence for bacteriophage WO orf7 correlation with *Wolbachia*-induced cytoplasmic incompatibility in the *Culex pipiens* complex (Culicidae: Diptera). *Journal of Medical Entomology* 42:789-794.
- Sarmiento, C.E., and M.J. Sharkey. On the status of some species of Braconidae (Hymenoptera) described by J. C. Fabricius and the synonymy of *Dichelosus* Szepilgeti with *Coccygidium* De Saussure. *Zootaxa* 1067:59-68.
- Sharkey, M.J., and R.A. Briceno. Review of *Sesioctonus* Viereck (Hymenoptera: Braconidae: Agathidinae) from Colombia with descriptions of five new species. *Zootaxa* 1002:45-58.
- Sharkey, M.J. A new species of *Agathirsia* Westwood (Hymenoptera: Braconidae) from Mexico. *Zootaxa* 1070:43-47.
- Staley, A.C., and K.V. Yeargan. Oviposition behavior of *Coleomegilla maculata* (Coleoptera: Coccinellidae): Diel periodicity and choice of host plants. *Environmental Entomology* 34:440-445.
- Stillwell, R.C., and C.W. Fox. Complex patterns of phenotypic plasticity: Interactive effects of temperature during rearing and oviposition. *Ecology* 86:924-934.
- Turnbull, M.W., A.-N. Volkoff, P. Phelan, and B.A. Webb. Functional gap-junction genes are encoded by insect viruses. *Current Biology* 15:491-492.
- Webb, B.A., M.R. Strand, S.E. Dickey, M. Beck, R.S. Hilgarth, K. Kadash, J.A. Kroemer, K.G. Lindstrom, W. Rattanadechakul, K.S. Shelby, L. Thoetkiattikul, M.W. Turnbull, and R.A. Witherell. Polydnavirus genomes reflect their dual roles as mutualists and pathogens. *Virology*. doi:10.1016/j.virol.2005.11.01; online Dec. 27.
- Xi, Z., C.C. H. Khoo, and S.L. Dobson. *Wolbachia* establishment and invasion in an *Aedes aegypti* laboratory population. *Science* 310:326-328.
- Xi, Z., J.L. Dean, C. Khoo, and S.L. Dobson. Generation of a novel *Wolbachia* infection in *Aedes albopictus* (Asian tiger mosquito) via embryonic microinjection. *Insect Biochemistry and Molecular Biology* 35:903-10.
- Xi, Z., and S.L. Dobson. Characterization of *Wolbachia* transfection efficiency by using microinjection of embryonic cytoplasm and embryo homogenate. *Applied Environmental Microbiology* 71:3199-204.
- Yeargan, K.V., and C.M. Allard. Comparison of common milkweed and honeyvine milkweed (Asclepiadaceae) as host plants for monarch larvae (Lepidoptera: Nymphalidae). *Journal of the Kansas Entomological Society* 78:247-251.

In addition, members of the department published 20 abstracts.

Family Studies

- Bradford, K., and Barber, B.K. Intrusive and coercive family processes: Interparental conflict and ineffective parenting. *Journal of Emotional Abuse* 5 (2/3):143-167.
- Devall, E., Vail, A., and Resendez, J. Strategies for recruiting and retaining Hispanic students. *Journal of Family and Consumer Sciences* 97(4):50-55.
- Coleman, M., Ganong, L.H., Hans, J.D., Sharp, E.A., and Rothrauff, T.C. Filial obligations in post-divorce step-families. *Journal of Divorce and Remarriage* 43(3/4):1-27.
- Kim, H., and J. Lee. Unequal effects of elders' health problems on wealth depletion across race and ethnicity. *Journal of Consumer Affairs* 39(1):148-172.
- Whiting, J.B., Nebeker, R.S., and Fife, S.T. Moral responsiveness and discontinuity in therapy: A qualitative study. *Counseling and Values* 50:20-37.
- Zhao, Baomei, Heath, Claudia J., and Fogue, Ray. Perceptions of quality of life and availability of human services for households. *Consumer Interests Annual* 51:83-86. <http://www.consumerinterests.org/i4a/pages/idx.cfm?pageid=4032>.

Forestry

- Chiang, J., M.A. Arthur, and B.A. Blankenship. The effect of prescribed fire on gap fraction in an oak forest on the Cumberland Plateau. *Journal of the Torrey Botanical Society* 132:432-441.
- Yanai, R.D., J.D. Blum, S.P. Hamburg, M.A. Arthur, C.A. Nezat, and T.G. Siccama. New insights into calcium depletion in northeastern forests. *Journal of Forestry* 103:14-20.
- Yanai, R.D., R.P. Phillips, M.A. Arthur, T.G. Siccama, and E.N. Hane. Spatial and temporal variation in calcium and aluminum in northern hardwood forest floors. *Water, Air and Soil Pollution* 160:109-118.
- Seward, N.W., D.S. Maehr, J.W. Gasset, J.J. Cox, and J.L. Larkin. Field searches versus vaginal implant transmitters for locating elk calves. *Wildlife Society Bulletin* 33:751-755.
- Wichrowski, M.W., D.S. Maehr, J.L. Larkin, J.J. Cox, and M. Olsson. Activity and movements of reintroduced elk in southeastern Kentucky. *Southeastern Naturalist* 4:365-374.

Horticulture

- Arbolea, J., J. Masabni, M. Particka, and B. Zandstra. Identification of preharvest desiccants for use in onion production. *HortTechnology* 15(4):808-811.
- Cai-Xia Hou, Lynnette M.A. Dirk, and Mark A. Williams. 2004. Inhibition of peptide deformylase leads to a decrease of D1 protein synthesis and a disassembly of PSII complexes in *Nicotiana tabacum*. *The American Journal of Botany* 91(9):1304-1311.
- Geneve, R.L. Comparative adventitious shoot induction in Kentucky coffeetree root and petiole explants treated with thidiazuron and benzylaminopurine. *In Vitro Cellular and Developmental Biology—Plant* 41:489-493.
- Geneve, R.L. Common misconceptions about seed dormancy. *Combined Proceedings, International Plant Propagators' Society* 55:9-12.
- Hamilton-Kemp, T., Newman, M., Collins, R., Elgaali, H., Yu, K., and Archbold, D. Production of the long-chain alcohols octanol, decanol, and dodecanol by *Escherichia coli*. *Current Microbiology* 51:82-86.
- Koslanund, R., D.D. Archbold, and K.W. Pomper. Pawpaw (*Asimina triloba* (L.) Dunal) fruit ripening. I. Ethylene biosynthesis and production. *Journal of American Society for Horticultural Science* 130:638-642.
- Koslanund, R., D.D. Archbold, and K.W. Pomper. Pawpaw (*Asimina triloba* (L.) Dunal) fruit ripening. II. Activity of selected cell-wall degrading enzymes. *Journal of American Society for Horticultural Science* 130:643-648.
- Rowell, B., N. Bunsong, K. Sathaporn, S. Phithamma, and C. Doungsa-ard. Hymenopteran parasitoids of diamondback moth (Lepidoptera: Yponomeutidae) in northern Thailand. *Journal of Economic Entomology* 98:449-456.

Salaita, L., Kar, R.K., Majee, M., and Downie, A.B. Identification and characterization of activation tagged Arabidopsis mutants exhibiting rapid seed germination. *Journal of Experimental Botany* 56:2059-2069.

Walters, S.A., S.K. Kurtural, and B.H. Taylor. Influence of watermelon mosaic virus on net photosynthesis, yields, and farm-gate revenues of yellow squash. *Journal of Vegetable Science* 11(4):61-70.

Wells, S.K., S.T. Kester, and R.L. Geneve. Somatic embryo development in willow oak. *Combined Proceedings, International Plant Propagators' Society* 55:133-135.

Xu, Q., Zhang, D., and Downie, B. Rapid and efficient subcloning of DNA without dephosphorylation or gel electrophoresis. *Molecular Biotechnology* 29:111-118.

In addition, members of the department published 14 abstracts.

Landscape Architecture

Lee, B.D. Pennsylvania community watershed organizations as seen by key informants. *Journal of Extension* 43(5). <http://www.joe.org/joe/2005october/rb7.shtml>.

Livestock Disease Diagnostic Center

Bolin D.C., Donahue M., Vickers M.L., Harrison L., Sells S.F., Giles R.C., Hong C.B., Poonacha K.B., Sebastian M., Roberts J.E., and Williams N.M. Microbiologic and pathologic findings in an epidemic of equine pericarditis. *Journal of Veterinary and Diagnostic Investigation* 17: 38-44.

Flaminio, Julia B.F., Nydam Daryl V., Sebastian M., Bernard William V., Tobin Thomas, Hillegas Julia M., and Matychak Mary Beth. The mare reproductive loss syndrome (MRLS) and the eastern tent caterpillar: Immunological testing of aborting mares. *International Journal of Applied Research in Veterinary Medicine* 3(3):207-216.

Sebastian M., Giles R., Roberts J., Poonacha K., Harrison L., Donahue J., and Benirschke K. Funisitis associated with leptospiral abortion in an equine placenta. *Veterinary Pathology* 42:659-662. KAER Publications.

In addition, members of the department published two abstracts.

Merchandising, Apparel, and Textiles

Easter, E.P., and Ankenman, B.E. Evaluation of the care and performance of comfort stretch knits fabrics. *Book of Papers: AATCC 2005 International Conference and Exhibition*.

Kwon, H., and Y. Ku. Analysis of Web-site utilization on fashion brands. *Journal of Korean Society for Clothing Industry* 7(1):1-9.

Moore, M., Carpenter, J., Joshi, P., and Turner, M. Generation X versus Generation Y consumers: An evaluation of retail format preference and patronage motives. *Proceedings, ACRA Conference, Philadelphia, Pa.*

Turner, M., Carpenter, J. M., and Michelman, S. O. Assessing source countries for U.S. Product developers: Utilizing national competitive development as a framework. *Proceedings, Association of Marketing Theory and Practice Annual Conference* 14:326-332.

Wesley, S. C., and M. Bickle. Examination of a paradigm for preparing undergraduates for a career in the retailing industries: Mentors, curriculum, and an internship. *College Student Journal* 39(4):680-691.

In addition, members of the department published two abstracts.

Nutrition and Food Science

DiPietro, R., M.G. Roseman, and R. Ashley.

A study of consumers' response to quick service restaurants' healthy menu items: Attitudes vs. behaviors. *Journal of Foodservice Business Research* 7(4):59-74.

Espandiar, P., L.W. Robertson, C. Srinivasan, and H.P. Glauert. Comparison of different initiation protocols in the resistant hepatocyte model. *Toxicology* 206:373-381.

Glauert, H.P., Lu, Z., A. Kumar, R.P. Bunaciu, S. Patel, J.C. Tharappel, D.N. Stemm, H.J. Lehmler, E.Y. Lee, L.W. Robertson, and B.T. Spear. Dietary vitamin E does not inhibit the promotion of liver carcinogenesis by polychlorinated biphenyls in rats. *Journal of Nutrition* 135:283-286.

Ham, S., Kim, W., and Jeong, S. Effect of information technology on performance in upscale hotels. *International Journal of Hospitality Management* 24(2):281-294.

O'Brien, M.L., B.T. Spear, and H.P. Glauert. Role of oxidative stress in peroxisome proliferator-mediated carcinogenesis. *Critical Review of Toxicology* 35:61-88.

Roseman, M.G., Kurzynske, J., Tietyen, J. Consumer confidence regarding the safety of the U.S. food supply. *International Journal of Hospitality and Tourism Administration* 6(4):71-90.

Roseman, M.G. Consumer opinion on smoking bans and predicted impact on restaurant frequency. *International Journal of Hospitality and Tourism Administration* 6(4):49-60.

Roseman, M.G., and R. DiPietro. An exploratory study of quick service restaurants changing menus. *Journal of Nutrition in Recipe and Menu Development* 3(3/4):103-120.

Tatum, V.L., and C.K. Chow. Rapid measurements of retinol, retinal, and retinoic acid by high performance liquid chromatography. *Journal of Food and Drug Analysis* 11:21-24.

Wong, K., Ham, S., and Forsythe, H.W. Exploring the use of information technology in dietetics practice among clinical dietitians. *Journal of Community Nutrition* 7(3):1-7.

Zhao, Y., and L.H. Chen: Eicosapentaenoic acid prevents lipopolysaccharide-stimulated DNA binding or activator protein-1 and c-Jun N-terminal kinase activity. *Journal of Nutritional Biochemistry* 16:78-84.

In addition, members of the department published 27 abstracts.

Kwaku Addo contributed to two publications with the primary author in the Animal and Food Sciences Department.

Plant and Soil Sciences (Agronomy)

Adams, C.A., J.M. Baskin, and C.C. Baskin. Trait stasis versus adaptation in disjunct relict species: Evolutionary changes in seed dormancy-breaking and germination requirements in a subclade of *Aristolochia* subgenus *Siphisia* (Piperales). *Seed Science Research* 15:161-173.

Adams, C.A., J.M. Baskin, and C.C. Baskin. Comparative morphology of seeds of closely-related species of *Aristolochia* subgenus *Siphisia* (Aristolochiaceae, Piperales). *Botanical Journal of the Linnean Society* 148:433-436.

Afithhile, M.M., H. Fukushige, and D. Hildebrand. A defect in glyoxysomal fatty acid oxidation reduces jasmonic acid accumulation in *Arabidopsis*. *Plant Physiology and Biochemistry* 43:603-609.

Afithhile, M.M., H. Fukushige, and D. Hildebrand. Allene oxide synthase and hydroperoxide lyase product accumulation in *Artemisia* species. *Plant Science* 169:139-146.

Aiken, G.E., M.L. Looper, S.F. Tabler, and J.R. Strickland. Recovery of yearling steers from fescue toxicosis. *Proceedings, 20th International Grassland Congress*. Dublin, Ireland. Published on CD.

Aiken, G.E., S.F. Tabler, M.L. Looper, and D.K. Brauer. Supplementation with ground corn cost effectively increases weight gain of steers grazing bermudagrass. *Forages and Grazinglands*. Published online: doi:10.1094/FG-2005-0210-01-RS. <http://www.plantmanagementnetwork.org/pub/fg/research/2005/corn>.

Aiken, G.E., D.H. Pote, S.F. Tabler, and T.C. Tabler. Application of near infrared reflectance spectroscopy to estimate chemical constituents in broiler litter. *Communications in Soil Science and Plant Analysis* 36:2529-25239.

Animut, G., A.L. Goetsch, G.E. Aiken, R. Puchala, G. Detweiler, C.R. Krehbiel, R.C. Merkel, T. Sahl, L.J. Dawson, Z.B. Johnson, and T.A. Gipson. Grazing behavior and energy expenditure by sheep and goats co-grazing grass/forb pastures at three stocking rates. *Small Ruminant Research* 59:191-201.

Animut, G., A.L. Goetsch, G.E. Aiken, R. Puchala, G. Detweiler, C.R. Krehbiel, R.C. Merkel, T. Sahl, L.J. Dawson, Z.B. Johnson, and T.A. Gipson. Performance and forage selectivity of sheep and goats co-grazing grass/forb pastures at three stocking rates. *Small Ruminant Research* 59:203-215.

Argyris, J., D.M. TeKrony, D. Hershman, D.A. Van Sanford, M. Hall, B. Kennedy, M. Rucker, and C. Edge. *Fusarium* head blight infection following point inoculation in the greenhouse compared to movement of *Fusarium graminearum* in seed and floral components. *Crop Science* 45:626-634.

Baskin, J.M., C.C. Baskin, and R.W. Tyndall. Studies on dormancy, germination, and survival of seeds buried in soil of the rare plant species *Aeschynomene virginica* (Fabaceae). *Natural Areas Journal* 25:147-155.

Baskin, C.C., and J.M. Baskin. Underdeveloped embryos in dwarf seeds and implications for assignment to dormancy class. *Seed Science Research* 15:357-360.

- Baskin, C.C., J.M. Baskin, A. Yoshinaga, and K. Thompson. Germination of drupelets in multi-seeded drupes of the shrub *Lepetocophylla tameiameiae* (Ericaceae) from Hawaii, a case for deep physiological dormancy broken by high temperatures. *Seed Science Research* 15:349-356.
- Baskin, J.M., and C.C. Baskin. Ecology of two geographically restricted *Astragalus* species (Fabaceae), *A. bibullatus* and *A. tennesseensis*, of the eastern United States. *Brittanica* 57:345-353.
- Baskin, C.C., J.M. Baskin, and A. Yoshinaga. Morphophysiological dormancy in seeds of six endemic lobelioid shrubs (Campanulaceae) from the montane zone in Hawaii. *Canadian Journal of Botany* 83:1630-1637.
- Brauer, D., G.E. Aiken, D.H. Pote, S.J. Livingston, L.D. Norton, T.R. Way, and J.H. Edwards. Amendment effects on soil test phosphorus. *Journal of Environmental Quality* 34:1682-1686.
- Browne, R.A., J.P. Murphy, B.M. Cooke, D. Devaney, C.A. Griffey, J.A. Hancock, S.A. Harrison, P. Hart, F.L. Kolb, A.L. McKendry, E.A. Milus, C. Sneller, and D.A. Van Sanford. Identification of fusarium head blight resistance in soft red winter wheat germplasm using a detached leaf assay. *Plant Disease* 89:404-411.
- Bush, L.P. Tien C. (T.C.) Tso, Recipient of the 2005 Tobacco Science Research Conference Lifetime Achievement Award. *Beitrag Tabakforsch International* 21:423-424.
- Chatterjee, R., and L. Yuan. Directed evolution of metabolic pathways. *Trends in Biotechnology* 24 (1):28-38. Published online: doi:10.1016/j.tibtech.2005.11.002.
- Crossa, J., J. Burgueno, D. Autran, J.P. Ville-Calzada, P.L. Cornelius, N. Garcia, F. Salamanca, and D. Arenas. Using linear-bilinear models for studying gene expression \times treatment interaction in microarray experiments. *Journal of Agricultural, Biological and Environmental Statistics* 10:337-353.
- D'Angelo, E.M. Phosphorus retention and exchange by soils from mitigated and natural bottomland forest wetlands. *Wetlands* 25:297-305.
- D'Angelo, E.M., A.D. Karathanasis, J.E. Sparks, S.A. Ritchey, and S.A. Wehr-McChesney. Soil carbon and microbial communities at mitigated and late successional bottomland forest wetlands. *Wetlands* 25:162-175.
- De Paepe A., L. De Grauwe, S. Bertrand, J. Smalle, and D. Van Der Straeten. The *Arabidopsis* mutant *eer2* has enhanced ethylene responses in the light. *Journal of Experimental Botany* 56:2409-2420.
- Diaz-Zorita, M., J.H. Grove, and E. Perfect. Soil fragment size distribution and compact effort effects on maize root seedling elongation in moist soil. *Crop Science* 45:1417-1426.
- Egli, D.B., D.M. TeKrony, J.J. Heitholt, and J. Rupe. Relationship between air temperature during seed filling and seed germination and vigor in soybean. *Crop Science* 45:1329-1335.
- Egli, D.B., D.M. TeKrony, and J.F. Spears. Effect of high temperature stress during different stages of seed development in soybean (*Glycine max* (L.) Merrill). *Seed Technology* 27:177-189.
- Egli, D.B. Flowering, pod set, and reproductive success in soya bean. *Journal of Agronomy and Crop Science* 191:283-291.
- Egli, D.B., and W.P. Bruening. Shade and temporal distribution of pod production and pod set in soybean. *Crop Science* 45:1764-1769.
- Egli, D.B., and W.P. Bruening. Depodding causes green stem in soybean. *Crop Management*. doi:10.1094/CM-2006-0104-01-RS. (online).
- Fukushige, H., and D.F. Hildebrand. A simple and efficient system for green note compound biosynthesis by use of certain lipooxygenase and hydroperoxide lyase sources. *Journal of Agricultural and Food Chemistry* 53:6877-6882.
- Fukushige, H., C. Wang, T.D. Simpson, H.W. Gardner, and D.F. Hildebrand. Purification and identification of linoleic acid hydroperoxides generated by soybean lipooxygenases 2 and 3. *Journal of Agricultural and Food Chemistry* 53:5691-5694.
- Fukushige, H., and D.F. Hildebrand. Watermelon (*Citrullus lanatus*) hydroperoxide lyase greatly increases C₆ aldehyde formation in transgenic leaves. *Journal of Agricultural and Food Chemistry* 53:2046-2051.
- Gandhapudi, S.K., M.S. Coyne, E. D'Angelo, and C.J. Matocha. Nitrification in soil slurries amended with alum-treated poultry manure. *Bioresource Technology* 97:664-670.
- Harrell, M.S., D. Williams, B. Brecke, and S. Davis. Evaluation of sulfonylurea herbicides on cool- and warm-season turf species. Online. *Applied Turfgrass Science*. doi:10.1094/ATS-2005-1121-01-RS.
- Hartssock, N.J., T.G. Mueller, A.D. Karathanasis, and P.L. Cornelius. Interpreting soil electrical conductivity and terrain attribute variability with soil surveys. *Precision Agriculture* 6:53-72.
- Hawkins, T.S., J.M. Baskin, and C.C. Baskin. Life cycles and biomass allocation in seed- and ramet-derived plants of *Cryptotaenia canadensis* (Apiaceae), a monocarpic species of eastern North America. *Canadian Journal of Botany* 83:518-528.
- Hendrickson, E.B., D.W. Kennedy, G.E. Aiken, and S.F. Tabler. Case study: Assessment of relationships between carcass traits and body measures at conclusion of pasture backgrounding. *Professional Animal Scientist* 21:495-501.
- Hidayati, S.N., J.M. Baskin, and C.C. Baskin. Epicotyl dormancy in *Viburnum acerifolium* (Caprifoliaceae). *American Midland Naturalist* 153:232-244.
- Karathanasis, A.D., D.M.C. Johnson, and C.J. Matocha. Biosolid colloid-mediated transport of Cu, Zn, and Pb in waste-amended soils. *Journal of Environmental Quality* 34:1153-1164.
- Karathanasis, A.D., and J.R.V. Pils. Solid-phase fractionation of selected trace metals in some northern Kentucky soils. *Journal of Soil and Sediment Contamination* 14:293-308.
- Kersebaum, K.C., K. Lorenz, H.I. Reuter, J. Schwarz, M. Wegehenkel, and O. Wendroth. Operational use of agrometeorological data and GIS to derive site-specific nitrogen fertilizer recommendations based on the simulation of soil and crop growth processes. (Special Issue *Agrometeorology*, Z. Dunkel. ed.) *Physics and Chemistry of the Earth* 30/1-3:59-67.
- Kersebaum, K.C., H.I. Reuter, K. Lorenz, and O. Wendroth. Long-term simulation of soil/crop interactions to estimate temporal stability of potential management zones and consequences for site-specific nitrogen management considering water protection and/or yield production. pp. 795-802. IN: J.V. Stafford, ed. *Precision Agriculture '05. Proceedings, 5th European Conference on Precision Agriculture*, Uppsala, Sweden.
- Kondo, T., N. Okubo, T. Miura, C.C. Baskin, and J.M. Baskin. Ecophysiology of seed dormancy and germination of the mesic woodland herbaceous perennial *Corydalis ambigua* (Fumariaceae) in Japan. *Canadian Journal of Botany* 83:571-578.
- Kumudini, S., L. Grabau, T. Pfeiffer, and C. Steele. Management and production potential of value-added soybean cultivars in south-central USA. *Agronomy Journal* 97:904-909.
- Lee, C.D., K.A. Renner, D. Penner, R. Hammerschmidt, and J.D. Kelly. Glyphosate-resistant soybean management system effect on sclerotinia stem rot. *Weed Technology* 19:580-588.
- Long, P.W., J.C. Henning, and L.P. Bush. Ergovaline and ergovalinine and tall fescue content of pastures in central Kentucky. p. 309. IN: F.P. O'Mara et al., ed. *Proceedings, 20th International Grassland Congress*, Dublin, Ireland, June 26-July 1.
- Looper, M.L., G.E. Aiken, R. Flores, and C.F. Rosenkrans Jr. Influence of nutrient supplementation on body weight and condition, and pregnancy of market beef cows grazing stockpiled and spring-growth tall fescue. *Professional Animal Scientist* 21:225-231.
- Matocha, C.J., A.D. Karathanasis, S. Rakshit, and K.M. Wagner. Reduction of Cu(II) by Fe(II). *Journal of Environmental Quality* 34:1539-1546.
- Meade, T., and E.M. D'Angelo. Pentachlorophenol degradation at the flooded rice root-soil interface. *Chemosphere* 61:48-55.
- Mueller, T.G., H. Cetin, R.A. Fleming, C.R. Dillon, A.D. Karathanasis, and S.A. Shearer. Erosion probability maps: Calibrating precision agriculture data with soil surveys using logistic regression. *Journal of Soil and Water Conservation* 60:462-468.
- Mueller, T.G., S.R.K. Dhanikonda, N.B. Pusuluri, A.D. Karathanasis, K.K. Mathias, B. Mijatovic, and B.G. Sears. Optimizing inverse distance weighted interpolation with cross-validation. *Soil Science* 170:504-515.

- Pena-Yewtukhiw, E.M., G.J. Schwab, O. Wendroth, L.W. Murdock, and T. Stombaugh. Change in spatial variability structure of NDVI readings related to observation scale. pp. 353-359. IN: J.V. Stafford, ed. Precision Agriculture '05. Proceedings, 5th European Conference on Precision Agriculture, Uppsala, Sweden.
- Phartyal, S.S., J.M. Baskin, C.C. Baskin, and R.C. Thapliyal. Physical dormancy in seeds of *Dodonaea viscosa* (Sapindaceae) from India. Seed Science Research 15:59-61.
- Rakshit, S., C.J. Matocha, and G.R. Haszler. Nitrate reduction in the presence of wüstite. Journal of Environmental Quality 34:1286-1292.
- Reuter, H.I., K.C. Kersebaum, and O. Wendroth. Modelling of solar radiation influenced by topographic shading—evaluation and application for precision farming. (Special Issue Agrometeorology, Z. Dunkel, ed.) Physics and Chemistry of the Earth 30/1-3:143-149.
- Reuter, H.I., K.C. Kersebaum, and O. Wendroth. Spatial and temporal variability of soil properties with respect to relief information. pp. 433-440. IN: J.V. Stafford, ed. Precision Agriculture '05. Proceedings, 5th European Conference on Precision Agriculture, Uppsala, Sweden.
- Reuter, H.I., A. Giebel, and O. Wendroth. Can landform stratification improve our understanding of crop yield variability? Precision Agriculture 6:521-537.
- Schwab, G.J., E. Pena, T.S. Stombaugh, O. Wendroth, and L.W. Murdock. Wheat yield population response to variable rate N fertilization strategies using active NDVI sensors. pp. 235-242. IN: Stafford, J.V., ed. Precision Agriculture '05. Proceedings, 5th European Conference on Precision Agriculture, Uppsala, Sweden.
- Schultz, C.L., S.L. Lodge-Ivey, A.M. Craig, J.R. Strickland, and L.P. Bush. The effects of exposure to endophyte-infected tall fescue seed on fecal and urine concentrations of ergovaline and lysergic acid in mature gelding horses. p. 308. IN: F.P. O'Mara et al., ed. Proceedings, 20th International Grassland Congress, Dublin, Ireland, June 26-July 1.
- Sears, B.G., B. Mijatovic, T.G. Mueller, and R.I. Barnhisel. Interpreting yield variability with electrical conductivity and terrain attributes across a central Kentucky landscape. Crop Management. Published online September 2005: doi:10.1094/CM-2005-0928-01-RV.
- Shepherd, R.W., T. Bass, R.L. Houtz, and G.J. Wagner. Phylloplanins of tobacco are defensive proteins deployed on aerial surfaces by short glandular trichomes. The Plant Cell 17:1851-1861.
- Shi, H., L.P. Bush, and M. Krauss. Effect of nicotine to nornicotine conversion on myosmine and TSNA contents of burley tobacco. Tobacco Science and Technology 10:27-30.
- Siminszky, B., L. Gavilano, S.W. Bowen, and R.E. Dewey. Conversion of nicotine to nornicotine in *Nicotiana tabacum* is mediated by CYP82E4, a cytochrome P450 monooxygenase. Proceeding of the National Academy of Sciences, USA 102:14919-14924.
- Siminszky, B., N.P. Coleman, and M. Naveed. Denaturing HPLC efficiently detects mutations of the acetolactate synthase gene. Weed Science 53:146-152.
- Stoddard, C.S., J.H. Grove, M.S. Coyne, and W.O. Thom. Fertilizer, tillage, and dairy manure contributions to nitrate and herbicide leaching through the vadose zone. Journal of Environmental Quality 34:1354-1362.
- Takahashi, S., Y. Zhao, P.E. O'Maille, B.T. Greenhagen, J.P. Noel, R.M. Coates, and J. Chappell. Kinetic and molecular analysis of 5-Epiaristolochene-1,3-Dihydroxylase, a cytochrome P450 enzyme catalyzing successive hydroxylations of sesquiterpenes. Journal of Biological Chemistry 280:3686-3696.
- Taylor, N. L. and G. L. Olson. Registration of "Lucky" multiple-leaflet red clover. Crop Science 45:2657.
- TeKrony, D.M., T. Shande, M. Rucker, and D.B. Egli. Effect of seed shape on corn germination and vigor during warehouse and controlled environment storage. Seed Science and Technology 33:185-197.
- Turner, R., D.J. Merritt, C.C. Baskin, K.W. Dixon, and J.M. Baskin. Physical dormancy in seeds of six genera of Australian Rhamnaceae. Seed Science Research 15:51-58.
- Walck, J.M., J.M. Baskin, C.C. Baskin, and S.N. Hidayati. Defining transient and persistent seed banks in species with pronounced seasonal dormancy and germination patterns. Seed Science Research 15:189-196.
- Wendroth, O., A. Giebel, E. Pena-Yewtukhiw, K.C. Kersebaum, G.J. Schwab, H.I. Reuter, L.W. Murdock, and T.S. Stombaugh. Spatial relation between NDVI and grain yield: Impact of spatial resolution and measurement device. pp. 731-739. IN: Stafford, J.V., ed. Precision Agriculture '05. Proceedings, 5th European Conference on Precision Agriculture, Uppsala, Sweden.
- Williams, D., P. Burrus, R. King, E.K. Nelson, and J. Frelich. Comparisons of glyphosate-tolerant and glyphosate-susceptible creeping bentgrass genotypes in tiller production from stolon fragments. International Turf Society Research Journal 10:281-285.
- Woltz, J.M., D.B. Egli, and D.M. TeKrony. Freezing point temperatures of corn seed structures during seed development. Agronomy Journal 97:1564-1569.
- Wu, S., M.A. Schoenbeck, B.T. Greenhagen, S. Takahashi, S. Lee, R.M. Coates, and J. Chappell. Surrogate splicing for functional analysis of sesquiterpene synthase genes. Plant Physiology 138:1322-1333.
- Xu, S., E.M. D'Angelo, D. Ghosh, J. Feliciano, S. Deo, and S. Daunert. Detection of polychlorinated biphenyls employing chemical dechlorination followed by biphenyl whole-cell sensing system. Toxicological and Environmental Chemistry 87:287-298.
- Yuan, L., I. Kurek, J. English and R. Keenan. Laboratory-directed protein evolution. Microbiology and Molecular Biology Reviews 69 (3):373-392.
- Zhu, C., and S.E. Perry. Control of expression and autoregulation of AGL15, a member of the MADS-box family. The Plant Journal 41:583-594.
- Zhu H.Y., H.K. Choi, D.R. Cook, and R.C. Shoemaker. Bridging model and crop legumes through comparative genomics. Plant Physiology 137:1189-1196.

Andy Bailey contributed to two other publications in *Agricultural Economics*. Lowell Bush contributed to one other publication in *Plant Pathology*. Thomas Mueller contributed to two other publications in *Biosystems and Agricultural Engineering*. David Williams contributed to seven other publications in *Plant Pathology* and to one publication in *Biosystems and Agricultural Engineering*. Mark Coyne contributed to one publication in *Biosystems and Agricultural Engineering*.

In addition, members of the department published 109 abstracts.

Plant Pathology

- Blankenship, J.D., J.B. Houseknecht, S. Pal, L.P. Bush, R.B. Grossman, and C.L. Scharld. Biosynthetic precursors of fungal pyrrolizidines, the loline alkaloids. Chembiochem 6:1016-1022.
- Cheng, C.P., T. Panavas, G. Luo, and P.D. Nagy. Heterologous RNA replication enhancer stimulates *in vitro* RNA synthesis and template-switching by the carmovirus, but not by the ombusvirus, RNA-dependent RNA polymerase: Implication for modular evolution of RNA viruses. Virology 341:107-21.
- Damrongkool, P., A.B. Sedlock, C.A. Young, R.D. Johnson, K.E. Goetzl, B. Scott, C.L. Scharld, and D. G. Panaccione. Structural analysis of a peptide synthetase gene required for ergopeptine production in the endophytic fungus *Neotyphodium lolii*. DNA Sequence 16:379-385.
- Dean R., N. Talbot, D. Ebbole, M. Farman, T. Mitchell, M. Orbach, M. Thon, R. Kulkarni, J.-R. Xu, H. Pan, N. Read, Y.-H. Lee, I. Carbone, D. Brown, Y. Oh, N. Donofrio, J. Jeong, D. Soanes, S. Djonovic, E. Kolomiets, C. Rehmeyer, W. Li, M. Harding, S. Kim, M-H Lebrun, H. Bohnert, S. Coughlan, J. Butler, S. Calvo, L.-J. Ma, R. Nicol, S. Purcell, C. Nusbaum, J. Galagan, and B. Birren. Analysis of the genome sequence of the plant pathogenic fungus *Magnaporthe grisea*, the causal agent of rice blast disease. Nature 434:980-986.
- Donofrio N., R. Rajagopalan, D. Brown, S. Diener, D. Windham, S. Nolin, A. Floyd, T. Mitchell, N., Galadima, S. Tucker, M. Orbach, G. Patel, M. Farman, V. Pampanwar, F. Soderlund, Y.-H. Lee, and R. Dean. PACLIMS: A component LIM system for high-throughput functional genomic analysis. BMC Bioinformatics 6:94.

- Du, M., C.L. Schardl, E.M. Nuckles, and L.J. Vaillancourt. Using mating-type gene sequences for improved phylogenetic resolution of *Colletotrichum* species complexes. *Mycologia* 97(3):641-658.
- Farman, M., and Y.-S. Kim. Telomere hypervariability in *Magnaporthe oryzae*. *Molecular Plant Pathology* 6:287-298.
- Flowers, J.L., and L.J. Vaillancourt. Parameters affecting the efficiency of *Agrobacterium tumefaciens*-mediated transformation of *Colletotrichum graminicola*. *Current Genetics* 48:380-388.
- Funnell, D.L., C.B. Lawrence, J.F. Pedersen, and C.L. Schardl. Expression of the tobacco beta-1,3-glucanase gene PR-2d, following induction of SAR with *Peronospora tabacina*. *Physiological and Molecular Plant Pathology* 65(6):285-296.
- Galagan, J., S. Calvo, C. Cuomo, L.-J. Ma, J. Wortman, S. Batzoglou, S. Lee, M. Bastürkmen, C. Spevak, J. Clutterbuck, V. Kapitonov, J. Jurka, C. Scacciocchio, M. Farman, J. Butler, S. Purcell, S. Harris, G. Braus, O. Draht, S. Busch, C. D'Enfert, C. Bouchier, G. Goldman, D. Bell-Pedersen, S. Griffiths-Jones, J. Doonan, J. Yu, K. Vienken, A. Pain, M. Freitag, E. Selker, D. Archer, M. Peñalva, B. Oakley, M. Momany, T. Tanaka, T. Kumagai, K. Asai, M. Machida, W. Nierman, D. Denning, M. Caddick, M. Hynes, M. Paoletti, R. Fischer, B. Miller, P. Dyer, M. Sachs, S. Osmani, and B. Birren. Sequencing of *Aspergillus nidulans* and comparative analysis with *A. fumigatus* and *A. oryzae*. *Nature* 438:1105-1115.
- Gentile, A., M.S. Rossi, D. Cabral, K.D. Craven, and C.L. Schardl. Origin, divergence, and phylogeny of epichloë endophytes of native Argentine grasses. *Molecular Phylogenetics and Evolution* 35:196-208.
- Gu, H., and S.A. Ghabrial. The bean pod mottle virus proteinase cofactor and putative helicase are symptom severity determinants. *Virology* 333:271-283.
- Haarmann, T., C. Machado, Y. Lübke, T. Correia, C.L. Schardl, D.G. Panacchione, and P. Tudzynski. The ergot alkaloid gene cluster in *Claviceps purpurea*: Extension of the cluster sequence and intra-species evolution. *Phytochemistry* 66:1312-1320.
- Iriarte, F.B., H.C. Wetzel III, J.D. Fry, D.L. Martin, P. Vincelli, E.W. Dixon, and N.A. Tisserat. Aggressiveness of spring dead spot pathogens to bermudagrass. *International Turfgrass Research Society Journal* 10:258-264.
- Kachroo, P., C.V. Srivathsa, D.A. Navarre, L. Lapchyk, and A. Kachroo. Role of salicylic acid and fatty acid desaturation pathways in ssi2-mediated signaling. *Plant Physiology* 139:1717-1735.
- Li, W., C. Rehmeyer, C. Staben, and M. Farman. TERMINUS - Telomeric end read mining in unassembled sequences. *Bioinformatics* 21:1695-1698.
- Li, W., C. Rehmeyer, C. Staben, and M. Farman. TruMatch—A BLAST post-processor for identifying and reporting bona fide sequence matches. *Bioinformatics* 21:2097-2098.
- Luo, C.-X., L.-F. Yin, S. Koyanagi, M.L. Farman, M. Kusaba, and H. Yaegashi. Genetic mapping and chromosomal assignment of *Magnaporthe oryzae* avirulence genes AvrPik, AvrPiz, and AvrPiz-t controlling cultivar specificity on rice. *Phytopathology* 95:640-647.
- Monkewich, S., H.-X. Lin, M.R. Fabian, W. Xu, H. Na, D. Ray, O.A. Chernysheva, P.D. Nagy, and K.A. White. p92 polymerase coding region contains an internal RNA element required at an early step in tombusvirus genome replication. *Journal of Virology* 79:4848-58.
- Nandi, A., W. Moeder, P. Kachroo, D. Klessig, and J. Shah. The Arabidopsis ssi2-conferred susceptibility to *Botrytis cinerea* is dependent on EDS5 and PAD4. *Molecular Plant-Microbe Interactions* 18:363-370.
- Nierman, W., A. Pain, M. Anderson, J. Wortman, H. Kim, J. Arroya, M. Berriman, K. Abe, D. Archer, C. Bermejo, J. Bennett, P. Bowyer, D. Chen, M. Collins, R. Coulsen, R. Davies, P. Dyer, M. Farman, N. Fedorova, T. Feldblyum, R. Fischer, N. Fosker, A. Fraser, J. Garcia, M. Garcia, A. Goble, G. Goldman, K. Gomi, S. Griffiths-Jones, R. Gwilliam, H. Haas, D. Harris, H. Horiuchi, J. Huang, S. Humphrey, J. Jimenez, N. Keller, H. Khouri, K. Kitamoto, T. Kobayashi, R. Kulkarni, T. Kumagai, A. Lafton, J.-P. Latge, A. Lord, C. Lu, W. Majoros, G. May, B. Miller, Y. Mohamoud, M. Molina, M. Monod, I. Mouyna, S. Mulligan, L. Murphy, S. O'Neill, I. Paulsen, M. Penalva, M. Perlea, C. Price, B. Pritchard, M. Quail, E. Rabinowitsch, N. Rawlins, M.-A. Rajandream, U. Reichard, H. Renaud, G. Robson, S. de Cordoba, J. Rodrigues-Pena, C. Ronning, S. Rutter, S. Salzberg, M. Sanchez, J. Sanchez-Ferrero, D. Saunders, K. Seeger, R. Squares, S. Squares, M. Takeuchi, F. Tekaiia, G. Turner, C. Vasquez de Aldana, J. Weidman, O. White, J. Woodward, J.-H. Yu, C. Fraser, J. Galagan, K. Asai, M. Machida, N. Hall, B. Barrell, and D. Denning. Genomic sequence of the pathogenic and allergenic *Aspergillus fumigatus*. *Nature* 438:1151-1156.
- Panaviene, Z., T. Panavas, and P.D. Nagy. Role of an internal and two 3'-terminal RNA elements in assembly of tombusvirus replicase. *Journal of Virology* 79:10608-18.
- Panavas, T., C.M. Hawkins, Z. Panaviene, and P.D. Nagy. The role of the p33:p33/p92 interaction domain in RNA replication and intracellular localization of p33 and p92 proteins of cucumber necrosis tombusvirus. *Virology* 338:81-95.
- Panavas, T., and P.D. Nagy. Mechanism of stimulation of plus-strand synthesis by an RNA replication enhancer in a tombusvirus. *Journal of Virology* 79:9777-85.
- Panavas, T., E. Serviène, J. Brasher, and P.D. Nagy. Yeast genome-wide screen reveals dissimilar set of host genes affecting replication of RNA viruses. *Proceedings, National Academy of Sciences U.S.A.* 102:7326-31.
- Pogany, J., K.A. White, and P.D. Nagy. Specific binding of the tombusvirus replication protein p33 to an internal replication element in the viral RNA is essential for replication. *Journal of Virology* 79:4859-69.
- Senthil, G., H. Liu, V.G. Puram, A. Clark, A. Stromberg, and M.M. Goodin. Specific and common changes in *Nicotiana benthamiana* gene expression in response to infection by enveloped viruses. *Journal of General Virology* 86:2615-2625.
- Serviène, E., N. Shapka, C.-P. Cheng, T. Panavas, B. Phuangrat, J. Baker, and P.D. Nagy. Genome-wide screen identifies host genes affecting viral RNA recombination. *Proceedings, National Academy of Sciences U.S.A.* 102:10545-10550.
- Shapka, N., J. Stork, and P.D. Nagy. Phosphorylation of the p33 replication protein of cucumber necrosis tombusvirus adjacent to the RNA binding site affects viral RNA replication. *Virology* 343:65-78.
- Spiering, M.J., C.D. Moon, H.H. Wilkinson, and C.L. Schardl. Gene clusters for insecticidal alkaloids in the grass-endophytic fungus *Neotyphodium uncinatum*. *Genetics* 169:1403-1414.
- Stork, J., Z. Panaviene, and P.D. Nagy. Inhibition of *in vitro* RNA binding and replicase activity by phosphorylation of the p33 replication protein of cucumber necrosis tombusvirus. *Virology* 343:79-92.
- Tsai, C.W., M.G. Redinbaugh, K.J. Willie, S. Reed, M.M. Goodin, and S.A. Hogenhout. Complete genome sequence and in planta subcellular localization of maize fine streak virus proteins. *Journal of Virology* 79:5304-5314.
- Vincelli, P. An inquiry-based approach to teaching disease cycles. The Plant Health Instructor. Published online: doi:10.1094/PHI-T-2005-0222-01. <http://www.apsnet.org/education/InstructorCommunication/TeachingArticles/Vincelli/default.htm>.
- Zhang, C. and S.A. Ghabrial. Development of bean pod mottle virus based vectors for stable protein expression and sequence-specific virus-induced gene silencing in soybean. *Virology*. Published online: doi: 10.1016/j.virol.2005.08.046.

Donald Hershman also contributed to one publication listed under another department. Christopher Schardl also contributed to one publication listed under another department. Paul Vincelli also contributed to one publication listed under another department.

In addition, members of the department published 30 abstracts.

Veterinary Science

- Anzai, T., Kuwanmoto, R. Wada, S. Sugita, T. Kakuda, S. Takai, T. Higuchi, and J.F. Timoney. Variation in the N-terminal region of an M-like protein of *Streptococcus equi* and evaluation of its potential as a tool in epidemiologic studies. *American Journal of Veterinary Research* 66:2167-2171.
- Bowles, K., D. Horohov, D. Paulsen, C. Leblanc, M. Littlefield-Chabaud, T. Ahlert, K. Ahlert, S. Pourciau and A. Penn. Exposure of adult mice to environmental tobacco smoke fails to enhance the airway response to inhaled ovalbumin. *Inhalation Toxicology* 17(1):43-51.

- Brooks, S.A., and E. Bailey. Exon skipping in the *KIT* gene causes the Sabino spotting pattern in horses. *Mammalian Genome* 16:893-902.
- Buchanan, M.F., W.C. Carter, L.M. Cowgill, D.J. Hurley, S.J. Lewis, J.N. MacLeod, T.R. Melton, J.N. Moore, I.M. Pessah, M.S. Roberson, T.P. Robertson, M.L. Smith, and M.L. Vandenplas. Using 3-D animations to teach intracellular signal transduction mechanisms: Taking the arrows out of cells. *Journal of Veterinary Medical Education* 32:72-78.
- Cook, R.F., S.J. Cook, P.S. Bolin, L.J. Howe, R.C. Montelaro, and C.J. Issel. Genetic immunization with codon-optimized equine infectious anemia virus (EIAV) surface unit (SU) envelope sequences stimulates immune responses in ponies. *Veterinary Microbiology* 108:23-37.
- Craig, J.K., J.D. Steckbeck, S. Durkin, L. Howe, S.J. Cook, C. Issel, and R.C. Montelaro. Discerning an effective balance between equine infectious anemia virus attenuation and vaccine efficacy. *Journal of Virology* 79(5):2666-2677.
- Flaminio, M., D.V. Nydam, M. Sebastian, W.V. Bernard, T. Tobin, J.M. Hillegas, and M.B. Matychak. The mare reproductive loss syndrome (MRLS) and the eastern tent caterpillar: Immunological testing of aborting mares. *International Journal of Applied Research in Veterinary Medicine* 3(3):207-216.
- Guan, F.Y., C.E. Uboh, L.R. Soma, Y. Luo, J. Rudy, and T. Tobin. Detection, quantification, and confirmation of anabolic steroids in equine plasma by liquid chromatography and tandem mass spectrometry. *Journal of Chromatography B Analytical Technologies in the Biomedical and Life Sciences* 829(1-2):56-68.
- Hoane, J.S., J.K. Morrow, W.J. Saville, J.P. Dubey, D.E. Granstrom, and D.K. Howe. Enzyme-linked immunosorbent assays for the detection of equine antibodies specific to *Sarcocystis neurona* surface antigens. *Clinical and Diagnostic Laboratory Immunology* 12(9):1050-1056.
- Hoane, J.S., M.R. Yeagan, S. Stamper, W.J. Saville, J.K. Morrow, D.S. Lindsay, and D.K. Howe. Recombinant NhSAG1 ELISA: a sensitive and specific assay for detecting antibodies against *Neospora iugheesi* in equine serum. *Journal of Parasitology* 91(2):446-452.
- Horohov, D.W., R.E. Beadle, S. Mouch, and S.S. Pourciau. Temporal regulation of cytokine mRNA expression in equine recurrent airway obstruction. *Veterinary Immunology and Immunopathology* 108:237-245.
- Howe, D.K., R. Gaji, M. Mroz-Barrett, M.J. Gubbels, B. Striepen, and S. Stamper. *Sarcocystis neurona* merozoites express a family of immunogenic surface antigens that are orthologues of the *Toxoplasma gondii* surface antigens (SAGs) and SAG-related sequences. *Infection and Immunity* 73(2):1023-1033.
- Howe, L., J. Craig, C.J. Issel, and R.C. Montelaro. Development of serum neutralizing antibodies to a neutralization resistant ELAV Δ PND envelope variant after immune suppression of experimentally infected ponies results from changes in host antibodies directed to gp90 V3 and V4 domains. *Journal of General Virology* 86:139-149.
- Kleiber, C., B.C. McGorum, D.W. Horohov, R.S. Pirie, A. Zurbruggen, and R. Straub. Cytokine profiles of peripheral blood and airway CD4 and CD8 T lymphocytes in horses with recurrent airway obstruction. *Veterinary Immunology and Immunopathology* 104(1-2):91-97.
- Kumar, P., and J.F. Timoney. Histology and ultrastructure of the equine lingual tonsil. I. Crypt epithelium and associated structures. *Anatomy, Histology, Embryology* 34:27-32.
- Kumar, P., and J.F. Timoney. Histology and ultrastructure of the equine lingual tonsil. II. Lymphoid tissue and associated high endothelial venules. *Anatomy, Histology, Embryology* 34:98-104.
- Kumar, P., and J.F. Timoney. Histology, immunohistochemistry, and ultrastructure of the equine tubal tonsil. *Anatomy, Histology, Embryology* 34:141-148.
- Kumar, P., and J.F. Timoney. Histology, immunohistochemistry, and ultrastructure of the equine palatine tonsil. *Anatomy, Histology, Embryology* 34:192-198.
- Lehner, A.F., M. Craig, N. Fannin, L. Bush, and T. Tobin. Electrospray[+] tandem quadrupole mass spectrometry in the elucidation of ergot alkaloids chromatographed by HPLC: Screening of grass or forage samples for novel toxic compounds. *Journal of Mass Spectrometry* 40(11):1484-1502.
- Luis, C., E.G. Cothran, M.M. Oom, and E. Bailey. Major histocompatibility complex locus DRA polymorphism in the endangered Sorraia horse and related breeds. *Journal of Animal Breeding and Genetics* 122:69-72.
- Lyons, E.T. Historic importance of some aspects of research by O. Wilford Olsen on hookworms (*Uncinaria lucasi*) in northern fur seals (*Callorhinus ursinus*) and Steller sea lions (*Eumatopias jubatus*) in 1951 on St. Paul Island, Alaska. *Parasitology Research* 95:353-357.
- Lyons, E.T., and R.L. DeLong. Photomicrographic images of some features of *Uncinaria* spp. (Nematoda: Ancylostomatidae) from otariid pinnipeds. *Parasitology Research* 95:346-352.
- Lyons, E.T., R.L. DeLong, T.R. Spraker, S.R. Melin, J.L. Laake, and S.C. Tolliver. Seasonal prevalence and intensity of hookworms (*Uncinaria* spp.) in California sea lion (*Zalophus californinus*) pups born in 2002 on San Miguel Island, California. *Parasitology Research* 96:127-132.
- Penedo, M.C.T., L.V. Millon, D. Bernoco, E. Bailey, M. Binns, G. Cholewinski, N. Ellis, J. Flynn, B. Gralak, A. Guthrie, G. Lindgren, L.A. Lyons, T. Tozaki, K. Røed, and J. Swinburne. International Equine Gene Mapping Workshop Report: A comprehensive linkage map constructed with data from new markers and by merging four mapping resources. *Cytogenetics and Genome Research* 111:5-15.
- Pereygin, A.A., T.L. Lear, A.A. Zharkikh, and M.A. Brinton. Structure of equine 2'-5' oligoadenylate synthetase gene family. *Cytogenetic and Genome Research* 111:51-56.
- Quinlivan, M., D. Zamarin, A. Garcia-Sastre, A. Cullinane, T. Chambers, and P. Palese. Attenuation of equine influenza viruses through truncations of the NS1 protein. *Journal of Virology* 79:8431-8439.
- Sponseller, B.T., S. J. Valberg, B. Tennent-Brown, J.H. Foreman, P. Kumar, and J.F. Timoney. Severe acute rhabdomyolysis associated with *Streptococcus equi* infection in four horses. *Journal American Veterinary Medical Association* 227:1800-1807.
- Sweeney, C.R., J.F. Timoney, J.R. Newton, and M.T. Hines. *Streptococcus equi* infections in horses: Guidelines for treatment, control and prevention of strangles. *Journal of Veterinary Internal Medicine* 19:123-134.
- Tallmadge, R.L., T.L. Lear, and D.F. Antczak. Genomic characterization of MHC class I genes of the horse. *Immunogenetics* 57:763-764.
- Tandon, R., E.T. Lyons, S.C. Tolliver, and R.M. Kaplan. Effect of moxidectin selection on the genetic variation within *Cylicocyclus nassatus* based on amplified fragment length polymorphism (AFLP). *International Journal of Parasitology* 35:813-819.
- Timoney, J.F., M. Hartmann, L. Fallon, and J. Walker. Antibody responses of mares to prepartum vaccination with *Clostridium perfringens* bacterin supplemented with recombinant Beta 2 toxin. *Veterinary Record* 157:810-811.
- Vaishnav, S., D.P. Morrison, R.Y. Gaji, J.M. Murray, R. Entzeroth, D.K. Howe, and B. Striepen. Plastid segregation and cell division in the apicomplexan parasite *Sarcocystis neurona*. *Journal of Cell Science* 118:3397-3407.
- Verma, A., S. Artiushin, J. Matsunaga, D.A. Haake, and J.F. Timoney. LruA and LruB, novel lipoproteins of pathogenic *Leptospira interrogans* associated with equine recurrent uveitis. *Infection and Immunity* 73:7259-7266.
- Walker, M.C., T.C. Mandell, P.C. Crawford, G.G. Simon, K.S. Cahill, P.J. Fernandes, J.N. MacLeod, B.J. Byrne, and J.K. Levy. Expression of erythropoietin in cats treated with a recombinant adeno-associated viral vector. *American Journal of Veterinary Research* 66:450-456.

In addition, members of the department published 44 abstracts.

Other Research Publications

Agricultural Economics

- Freshwater, David. External Constraints and Opportunities for the Farm Credit System. Report prepared for the Horizons Project of the Farm Credit System. March.
- Maynard, L.J. Value-added pros and cons: Can producers profit from high-CLA milk and dairy products? IN: Beauchemin, K., ed. *Advances in Dairy Technology*, Proceedings, Western Canadian Dairy Seminar, 17(2005):49-60.

Animal and Food Sciences

- Cromwell, G.L. Micro-mineral nutrition in monogastrics: Copper and zinc. pp. 67-75. Proceedings, Western Nutrition Conference, Calgary, Alberta, Canada, Sept. 21-23.
- Lawrence, L.M., and B. Cassill. Alfalfa hay for horses. Proceedings, 25th Kentucky Alfalfa Conference, Cave City, Ky.
- Lindemann, M.D. Vitamin supplementation—from requirement to risk management. pp. 41-55. Proceedings, 11th Short Course on Feed Technology, Seoul, Korea.
- Matthews, J.C. Patterns and Putative Regulatory Pathways of High-Affinity Glutamate Transporter Expression by Ruminants. Virginia Tech Department of Dairy Science Seminar, Blacksburg, Va., Jan. 15.

Biosystems and Agricultural Engineering

- Casey, K.D., R.S. Gates, A. Singh, A.J. Pescatore, E.F. Wheeler, H. Xin, and Y. Liang. The effect of litter management on ammonia emissions from U.S. broiler chicken houses. Paper No. 615. Air and Waste Management Association 98th Annual Conference, Minneapolis, Minn. June 21-24.
- Colliver, D.G., and R.E. Jarnagin. Achieving 30% progress toward a net-zero energy small office—development of the advanced energy design guide for small office buildings. *Clima 2005—8th REHVA World Congress*. Lausanne, Switzerland.
- Colliver, D.G., and R.E. Jarnagin. Development of the advanced energy design guide for small office buildings. Same as ASHRAE March ASHRAE Journal paper but posted on the Illuminating Engineering Society of North America (IESNA). Online site <http://iesna.org/PDF/Store/AEDGArticle.pdf>.
- Crofcheck, C., and M. Montross. Comparison of methods for glucose and xylose quantification. Presented at the 2005 ASABE Annual Meeting, Tampa, Fla. ASABE No. 05-7049.
- Crofcheck, C., R. Gates, S. Workman, M. Montross, H. Xin, B. Steward, S. Mikelson, S. Taylor, and Ilda de Fátima de Ferreira Tinôco. Consortium for sustainable plant and animal production systems: An undergraduate exchange program. Presented at the 2005 ASABE Annual International Meeting, Tampa, Fla. ASABE No. 05-8015.
- Crofcheck, C., S. Nokes, M. Montross, and S. McNeill. Virtual and face-to-face tours of ethanol and biodiesel production facilities in Kentucky. Presented at the 2005 ASABE Annual International Meeting, Tampa, Fla. ASABE No. 05-7010.
- Darr, M.J., L. Zhao, M.R. Ehsani, J.K. Ward, and T.S. Stombaugh. Evaluation of Controller Area Network data collection system in confined animal feeding operations. pp. 179-187. IN: Tami Brown-Brandl and Ronaldo Maghirang, ed. Proceedings, 5th International Symposium, Livestock Environment VII, May 18-20, Beijing, China. ASAE Pub. No. 701P0205.
- Ferrandini, E. Castillo, M., Price, A.V., Laencina, J., and Lopez, M.B. Estudio del empleo de cuajos naturales en leche de cabra y vac. pp. 1023-1026. IN: Avances de la Ciencia y Tecnología en los inicios del siglo XXI. Productos tradicionales y tipificación de aliment. Ed Servicio de Publicaciones. Universidad de Burgos. ISBN:84-96394 23-9.
- Ferrandini, E., Castillo, M., López, M.B., and Laencina, J. A review of the models for the structure of the casein micelle. Poster. ADSA Annual Meeting. Cincinnati, Ohio, 24-28 July.
- Ferrandini, E., López, M. B., Castillo, M., and Laencina, J. El Futuro del sector lechero caprino. Conclusiones del symposium internacional de la Federación Internacional de Lechería. *Acrimur*. Revista de Información Ganadera. 15 14 16.
- Gates, R.S., K.D. Casey, A.J. Pescatore, E.F. Wheeler, and H. Xin. Assessing annual U.S. broiler house emissions. Paper No. 1292, Air and Waste Management Association 98th Annual Conference, Minneapolis, Minn. June 21-24.
- Green, A.R., G.A. Watkins, G.B. Day, J.R. Barnett, and R.S. Gates. Design of a biofilter for swine waste facility. IN: Proceedings, 5th International Symposium, Livestock Environment VII, May 18-20, Beijing, China. ASAE Publications, St. Joseph, Mich.
- Koostra, B.K., T.S. Stombaugh, S.A. Shearer, and M.W. Veal. GIS analysis of dynamic GPS test data. ASAE Paper No. 05-1084. ASAE Publications, St. Joseph, Mich.
- McNeill, S.G., and M.D. Montross. Drying and storage properties of selected specialty grains. Paper No. 05-6177. ASABE Annual International Meeting, Tampa, Fla. July 17-20.
- Minagawa, H., and R.S. Gates. Growth and production of layers raised in a controlled thermal environment compared to those in an environment non-controlled. IN: Proceedings, 5th International Symposium, Livestock Environment VII, May 18-20, Beijing, China. ASAE Publications, St. Joseph, Mich.
- Norikane, J.H., J.C. Sager, R.M. Wheeler, G.W. Stutte, and H.-H. Kim. Characterization of nutrient solution changes during flow through media. Paper No. 05-ICES-2774. 35th International Conference on Environmental Systems (ICES). Rome, Italy, July 11-14.

- Purwell, J.L., R.S. Gates, L.M. Lawrence, T.S. Stombaugh, R.J. Coleman, and W.C. Adams. Air exchange rate in a horse trailer during transport. pp. 013. IN: Tami Brown-Brandl and Ronaldo Maghirang, ed. Proceedings, 7th International Livestock Environment Symposium, 18-20 May, Beijing, China. American Society of Agricultural Engineers, ASAE Pub. No. 701P0205. ASAE Publications, St. Joseph, Mich.
- Sama, M.P., T.S. Stombaugh, and P. Menguc. Adaptation and modification of a digital imaging system for remote sensing. ASAE Paper No. 05-1016. ASAE Publications, St. Joseph, Mich.
- Shearer, S.A., T.S. Stombaugh, and M.W. Veal. Distribution and directional dependence of GPS receiver dynamic cross-track errors under constant acceleration. ASAE Paper No. 05-1085. ASAE Publications, St. Joseph, Mich.
- Singh, A., K.D. Casey, A.J. Pescatore, and R.S. Gates. Efficacy of urease inhibitor to reduce ammonia emissions from broiler litter. p. 18. Proceedings, Animal Waste Management Symposium, Research Triangle Park, N.C., Oct. 5-7.
- Stombaugh, T.S., J. Cole, B.K. Koostra, S.A. Shearer, and M.W. Veal. Comparison of GPS receiver dynamic performance using a test fixture. ASAE Paper No. 05-1086. ASAE Publications, St. Joseph, Mich.
- Stombaugh, T.S., J. Cole, S.A. Shearer, and B.K. Koostra. A test facility for evaluating GPS dynamic accuracy. pp. 605-612. IN: Proceedings, 5th European Conference on Precision Agriculture, Uppsala, Sweden, 8-10 June.
- Swamy, J.N., C. Crofcheck, M.P. Mengüç, and M. Aslan. Modeling foam properties and protein recovery in a foam fractionation column. Presented at the 2005 ASABE Annual International Meeting, Tampa, Fla. ASABE No. 05-7057.
- Thoma, E.D., R.C. Shores, D.B. Harris, D.F. Natshke, R.A. Hashmonay, K.D. Casey, and R.S. Gates. Measurement of ammonia emissions from mechanically ventilated poultry houses using multipath tunable diode laser spectroscopy. Paper No. 542, Air and Waste Management Association 98th Annual Conference, Minneapolis, Minn., June 21-24.
- Veal, M.W., S.A. Shearer, T.S. Stombaugh, and B.K. Koostra. Assessment of GPS guidance system accuracy using multiple RTK-GPS receivers. ASAE Paper No. 05-1089. ASAE Publications, St. Joseph, Mich.
- Wells, L., and C. Crofcheck. Educational objectives and outcomes at the University of Kentucky: Perspectives from a recently reviewed program. Presented at the 2005 ASABE Annual International Meeting, Tampa, Fla. ASABE No. 05-7059.
- Wolanin, M., and C. Crofcheck. Utilization of nickel nanoparticles to facilitate the recovery of histidine-tagged proteins. Presented at the 2005 ASABE Annual International Meeting, Tampa, Fla. ASABE No. 05-7011.

Community and Leadership Development

- Frank, S.M., and J.N. Zimmerman. Food in Floyd: A case study of food cost disparity in rural areas. *The Rural Sociologist* 25(4):34-40.
- Kitchel, T., and Torres, R.M. Matching student teachers with cooperating teachers: Similarity, satisfaction, and personality type. Proceedings, Third North Central AAEA Research Conference, Columbus, Ohio.
- Kitchel, T., and R.M. Torres. Personality type as a predictor of psychosocial assistance cooperating teachers provided student teachers. Proceedings, Third North Central AAEA Research Conference, Columbus, Ohio.
- Peiter Horstmeier, R., M. Nall, and R. Rennekamp. FFA leadership: Do activities navigate toward full potential? Proceedings, Association for Leadership Educators Conference, Wilmington, N.C. Available online: www.leadershipeducators.org
- Peiter, R., and B.A. Dukes. College of Agriculture faculty perspectives in their role as advisor and mentor. Proceedings, 55th annual AAEA-Southern Region Conference, Little Rock, Ark.
- Peiter, R., and B.A. Dukes. Student advising and mentoring in the College of Agriculture: Examining faculty and administration attitudes. Proceedings, 55th annual AAEA-Southern Region Conference, Little Rock, Ark.
- Zimmerman, J.N. A Conversation with Olaf Larson: Part 1. *The Rural Sociologist* 25(4):30-32.
- Zimmerman, J.N., and S.M. Frank. Selecting control counties for the 9-county project on breast and cervical cancer screening. Department of Community and Leadership Development, University of Kentucky. Data analysis and report. May 16.

Entomology

- Harwood, J.D., and J.J. Obycki. The role of alternative prey in sustaining predator populations. pp. 453-462. IN: M.S. Hoddle, compiler. Proceedings, Vol. II, 2nd International Symposium on the Biological Control of Arthropods, Davos, Switzerland, Sept. 12-16.
- Sharkey, M.J., J. Whitfield, and K. Seltmann. Identification keys to the economically important species of parasitic wasps of the genus *Cotesia* (Hymenoptera: Braconidae). <http://www.uky.edu/cgi-bin/cgiwrap/mjshar0/cotesia.cgi>.
- Sharkey, M.J., J. Whitfield, and K. Seltmann. Species home pages for economically important species of parasitic wasps of the genus *Cotesia* (Hymenoptera: Braconidae). <http://www.uky.edu/cgi-bin/cgiwrap/mjshar0/cotesia.cgi>.

Family Studies

- Devall, E., Vail, A., Vanleeuwen, D., and Montanez, M. Parenting education in New Mexico: Strengthening diverse families. IN: Rosario Esteinou. *The Mexican International Family Strengths Conference Proceedings*. http://www.ciesas.edu.mx/bibdf/proyectos/mifs2005/papers/05/esther_devall_et_al.pdf.
- Heath, Claudia J. The Economic Effects of Marriage on Poor and Non-Poor Women in Kentucky: The Complete Model: Recognizing the Effects of Domestic Violence, Mental Health, and Substance Abuse. UK Center for Poverty Research. July.
- Simmons, L.A., and Swanberg, J.E. The working poor blues: Work, depression, and labor force attachment among working poor parents. pp. 233-237. IN: W. Ostasiewicz, ed. *Towards Quality of Life Improvement: Proceedings, 3rd International Conference: Research Statistics No. 43*. Wroclaw, Poland: Wroclaw University of Economics Department of Statistics.
- Whiting, J.B., and Huber, P.T. The unique lives of foster parents. NCFR Report 50(2):F11-F12.

Forestry

- Barnes, T.G. Functional foundation: Using native trees and shrubs in the landscape. *Kentucky Gardener* 3(9):48-50.
- Barnes, T.G. Shade show: Native flowering plants for shady situations. *Kentucky Gardener* 3(8):13-16.
- Barnes, T.G. Designing living room with native plants. *Kentucky Gardener* 3(7):44-45.
- Barnes, T.G. Designing with nature: Know your plants. *Kentucky Gardener* 3(6):48-50.
- Barnes, T.G. The July shade garden in Kentucky: It doesn't have to be all ferns and hostas—try a little color. *Kentucky Gardener* 3(6):14-16.
- Barnes, T.G. American goldfinches: How to keep them coming back year after year. *Kentucky Gardener* 3(4):14-16.
- Barnes, T.G. Wet feet: Six species for the boggy landscape. *Kentucky Gardener* 3(3):13-16.
- Barnes, T.G. More backyard birds: Woody plants that attract birds. *Kentucky Gardener* 3(2):13-15.
- Barnes, T.G. Backyard birds: Keep feathered friends flocking to your garden. *Kentucky Gardener* 3(1):48-50.
- Conners, T.E., P. Stiglbauer, S. Banerjee, and J.M. Ringe. Decreasing flaker fines by changing knife angles at different ambient temperatures. pp. 23-30. Proceedings, 9th European Panel Products Symposium, Llandudno, Wales, U.K., Oct. 5-7.
- Conners, T.E. Wood Structure and Wood Moisture. Invited presentation to the joint meeting of the Ohio Valley Lumber Drying Association, the Appalachian Kiln Club and the Southeastern Dry Kiln Club held at Pipestem State Resort Park, Pipestem, W.Va., Nov. 2.
- Conners, T.E., P. Stiglbauer, and S. Banerjee. Influence of Knife Angle and Ambient Temperature on Fines Generation from Flakers. Invited presentation to the Norbord Technical Managers Meeting held in Atlanta, Ga., Nov. 3.

- Cox, J.J., D.S. Maehr, and J.L. Larkin. A Euclidean distance-based habitat use analysis of the endangered Florida panther. *Society for Conservation Biology 19th Annual Conference*, University of Brasilia, Brazil. July.
- Fei, S. Hotspot detection for chestnut oak regeneration. pp. 243-244. Proceedings, 6th Annual National Conference on Digital Government Research (dg.o. 2005). ACM International Conference Proceedings Series, Vol. 89, Atlanta, Ga.
- Harris, H.B., and D.S. Maehr. Watching bears in Kingdom Come: Wildlife tourism in eastern Kentucky. 12th Annual Conference of The Wildlife Society. Madison, Wis. September.
- Hartman, P.J., D.S. Maehr, and J.L. Larkin. Structural and behavioral cues in cerulean warbler habitat selection. 12th Annual Conference of The Wildlife Society. Madison, Wis. September.
- Maehr, D.S., J.J. Cox, and J.L. Larkin. Florida panther habitat use: A new approach to a management dilemma. 12th Annual Conference of The Wildlife Society. Madison, Wis. September.
- Maehr, D.S., J.J. Cox, J.L. Larkin, P.H. Crowley, J. Treanor, T.S. Hocter, and J.L. Gittleman. Do life histories and landscape predict colonization success in large mammals? 9th International Mammalogical Congress, Sapporo, Japan. August.
- Maehr, D.S., J.N. Layne, T.S. Hocter, and M.A. Orlando. Status of the black bear in south-central Florida. *Archbold Symposium*, Archbold Biological Station, Lake Placid, Fla. January.
- Patton, L.P., D.S. Maehr, and J.L. Larkin. Golden-winged and blue-winged warbler use of reclaimed mine lands in eastern Kentucky. Presented at a Beckham Bird Club spring meeting, Louisville, Ky., April.
- Stiglbauer, P.F., T.E. Conners, and S. Banerjee. Reduction of fines generation at oriented-strand board flakers by adjusting knife angles as temperature varies. Proceedings, American Institute of Chemical Engineers. Atlanta, Ga., April 11-13.
- Stiglbauer, P., T.E. Conners, S. Banerjee, and J. Ringe. Reducing fines at OSB flakers by adjusting knife angle with wood temperature. Poster presentation, Forest Products Society, Quebec, Canada. June.
- Ter Beest, J.M., C.D. Barton, D.S. Maehr, and J.L. Larkin. Effects of a restored elk population on soils, vegetation, and water quality in eastern Kentucky. *Soil and Water Conservation Society*, Rochester, N.Y. August.
- Ter Beest, J.M., D.S. Maehr, C.D. Barton, J.L. Larkin, and J.J. Cox. Effects of a restored elk population on soils, vegetation, and water quality in eastern Kentucky. 12th Annual Conference of The Wildlife Society. Madison, Wis. September.
- Ulrey, W.A., D.S. Maehr, J.M. Guthrie, and M. Smoak. Ecology and conservation of a small black bear population in south-central Florida. 18th Eastern Black Bear Workshop, Tallahassee, Fla. March.

Horticulture

Fulcher, Amy, Win Dunwell, Robert McNeil, and Dava Hayden. Integrated Pest Management for Nursery Crop Production. Proceedings, Southern Nursery Association Research Conference 50:182-184.

Landscape Architecture

Higdon, E., K. Brasier, R. Stedman, B. Lee, and S. Sherman. Assessment of Community Watershed Organizations in Rural Pennsylvania. Center for Rural Pennsylvania—A Legislative Agency of the Pennsylvania General Assembly. November. http://www.ruralpa.org/watersheds_higdon.pdf.

Lee, B.D. Mapping a sense of place in the classroom. Proceedings, 5th Annual Environmental Systems Research Institute's Education User Conference, San Diego, Calif., July 23-26. <http://gis.esri.com/library/userconf/educ05/papers/pap1247.pdf>.

Lee, B.D. Which resources to mobilize for an effective organization? Southeast Regional and Kentucky State Watershed Roundtable, Bowling Green, Ky., Nov. 3-4. <http://www.southeastwaterforum.org/roundtables/>.

Motsch, Billie Jo, K. McCalla, and B.D. Lee. Master Land Use Planning Using GIS. Four posters. 5th Annual Environmental Systems Research Institute's Education User Conference, San Diego, Calif., July 23-26.

Livestock Disease and Diagnostic Center

Jackson, C.B. Cytauxzoonosis in Kentucky. Kentucky Veterinary News, Kentucky Veterinary Medical Association publication. Fall.

Plant and Soil Sciences (Agronomy)

Aiken, G.E. Forage systems for minimizing hay and concentrate needs. pp. 21-23. Proceedings, Kentucky Cattlemen's Association Convention.

Bailey, Andy. Topping tips for dark tobacco. pp. 11-13. IN: 2005 Burley and Dark Tobacco Production Guide. Insert in winter issue of Southern Farmer magazine.

Bailey, Andy. Early flowering prevalent in 2005 tobacco crop. *MidAmerica Farmer/Grower* 28(27):9.

Bailey, Andy. Dry weather makes for difficult tobacco curing season. *MidAmerica Farmer/Grower* 28(45):7.

Barnhisel, R.I., A. Moberly, and T.G. Mueller. Variable seeding and nitrogen rates on rolling Kentucky terrains: Effects on corn yield. IN: D.J. Mulla, ed. Proceedings, 7th International Conference on Precision Agriculture. ASA Misc. Publ., ASA, CSSA, and SSSA, Madison, Wis. Published on CD.

Brown-Guedira, G., L. Perugini, C. Sneller, F. Kolb, D.A. Van Sanford, C. Griffey, and H. Ohm. Phenotypic and genotypic analysis of scab resistance in soft red winter wheat germplasm. p. 19. Proceedings, 2005 National Fusarium Head Blight Forum, Milwaukee, Wis. Dec. 11-13.

Cetin, H., J.T. Pafford, and T.G. Mueller. Precision agriculture using hyperspectral remote sensing and GIS. Proceedings, 2nd International Conference on Recent Advances in Space Technologies-RAST2005, the Institute of Electrical and Electronics Engineers (IEEE) Publications. June.

Coyne, M.S. Review of Enriching the Earth: Fritz Haber, Carl Bosch, and the Transformation of World Food Production. *Agricultural History* 79(3):383-384.

Flynn, E.S., C.T. Dougherty, G.E. Aiken, and G.J. Schwab. Defining tall fescue grassland landscapes with Normalized Difference Vegetation Index. p. 22. Tall Fescue Toxicosis Workshop (SERA-IEG-8), Natchez Trace State Park, Tenn.

Flynn, E.S., C.T. Dougherty, G.E. Aiken, G.J. Schwab, and E.S. Vanzant. Using NDVI to show the effect of beef cattle stocking rates on tall fescue landscapes. pp. 26-28. Tall Fescue Toxicosis Workshop (SERA-IEG-8), Natchez Trace State Park, Tenn.

Grove, J.H., E.M. Pena-Yewtukhiw, and J.A. Thompson. Corn grain yield in rolling landscapes: Terrain attributes or surface soil properties? IN: D.J. Mulla, ed. Proceedings, 7th International Conference on Precision Agriculture and Other Precision Resources Management. University of Minnesota, St. Paul. Published on CD.

Harrell, M., P. Vincelli, and D. Williams. Efficacy of Eagle fungicide and urea nitrogen combinations for control of dollar spot of creeping bentgrass, 2004. *Fungicide and Nematicide Tests* 60:T034.

Herbek, J., L.W. Murdock, J. Grove, L. Grabau, D.A. Van Sanford, and D. Call. No-till wheat. Proceedings, Eastern Wheat Workers and Southern Small Grain Workers Conference, Bowling Green, Ky., May 9-12.

Knott, C., and D.A. Van Sanford. Evaluation of fusarium head blight resistance in soft red winter wheat. p. 53. Proceedings, 2005 National Fusarium Head Blight Forum, Milwaukee, Wis., Dec. 11-13.

Knott, C.A., and D.A. Van Sanford. Screening for scab resistance in soft red winter wheat. 2005 Wheat Science Research Report.

Looper, M.L., and G.E. Aiken. Supplementation may increase pregnancy and profits of cull cows. Research Report. *Arkansas Cattle Business* 42:28.

Looper, M.L., G.E. Aiken, S.F. Tabler, R. Flores, C.F. Rosenkrans Jr., and J.R. Miesner. Effects of harvest frequency and fertilization rates on quantity and quality of stockpiled common bermudagrass. Proceedings, American Forage and Grasslands Conference 14:191-195. Presented at Bloomington, Ill., June 11-15.

Looper, M.L., G.E. Aiken, S.F. Tabler, R. Flores, D.F. Rosenkrans Jr., and J.R. Miesner. Quantity, quality, and ergovaline concentrations of burned stockpiled tall fescue. Proceedings, American Forage and Grasslands Conference 14:196-200. Presented at Bloomington, Ill., June 11-15.

Looper, M.L., T.S. Edrington, C.F. Rosenkrans Jr., J.M. Burke, R. Flores, T.R. Callaway, and G.E. Aiken. Effects of feeding endophyte-infected tall fescue seed to sheep experimentally infected with *Escherichia coli* O157-H7. Proceedings, Western Section American Society Animal Science 56:213-216. Presented at Las Cruces, N.M., June 22-24.

Martin, J., D.L. Call, and C. Tutt. Italian ryegrass control with Osprey. 2004-2005 Wheat Science Research Report, University of Kentucky.

Martin, J., D.L. Call, and C. Tutt. Response of no-till wheat to burndown and postemergence applications of 2, 4-D and dicamba. 2004-2005 Wheat Science Research Report, University of Kentucky.

Martin, J., D. L. Call, and C. Tutt. Effect of timing of application on henbit and common chickweed control and yield of conventional tillage wheat. 2004-2005 Wheat Science Research Report, University of Kentucky.

Martin, J., and C.H. Slack. Factors affecting burndown control of Italian ryegrass. 27th Annual Southern Conservation Tillage Systems Conference. <http://www.ag.auburn.edu/aux/nsdl/sctcsa/>.

Murdock, L.W. Sidedressing nitrogen on corn. UK Plant and Soil Sciences Corn and Soybean Newsletter. June.

Murdock, L.W., J. Herbek, J. James, and D. Call. Effect of tillage on crop yields. UK Wheat Science Newsletter 9(1):August.

Murdock, L.W., and G. Schwab. Harvesting on wet soils. UK Corn and Soybean Newsletter 5(4):September.

Murdock, L.W. Potassium deficiency common this year. Kentucky Certified Crop Advisor's Newsletter 5(2):Summer.

Murdock, L.W., J.H. Herbek, J.R. Martin, J. James, and D. Call. No-till vs. tilled wheat. 2004-2005 Wheat Science Research Report, University of Kentucky. January.

Murdock, L.W., J. Grove, and D. Call. On-farm no-till wheat research and its effect on the soil and rotational crops. 2004-2005 Wheat Science Research Report, University of Kentucky. January.

Murdock, L.W., J. Herbek, J. Martin, J. James, and D. Call. No-till wheat increases yields of corn and soybeans in the cropping rotation. 2004-2005 Wheat Science Research Report, University of Kentucky. January.

Murdock, L.W., J. James, and D. Call. Boron fertilization of wheat. 2004-2005 Wheat Science Research Report, University of Kentucky. January.

Pena-Yewtukhiw, E.M., and J.H. Grove. Spatial/temporal probabilistic distribution of soil moisture in a well-drained Paleudalf as influenced by landscape. IN: D.J. Mulla, ed. Proceedings, 7th International Conference on Precision Agriculture and Other Precision Resources Management. University of Minnesota, St. Paul. Published on CD.

Schwab, G.J., L.W. Murdock, J. James, and D. Call. Using wheat canopy color to vary nitrogen application rate. 2004-2005 Wheat Research Report, University of Kentucky.

- Schwab, G., L.W. Murdock, J. James, and D. Call. Optical sensors for variable rate N fertilization of wheat. Proceedings, 2005 Southern Plant Nutrition Management Conference, Olive Branch, Miss., Oct. 3-5.
- Sears, B.G., T.G. Mueller, N. Pusuluri, and K. Iskapalli. 2004. Soil electrical conductivity map quality: Impact of interpolation search neighborhood parameters. North Central Extension-Industry Soil Fertility Conference Proceedings. Des Moines, Iowa, Nov. 11-12, 2004.
- Strickland, J.R., G.E. Aiken, I.A. Kagan, and R.D. Dinkins. Forage-Animal Production Research Unit (FAPRU): Establishment of a new USDA-ARS research location. Proceedings, 20th International Grasslands Congress, Dublin, Ireland.

Plant Pathology

- Dorrance, A.E., M.A. Draper, and D.E. Hershman, ed. Using foliar fungicides to manage soybean rust. Ohio State University Extension Bulletin SR-2005. 50 pp.
- Dorrance, A.E., D.E. Hershman, and M.A. Draper. Introduction. Ohio State University Extension Bulletin SR-2005:8-15.
- Tenuata, A.U., D.E. Hershman, M.A. Draper, and A.E. Dorrance. Fungicide basics. Ohio State University Extension Bulletin SR-2005:22-29.
- Vincelli, P., E. Dixon, D. Williams, and P. Burrus. Influence of spray program with turfphite (= phosphonate) fungicides on turf quality in a mixed creeping bentgrass/*Poa annua* soil-based green, 2004. Fungicide and Nematicide Tests 60:T001.
- Vincelli, P., E. Dixon, D. Williams, and P. Burrus. Efficacy of fungicides for control of gray leaf spot of perennial ryegrass, 2004. Fungicide and Nematicide Tests 60:T002.
- Vincelli, P., E. Dixon, D. Williams, and P. Burrus. Efficacy of fungicides for control of dollar spot of creeping bentgrass on a sand-based green, 2004. Fungicide and Nematicide Tests 60:T003.
- Vincelli, P., E. Dixon, D. Williams, and P. Burrus. Efficacy of fungicides for control of brown patch of creeping bentgrass on a sand-based green, 2004. Fungicide and Nematicide Tests 60:T004.
- Vincelli, P., E. Dixon, D. Williams, and P. Burrus. Efficacy of fungicides and nozzle coverage for control of dollar spot on a creeping bentgrass sand-based green, 2004. Fungicide and Nematicide Tests 60:T005.
- Vincelli, P., E. Dixon, D. Williams, and P. Burrus. Efficacy of fungicides and nozzle coverage for control of dollar spot on a creeping bentgrass fairway, 2004. Fungicide and Nematicide Tests 60:T006.
- Vincelli, P., E. Dixon, B. Jones, D. Williams, and P. Burrus. Efficacy of fungicides for control of dollar spot in a mixed creeping bentgrass/*Poa annua* soil-based green, 2004. Fungicide and Nematicide Tests 60:T007.

Veterinary Science

- Bellone R., S. Archer, and E. Bailey. The Appaloosa genetic project lopes ahead. The Appaloosa 13:5-8.
- Camargo, F.C., A.F. Lehner, W. Karpiesiuk, K. Stirling, P.V. Kavanagh, N. Brennan, M. Dowling, and T. Tobin. Review of environmental morphine identifications: Worldwide occurrences and responses of authorities. pp. 58-64. Proceedings, 51st Annual Convention of the American Association of Equine Practitioners, Seattle, Wash.
- Dirikolu, L., W. Karpiesiuk, A.F. Lehner, C. Hughes, W.E. Woods, J.D. Harkins, J. Boyles, A. Atkinson, D.E. Granstrom, and T. Tobin. New therapeutic approaches for equine protozoal myeloencephalitis: Synthesis and pharmacokinetics of diclazuril sodium salt in the horse. pp. 135-139. Proceedings, 15th International Conference of Racing Analysts and Veterinarians, Dubai, UAE.
- Dwyer, R.M. Risk reduction. Equine Disease Quarterly 14(2):4.
- Gantz, M., J.D. Harkins, M. Sebastian, J. Bosken, C. Hughes, L. Harrison, W.V. Bernard, D. Richter, T.D. Fitzgerald, and T. Tobin. A toxicokinetic/accelerated failure time analysis of the mare reproductive loss syndrome (MRLS). pp. 412-417. Proceedings, 15th International Conference of Racing Analysts and Veterinarians, Dubai, UAE.
- Horohov, D.W. Immunology and immunopathology of the equine lung. Mucosal Immunology Conference Proceedings, The Ohio State University, Columbus, Ohio.
- Horohov, D.W., C.C. Breathnach, and T. Sturgill-Wright. Development of immunological function in the foal and how it relates to *Rhodococcus equi*. Haygard Bluegrass Equine Symposium 2005 Proceedings, Haygard-Davidson-McGhee, Lexington, Ky.
- Howe, D.K. Equine protozoal myeloencephalitis: Efforts to open the black box. Equine Disease Quarterly 14(4):2-3.
- Hughes, C.G., A.F. Lehner, W. Karpiesiuk, F.C. Camargo, J.D. Harkins, W.E. Woods, J. Bosken, J. Boyles, A. Troppmann, and T. Tobin. Preliminary report on the confirmation and quantitative determination of salmeterol in equine urine. pp. 406-411. Proceedings, 15th International Conference of Racing Analysts and Veterinarians, Dubai, UAE.
- Issel, C.J. Equine infectious anemia (EIA): 25 years and \$600,000,000 later. Equine Disease Quarterly 14(1):1.
- Karpiesiuk, W., A.F. Lehner, and T. Tobin. Synthesis and certification of salmeterol and salmeterol-d standards. p. 405. Proceedings, 15th International Conference of Racing Analysts and Veterinarians, Dubai, UAE.
- Karpiesiuk, W., A.F. Lehner, C. Hughes, F. Guan, C. Uboh, L. Soma, C. Bratton, L. Kellerman, and T. Tobin. Preparation and analysis of tetrahydrogestrinone (THG), a recently reported "designer" anabolic steroid: A preliminary report. pp. 518-522. Proceedings, 15th International Conference of Racing Analysts and Veterinarians, Dubai, UAE.
- Lehner, A.F., C.G. Hughes, J.D. Harkins, J. Bosken, F. Camargo, J. Boyles, A. Troppmann, W. Karpiesiuk, B. Mollett, W.E. Woods, and T. Tobin. Metabolism of the beta-adrenergic agonist ractopamine in horses and confirmation of its administration with GC/MS. pp. 93-98. Proceedings, 15th International Conference of Racing Analysts and Veterinarians, Dubai, UAE.
- Lehner, A.F., C.G. Hughes, W. Karpiesiuk, J.D. Harkins, J. Bosken, F. Camargo, B.J. Boyles, A. Troppmann, W.E. Woods, and T. Tobin. Metabolism of the alpha-2-agonist amitraz in horses and confirmation of its administration. pp. 155-160. Proceedings, 15th International Conference of Racing Analysts and Veterinarians, Dubai, UAE.
- MacLeod, J.N. A broad perspective on chondrocyte gene expression. Equine Disease Quarterly, 14(1):3-4.
- Powell, D.G. Commentary. Equine Disease Quarterly 14(1):1.
- Powell, D.G. Commentary. Equine Disease Quarterly 14(2):1.
- Powell, D.G. Fourth Quarter 2004. Equine Disease Quarterly 14(2):2.
- Powell, D.G. First Quarter 2005. Equine Disease Quarterly 14(3):2.
- Powell, D.G. Second Quarter 2005. Equine Disease Quarterly 14(4):2.
- Timoney, P.J. Equine viral arteritis: Is the disease a cause for industry concern? Parts I and II. Impulsion, Spring, pp. 4-7; Summer, pp. 9-10.
- Timoney, P.J. Equine herpesviruses 1 and 4: Economically significant pathogens of the horse. pp. 9-15. 17th International Seminar: Some Important Viral Disease of Horses, Perugia, Italy, May 2.
- Timoney, P.J. Equine viral arteritis: Significant features of a frequently misunderstood disease. pp. 17-24. 17th International Seminar: Some Important Viral Disease of Horses, Perugia, Italy, May 2.
- Timoney, P.J. West Nile virus: The North American experience. pp. 25-33. 17th International Seminar: Some Important Viral Disease of Horses, Perugia, Italy, May 2.
- Timoney, P.J. Perspective on the virologic, epidemiologic, and prophylactic aspects of equine influenza. pp. 35-36. 17th International Seminar: Some Important Viral Disease of Horses, Perugia, Italy, May 2.
- Timoney, P.J. Equine viral arteritis: How significant a threat to the horse? pp. 238-242. Proceedings, 15th International Conference of Racing Analysts and Veterinarians, Dubai, UAE.
- Tobin, T., J.D. Harkins, J.F. Roberts, P.W. Van Meter, and T.A. Fuller. Septic penetrating setae/bacteria/bacterial emboli/septic penetrating setal emboli: A hypothesis to explain the pathogenesis of the mare reproductive loss syndrome. pp. 418-422. Proceedings, 15th International Conference of Racing Analysts and Veterinarians, Dubai, UAE.

Graduate Degrees

Degrees listed are from the 2005 Spring Semester, 2005 Second Summer Session, and 2005 Fall Semester.

Ph.D. Dissertations

Agricultural Economics

- Chen, Jianhua. Neural Network Applications in Agricultural Economics.
- Gandonou, Jean-Marc. Essays on Precision Agriculture Technology Adoption and Risk Management.
- Hao, Jianqiang. Modeling and Financing Weather Risk: Three Essays.
- Veeramani, Venkat N. Testing for the Existence of Price Points and Price Thresholds in Retail Scanner Data Using Microeconomic Theory.
- Xiao, Qing. Three Essays in International Economics.

Animal and Food Sciences

- Agudelo-Trujillo, Jorge Hernan. An Examination of Dietary Amendments to Affect Phosphorus Utilization in Growing Pigs.
- Ao, Tuoying. Exogenous Enzymes and Organic Acids in the Nutrition of Broiler Chicks: Effects on Growth Performance and *in vitro* Digestion.
- Elgaali, Hesham Abd-Alrahim. The Minimum Inhibitory Concentration and Mode of Action of Decanol against *Listeria monocytogenes* and Its Antilisterial Effects in Ready-to-Eat Meat Products.
- Zanghi, Brian M. The *in vivo* and *in vitro* Characterization and Regulation of Canine Peptide Transporter 1.

Biosystems and Agricultural Engineering

- Casey, Kenneth. The Determination of Ammonia Emissions from Mechanically Ventilated Poultry Houses: An Examination of the Issues Involved.
- Danao, Mary-Grace. Enhanced Optical Detection of Microparticles and Bacteria Cells in Water Using Stationary Acoustic Wave Fields.
- Day V., George B. Granular Mechanics Formulary for Soft Red Winter Wheat in Corrugated Storage Bins.
- Purswell, Joseph. Characterization of Ventilation and Thermal Environment in a Horse Trailer during Transport.

Entomology

- Quinton, Scott E. Economic Injury Levels and Economic Thresholds for the European Corn Borer, *Ostrinia nubilalis* (Hubner), and the Corn Leaf Aphid, *Rhopalosiphum maidis* (Fitch), on Quality Enhanced Maize in Kentucky.
- Xi, Zhiyong. Generation of Novel Symbiosis in Mosquito via Embryo Microinjection and Characterization of the *Wolbachia*/Host Interaction.

Horticulture

- Myung, Kyung. Biosynthesis of Trans 2-hexenal in Response to Wounding in Strawberry Fruit and Interaction of Trans 2-hexenal with *Botrytis cinerea*.

Plant and Soil Sciences (Agronomy)

- Forbes, Kevin P. Characterization of Plant Polyadenylation Trans-Acting Factors That Modify Poly(A) Polymerase Activity.
- Harrell, Michael S. Color Enhancement of Creeping Bentgrass (*Agrostis stolonifera* L.) Turf with Foliar-Applied Urea-Nitrogen.
- Luo, Wensui. Influence of Plant Secondary Metabolites and Surfactant on Polychlorinated Biphenyl Removal and Soil Microbial Populations.
- Marshall, Michael W. Biology and Carbohydrate Fluctuations of Trumpet creeper (*Campsis radicans* [L.] Seem.) and Its Control in No-Tillage and Minimum-Tillage.
- Meeks, Lisa R. Isolation and Characterization of the Four *Arabidopsis thaliana* Poly(A) Polymerase Genes.
- Siangdung, Wipawan. Improvement of Leaf Aldehyde Production.
- Zhu, Cong. Gene Regulatory Networks of AGL 15, a Plant MADS Transcription Factor.

Plant Pathology

- Cheng, Chi-Ping. Viral RNA Elements and Host Genes Affecting RNA Recombination in Tombusviruses.
- Rehmeier, Cathryn J. Richardson. Sequencing of Chromosome Ends and Characterization of a Telomere-Linked Helicase Gene Family in the Rice Blast Fungus *Magnaporthe oryzae*.
- Zhang, Chunquan. Genetic Diversity of Bean Pod Mottle Virus (BPMV) and Development of BPMV as a Vector for Gene Expression in Soybean.

Veterinary Science

- Muthupalani, S. Characterization, Immunogenicity, and Possible Roles of *Streptococcus equi* Linkage Group Proteins in the Pathogenesis of Strangles.
- Zhang, J. Permissiveness of Selected Cell Lines to Equine Arteritis Virus: Establishment, Characterization, and Significance of Persistent Infection in Hela Cells.

M.S. Theses

Agricultural Economics

- Eldridge, Roger W. Kentucky Feeder Cattle Price Analysis: Models for Price Predictions and Grazing Management.
- Lunsford, Terry L. Characteristics of Beef Cattle That Determine the Price Difference between Traditional and CPH Sales.
- Kumar, Sanjeev. Demand Determinants for U.S. Exports of Processed Foods to Emerging Market Economies.
- Nagy, Reka. Effects of Management on Reproductive Efficiency in Thoroughbreds.
- Vercken De Vreuschme, Camille. Are Pinhooked Yearlings Different? A Hedonic Pricing Analysis of Yearlings at the Select Auctions.

Animal and Food Sciences

- Elmore, Curt A. Efficacy of Chromium Picolinate in Reducing Stress in Finishing Pigs Fed Ractopamine HCL.
- Johnston, Joshua E. Quality Effects of Freezing and Thawing Method on Whole Muscle Cuts of Meat during Frozen Storage.
- Mays III, Charles E. Effects of Endophyte-Infected Fescue and FEB-200TM on Reproductive Performance of Beef Bulls.
- Scramlin, Stacy M. The Effects of Brine Enhancement, Cookery Temperature, and Natural Antioxidants on the Quality Attributes of Beef Longissimus Dorsi and Semimembranosus Muscles of Different Ages.
- Sepe, Hilary A. Quality Attribute Characterization of Underutilized Beef Muscles.
- Varble, Jaime C. Quality Attributes of Beef Longissimus Dorsi and Semitendinosus Muscles from Cattle of Varying Maturity as Affected by Brine Enhancement and Cookery Method.

Biosystems and Agricultural Engineering

- Reilly, John C. Demand Controlled Ventilation for Residential Homes.
- Sisk II, Jerry L. A Fuzzy Logic Approach for Determining Optical Cropping Patterns Based on Field Boundary Geometry.

Entomology

- Choate, Beth A. The Life History and Dispersal Patterns of *Malacosoma americanum*, the Insect Associated with Mare Reproductive Loss Syndrome.
- Maier, Reid M. Biology and Management of the Ant, *Lasius neoniger* (Emery), on and around Golf Course Putting Green.
- Prater, Callie A. Microbial Control of the Black Cutworm (*Agrotis ipsilon*) in Turfgrass Using a Naturally Occurring Baculovirus.

Forestry

- Dillaway, Dylan N. Response of Natural and Artificial Oak Regeneration to Changes in Light Regimes.
- Green, Stephanie R. The Effects of Prescribed Fire on Stand Structure, Canopy Cover, and Seedling Populations in Oak-Dominated Forests on the Cumberland Plateau, Kentucky.
- Ter Beest, Julia. Effects of a Restored Elk Population on Soils, Vegetation, and Water Quality in Eastern Kentucky.

Horticulture

- Dutt, Manjul. Using Sequential Imagery to Evaluate Aspects of Seed Vigor and Germination.

Merchandising, Apparel, and Textiles

- Crawford, Cassandra. Retail Internationalization: The Influence of Culture on Product Development Issues.
- Joshi, Preeti. Relationships between Consumers' Shopping Orientation, Prior Purchase Experience, and Online Purchase Intention.
- Turner, Mike. Country Selection in International Sourcing Decisions: A Proposed Framework.

Plant and Soil Sciences (Agronomy)

- Akhwale, Michael S. Evaluating Soybean Rooting Type, Pubescence Density, and Pubescence Color for Improving Drought Tolerance.
- Bec, Sladana. Production System for Extending Harvest of Fresh-Market Edamame in Kentucky.

- Hyatt, Jessica E. Relationship of Soil Compaction to Soybean Seedling Emergence.
- Sears, Brandon G. Corn Grain Yield Variability across a Central Kentucky Landscape.
- Zhu, Jie. *In vitro* Selection of ssDNA Aptamers That Bind Herbicides and Antibiotics.

Plant Pathology

- Mundell, Jaclyn N. Phylogenetic Analysis of Kentucky Strains of *Xylella fastidiosa*.

Veterinary Science

- Hall, David C. An Epidemiological Study of Leptospira-Induced Abortion in Mares in Central Kentucky (1990-2004).
- Herman, Rebecca K. Regulation of Host Cell Apoptosis by the Protozoan Parasite *Neospora caninum*.

Graduate Enrollment and Degrees

Note: Graduate enrollment and graduate figures are reported by academic year by graduate program for the 2004 First Summer Session, 2004 Second Summer Session, 2004 Fall Semester, 2005 Spring Semester. Graduation figures include the 2004 Second Summer Session, 2004 Fall Semester, and 2005 Spring Semester. These figures are from the Graduate School's Annual Statistical Report.

	Enrollment			03-04 Degrees Awarded			04-05 Degrees Awarded			Net
	03-04	04-05	Net	Master's	Doctoral	Total	Master's	Doctoral	Total	
Agricultural Economics	54	51	-3	5	3	8	12	4	16	8
Animal and Food Sciences	67	54	-13	11	11	22	6	3	9	-13
Biosystems and Agricultural Engineering	33	38	5	9	2	11	9	3	12	1
Crop Science	14	29	15	0	1	1	1	3	4	3
Entomology	34	45	11	3	3	6	11	2	13	7
Family Studies	70	52	-18	13	1	14	4	2	6	-8
Forestry	17	24	7	3	*	3	4	*	4	1
Hospitality and Dietetic Administration	15	13	-2	2	*	2	2	*	2	0
Interior Design, Merchandising, and Textiles**	9	13	4	1	*	1	5	*	5	4
Plant Pathology	22	34	12	0	5	5	0	3	3	-2
Plant Physiology	18	29	11	*	3	3	*	6	6	3
Plant and Soil Science	36	26	-10	4	*	4	9	*	9	5
Rural Sociology/Career, Technology, and Leadership Education	49	58	9	19	0	19	5	3	8	-11
Soil Science	11	14	3	*	1	1	*	1	1	0
Veterinary Science	29	33	4	2	3	5	4	4	8	3
Total	478	513	35	72	33	105	72	34	106	1

* Degree type not offered.

** Includes graduate student numbers in the joint School of Design Interior Design, Merchandising, and Textiles program.

Financial Statement

Statement of Current General Fund Income and Expenditures

Fiscal Year 2005

Income	
Federal Funds	
<i>Hatch</i>	\$3,888,038
<i>Hatch Multistate</i>	853,897
<i>McIntire-Stennis</i>	464,080
<i>Animal Health</i>	57,272
Total Federal Funds	\$5,263,287
State Funds	28,413,787
Total Funds	\$33,677,074

Expenditures	Federal	State	Total
Personal Services	\$4,513,209	\$16,501,585	\$21,014,794
Travel	58,395	253,045	311,440
Equipment	164,202	830,513	994,715
Other Operating Expenses	527,481	10,828,644	11,356,125
Total Expenditures	\$5,263,287	\$28,413,787	\$33,677,074

Staff

University of Kentucky Board of Trustees 2005

James F. Hardymon, Chairperson
Mira S. Ball
Stephen P. Branscum
Penelope A. Brown
Dermontti F. Dawson
Marianne Smith Edge
Ann Brand Haney
Pamela R. May
Billy Joe Miles
Phillip R. Patton
Steven S. Reed
C. Frank Shoop
Myra Leigh Tobin
JoEtta Y. Wickliffe
Billy B. Wilcoxson
Barbara S. Young

Faculty Members:

Roy L. Moore and Jeffrey B. Dembo

Staff Member:

Russ Williams

Student Member:

Rebecca Ellingsworth

Agricultural Experiment Station

January 1, 2005-December 31, 2005

Administration

Lee T. Todd Jr., President
Michael T. Nietzel, Provost
M. Scott Smith, Dean & Acting Provost
H.C. Owen, Treasurer
Nancy M. Cox, Associate Dean for Research & Director
Linus R. Walton, Associate Dean for Administration
Lisa Collins, Assistant Director
J. D. Lawson, Assistant Director for Legal & Fiscal Affairs
W. O. Peterson, Director of Management Operations

Departments

Following are Experiment Station personnel lists for calendar year 2005 as reported by departments. (R) denotes Experiment Station appointment.

Agricultural Communications

Miller, T.H., Interim Director
Wood, C.H., CALE Lab Director and
Professor

Agricultural Economics

Robbins, L.W., Professor and Chair (R)
Brown, R., Lecturer (R)
Debertin, D.L., Professor (R)
Dillon, C., Associate Professor (R)
Fleming, R., Associate Professor (R)
Freshwater, D., Professor (R)
Infanger, C.L., Extension Professor
Isaacs, S., Extension Professor
Jones, L.D., Extension Professor (R)
Marchant, M.A., Professor (R)
Mather, L.L., Associate Professor (R)
Maynard, L., Associate Professor (R)
Meyer, A.L., Extension Professor
Pagoulatos, A., Professor (R)
Pushkarskaya, H.N., Assistant Professor (R)
Reed, M.R., Professor (R)
Riggins, S.K., Extension Professor
Saghaian, S., Assistant Professor (R)
Scorsone, E., Assistant Extension Professor
Skees, J.R., Professor (R)
Snell, W.M., Extension Professor
Trimble, R.L., Extension Professor
Williamson, L., Extension Professor
Woods, T., Associate Extension Professor

Animal and Food Sciences

Harmon, R.J., Professor and Chair
Aaron, D.K., Professor (R)
Alderton, A.L., Assistant Professor (R)
Amaral-Phillips, D.M., Associate
Extension Professor
Anderson, L.H., Associate Extension
Professor
Boatright, W.L., Associate Professor (R)
Boling, J.A., Professor (R)
Bullock, K.D., Extension Professor
Burris, R., Extension Professor
Cantor, A.H., Associate Professor (R)
Coffey, R.D., Associate Extension
Professor
Coleman, R.J., Associate Extension
Professor
Crist, W.L., Post-Retirement Extension
Professor
Cromwell, G.L., Professor (R)

Dawson, K.A., Adjunct Professor
Edgerton, L.A., Associate Professor (R)
Ely, D.G., Professor (R)
Harmon, D.L., Professor (R)
Heersche Jr., G., Extension Professor
Hennig, B., Professor (R)
Hicks, C.L., Professor (R)
Jackson Jr., J.A., Associate Professor (R)
Johns, J.T., Post-Retirement Extension
Professor
Lawrence, L.M., Professor (R)
Lindemann, M.D., Professor (R)
Matthews, J.C., Associate Professor (R)
McAllister, A.J., Extension Professor
McLeod, K.R., Assistant Professor (R)
Mikel, W.B., Extension Professor
Newman, M.C., Associate Professor (R)
O'Leary, J., Extension Associate Professor
Parker, G.R., Extension Professor
Pescatore, A.J., Extension Professor
Schillo, K.K., Associate Professor (R)
Silvia, W.J., Professor (R)
Strobel, H.J., Associate Professor (R)
Thrift, F.A., Professor (R)
Tidwell, J., Adjunct Assistant Professor
Vanzant, E.S., Associate Professor (R)
Wang, C., Adjunct Assistant Professor
Webster, C., Adjunct Assistant Professor
Xiong, Y., Professor (R)

Biosystems and Agricultural Engineering

Gates, R.S., Professor and Chair (R)
Byers, M., Adj. Assistant Professor (R)
Carey, D., Adj. Assistant Professor (R)
Castillo, M., Assistant Research Professor
(R)
Colliver, D.G., Associate Professor (R)
Crofcheck, C., Assistant Professor (R)
Duncan, G.A., Post-Retirement Extension
Professor (R)
Edwards, D.R., Professor (R)
Fehr, R., Extension Professor (R)
McNeill, S.G., Associate Extension
Professor (R)
Montross, M.D., Associate Professor (R)
Nokes, S.E., Associate Professor (R)
Norikane, J., Assistant Professor (R)
Overhults, D.G., Associate Extension
Professor (R)
Payne, F.A., Professor (R)
Rohlf, R., Adj. Assistant Professor (R)
Shearer, S.A., Professor (R)

Stombaugh, T.D., Assistant Extension
Professor (R)
Taraba, J., Extension Professor (R)
Warner, R.C., Extension Professor (R)
Wells, L.G., Professor (R)
Wheeler, E., Adj. Assistant Professor (R)
Wilkerson, E., Assistant Extension
Professor (R)
Workman, S., Associate Professor (R)

Community and Leadership Development

Hansen, G., Extension Professor and
Chair (R)
Burmeister, L., Associate Professor (R)
Dyk, P., Associate Professor (R)
Garkovich, L., Professor (R)
Harris, R., Associate Professor (R)
Horstmeier, R.P. Assistant Professor (R)
Hustedde, R., Extension Professor
Jones, K., Extension Assistant Professor (R)
Kitchel, T., Assistant Professor (R)
Maurer, R., Extension Professor
Nall, M., Extension Professor
Tanaka, K., Assistant Professor (R)
Warner, P., Extension Professor
Weckman, R., Associate Professor
Witham, D., Professor
Zimmerman, J., Associate Extension
Professor (R)

Entomology

Obrycki, J.J., Professor and Chair (R)
Barney, R.J., Assistant Adjunct Professor
Bessin, R.T., Extension Professor
Brown, G.C., Professor (R)
Dobson, S.L., Associate Professor (R)
Fox, C.W., Associate Professor (R)
Haynes, K.F., Professor (R)
Johnson, D.W., Extension Professor
Palli, S.R., Associate Professor (R)
Potter, D.A., Professor (R)
Potter, M.F., Extension Professor
Rieske-Kinney, L.K., Associate Professor
(R)
Sedlacek, J.D., Assistant Adjunct Professor
Sharkey, M.J., Professor (R)
Townsend, L.H., Extension Professor
Webb, B.A., Professor (R)
Webster, T.C., Assistant Adjunct Professor
Wise, D.H., Professor (R)
Yeagan, K.V., Professor (R)

Family Studies

Dyk, P., Associate Professor and Acting Chair (R)
Bradford, K.P., Assistant Professor
Brock, G.W., Professor
Ellington, V., Lecturer
Flashman, R.H., Extension Professor
Forgue, R.E., Associate Professor
Hans, J.D., Assistant Professor
Heath, C.J., Professor
Hildreth, G.J., Professor
Kim, H., Assistant Professor
Mowery, R.L., Assistant Professor
Simmons, L.A., Assistant Professor
Smith, D.R., Associate Professor
Turner, L., Lecturer
Vail, A., Extension Professor
Whiting, J.B., Assistant Professor

Forestry

Bullard, S., Professor and Chair (R)
Arthur, M.A., Associate Professor (R)
Barnes, T.G., Extension Professor
Barton, C., Assistant Professor (R)
Conners, T., Associate Extension Professor
Cushing, T., Assistant Professor (R)
Fei, S., Assistant Professor (R)
Graves, D.H., Extension Professor (R)
Hill, D.H., Extension Professor
Kalisz, P.J., Associate Professor
Lacki, M.J., Associate Professor (R)
Maehr, D.S., Associate Professor (R)
Ringe, J.M., Professor (R)
Stringer, J.W., Associate Professor (R)
Wagner, D.B., Associate Professor

Horticulture

Ingram, D.L., Professor and Chair (R)
Anderson, R.G., Extension Professor Emeritus (R)
Archbold, D.D., Professor (R)
Buxton, J.W., Associate Professor (R)
Downie, A.B., Associate Professor (R)
Dunwell, W.C., Extension Professor
Durham, R.E., Associate Extension Professor
Fountain, W.M., Extension Professor
Geneve, R.L., Professor (R)
Houtz, R.L., Professor (R)
Jones, R.T., Extension Professor
Kemp, T.R., Professor (R)
Masabni, J.G., Assistant Extension Professor (R)
McNiel, R.E., Extension Professor Emeritus (R)
Rowell, A.B., Extension Professor (R)
Snyder, J.C., Associate Professor (R)
Strang, J.G., Extension Professor
Williams, M.A., Assistant Professor (R)

Kentucky Tobacco Research and Development Center

Davies, H. Maelor, Director
Chambers, O.D., Biotechnology Relations Director
Li, B., Scientist III
Maiti, I.B., Scientist III
Zaitlin, D., Scientist III

Landscape Architecture

Schach, H., Professor and Chair
Crankshaw, N.M., Associate Professor
Kew, B.W., Assistant Professor
Lee, B.D., Assistant Professor
Nieman, T.J., Professor (R)

Livestock Disease Diagnostic Center

Harrison, L.R., Professor and Director
Bolin, D.C., Associate Professor
Carter, C.N., Professor
Donahue, J.M., Professor
Giles, R.C., Professor
Hong, C.B., Professor
Jackson, C.B., Associate Professor
Lehner, A.F., Ag. Research Specialist (R)
Poonacha, K.B., Professor
Scharko, P.B., Associate Professor
Vickers, M.L., Associate Professor
Williams, N.M., Associate Professor

Merchandising, Apparel, and Textiles

Michelman, S.O., Associate Professor and Chair
Easter, E.P., Professor
Jackson, V.P., Associate Professor
Joshi, P.R., Lecturer
Spillman, K.M., Associate Professor
Wesley, S.C., Assistant Professor
Kwon, H., Visiting Scholar (R)

Nutrition and Food Science

Forsythe, H.W., Associate Professor and Chair (R)
Addo, K., Associate Professor (R)
Brown, D.O., Associate Professor (R)
Chen, L., Professor (R)
Chow, C.K., Professor (R)
Cook-Newell, M., Lecturer
Gaetke, L., Associate Professor (R)
Ham, S., Associate Professor (R)
Roseman, M.G., Assistant Professor (R)
Stephenson, T.J., Lecturer
Wesley, M., Associate Professor

Plant and Soil Sciences (Agronomy)

Barrett, M., Professor and Chair
Aiken, G.E., Associate Adjunct Professor
Bailey, W.A., Assistant Extension Professor
Barnhisel, R.I., Professor (R)
Baskin, C., Professor* (R)
Bitzer, M.J., Professor (Emeritus)
Blair, M., Research Specialist

Burton, H.R., Associate Professor (R)
Bush, L.P., Professor (R)
Calvert, J., Research Specialist
Chappell, J., Professor (R)
Collins, G.B., Professor (R)
Cornelius, P.L., Professor (R)
Coyne, M., Associate Professor (R)
D'Angelo, E.M., Associate Professor (R)
Davies, M., Professor and Director, KTRDC
Dinkins, R., Assistant Adjunct Professor
Ditsch, D., Associate Extension Professor
Dougherty, C.T., Professor (R)
Drury, L.T., Research Specialist
Egli, D.B., Professor (R)
Grabau, L.J., Professor (R)
Green, J.D., Extension Professor
Grove, J.H., Associate Professor (R)
Herbek, J.H., Extension Professor
Hildebrand, D.F., Professor (R)
Hill, R., Research Specialist
Hunt, A.G., Professor (R)
Jack, A.M., Research Specialist
Kagan, I., Assistant Professor Adjunct
Karathanasis, A.D., Professor (R)
Kennedy, B.S., Research Specialist
Knott, C., Research Specialist
Kumudini, S., Assistant Professor (R)
Lacefield, E., Research Specialist
Lacefield, G.D., Extension Professor
Lee, C.D., Assistant Extension Professor
Martin, J.R., Extension Professor
Matocha, C.J., Assistant Professor (R)
Miller, R.D., Professor (R)
Mueller, T.G., Associate Professor (R)
Murdock, L.W., Extension Professor
Olson, G., Research Specialist
Palmer, G.K., Associate Extension Professor
Pearce, R.C., Associate Extension Professor
Pearce, W.L., Research Specialist
Perry, S.E., Associate Professor (R)
Pfeiffer, T.W., Professor (R)
Phillips, T.D., Associate Professor (R)
Powell, A.J., Professor (Emeritus)
Rasnake, M., Associate Extension Professor
Ritchey, E., Research Specialist
Schwab, G.J., Assistant Extension Professor
Siminszky, B., Assistant Professor (R)
Slack, C.H., Research Specialist
Smalle, J., Assistant Professor (R)
Smith, R.S., Associate Extension Professor
Stefaniak, T., Research Specialist
Tang, G., Assistant Professor (R)
Taylor, N.L., Professor (Emeritus)
TeKrony, D.M., Professor (R)
Thom, W.O., Extension Professor
Van Sanford, D.A., Professor (R)
Wagner, G.J., Professor (R)
Wendroth, O., Associate Professor (R)
Williams, D.W., Associate Professor (R)
Witt, W.W., Professor (R)
Xu, D., Assistant Adjunct Professor (R)
Yuan, L., Assistant Professor (R)
Zhu, H., Assistant Professor (R)

* Joint Biological Sciences

Plant Pathology

Smith, D.A., Professor and Chair
 Bachi, P.R., Ag. Research Specialist
 Beale, J.W., Ag. Research Specialist
 De Sa Guimaraes, P., Ag. Research Specialist
 Farman, M.L., Associate Professor (R)
 Ghabrial, S.A., Professor (R)
 Goodin, M.M., Assistant Professor (R)
 Hartman, J.R., Extension Professor
 Hershman, D.E., Extension Professor
 Kachroo, P.R., Assistant Professor (R)
 Kachroo, A.P., Ag. Research Specialist
 Nagy, P.D., Associate Professor (R)
 Nuckles, E.M., Ag. Research Specialist
 Pogany, J., Ag. Research Specialist
 Scharll, C.L., Professor (R)
 Seebold Jr., K.W., Assistant Extension
 Professor
 Thornbury, D.W., Scientist II
 Vaillancourt, L.J., Associate Professor (R)
 Vincelli, P., Extension Professor
 Wang, R., Ag. Research Specialist

Regulatory Services

Miller, Eli, Director
 Barrow, M., Regulatory Specialist Inspector
 Bartos, J., Regulatory Specialist
 Bryant, M., Feed/Fertilizer Laboratory
 Coordinator
 Buckingham, D.T., Seed Regulatory
 Coordinator

Burden, T., Regulatory Specialist
 Coffey, D.S., Regulatory Specialist Inspector
 Finneseth, C.H., Seed Testing Coordinator
 Flood, J.S., Regulatory Specialist Inspector
 Hickerson, R.R., Regulatory Specialist
 Inspector
 Johnston, C.B., Regulatory Specialist
 Inspector
 Johnston, N.T., Regulatory Specialist
 Inspector
 Mason, D.W., Regulatory Specialist
 Inspector
 McMurry, S.W., Inspection Program
 Coordinator
 Pinkston, W.P., Regulatory Specialist
 Inspector
 Prather, T.G., Regulatory Specialist
 Inspector
 Sikora, F.J., Soil Testing Coordinator &
 Professor
 Spencer, H.S., Auditor
 Terry, D.L., Fertilizer Regulatory
 Coordinator and Assistant Director
 Thompson, C.D., Milk Regulatory
 Coordinator
 Traylor, S.L., Feed Regulatory Coordinator
 Whitehouse, W.J., Regulatory Specialist
 Inspector

Robinson Station

Ditsch, D., Acting Superintendent

Tracy Farmer Center for the Environment

Hanley, Carol, Director of Education and
 Communications

Veterinary Science

Timoney, P.J., Professor and Chair (R)
 Allen, G.P., Professor (R)
 Artiushin, S.C., Assistant Professor (R)
 Bailey, E.F., Professor (R)
 Balasuriya, U.B., Associate Professor (R)
 Chambers, T.M., Associate Professor (R)
 Cook, R.F., Assistant Professor (R)
 Cothran, E.G., Professor (R)
 Dwyer, R.M., Professor (R)
 Fitzgerald, B.P., Associate Professor (R)
 Graves, K.T., Assistant Professor (R)
 Horohov, D.W., Professor (R)
 Howe, D.K., Associate Professor (R)
 Issel, C.J., Professor (R)
 Lear, T.L., Associate Professor (R)
 Lyons, E.T., Professor (R)
 MacLeod, J.N., Professor (R)
 McDowell, K.J., Associate Professor (R)
 Powell, D.G., Professor
 Swerczek, T.W., Professor (R)
 Timoney, J.F., Professor (R)
 Tobin, T., Professor (R)

West Kentucky Substation

Davis, D., Superintendent

*Editor—Linda R. Kiesel, Ph.D., Agricultural Communications Services
Designer—Dennis Duross, Agricultural Communications Services*

Mention of a trademark or proprietary product is for experimental purposes and does not constitute a guarantee or warranty by the Kentucky Agricultural Experiment Station and does not imply its approval to the exclusion of other products that may also be suitable.

*Look for the College of Agriculture on the World Wide Web at:
www.ca.uky.edu*

