To His Excellency,
The Honorable Paul Patton
Governor of Kentucky

I herewith submit the one hundred and thirteenth annual report of the Kentucky Agricultural Experiment Station for the period ending December 31, 2000. This is done in accordance with an act of Congress, approved March 2, 1887, entitled, “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,

M. Scott Smith, Director
Lexington, Kentucky
June 30, 2001
Contents

Purpose of the Kentucky Agricultural Experiment Station ......................... 7
Statewide Research ..................................................................................... 7
Regulatory Services .................................................................................. 8
Kentucky Agricultural Experiment Station Projects ................................. 11
Publications .............................................................................................. 16
Ph.D. Dissertations .................................................................................. 31
M.S. Theses .............................................................................................. 32
Financial Statement .................................................................................. 33
Staff ........................................................................................................... 34
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 2000. A faculty 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.

Purpose of the Kentucky Agricultural Experiment Station

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 2000.

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.

**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 and vegetables, ornamentals.
- **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. The farm is in Phase I of development as a research facility.

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.

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.

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.
Regulatory Services

The Division of Regulatory Services administers state laws pertaining to the manufacturing, processing, labeling, and marketing of commercial feed, fertilizer, seed, and raw milk. Its purpose is to protect farmers and other consumers from poor quality, mislabeled, or misrepresented products and to protect agricultural businesses from unfair competition.

Feed, fertilizer, and seed are monitored in the manufacturing or retail channels for compliance with state laws through label review, product and facility inspections, and product sampling and analysis. Raw milk is monitored during marketing to assure an accurate and equitable exchange between producers and processor and to ensure the integrity of milk from farm to processor.

Ten regulatory inspectors and one auditor cover the state, collecting samples, inspecting facilities, and auditing records. Additionally, a specialty-products inspector checks and samples small-package and specialty feed, fertilizer, and seed products throughout the state.

The Division also offers to growers and homeowners seed testing, soil testing, poultry litter and animal manure testing, and water and nutrient solution analyses for greenhouse production and float-bed systems of seedling production.

Auditing Program

H.S. Spencer

Audits of sales and fee payments were made on 269 of 438 milk, seed, feed, and fertilizer businesses in Kentucky to verify check-off and tonnage fees. Fees assessed to help pay the costs of inspecting, sampling, and analyzing commodities in accordance with Kentucky laws are: fertilizer, 50 cents per ton; feed, 35 cents per ton; and seed, 4 to 24 cents per unit. During May, raw milk is assessed a check-off fee of 3 cents per 100 pounds.

Income from fees in 2000:
Feed .................................................................$797,309
Fertilizer .......................................................... 645,410
Milk ............................................................... 68,594
Soil testing ...................................................... 144,587
Seed tags, testing, and licenses ..................... 408,295
TOTAL ............................................................. $2,064,195

These cash receivables were substantiated on 2,605 fertilizer tonnage reports, 2,864 feed tonnage reports, 684 seed reports, and 13 milk reports. These reports were checked for accuracy and compared with field audits of the firms submitting them. Additional fees of $5,500 were found as a result of these audits.

Milk Regulatory Program

C.D. Thompson

The Kentucky Creamery License Law has been in effect since 1918. During the 2000 legislative session this law was revised. The new law is now known as the Kentucky Farm Milk Handlers Law and is administered by the milk regulatory program. The program’s primary objective is to ensure that the raw farm milk produced and marketed in Kentucky is bought and sold using accurate weights and tests. The program provides a marketplace environment that is fair and equitable for all individuals and firms involved in Kentucky’s dairy industry. In 2000, the Division:
• reviewed and issued licenses to 14 milk buyers, 64 testers, 388 sampler-weighers, and eight raw milk transfer stations.
• analyzed and administered action on 6,443 official samples.
• analyzed 648 samples submitted by licensed testers for comparison purposes.
• conducted 13 producer pay record audits.
• conducted 59 inspections at 15 milk laboratories.
• trained and examined 67 new sampler-weighers and 11 new testers.
• conducted 632 inspections of 225 sampler-weighers.
• conducted 36 inspections of raw milk transfer stations.

Feed Regulatory Program

Steve Traylor

The feed regulatory program provides consumer protection for the purchasers of livestock feed and pet foods, maintains a marketplace environment that promotes fair and equitable competition for the feed industry, and helps ensure the safety and wholesomeness of animal products as human food. In 2000, the program:
• administered actions on 4,330 official samples of commercial feed involving 25,614 official 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 19 feed mills that mix restricted drugs in feed and to inspect these mills for compliance with the FDA’s national BSE Rule. The ruminant-to-ruminant feeding ban of certain mammalian proteins was promulgated to prevent the establishment and amplification of bovine spongiform encephalopathy (BSE) (i.e., mad cow disease) through animal feed. An additional 48 state inspections were conducted on mills that mix non-MFA drugs in feed to ensure compliance with medicated feed regulations. Thirty-eight mills that mix no drugs were inspected to
ensure compliance with labeling, manufacturing, and storage practices. In addition, 27 non-MFA mills were inspected to determine compliance with the BSE Rule.

- conducted 7,500 label reviews and maintained product registration for about 15,000 products from 900 companies.
- continued implementation of the revised feed labeling requirements for livestock and poultry feeds.

**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 and be assured of its quality. The law also protects the legitimate fertilizer industry from unfair competition. In 2000, the program:

- administered actions on 3,438 official and 87 unofficial samples of fertilizer involving 10,025 tests of the approximately 950,000 tons of fertilizer distributed in Kentucky.
- reviewed labels and registered 3,624 products from 530 firms, including 218 who manufactured custom blends of fertilizers.

**Inspection Program**

F. Herald

The inspection program aims to achieve industry compliance with the consumer protection laws that the Division is charged with administering. Inspectors strategically located throughout the state, each with an assigned area to cover, carry out this responsibility. They inspect manufacturing plants, processing facilities, storage warehouses, and retail stores; collect official samples of feed, pet food, fertilizer, milk, and seed; review records; and offer assistance to clientele in improving their operations to achieve compliance with the laws. In 2000:

- A team of nine inspectors performed 5,970 inspections of the processing, manufacturing, and marketing of feed, fertilizer, and seed. They inspected 19 feed mills for compliance with the FDA's regulation to prevent the establishment of bovine spongiform encephalopathy (BSE) in the United States. One inspector traveled throughout the state to inspect and sample small-package and specialty feed, fertilizer, and seed products in urban areas. Another inspector covered the state to administer the Creamery License Law.
- Inspectors collected the following numbers of official samples for laboratory verification of appropriate constituents and quality:

<table>
<thead>
<tr>
<th>Sample Type</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feed</td>
<td>4,330</td>
</tr>
<tr>
<td>Fertilizer</td>
<td>3,438</td>
</tr>
<tr>
<td>Seed</td>
<td>2,971</td>
</tr>
<tr>
<td>Milk</td>
<td>6,443</td>
</tr>
</tbody>
</table>

**Seed Regulatory Program**

D.T. Buckingham

The seed regulatory program assures Kentucky farmers and urban consumers of quality seed and promotes fair and equitable competition among seed dealers and seedsmen. In 2000, the program:

- collected and tested 2,971 official seed samples.
- issued stop-sale orders on 598 official seed samples and 124 violative seed lots at seed dealer and seed processor locations.
- cooperated with the USDA-Seed Branch regarding shipments of seed into Kentucky that were in violation of the Federal Seed Act.
- issued 243 permits to label seed and registered 403 seed dealer locations. Performed inspections and sampling of agricultural, lawn, turf, and garden seeds during 1,873 visits to more than 600 wholesale and retail locations.

**Seed Testing Services**

Tina Tillery

The seed testing program provides the seed industry and seed growers of Kentucky with competent, reliable, and timely analyses of their seeds for labeling requirements and quality assurance. In 2000, the seed laboratory tested the following number of samples:

- Official seed samples (regulatory) ....................... 2,971
- Regular seed samples (service) ................................ 3,124
- Certified seed samples (service) .......................... 288
- Tobacco seed samples (service) ............................ 1,744
- **TOTAL** ................................................................ 8,127

In addition to routine testing for purity, germination, and noxious weed seed, the laboratory offers testing for seed vigor (accelerated aging and cold test), seed moisture, seed size (seed count), Roundup-ready soybeans, and germination following fungicide application. The laboratory also provides tests to seedsmen and livestock farmers for the presence of the fungal endophyte in tall fescue seed and live fescue tillers.

**Soil Testing Service**

F.J. Sikora (Lexington)
Paula Howe (Princeton)

Soil testing provides farmers, homeowners, greenhouse operators, surface-mine specialists, and others with scientific information about the fertility status of their soils. In partnership with the Cooperative Extension Service, it also provides them with lime and fertilizer recommendations based on soil tests. We also offer analyses of poultry litter and animal wastes for farmers and farm advisors, water and nutrient solution analyses for greenhouse operators and float-bed seedling producers, and non-routine soil tests for University of Kentucky researchers.
Samples analyzed in 2000 were:

<table>
<thead>
<tr>
<th>Type</th>
<th>Number</th>
<th>% Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>25,975</td>
<td>-21</td>
</tr>
<tr>
<td>Home lawn and garden</td>
<td>6,213</td>
<td>1</td>
</tr>
<tr>
<td>Strip-mine reclamation</td>
<td>28</td>
<td></td>
</tr>
<tr>
<td>Commercial horticulture</td>
<td>541</td>
<td>-11</td>
</tr>
<tr>
<td>Greenhouse</td>
<td>87</td>
<td></td>
</tr>
<tr>
<td>Research</td>
<td>13,718</td>
<td>16</td>
</tr>
<tr>
<td>Atrazine residue in soil</td>
<td>127</td>
<td>108</td>
</tr>
<tr>
<td>Animal waste</td>
<td>784</td>
<td>-8</td>
</tr>
<tr>
<td>Nutrient solution</td>
<td>742</td>
<td>109</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>48,215</strong></td>
<td><strong>-7</strong></td>
</tr>
</tbody>
</table>

Feed and Fertilizer Laboratory

Robert L. Beine

The goal of the Regulatory Services Feed and Fertilizer Laboratory is accurate analytical results in a timely fashion. In 2000, 4,522 feed and 3,531 fertilizer samples were reported, including official regulatory, service, and inter-lab check samples. The laboratory also assists the soil lab in the analysis of manure and litter samples.

Approximately 50 different types of feed tests and 24 different fertilizer tests were performed. The laboratory participates in several check sample programs, including the AAFCO Check Sample Program for feed, Magruder7 check sample program for fertilizer, and specialty programs for microscopy, mycotoxins, UAN, phosphate, minerals, etc.

For each of the past five years, the laboratory has coordinated with the Kentucky Fertilizer and Agriculture Chemicals Association and the Burley Tobacco Cooperative to survey the chloride content of the season’s tobacco.
Kentucky Agricultural Experiment Station Projects

Agricultural Economics
- Analyzing the Use of Cooperatives to Improve the Profitability and Risk Exposure of Kentucky Corn Growers—Jerry Skees
- Analyzing the Non-Agricultural Cooperative's Role in Rural Economic Development—David Freshwater
- Analyzing Nonprofits to Improve the Profitability and Risk Exposure of Kentucky Corn Growers—Gregg Ibendahl and Steve Isaacs
- Analyzing the International Competitiveness of the U.S. Agricultural Processing Industry—Michael Reed, Loys Mather, and Mary Marchant
- Assessment of Trade and Foreign Direct Investment on U.S. Commodity Markets—Richard Aronson
- Analyzing Profits and Risk Potential of New Crop Varieties—Kimberly Zeuli and Gregg Ibendahl
- Analyzing the Effect of Foreign Direct Investment on U.S. Commodity Markets—Carl Dillon, Steve Isaacs, Ronald Fleming, and Gregg Ibendahl
- Analyzing the Role of Cooperatives in Rural Economic Development—David Freshwater
- Analyzing the Use of Cooperatives to Improve the Profitability and Risk Exposure of Kentucky Corn Growers—Jerry Skees

Agronomy
- 319 Program Site-Specific Nutrient and Biosolids Management on Agricultural Lands—R.J. Barnhisel
- Accelerated Development of Scab-Resistant Wheat Varieties—D.A. Van Sanford
- Amount and Quality of Herbage Ingested by Cattle Grazing Tall Fescue Clover Grasslands—C.T. Dougherty
- Analysis of mRNA Polyadenylation and Metabolism in Plants—A.G. Hunt
- Analysis of Senescence-Specific Genes Using Arabidopsis Enhancer Trap Lines—S. Gan
- Baled Silage School: Silage Production Techniques for Producers and Extension—M. Collins
- Breeding for Fusarium Head Blight Resistance in Wheat for Kentucky—D.A. Van Sanford
- Breeding Grasses for the Transition Zone—T.D. Phillips
- Career: AGL 15 during Embryogenesis—S. Perry
- Characterization, Classification, and Use Interpretations of Kentucky Soils—A.D. Karathanasis
- Characterization of a Plant polyA Polymerase—A.G. Hunt
- CHS Paducah Gaseous Diffusion Plant Oversight—M. Coyne
- Cellular and Molecular Biology Initiative in Dark Tobacco—G.B. Collins
- Cloning and Heterologous Expression of Cytochrome—M. Barrett
- Cloning Epoxy Fatty Acid Genes—P. Legg
- Demonstrating Commercial Potential of Zinc Finger Proteins for Gene Expression—T.D. Phillips
- Determining Rates of Several Nutrient Sources for Optimum Crop Performance—M. Collins
- Early-Maturing Soybean Cropping System: Identifying Appropriate Cultivars—A.G. Hunt
- Engineered Oilseeds for Epoxy Fatty Acids Accumulation—D.F. Hildebrand
- Enhancing Soil Crop Management with an Electrical Conductivity Sensor—T. Mueller
- Evaluate Red Clover for Agronomic Descriptions—N.L. Taylor
- Evaluation of Burley Tobacco Varieties—J. Calvert
- Evaluation of Fall-Applied Herbicides for Corn Weed Control—W.W. Witt
- Evaluation of Fall-Applied Herbicides for Corn Weed Control—W.W. Witt
- Evaluation of Fall-Applied Herbicides for Corn Weed Control—W.W. Witt
- Evaluation of Fall-Applied Herbicides for Corn Weed Control—W.W. Witt
- Evaluation of Forest Crop Varieties—R. Spitaleri
- Evaluation of Soybean Varieties and Breeding Lines for Use in Kentucky—T.W. Pfeiffer

Experiment Station Projects
- Corn Hybrid Response to Sulfuron-urea Herbicides—W.W. Witt
- Dark Tobacco Breeding and Chemistry—P. Legg
- Dark Tobacco Breeding Genetics and Management—P.D. Legg
- Defining the Roles of Interactions between Plant Nuclear polyA Polymerases and Other Factors—A.G. Hunt
- Demonstrating Commercial Potential of Zinc Finger Proteins for Generating Value-Added Crops—D.F. Hildebrand
- Determining Rates of Several Nutrient Sources for Optimum Crop Production and Soil—W.O. Thom
- Development of a Basic Soil Morphology Training Course—A.D. Karathanasis
- Disease-Resistance Properties of Tobacco Cultivars That Express E. coli—A.G. Hunt
- Early-Maturing Soybean Cropping System: Identifying Appropriate Cultivars—L.J. Grabau
- Effect of Tillage and Land Use on Physical and Chemical Properties of Kentucky Soils—G.W. Thomas
- Effect of Variable Rate Seeding and Nitrogen Rates, Based on Landscape Position on Corn—R.I. Barnhisel
- Engineering Oilseeds for Epoxy Fatty Acids Accumulation—D.F. Hildebrand
- Enhancing Soil Crop Management with an Electrical Conductivity Sensor—T. Mueller
- Evaluate Red Clover for Agronomic Descriptions—N.L. Taylor
- Evaluation of Burley Tobacco Varieties—J. Calvert
- Evaluation of Fall-Applied Herbicides for Corn Weed Control—W.W. Witt
- Evaluation of On-Site Wastewater Treatment Vertical Distance Separation Standards in Kentucky—A.D. Karathanasis
- Evaluation of Perennial Forage Crop Varieties—R. Spitaleri
- Evaluation of Soybean Varieties and Breeding Lines for Use in Kentucky—T.W. Pfeiffer

Agricultural Industryization and Globalization: Implications for Rural Economies—Angelos Pagoulatos, David Debertin, and Ronald Fleming
- Analysis of Risk Management, Agricultural Policy and Field Crops—Ronald Fleming
- Analyzing Profits and Risk Potential of New Crop Varieties—Kimberly Zeuli and Gregg Ibendahl
- Analyzing the Non-Agricultural Cooperative’s Role in Rural Economic Development—David Freshwater
- Analyzing the Use of Cooperatives to Improve the Profitability and Risk Exposure of Kentucky Corn Growers—Gregg Ibendahl and Steve Isaacs
- Analyzing the International Competitiveness of the U.S. Agricultural Processing Industry—Michael Reed, Loys Mather, and Mary Marchant
- Assessment of Trade and Foreign Direct Investment on U.S. Competitiveness in Asian Food Markets—Mary Marchant
- An Economic Assessment of Precision Agriculture and Decision Aids—Carl Dillon, Steve Isaacs, Ronald Fleming, and Gregg Ibendahl
- Enhancing Farmers’ Income through Polyculture of Paddlefish with Catfish in the Southern Region—Lee Meyer
- Enrichment Activities in Agricultural Education—Charles Byers
- Expansion of GRP Crop Programs—Jerry Skees
- Financing Agriculture and Rural America: Issues of Policy, Structure, and Technical Change—David Freshwater
- Fruit and Vegetable Supply-Chain Management, Innovations, and Competitiveness—Timothy Woods
- Impacts of Trade Agreements and Economic Policies on Southern Agriculture—Mary Marchant
- International Agricultural Market Structures and Institutions, 2000—Michael Reed
- Kentucky Center for Cooperative Development—Timothy Woods
- Market Development of a Nutraceutical Butter Product—Leigh Maynard
- Meat Processing and Marketing for Local and Direct Markets—Lee Meyer
- Motivating Teams for Enterprise Facilitation—Timothy Woods
- New Enterprise Results and Historic Production Patterns: Is There a Positive Correlation for Some Farms?—Kimberly Zeuli and Jerry Skees
- Precision Agriculture: Precision Farming Adoption in Kentucky—The Role of Capital Costs and Farm Size—David Debertin, Ronald Fleming, and Carl Dillon
- The Relation between Risk Management Policy and Natural Resource Use—Jerry Skees
- Responding to Expressed Needs: SARE/ACE Regional Training with the Sustainable Dairy Systems Manual—Steve Isaacs
- Rural Economic Development: Alternatives in the New Competitive Environment—David Freshwater
- U.S. Consumer Demand for Dairy Products: Needs-Driven Methods and Analysis—Leigh Maynard
- Work Crew Performance Model in Vocational Agriculture—Steve Isaacs

Agricultural Industryization and Globalization: Implications for Rural Economies—Angelos Pagoulatos, David Debertin, and Ronald Fleming
- Analysis of Risk Management, Agricultural Policy and Field Crops—Ronald Fleming
- Analyzing Profits and Risk Potential of New Crop Varieties—Kimberly Zeuli and Gregg Ibendahl
- Analyzing the Non-Agricultural Cooperative’s Role in Rural Economic Development—David Freshwater
- Analyzing the Use of Cooperatives to Improve the Profitability and Risk Exposure of Kentucky Corn Growers—Gregg Ibendahl and Steve Isaacs
- Analyzing the International Competitiveness of the U.S. Agricultural Processing Industry—Michael Reed, Loys Mather, and Mary Marchant
- Assessment of Trade and Foreign Direct Investment on U.S. Competitiveness in Asian Food Markets—Mary Marchant
- An Economic Assessment of Precision Agriculture and Decision Aids—Carl Dillon, Steve Isaacs, Ronald Fleming, and Gregg Ibendahl
- Enhancing Farmers’ Income through Polyculture of Paddlefish with Catfish in the Southern Region—Lee Meyer
- Enrichment Activities in Agricultural Education—Charles Byers
- Expansion of GRP Crop Programs—Jerry Skees
- Financing Agriculture and Rural America: Issues of Policy, Structure, and Technical Change—David Freshwater
- Fruit and Vegetable Supply-Chain Management, Innovations, and Competitiveness—Timothy Woods
- Impacts of Trade Agreements and Economic Policies on Southern Agriculture—Mary Marchant
- International Agricultural Market Structures and Institutions, 2000—Michael Reed
- Kentucky Center for Cooperative Development—Timothy Woods
- Market Development of a Nutraceutical Butter Product—Leigh Maynard
- Meat Processing and Marketing for Local and Direct Markets—Lee Meyer
- Motivating Teams for Enterprise Facilitation—Timothy Woods
- New Enterprise Results and Historic Production Patterns: Is There a Positive Correlation for Some Farms?—Kimberly Zeuli and Jerry Skees
- Precision Agriculture: Precision Farming Adoption in Kentucky—The Role of Capital Costs and Farm Size—David Debertin, Ronald Fleming, and Carl Dillon
- The Relation between Risk Management Policy and Natural Resource Use—Jerry Skees
- Responding to Expressed Needs: SARE/ACE Regional Training with the Sustainable Dairy Systems Manual—Steve Isaacs
- Rural Economic Development: Alternatives in the New Competitive Environment—David Freshwater
- U.S. Consumer Demand for Dairy Products: Needs-Driven Methods and Analysis—Leigh Maynard
- Work Crew Performance Model in Vocational Agriculture—Steve Isaacs
Forage Crop Genetics and Breeding to Improve Yield and Quality—N.L. Taylor

Forage for Advancing Livestock Production—T.D. Phillips

Foreign Gene Introduction into Soybean—G.B. Collins

Fragipan Influence on Hillside Hydrology and Soil Water Quality—J.A. Thompson

Genetic Engineering of Dark Tobacco—J. Chappell

Genetic Engineering of Soybeans for Increased Oil Content and Epoxy Fatty Acid Accumulation—D.F. Hildebrand

Grain Quality Laboratory—C.G. Poneleit

Herbicide Persistence in Southern Soils Bioavailable Concentration and Effect on Sensitive Rotational Crops—W.W. Witt

Integrated Grass Filter Strip-Permeable Reactive Barrier Systems for Groundwater Protection—E. D’Angelo

Introgressing Alleles from the Wild Species G. soja into Soybean—T. Pfeiffer

Isolation of Axillary Bud Specific Genes—R. Dinkins

Kentucky Watershed and Water Quality Education Project—W.O. Thom

Manipulation and Regulation of Oxylipin Formation in Plant Tissues—D.F. Hildebrand

Metabolic Engineering to Study the Regulation/Plasticity of and to Modify Diterpene Metabolism in Trichome Gland Cells—G.J. Wagner

Microbial Ecology of Nitrate Reduction in Fragipan Soils—M.S. Coyne

Mineralogical Controls on Colloid Dispersion and Solid-Phase Speckle—J.A. Thompson

Molecular Regulatory Mechanism of Two Senescence-Specific Genes in Arabidopsis—S. Gan

Multiplicative (Linear-Bilinear) Models for Genotype X Environment Interaction in Crop Cultivars—P.L. Cornelius

Phenology, Population Dynamics, and Interference: A Basis for Understanding Weed Biology and Ecology—W.W. Witt

Pilot Project for Yield Enhancement Synthetic Auxins—C.A. Meurer

Plant Genetic Resources Conservation and Utilization—N.L. Taylor

Phenol and Phenolic Compounds in Groundwater Protection—S. Gan

Potentially Impact of Global Warming on Seed Germination Ecology of Summer Annual and of Winter Annual Weeds—C.C. Baskin

Poultry Litter Management for Corn Production—M. Rasnake

Precision Agriculture: Evaluating Nutrient Removal as a Basis for Nutrient Management—J. Grove

Precision Agriculture: Evaluation of Topography Attributes on Corn Yield—R.I. Barnhisel

Precision Agriculture: Explaining Spatial Variability in Grain Fields—T. Mueller

Precision Agriculture: Quantitative Soil-Landscape Modeling to Define Landform Management Segments—J.A. Thompson

Precision Agriculture: Remote Sensing of Pasture Mass and Quality—M. Collins

Predicting Soluble Transport Parameters from Pore Characteristics of Kentucky Soils—E. Perfect

Relationship between Photosynthesis, Assimilate Supply and the Size of the Reproductive Sink—D.B. Egli

Resilience of Nitrogen Availability and Retention in Soils of Kentucky Certified Organic Farms—M. Coyne

Role of Ammonium-Potassium-Calci um Exchange Interactions in Regulating Nitrification Rates in Soil—M.S. Coyne

Seed Biology and Technology Investigations—D.M. Tekely

Significance of Loline Alkaloids in Ecosystems Predominated by Grass/Endophyte Associations—L.P. Bush

Soft Red Winter Wheat Breeding and Variety Development for Kentucky—D.A. Van Sanford

Soil and Crop Nitrogen Testing to Improve Nitrogen Management for Burley Tobacco—R.C. Pearce

Soil Biogeochemical Indicators to Assess Water Quality in Wetlands—E. D’Angelo

Soil Survey Characteristics and Environmental Impact—A.D. Karathanasis

Somatic Cell Genetics of Crop Plants—G.B. Collins

Soy 2000 Cellular and Molecular Biology of Soybean—G.B. Collins

Soybean Genetic Engineering—G.B. Collins

The Soybean Tissue Culture and Genetic Engineering Center—G.B. Collins

Species and Crop Management Effects on the Yield and Quality of Round Bale Silage—M. Collins

Switchgrass and Function of Terpene Cyclases—J. Chappell

Studies of and Efforts to Engineer the Metabolism in Plant Trichomes—G.J. Wagner

Studies on Decreasing Tobacco-Specific Nitrosamines in Burley Tobacco during Curing—H.R. Burton

Studies on Modified Air-Curing for the Production of Burley Tobacco Having Decreased Levels of Tobacco Specific Nitrosamines—H. Burton

Swing/ switchgrass as a Biomass—M. Rasnake

Technical Assistance for Data Analysis, Interpretation, and Manuscript Preparation in a Project on the Ecophysiology of the Mycorrhizal Symbiosis—M. Barrett

Turfgrass Management Practices in Kentucky—D.W. Williams

Understanding Recombination and Modifying its Frequency in Soybean and Corn—T.W. Pfeiffer

Using Seeded Cultivars of Zostera Grass for Sed Production—D.W. Williams

Variable Rate Seeding: Corn Producers—R.I. Barnhisel

Water We Doing with All That Water?—W.O. Thom

Yield Potential/Long-Term Effects of No-Tillage-Wheat Production—L. Murdock Jr.

Animal Sciences

Animal Manure and Waste Utilization Treatment and Nuisance Avoidance for a Sustainable Agriculture—G.L. Cromwell and J.H. Grove

Breedling to Optimize Maternal Performance and Reproduction of Beef Cows in the Southern Regions—F.A. Thrift and D.K. Aaron

Development of a Swine Model to Evaluate the Reduction of Antibiotic Resistant Enteric Bacteria in Domestic Livestock—M.C. Newman

Development of Peptide Blockers to Enhance Cheese Production—C.L. Hicks

Dietary Regulation of Carionic Amino Acid Transporter Protein Expression in Cattle—J.C. Matthews

Effects of Dietary Fiber Type and Amount on Large Intestinal Volatile Fatty Acids and Water Balance in Horses—L.M. Lawrence

Enhancing Food Safety through Control of Foodborne Disease Agents—M.C. Newman

Evaluation of Suplemental Chromium on Glucose Tolerance and Performance of Swine—M.D. Lindemann and G.L. Cromwell

Forage Protein Characterization and Utilization for Cattle—E.S. Vanzant

Formation and Treatment of Ovarian Cysts in Dairy Cows—W.J. Sileta

Interaction of Structurally Modified Food Proteins in Processed Meat Systems—Y. Xiong

Introduction of Puberty Onset in Beef Cattle—K.K. Schillo

Management Systems for Improved Decision Making and Profitability of Dairy Herds—D.M. Amaral-Phillips

Mastitis Resistance to Enhance Dairy Food Safety—R.J. Harmon

Metabolic Relationships in Supply of Nutrients for Lactating Cows—D.L. Harmon

Modifying Milk Fat Composition for Improved Manufacturing Quality and Consumer Acceptability—S.T. Franklin

Molasses-Based Strategic Supplementation Program to Enhance Beef Cow Reproductive Performance and Calf Weaning Weight from Endophyte-Infected Tall Fescue Pasture—D.G. Ely and D.K. Aaron

Molecular Characterization of Carbohydrate Utilization by Anaerobic Bacteria—H.J. Strobel and K.A. Dawson

Nutrition and Health of Dairy Calves—S.T. Franklin

Nutritional Systems for Swine to Increase Reproductive Efficiency—M.D. Lindemann

Organic Chromium and Anionic Salt Supplementation in the Diet of transition Dairy Cattle—J.A. Jackson

Post-Harvest Biochemistry of Methods of Minimizing Methamethiol Dimethyl Trisulfide in Soy Protein Products—W.L. Boaright
Post-Thaw Status of Bovine Spermatozoa: Sperm Qualitative Measurements and Artificial Insemination—P.M. Zavos

Regulation of Carbohydrate Digestion and Absorption in the Ruminant Small Intestine—D.L. Harmon and J.C. Matthews

Strategies for Improving Ewe Lactational Performance and Predicting Preweaning Growth of Lambs Harvesting the Milk Produced—D.K. Aaron and D.G. Ely

Zinc Nutrition Endothelial Integrity—B. Hennig

Biosystems and Agricultural Engineering

Development and Application of Comprehensive Agricultural Ecosystems Models—D.R. Edwards, R.C. Warner, and J.L. Taraka

Fiber Optic Sensor Development for Cottage Cheese Processing—F.A. Payne, C.L. Hicks, and R.S. Gates

Light Backscatter Sensor Development for Measurement of Food Consistency—F.A. Payne and M.P. Menguc

Measuring and Predicting Soil Compaction by Machinery—L.G. Wells, S.A. Shearer, and R.J. Barnhazel

Mechanics of Granular Solids—I.J. Ross, R.S. Gates, and T.C. Bridges

Precision Agriculture: Development and Assessment of Integrated Practices for Kentucky Producers—S.A. Shearer

Precision Farming Technology and Its Economic and Environmental Impacts—S.A. Shearer

Quantification of Feeding and Drinking Behavior of Poultry for Enhancement Animal Well-Being—R.S. Gates

Residential Air Infiltration and Air Quality—D.G. Collier, R.S. Gates, and K.T. Priddy


A Systematic Approach to Enzyme Recovery from Solid State Fermentation—S.E. Nokes

Water and Solute Transport in Soils with Perched Water Tables—S.R. Workman

Entomology

Biological Control of Arthropod Pests and Weeds—Kenneth V. Yeargan

Biological Control of Selected Arthropod Pests and Weeds—Kenneth V. Yeargan

Biology and Management of Insects Attacking Turf and Woody Landscape Plants—Daniel A. Potter

Characterization of Selected Proteins Derived from an Insect Parasitoid—Douglas L. Dahman

Consequences of Variation in Host Plant Resistance for the Evolution of Offspring Size in a Seed-Feeding Beetle—Charles W. Fox

Development of Pest Management Strategies for Forage Alfalfa Persistence—B.C. Pass

Development and Integration of Entomopathogens into Pest Management Systems—Grayson C. Brown

Development, Evaluation, and Safety of Entomopathogens for Control of Arthropod Pests—Grayson C. Brown

Dynamic Soybean Insect Management for Emerging Agricultural Technologies and Variable Environments—Kenneth V. Yeargan

Ecology and Management of European Corn Borer and Other Stalk Boring Lepidoptera—Grayson C. Brown

Evolutionary Genetics of Developmental and Age-Related Changes in Social Signals—Charles W. Fox

Field Evaluation and Implementation of Economic Injury Levels Incorporating Biological Control Agents in Two Crop Systems—Grayson C. Brown

Functional Implications of Polydnavirus Genome Organization—Bruce A. Webb

Impacts of Spiders in Food Webs of Crop and Forest-Floor Ecosystems—David H. Wise

Integrated Management of Arthropod Pests of Livestock and Poultry—Stephen L. Dobson

Matting Disruption and the Evolution of Pheromone Communication in Moths—Kenneth F. Hayes

Molecular Dissection of Polydnavirus Functional Activities—Bruce A. Webb

Phytochemical and Physiological Effects of Herbivore Feeding Guild Interactions: The Impact of Bud Herbivory on Gypsy Moth Success—Lynne K. Rieseke-Kinney

Systematics and Biodiversity of Biological Control Agents with Special Reference to the Braconidae—Michael J. Sharkey

Forestry

Conservation, Ecology, and Restoration of Large Mammals in Eastern Kentucky—David Maehr

Controls on Litter Decay and N Transformations: Effects of Tree Species, Microclimate, and Soil Mesofauna in Oak and Mixed Hardwood Stands—Mary Arthur

Developing a Digital Photogrammetric Method for Forest Density Estimation—Calvin Liu

Effects of Disturbance Corridors (Roads and Hiking Trails) on Invertebrate Macrofauna of Forest Soils on the Cumberland Plateau of Kentucky—Paul Kalisz


Rooft Selection of Bats in Eastern Kentucky—Michael Lacki

Species Composition and Dynamics of the Herbaceous Layer of the Mixed Mesophytic Forest in Eastern Kentucky—Robert Muller

Horticulture

ACC-Treated Seeds Show Increased Speed of Germination—R.L. Geneve

Assuring Food Safety through Control of Foodborne Disease Agents—B.E. Langlois, D.D. Archbold, T.R. Hamilton-Kemp

Botrytis cinerea Development and Natural Volatile Compounds from Strawberry Fruit—T.R. Kemp

Characterizing Drought Resistance and Chemical Thinning of Fruit Crops—D.D. Archbold

Construction and Evaluation of Transgenic Wheat and Maize Plants Expressing Full-Length and Truncated Forms of Pea Rubisco—R.L. Houz

Controlled Water Table Irrigation for Container Plant Production—J.W. Buxton

Designing a Horticulture Laboratory Course to Accommodate Students with Disabilities—R. Durham

Dislodgeable Residues of Organophosphorous Insecticides—J.C. Snyder and G.F. Antonious

Evaluation of Growth and Phenolic Content of Echinacea Species under Greenhouse Conditions—R.A. Anderson

Ginseng Monitoring and Research—R.T. Jones

A Key Element in Plant Stress Tolerance—A.B. Downie

Mechanism and Significance of Post-Translational Modifications of Ribulose Bisphosphate Carboxylase/Oxygenase—R.L. Houz

Molecular Characterization of the Role of Raffinose in Arabidopsis, Tomato and Corn—A.B. Downie

Natural Products, Host Resistance, and Crop Protection—J.C. Snyder

New Crop Opportunities Center—D.L. Ingram and L.J. Grabau

Post-Translational Methylation of Lysyl Residue 14 in the Large Subunit of Ribulose-1,5-Bisphosphate Carboxylase/Oxygenase—R.L. Houz

Production of Ethylene and its Biosynthetic Precursors as Indicators of Seed Vigor—R.L. Geneve

Rooftock and Interspecific Effects on Pome and Stone Fruit Trees—G.R. Brown

Seed Vigor Testing for Small-Seeded Flower Species Using Computer-Aided Image Analysis—R.L. Geneve

Technical and Economical Efficiencies of Production, Marketing, and Managing Environmental Plants—R.E. McNiel

Landscape Architecture

A Planning Model for Assessment of Agricultural Potential in Appalachia Using Information Technology Tools—Thomas J. Nieman
Nutrition and Food Science

Dietary Vitamin E/Fat and Oxidative Damage—C. K. Chow
Effect of Dietary Antioxidant on Hepatic NF-kB Activation—H. P. Glaevert
Effects of Dietary Fish Oil and N-3 Fatty Acids on Antioxidant Defense Systems and Inflammatory Processes—L. H. Chen

Plant Pathology

Aggressiveness and Pathogenicity Determinants in Anthracnose Stalk Rot of Corn—L. J. Vaillancourt
Altering Ergot Alkaloid Biosynthesis by the Acremonium Endophyte of Tall Fescue—C. L. Schardl
Assessment of Diseases and their Management in Trees and Other Perennials—J. R. Hartman
Biological Control and Management of Soilborne Plant Pathogens for Sustainable Crop Production—J. W. Hendrix
Biological Control of Soilborne Plant Pathogens for Sustainable Agriculture—J. W. Hendrix
Control of Acidic Beta-1,3-glucanase Gene Expression in Induced Systemic Resistance of Tobacco to Blue Mold—C. L. Schardl
Development of a Cucumovirus-Based Tobacco Transient Expression Vector—S. A. Ghabrial
Development of Gray Leaf Spot-Resistant Perennial Ryegrass through Breeding and Biotechnological Approaches—M. L. Farman
Efforts to Limit Disease in Tobacco and Vegetables—W. C. Nesmith
Evaluation of Disease Management Strategies for Corn, Forages, and Turf—P. Vincelli
Expression of a Broad-Spectrum Antifungal Polypeptide in Transgenic Tobacco Plants: Novel Approaches for Control of the Blue Mold Disease of Tobacco—S. A. Ghabrial
Factors Influencing De Novo Meiotic Chromosome Deletions—M. L. Farman
Genetic Analysis of Avirulence/Virulence in Magnaporthe grisea, a Pathogen of Rice—M. L. Farman
Genetic Analysis of Bioprotective Alkaloids Produced by Grass Symbionts—C. L. Schardl
Genetic Determinants of Parasitism and Pathogenicity in Colletotrichum graminicola—L. J. Vaillancourt
Identification of Pathogenicity Mutants of Colletotrichum graminicola—M. R. Thon
Impact of Viruses on Illinois Soybean—S. A. Ghabrial
Managing Plant-Parasitic Nematodes in Sustainable Agriculture with Emphasis on Crop Resistance—D. E. Hershman
Mechanisms of Defective Interfering RNA Replication and Interference with Helper Virus Infections—P. D. Nagy
Mechanisms of Virus Particle Disassembly during the Establishment of Plant Virus Infections—J. G. Shaw
Molecular Basis of Disease in a Virus-Infected Plant Pathogenic Fungus—S. A. Ghabrial
Molecular Genetics and Biosynthesis of Loline Alkaloids by Mutualistic Endophytes—C. L. Schardl
Molecular Systematics of Grass Symbionts of the Fungal Family Clavicipitaceae (Hypocreales)—C. L. Schardl
Mycoreovirus-Host Interactions in Diseased Isolates of Helminthosporium victoriae—S. A. Ghabrial
A National Agricultural Program to Clear Pest Control Agents for Minor Uses—W. C. Nesmith
National Fusarium Head Blight Initiative: Work Plans and Budget for 1999—D. E. Hershman
Phylogenetics of Epichloë Species and Related Grass Myc symbionts—C. L. Schardl
Role of Promoter and Enhancer Elements in the Replication of Defective Interfering Tombusvirus RNA—P. D. Nagy
Strategic Utilization of Resistance Genes to Prevent Virus-Induced Yield Losses—S. A. Ghabrial
Survey and Management of Soybean and Wheat Diseases—D. E. Hershman
Toxin Biosynthesis in Ergopeptine-Producing Fungi—C. L. Schardl
Uncoating of a Helical Virus: Cotranslational and Coreplicational Disassembly Mechanisms—J. G. Shaw
Use of Molecular Markers for Epidemiological and Population Studies of Peronospora tabacina—M. L. Farman
Vector Specificity in Potyvirus Transmission: Role of the Helper Component—T. P. Pirone

Rural Sociology

Assessing the Impacts of Welfare Reform on Individual, Family, and Community Well-Being: A Focus on the Rural South—J. Zimmerman
Best Practices Approach to Parental Involvement—P. Dyk
HIV Interventions for Young, Appalachian Risk Takers—G. Hansen
Impacts and Outcomes of Welfare Reform across Rural and Urban Places in Kentucky—P. Dyk and J. Zimmerman
Organizational and Structural Changes in the Dairy Industry—L. Garkovich and P. Dyk
Risk and Regulatory Regimes in Industrial Animal Agriculture—L. Barmeister
Rural Low-Income Families: Tracking Their Well-Being and Functioning in the Context of Welfare Reform—P. Dyk
Rural Restructuring: Causes and Consequences of Globalized Agricultural and Natural Resource Systems—L. Barmeister

Veterinary Science

Age Dependence of Foal Vaccination for Viral Infectious Diseases—T. M. Chambers
Bovine Influenza—T. M. Chambers
Cause of Death of Elk in Kentucky—D. Bolin
Cellular Immunity to Infection of Horses by Equine Herpesvirus 1—G. P. Allen
Characterization of Immunogenic Surface Proteins of Streptococcus equi—J. F. Timoney
Characterization of Protectively Immunogenic Proteins of Leptospira interrogans—J. F. Timoney
Continuing Education: Racetrack Veterinarians and Commission Veterinarians Short Course—T. Tobin
Control, Transmission, and Prevalence of Natural Infections of Internal Parasites of Equids and Rumintants—E. T. Lyons
Development of a Physical Gene Map for the Horse—T. L. Lear
Differential Gene Expression during Early Equine Conception Development—K. J. McDowell
EIAV Diagnostics—C. Issel
Equine Disease Surveillance at the Local, National, and International Level—D. G. Powell
Equine Influenza Surveillance and Virus Characterization—T. M. Chambers
Functional Genomics for the Horse—E. Bailey
Galactokinase 1 as a Candidate Gene for Juvenile Cataracts in Dogs—K. A. Graves
Gene Discovery in Sarcocystis neurona, the Primary Cause of EPM—D. Howe
Genes Map for the Horse: Genes for Growth and Development—E. Bailey
Genetic Basis of Epitheliogenesis imperfecta—E. G. Cohran
Genetic Variation and Management for Feral Horse Herds—E. G. Cohran
Genetics of Equine Infertility: Chromosome Abnormalities, Candidate Genes, and Testicular Gene Expression Affecting Stallion Fertility—T. L. Lear
Genome and Chromosome Evolution: Comparative Mapping and Genome Evolution of the Equidae and Other Perissodactyls—T. L. Lear
Host Factors Involved in Equine Infectious Anemia—R. F. Cook
Identification and Characterization of Immunodominant Antigens from Sarcocystis neurona—D. Howe
Identification of Genes Unique to Streptococcus equi by Subtractive DNA Hybridization—J. F. Timoney
Immunological Management of Lentivirus Infections: ELAV—C. Issel
Inactivation of the has A Gene of the Pinnacle Vaccine Strain of Streptococcus equi—J.F. Timoney
Induction of Local Immune Responses in the Equine Nasopharynx—J.F. Timoney
Insulin Resistance and Obesity in the Mare: Implications to Reproduction and Laminitis—B.P. Fitzgerald
Interactions among Prostaglandin F$_{2\alpha}$, Oxytocin and Conceptuses—K.J. McDowell
Investigation of Infectious Disease Outbreaks in Central Kentucky—D.G. Powell
Investigation of the Role of Thyroxine in the Control of Seasonal Reproductive Activity in the Mare—B.P. Fitzgerald
Investigations of Placentitis Associated with Gram-Positive Filamentous Bacteria in Horses—N.M. Williams
Melatonin and Seasonal Reproduction in Mares—B.P. Fitzgerald
Molecular Characterization of Bacteria Associated with Nocardioform Placentitis—J.M. Donahue
National Animal Genome Project—E. Bailey
New Analytical Methods: Detection of Erythropoietin Administration in Racing Horses—T. Tobin
New Therapeutic Approaches to Equine Diseases—T. Tobin
No Effect Thresholds in Racing Horses—T. Tobin
Pathogenesis of Equine Infectious Anemia—C. Issel
Role of Adipose-Tissue Derived Cytokines, Including Leptin in the Control of Seasonal Reproductive Activity in the Mare—B.P. Fitzgerald
Synteny Mapping of Coding Genes in New World Camelids—K.A. Graves
Synthesis of Equine Drug Metabolites—T. Tobin
Testing Integrity Program (TIP)—T. Tobin
Testing of Modified Live Equine Influenza Virus Vaccine (FluAvert™ I.N. Vaccine)—T.M. Chambers
Annual Report

One Hundred and Twelfth Annual Report of the Kentucky Agricul-
tural Experiment Station for 1999. College of Agriculture, Uni-
versity of Kentucky, C. Oran Little, Director. June.

Books and Book Chapters

Agricultural Economics
Debertin, D.L. Review of urban-regional economics. Social system
accounts and eco-behavioral science: Selected writings by Karl A.
Fox. pp. 438-441. IN: James R. Prescott, Paul Van Moeske,
University Press (book review).

Reed, M. International Trade in Agricultural Products. Prentice-Hall.
235 pp.

Reed, M.R., and M. Hasan. Government intervention and competi-
tiveness: The case of the Indonesian palm oil industry. IN: Lodha,
ed. Business in the 21st Century. Southern Connecticut State Uni-
versity, New Haven, Conn.

Reed, M.R. The U.S. food processing industry. IN: Colyer, Kennedy,
Amponsah, Fletcher, Jolly, eds. Competition in Agriculture: The United
States in the World Market. Haworth Press, Binghamton, N.Y.

Agronomy
Barnhisel, R.I., R.G. Darmody, and W.L. Daniels, eds. Reclamation of
Drastically Disturbed Lands. Agronomy Monograph 41. American
Society of Agronomy Inc., Crop Science Society of America Inc.,

Crossa, J., and P.L. Cornelius. Modelos lineales-bilineales para el
análisis de ensayos de genotipos en ambientes múltiples. IN: F.G.
Garcia and N.E. Treviño, eds. Simposio Interacción Genotipo ×
Ambiente. Sociedad Mexicana de Fitogenética (SOMEFI).
Chapingo, México.

Díaz-Zorita, M., and J.H. Grove. Crop rotations and soil properties
under no-till systems in the Pampas region (Spanish). pp. 35-41.
IN: J.L. Panigatti, D. Buschiazzo, and H. Marelli, eds. Símbra

Ditsch, D.C., and M. Collins. Reclamation considerations for pasture
Darmody, and W.L. Daniels, eds. Reclamation of Drastically Disturbed
Lands. Agronomy Monograph 41. American Society of Agronomy
Inc., Crop Science Society of America Inc., Soil Science Society
of America Inc., Madison, Wis.

Dunker, R.G. and R.I. Barnhisel. Cropland reclamation. Chapter 13,
pp. 323-369. IN: R.I. Barnhisel, R.G. Darmody, and W.L. Daniels,
eds. Reclamation of Drastically Disturbed Lands. Agronomy Mono-
graph 41. American Society of Agronomy Inc., Crop Science
Society of America Inc., Soil Science Society of America Inc., Mad-
ison, Wis.

Perfect, E. Estimating soil mass fractal dimensions from water reten-
tion curves. pp. 131-141. IN: Y.A. Pachepsky, J.W. Crawford, and
W.J. Rawls, eds. Fractals in Soil Science, Developments in Soil Science
27. Elsevier, Amsterdam, the Netherlands.

Reddy, K.R., E.M. D’Angelo, and W.G. Harris. Biogeochemistry of
Science. CRC Press, Boca Raton, Fla.

Chapter 27, pp. 775-799. IN: R.I. Barnhisel, R.G. Darmody, and
W.L. Daniels, eds. Reclamation of Drastically Disturbed Lands.
Agronomy Monograph 41. American Society of Agronomy Inc.,
Crop Science Society of America Inc., Soil Science Society of
America Inc., Madison, Wis.

Taguas, J.F., M.A. Martín, and E. Perfect. Simulation and testing of
self-similar structures for soil particle-size distributions using iter-
ated function systems. pp. 101-113. IN: Y.A. Pachepsky, J.W.
Crawford, and W.J. Rawls, eds. Fractals in Soil Science, Develop-
ments in Soil Science 27. Elsevier, Amsterdam, the Netherlands.

Williams, D., B. McCrary, and L.C. Miller. Cultural practices for golf
courses. pp. 317-355. IN: McCrary, L.B., ed. Best Golf Course Man-
agement Practices. Prentice Hall.

Animal Sciences
Aaron, D.K., and V.W. Hays. Statistical techniques for the design and
analysis of swine nutrition experiments. pp. 879-899. IN: A.J. Lewis
and L.L. Southern, eds. Swine Nutrition, 2nd ed. CRC Press, Boca
Raton, Fla.

Cantor, A.H., E.A. Decker, and V.P. Collins. Fatty acids in poultry
and egg products. pp. 125-151. IN: C.K. Chow, ed. Fatty Acids in
Foods and Their Health Implications, 2nd ed. Marcel Dekker, New
York.

Effect of feeding organic selenium in diets of laying hens on egg
Guenter, eds. Egg Nutrition and Biotechnology. CAB International,
Wallingford, United Kingdom.

Cromwell, Gary L. An animal nutritionist’s perspective. pp. 57-82.
IN: C.F. Murphy and D.M. Peterson, eds. Designing Crops for Added
Value. American Society of Agronomy, Crop Science Society of
America, Soil Science Society of America, Madison, Wis.

Cromwell, Gary L. Utilization of soy products in swine diets. pp. 258-
of Animal Science Societies, Savoy, Ill.

Hennig, B., M. Toborek, and G.A. Boissonneau. Lipids, inflamma-
tory cytokines, and endothelial cell injury. Chapter 17, pp. 205-
220. IN: Gershwin, German and Keen, eds. Nutrition and Immun-

Lindemann, M.D., A.J. Lepine, and M.G. Hayek. Evaluation of chro-
nium supplementation on several insulin-controlled parameters
Proceedings of the 2000 IAMS Nutrition Symposium. Orange Frazer
Press, Wilmington, Ohio.

Matthews, J.C. Mechanisms of peptide and amino acid transport.
Chapter 1. IN: J.P.F. D’Mello, ed. Farm Animal Metabolism and
Nutrition: Critical Reviews. CAB International, Wallingford, United
Kingdom.

Matthews, J.C. Peptide absorption: Where peptides fit in protein nut-
rition and metabolism. pp. 357-368. IN: T.P. Lyons and K.A.
Jacques, eds. Biotechnology in the Feed Industry. Proceedings of Altech’s
16th Annual Symposium. Nottingham University Press, Nottingham, United Kingdom.

Silvia, W.J., and L.A. Edgerton. Possible roles of oxytocin in regulat-
ing uterine prostaglandin secretion during the oestrous cycle and
early pregnancy in sows. Havemeyer Foundation Monograph Se-
ries No. 2:10-12.

Xiong, Y.L. Meat processing. Chapter 2, pp. 89-145. IN: S. Nakai and
H.W. Mosler, eds. Food Proteins: Processing Applications. Wiley-
VCH, New York.

Publications

All publication dates in this section are 2000 unless otherwise noted.

**Biosystems and Agricultural Engineering**


Gates, R.S., K. Chao, and N. Sigrimis. Identifying design parameters for fuzzy control of staged ventilation control systems. Computers and Electronics in Agriculture, Special Issue on Intelligent Systems in Crop Production (COMPAG 1576).


**Entomology**


**Forestry**


**Horticulture**


**Landscape Architecture**


**Nutrition and Food Science**


**Plant Pathology**


Veterinary Science


Tobin, T. Furosemide in the Horse. CABI Publishing, Wallingford, United Kingdom.


Journal Articles
Agricultural Economics


Skees, J.R., P. Hazelli, and M. Miranda. Nuovi approcci per le assicurazioni in agricoltura nei Paesi in via di svolgimento. Rivista di Politic Agraria ANO XVIII (Italy), 31-52.


(In addition, members of the department published 17 abstracts.)
Agronomy
Hage, Tanois G., Craig Seither, and David Hildebrand. Isolation of two cDNAs from Vernonia galamensis (Cass.) Less. Encoding a microsomal oleate desaturase (FAD2) (Accession No. AF188263 and AF188264) and functional expression in Saccharomyces cerevisiae. Plant Physiology, 122:1457.
Pfeiffer, T.W. Selecting soybean for adaptation to double cropping on the basis of full season plant height. Crop Science, 40:387-390.


(Addison, members of the department published 133 abstracts.)

Animal Sciences


Thrift, F.A. A simple example illustrating adjustment for merit of mates in a national cattle evaluation program. Journal of the Professional Animal Scientist, 16:149-158.


(In addition, members of the department published 75 abstracts.)

**Biosystems and Agricultural Engineering**


(In addition, members of the department published 7 abstracts.)

Entomology


Fox, Charles W. Natural selection on seed-beetle egg size in nature and the laboratory: Variation among environments. Ecology, 81(11):3029-3035.


López, Rolando, and Daniel A. Potter. Ant predation on eggs and larvae of the black cutworm (Lepidoptera: Noctuidae) and Japanese beetle (Coleoptera: Scarabaeidae) in turfgrass. Environmental Entomology, 29(1):116-125.


(In addition, members of the department published 8 abstracts.)

**Forestry**


(In addition, members of the department published 31 abstracts.)

**Horticulture**


**Nutrition and Food Science**


Plant Pathology


Soldevila, A., and S.A. Ghabrial. A novel alcohol oxidase/RNA-binding protein with affinity for mycovirus double-stranded RNAs from the filamentous fungus Helminthosporium (Cochliobolus) victoriae. Molecular and functional characterization. Journal of Biological Chemistry. Published online on October 30 as a JBC Paper in Press (10.1074/jbc.M007102120), and can be seen at <www.jbc.org>.


Vaillancourt, L.J., and J.R. Hartman. Apple scab. The Plant Health Instructor. COI:10.1094/PHI-I-2000-1005-01. (This is an online “Lesson” prepared for APSnet and is located under APS educational resources.)


(In addition, members of the department published 22 abstracts.)

Rural Sociology


Veterinary Science


(In addition, members of the department published 63 abstracts.)

Other Research Publications

**Agricultural Economics**


Freshwater, D. Why a coherent regulatory philosophy is important. Contractor report to the Farm Credit Administration, February.


King, B.S., and S. Vickner. Vegetable consumption trends and opportunities. Agricultural Situation and Outlook, EMS-26, October, 75-78, John D. Anderson, ed. Department of Agricultural Economics, University of Kentucky.


Saghaian, S., M. Reed, and M. Marchant. Monetary impacts and over-shooting of agricultural prices in an open economy. Staff Paper #403. Department of Agricultural Economics, University of Kentucky. March.


Zeuli, K. and D. Freshwater. The changing role of agricultural coopera-tives in rural economics. The Kentucky Agribusiness Review, 3(1), Spring.

**Agronomy**


Freshwater, D. Why a coherent regulatory philosophy is important. Contractor report to the Farm Credit Administration, February.


King, B.S., and S. Vickner. Vegetable consumption trends and opportunities. Agricultural Situation and Outlook, EMS-26, October, 75-78, John D. Anderson, ed. Department of Agricultural Economics, University of Kentucky.


Saghaian, S., M. Reed, and M. Marchant. Monetary impacts and over-shooting of agricultural prices in an open economy. Staff Paper #403. Department of Agricultural Economics, University of Kentucky. March.


Zeuli, K. and D. Freshwater. The changing role of agricultural coopera-tives in rural economics. The Kentucky Agribusiness Review, 3(1), Spring.


Hennen, B. Forum: Vitamin E vs. PCBs. Environmental Health Perspectives, 108:4-5.

Lindemann, M.D. Fat sources and vitamin supplementation—a need to re-examine sow diets? Proceedings, Manitoba Swine Seminar, 14:33-47.

Lindemann, M.D. Space requirements for swine. The Farmer’s Pride, September 13, 12(11):12.

Lindemann, M.D. Space requirements for swine—Part II. The Farmer’s Pride, November 1, 12(18):19-20.


**Biosystems and Agricultural Engineering**


Burks, T.F., S.A. Shearer, and J.P. Fulton. Assessment of fertilizer application accuracy with the use of navigational aids. Paper No. 00-1154. Annual International Meeting, American Society of Agricultural Engineers, Milwaukee, Wis.


Puma, M., H. Xin, R.S. Gates, and D. Burnham. Feeding and drinking patterns and growth performance of individual broilers at selected cycling air temperature and drinking water temperatures. Paper No. 00-4068. Annual International Meeting, American Society of Agricultural Engineers, Milwaukee, Wis.


Entomology


Forestry


Maehr, D.S. Large carnivores in an island paradise! Wild Earth, 9(4):56-61.


Horticulture


Rowell, B. Selecting pepper varieties and bacterial leaf spot resistance. Proceedings, Ohio Fruit and Vegetable Growers Congress, February 10-12, Cincinnati, Ohio.

Rowell, B. Yields and disease resistance of fall-harvested transgenic and regular summer squash. Proceedings, Ohio Fruit and Vegetable Growers Congress, February 10-12, Cincinnati, Ohio.


Nutrition and Food Science

Plant Pathology

Rural Sociology
Garkovich, L. Land use at the edge: The challenges of urban growth for the South. The Rural South: Preparing for the Challenges of the 21st Century. Southern Rural Development Center, Mississippi State, Miss.

Veterinary Science
Dwyer, R.M. Bits and Pieces. The Horse Journal, August:10.
Dwyer, R.M. Drugs and show horses. Equine Disease Quarterly, 9:3.
Dwyer, R.M. Nurse mares. Equine Disease Quarterly, 8:3-4.
Dwyer, R.M. When should I call the vet? The Horse, June:122.
Lear, T.L. Equine genome project. Equine Disease Quarterly, 8:3.
Powell, D.G. Disease risks associated with the movement of horses. 27th Asian Racing Conference, Singapore.
Williams, N.M. Disease conditions in geriatric horses. Equine Disease Quarterly, 8:4-5.
Williams, N.M. Disease conditions in geriatric horses. Equine Practice, 22:32.
Williams, N.M. Fractures in horses. Equine Disease Quarterly, 8:5-6.
Ph.D. Dissertations

**Agricultural Economics**

**Agronomy**
Devarenne, Timothy P. Molecular and biochemical characterization of squalene synthase from *Nicotiana tabacum*: A putative regulatory step in the sterol biosynthetic pathway.
Duan, Ran. Relationship between yield and number of recombination events in soybean breeding.
Teutsch, Christopher D. Soil, plant, and animal interactions on reclaimed mine-land pastures in southeastern Kentucky.
Wei, Xiaochen. Studies on the biosynthesis and metabolites of pyridine alkaloids in *Nicotiana* species.
Yang, Xintong. Genetic diversity among parents and performance of single and three-way crosses in winter wheat.

**Animal Sciences**
Imwalle, Dennis Bradley. Endocrine control of bull sexual behavior.
Gill, Amy Michelle. Effect of feeding frequency on behavior, feed digestibility, and cecal fermentation pattern in stabled horses and ponies.
Slim, Rabih. Effects of polychlorinated biphenyls on vascular endothelial cell dysfunction: Modification by dietary lipids.
Swanson, Kendal Carl. Mechanisms regulating pancreatic a-Amylase expression and secretion in ruminants.
Tabeide, Zahra. Effect of immunoglobulin and milk fat globule membrane on culture agglutination.
Traylor, Steven Leon. Assessment of nutrient bioavailability in meat and bone meal for pigs and chicks.
Warren, Lori Kay. The effect of level and type of dietary fiber on the hydration status of horses in response to dehydration and endurance exercise.
Washburn, Brian Eric. Ecological relationships among eastern cottontail rabbits, tall fescue, and native warm-season grasses.

**Biosystems and Agricultural Engineering**
Gholamimerhrabadi, Abolfazl. An Assessment of Factors Affecting the Competency of Agricultural Mechanization Programs and Teachers in the Islamic Republic of Iran.

**Entomology**
Blank, Kenneth W. Identification, isolation, and characterization of *Clostridium bifermantans* Strain 10-A, a mosquito larvicidal bacterium.
Lawrence, Kendra Lynn. Role of spiders and other generalist predators in the trophic dynamics of the forest-floor leaf-litter food web.
Raymond, Charles Britt. Predatory interactions within a guild of predaceous heteroptera common in soybean and their effect on survival of a soybean pest.
Spohn, Bryan Gordon. Factors influencing the evolution of pheromone communication in the cabbage looper, *Trichoplusia Ni* (Hübner) (Lepidoptera: Noctuidae).

**Nutrition and Food Science**
Ibrahim, W. Studies on the mechanism of oxidative damage: Role of superoxide and iron.
O’Brien, M.L. Effects of peroxisome proliferators on antioxidant enzymes, vitamins, and redox-sensitive transcription factors in rats and hamsters.
Zhao Y. Modulation of tumor necrosis factor-alpha expression by eicosapentaenoic acid.

**Plant Pathology**
Wang, Jinghong. *dmaW* encoding tryptophan dimethyallyltransferase in ergot alkaloid biosynthesis from Clavicipitaceous fungi.

**Rural Sociology**
Veeraghanta, S. Life on the margins: The Jenu-Kuruba and their forests.
Redlin, M. Living on the dragon’s back: Agriculture, environment, and rural identity in deep rural Montana.

**Veterinary Science**
Burnett, S. Hale. Development of a competitive reverse transcription polymerase chain reaction assay for quantitation of equine interferon gamma, interleukin-2, interleukin-4, and glyceraldehyde-3-phosphate dehydrogenase.
Holland Jr., R.E. Effect of passive transfer of maternal antibodies on early foal vaccination with inactivated equine influenza antigen.
Lin, C.B. Mechanism of equine influenza virus mediated cytopotoxicity.
McManus, C.J. Effect of food restriction and pharmacological repartitioning of energy intake on reproductive activity in the mare.
M.S. Theses

Agricultural Economics
Botts, Alea Gale. Approaches and effects of two farm reorganization projects in Ukraine.

Cruce, Stefanie Beth. An economic analysis of Kentucky dairy farm abatement cost.

Hancock, Samuel Jesse. Limiting risk through agricultural cooperatives.

Harvey, Andrew G. The simultaneous occurrence of changes in poverty, income, educational attainment, and employment: An endogenous model of regional progress.

Kumakno, Kuami Mawunyo. Applying rainfall insurance in developing countries: The case of Morocco; a feasibility analysis.

Miriti, M’Kiaira Kimathi. Sub optimality: The economic dilemma of public welfare relief and its relevance to recent welfare reform—a market perspective on poverty and income transfer programs.

Agronomy
Ewing, Justin M. Effects of weed management strategies on winter wheat in Kentucky.

Ferrell, Jason A. Comparison of glyphosate with other herbicides for in-season weed control in corn.

Ipsilantis, Ioannis. Chromium effects on bulk soil and rhizosphere microbial communities and Cr bioremediation in the rhizosphere of Brassica juncea and by Cr reducing bacteria.

Munshaw, Gregory C. Management strategies during the establishment year enhance production and fitness of seeded bermudagrass stolons.

Peyyala, Rebecca. The value of increased pubescence density for yield and resistance to SMV in soybean.

Pinkston, Warren W. Effect of nozzle size and pressure on coverage of artificial targets and tobacco leaves.

Ruiz-Diego, Carmen. Groundwater and crop response to poultry litter application on reclaimed surface-mined land.

Settles, Joseph E. Response of native plant communities one year after herbicide treatment, mowing, or burning in powerline rights-of-way.

Animal Sciences
Anandappa, Marienne Angela. Trans-2-Hexenal: Its antibacterial activity and its potential as an alternative fungicide for produce.

Edgington, Charlie B. Effects of copper supplementation on immune function in holstein heifers fed endophyte-infected or endophyte-free tall fescue hay.

Fink, Dona Lee. Investigations into the use of gonadotropin-releasing hormone in estrus synchronization protocols for fixed-time inseminations of beef cattle.

Howell, Julie Ann. Tissue distribution of Na+-dependent glutamate transporters in sheep and cattle and differential tissue expression of GLUT-1 and EAAC1 in growing versus non-growing lambs.

O’Connor, Cara Irene. The effect of fish oil supplementation on exercising horses.

Portocarrero, Susana Maria. Evaluation of microbial population and shelf stability of country-cured ham.

Smith, Roger Dwayne. Effects of social conditions on sexual behavior, luteinizing hormone concentrations, and testosterone concentrations in yearling beef bulls.

Wolf, Charlie. The effectiveness of “Good-Fry” (a frying oil containing rice bran oil and sesame seed oil) on the percent trans fatty acids formed during restaurant frying.

Biomes and Agricultural Engineering
Camenisch, Gregory A. A mechanical harvesting and housing system for small burley tobacco crops.

Carter, Seaborn B. Effects of temperature and substrate water content on phytase production in solid state fermentation.

Chinn, Mari S. Temperature control of a solid state cultivation deep bed reactor for the production of xylanase by Trichoderma Longibrachiatum.

Collins-Camargo, Francis. Evaluation of enhanced water quality through passive dewatering systems utilizing sand filters: A field and large scale laboratory study.

Dawalt, Eric. Evaluation of sediment basin effectiveness using a laboratory scale basin and field basins.

Hallany, Jihad. Evaluation of passive dewatering system for small storms using a laboratory sediment basin.

Mack, Christian. Design, implementation, and evaluation of an algorithm to control crop to air vapor pressure deficit in a sunlit plant growth chamber.

Weber, Diana. Relative contribution of sediment from upland and channel erosion.

Entomology
Adams, Aaron Scott. Interactions between prescribed fire and herbivory: Effects on oak regeneration.

Griffin, Marisa Lynn. Ovipositional behavior of the 12-spotted lady beetle, Coleomegilla maculata: Choices among plant species and potential factors affecting those choices.

Held, David Wayne. Evaluation of controlled atmosphere anoxia treatments as a potential control tactic for greenhouse propagules.


Huang, LingKang. Identification and isolation of genes related to the replication of Campodeis sonorensis ichnovirus.

Morrison, Cynthia B. Effects of transplant date and management strategies on selected tobacco pests.

Newton, Blake L. The ecology of the harvestman Phalangium opilio, a predator of lepidopteran eggs in central Kentucky soybean.

Horticulture
Wilson, Tina. Influence of film coatings on germination of shrunken-2 sweet corn.

Plant Pathology
Chuky, Jennifer L. The influence of spore attachment and surface wettability and rigidity on germination in Colletotrichum graminicola.

Craven, Kelly D. Evolution of Epichloë/Neotyphodium species, fungal symbionts of grasses.

Heist, E. Patrick. Development of tissue culture systems with Peronsopora tabacina and various Nicotiana species to study growth of pathogen in callus and to examine interactions with host roots.

Rural Sociology
Jao, J. Ethnic inequalities and educational attainment in Taiwan.

Kershaw, D. Spirit and the farm: Sustaining the legacy in a new millennium.

Veterinary Science
Holtz, Cedric. Weight distribution on an equine hoof: The postural signature device.

Smith, Kimberly. The relationship between oxytocin and prostaglandin PGF2α at the expected time of luteolysis in mares.
## Financial Statement

### Statement of Current General Fund
### Income and Expenditures
### Fiscal Year 2000

#### INCOME

**Federal Funds:**
- Hatch Amended ................................................................. $3,941,624.00
- Hatch Multistate ............................................................... 869,791.00
- McIntire-Stennis .............................................................. 418,946.00
- Animal Health ................................................................. 61,254.00

**Total Federal Funds** ....................................................... $5,291,615.00

**State Funds** ................................................................. 24,518,338.00

**Total Funds** ................................................................... $29,809,953.00

#### EXPENDITURES

<table>
<thead>
<tr>
<th></th>
<th>Federal</th>
<th>State</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal Services</td>
<td>$4,133,806.00</td>
<td>$15,776,377.00</td>
<td>$19,910,183.00</td>
</tr>
<tr>
<td>Travel</td>
<td>97,469.00</td>
<td>203,536.00</td>
<td>301,005.00</td>
</tr>
<tr>
<td>Equipment</td>
<td>420,226.00</td>
<td>688,074.00</td>
<td>1,108,300.00</td>
</tr>
<tr>
<td>Other Operating Expenses</td>
<td>640,114.00</td>
<td>7,850,351.00</td>
<td>8,490,465.00</td>
</tr>
</tbody>
</table>

**Total Expenditures** .................................................... $29,809,953.00
Staff

University of Kentucky
Board of Trustees 2000

Edward T. Breathitt, Chairperson
Paul W. Chellgren
Marianne Smith Edge
Merwin Grayson Jr.
Jack Guthrie
Robert P. Meriwether
Billy Joe Miles
Elissa M. Plattner
Steven S. Reed
Marian Moore Sims
C. Frank Shoop
Alice Stevens Sparks
W. Grady Stumbo
JoEtta Y. Wickliffe
Billy B. Wilcoxson
Elaine A. Wilson
Faculty Members: Loys L. Mather & Daniel R. Reedy
Staff Member: Russ Williams
Student Member: James A. Glenn III

Agricultural Experiment Station
January 1, 1999—December 31, 2000

Administration
Charles T. Wethington Jr., President
Elisabeth Zinser, Chancellor
C.O. Little, Dean & Director
H.C. Owen, Treasurer
M. Scott Smith, Associate Dean for Research & Associate Director
Linus R. Walton, Associate Dean for Administration
J.D. Lawson, Assistant Director for Legal & Fiscal Affairs
W.O. Peterson, Director of Management Operations
Departments

Agricultural Communications
Craycraft, C.G., Director
Fehr, R.L., Professor
Ragland, K., Assistant Professor
Weckman, R.D., Associate Professor
Witham, D.B., Professor

Agricultural Economics
Robbins, L.W., Chairman & Professor
Debertain, D.L., Professor
Dillon, C., Associate Professor
Fleming, R., Assistant Professor
Freshwater, D., Professor
Marchant, M.A., Associate Professor
Mather, L.L., Associate Professor
Maynard, L., Assistant Professor
Pagulatmos, A., Professor
Reed, M.R., Professor
Skees, J.R., Professor
Vickner, S., Assistant Professor
Zeuli, K., Assistant Professor

Agronomy
Barrett, M., Chairman & Professor
Barnhise, R.L., Professor
Baskin, C.*, Professor
Burton, H.R., Associate Professor
Bush, L.P., Professor
Calvert, J.R., Research Specialist
Chappell, J., Associate Professor
Collins, G.B., Professor
Collins, M., Professor
Cornelius, P.L., Professor
Coyne, M.S., Assistant Professor
D'Angelo, E.M., Assistant Professor
Davis, Maclor, Professor
Dinkins, R.D., Research Specialist
Dougherty, C.T., Professor
Egli, D.B., Professor
Evangelou, V.P., Professor
Falcone, D.L., Assistant Professor
Green, S., Assistant Professor
Grabau, L.J., Associate Professor
Grove, J.H., Associate Professor
Hildebrand, D.F., Professor
Hunt, A.G., Professor
Karathanasis, A., Professor
Kennedy, B.S., Research Specialist
Legg, P.D., Professor
Macacha, C., Assistant Professor
Miller, B.D., Professor
Mueller, T.G., Assistant Professor
Pearce, R.C., Associate Professor
Perfect, E., Assistant Professor
Perry, S.E. Assistant Professor
Pfeiffer, T.W., Professor
Phillips, A.D., Research Specialist
Phillips, T.D., Associate Professor
Ponekle, C.G., Professor
Powell, A.J., Professor
Slack, C.H., Research Specialist
Taylor, N.L., Professor
TéKrony, D.M., Professor
Thom, W.O., Professor
Thompson, J.A., Assistant Professor
Tomes, C.J., Research Specialist
Tutt, C.R., Research Specialist
Van Sanford, D.A., Professor
Wagner, G., Professor
Williams, D.W., Assistant Professor
Witt, W.W., Professor
* Joint Biological Sciences

Animal Sciences
Kiracote, G.H., Chairman & Professor
Aaron, D.K., Professor
Barnes, T.B., Research Specialist
Boatright, W.L., Assistant Professor
Burris, R., Professor
Burt Jr., F.S., Research Specialist
Cantor, A.H., Associate Professor
Cromwell, G.L., Professor
Dawson, K.A., Professor
Dewese, W.P., Research Specialist
Edgerton, L.A., Associate Professor
Ely, D.G., Professor
Ford, M.J., Research Specialist
Franklin, S., Assistant Professor
Harmon, D.L., Professor
Harmon, R.J., Professor
Henning, B., Professor
Hicks, C.L., Professor
Hightshoe, B., Research Specialist
Jackson Jr., J.A., Associate Professor
Larson, B.T., Assistant Professor
Lawrence, L.M., Professor
Lindemann, M.D., Associate Professor
Matthews, J.C., Associate Professor
Moneque, H.J., Research Specialist
Moody, W.G., Professor
Newman, M., Assistant Professor
O'Leary, J., Associate Professor
Parker, G.R., Professor
Powell, D.M., Research Specialist
Randolph, J.H., Research Specialist
Schillo, K.K., Associate Professor
Silvia, W.J., Associate Professor
Strobel, H.J., Associate Professor
Surjan, I., Research Specialist
Thrift, F.A., Professor
Tidwell, J., Assistant Professor*
Vanzant, E., Assistant Professor
Wang, C., Assistant Professor*
Webster, C., Assistant Professor*
Xiong, Y., Professor
Zavos, P.M., Professor

Biosystems and Agricultural Engineering
Turner, L.W., Chairman & Professor
Bridges, T.C., Research Specialist
Colliver, D.G., Associate Professor
Day, G., Research Specialist
Duncan, G.A., Professor
Edwards, D.B., Professor
Gates, R.S., Professor
McNeill, S.G., Assistant Professor
Montross, M., Assistant Professor
Nokes, S.E., Assistant Professor
Overhults, D.G., Associate Professor
Payne, F.A., Professor
Pridy, K.T., Research Specialist
Ross, J.J., Professor
Shearer, S.A., Associate Professor
Smith, T., Research Specialist
Stombaugh, T.S., Assistant Professor
Taraba, J.L., Professor
Warner, R.C., Associate Professor
Wells, L.G., Professor
Workman, S.R., Assistant Professor

Entomology
Pass, B.C., Chairman & Professor
Brown, G.C., Professor
Dahlman, D.L., Professor
Dobson, S.L., Assistant Professor
Fox, C.W., Assistant Professor
Haynes, K.E., Professor
Knapp, F.W., Professor
Potter, D.A., Professor
Rieske-Kinney, L.K., Assistant Professor
Sharkey, M.J., Associate Professor
Webb, B.A., Associate Professor
Wise, D.H., Professor
Yeary, K.V., Professor

Forestry
Graves, D.H., Chairman & Professor
Arthur, M.A., Associate Professor
Kalins, P.J., Associate Professor
Kimmerer, T.W., Associate Professor
Kolka, R., Assistant Professor
Lacki, M.J., Associate Professor
Liu, C.J., Associate Professor
Meach, D.S., Assistant Professor
Muller, B.R., Associate Professor
Pelkki, M.H., Associate Professor
Ringe, J.M., Professor
Rhoades, C., Assistant Professor
Wagner, D.B., Associate Professor

Horticulture
Ingram, D.L., Chairman & Professor
Anderson, R.G., Professor
Archbold, D.D., Associate Professor
Brown, G.R., Professor
Buxton, J.W., Associate Professor
Downie, B., Assistant Professor
Geneve, R.L., Associate Professor
Houri, R.L., Associate Professor
Kemp, T.R., Professor
McNiel, R.E., Professor
Merkin, Z., Research Specialist
Rowell, A.B., Assistant Professor
Snyder, J.C., Associate Professor
Wolfe, D.E., Research Specialist

Landscape Architecture
Niemar, T.J., Professor

Nutrition and Food Science
Chen, L.H., Professor
Chow, C.K., Professor
Glauert, H.P., Professor

Plant Pathology
Smith, D.A., Chairman & Professor
Bachi, P.R., Research Specialist
Beale, J.W., Research Specialist
Farman, M.L., Assistant Professor
Ghaddar, S.A., Professor
Hendrix, J.W., Professor
Regulatory Services
Frye, W.W., Director & Professor
Beine, R.L., Laboratory Coordinator
Buckingham, D.T., Seed Regulatory Coordinator
Coffey, D.S., Inspector
Cox, B.W., Inspector
Fabricius, E.E., Seed Testing Coordinator
Flood, J.S., Inspector
Herald, F., Inspection Coordinator
Johnston, C.B., Inspector
Johnston, N.T., Inspector
Kirkland, D.L., Soil Testing Specialist
Lichtenberg, D., Lab Specialist
Mason, D.W., Inspector
McMurry, S.W., Inspector
Miller, E., Feed Coordinator
Prather, T.G., Inspector
Spencer, H.S., Auditor
Terry, D.L., Fertilizer Coordinator & Assistant Director
Thio, A.P., Lab Specialist
Thompson, C.D., Milk Coordinator
Troutman, D., Inspector

Robinson Station
Morrison, M., Superintendent

Rural Sociology
Hansen, G., Chairman & Professor
Burmeister, L.L., Associate Professor
Dyk, P.A., Associate Professor
Garkovich, L.E., Professor
Greider, T.R., Associate Professor
Harris, R.P., Associate Professor
Hustedde, R., Associate Professor
Maurer, R.C., Professor
Strang, N.L., Research Specialist
Zimmerman, J., Assistant Professor

Veterinary Science
Timoney, P.J., Chairman & Professor
Adams, M.H., Research Specialist
Allen, G.P., Professor
Artiushin, S.C., Research Specialist
Bailey, E.E., Professor
Chambers, T.M., Associate Professor
Cook, R.F., Assistant Professor
Cothran, E.G., Associate Professor
Donahue, J.M., Professor
Dwyer, R.M., Associate Professor
Fitzgerald, B.P., Associate Professor
Giles, R.C., Professor
Graves, K.A., Assistant Professor
Hale, G., Librarian
Harkins, J.D., Research Specialist
Harrison, L.H., Professor
Henney, P.J., Research Specialist
Hong, C.B., Professor
Issel, C.J., Professor
Leach, R.B., Research Specialist
Lear, T.L., Assistant Professor
Lehner, A.F., Research Specialist
Lyons, E.T., Professor
McCollum, W.H., Professor
McDowell, K.J., Associate Professor
Newman, D.H., Research Specialist
Poonacha, K.B., Professor
Powell, D.G., Associate Professor
Scharko, P.B., Associate Professor
Smith, B.J., Research Specialist
Smith, R.A., Associate Professor
Swerczek, T.W., Professor
Timoney, J.E., Professor
Tobin, T., Professor
Tolliver, S.C., Research Specialist
Tramontin, R.R., Associate Professor
Vickers, M.L., Associate Professor
Williams, N.M., Assistant Professor
Woods, W.E., Research Specialist
Yeargan, M.R., Research Specialist

West Kentucky Substation
Davis, D., Superintendent
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/