

# RESUME

## JOSEPH L. TARABA

### OFFICE ADDRESS

Room 216, Agricultural Engineering Building  
University of Kentucky  
Lexington, KY 40546-0276  
Phone: 859/257-3000 ext. 216  
FAX: 859/257-5671  
E-mail: jtaraba@bae.uky.edu

### PRESENT POSITION

Extension Professor, Biosystems and Agricultural Engineering Department, College of Agriculture (Kentucky Cooperative Extension Service), University of Kentucky, with major responsibilities for agricultural non-point source pollution impacts on surface and ground water, drinking water quality and animal waste management.

### EXPERIENCE

**1995-pres.** Extension Professor. Biosystems and Agricultural Engineering Department, University of Kentucky, Lexington.

**1982-1995** Associate Extension Professor and Extension Specialist. Agricultural Engineering Department, University of Kentucky, Lexington.

- Prime responsibilities in this position have been in developing and managing extension programs in private drinking water quality, management of animal waste and fuels from nonpetroleum resources. Responsibilities in the area of drinking water quality are developing and delivery of education programs and materials for extension agents, government officials and the general public. Other responsibilities are technical support for the statewide Kentucky Farm Bureau Private Water Testing Program and coordination of SB-271 mandate to the College of Agricultural to carry out an assessment of agricultural practice impact on groundwater, and the education and research program for the agricultural impacts on groundwater.
- Extension responsibilities involve the development of designs; economic evaluation of animal waste management systems that conform with state environmental requirements for air and water; and working with the Soil Conservation Service, the Department of Natural Resources and Environmental Protection and the Kentucky Geological Survey in developing guidelines for the animal waste management systems to meet State regulations. This work also includes the development of educational publications and materials for the training of extension personnel and clientele in environmental law, animal waste management systems, drinking water quality and alternate fuels.

- Teaching responsibility include teaching a regularly scheduled course in animal waste management and water quality and providing guest lectures in areas of expertise.
- Advising responsibility is serving as an advisor for M.S. and co-advisor for Ph.D. students.
- Supervisory responsibility is for the water quality and waste analysis laboratory and for consultation with other researchers in application of chemical analysis techniques.
- Research areas are in organic soil amendments, non-point source pollution assessment and modeling.

**1976-1982** Assistant Extension Professor and Extension Specialist. Agricultural Engineering Department, University of Kentucky, Lexington, KY.

- Responsibilities were same as 1982 to present.

**1972-1974** Graduate Teaching Associate. Department of Chemical Engineering, Ohio State University, Columbus, OH.

- Recitation Instructor in chemical reaction kinetics for two consecutive years for a four-course engineering development and design series for senior chemical engineering students.
- Laboratory Instructor in chemical process development.
- Problem Consultant for process design.
- Chief Teaching Associate supervising teaching assistants.
- Lecturer and Experimental Consultant in chemical unit operations laboratory.

**Summer 1971** Research Associate. Max Planck Institute fur Stromungsforschung, Gottingen, West Germany.

- Assisted the development of a new interpretation of turbulent kinetic energy equation for a cooperative program between the Department of Chemical Engineering, Ohio State University (Professor R.S. Brodkey) and Max Planck Institute fur Stromungsforschung, Gottingen, West Germany (J.M. Wallace).

**1969-1971** Graduate Teaching Assistant. Department of Chemical Engineering, Ohio State University, Columbus, OH.

- Recitation Instructor for junior chemical engineering students in chemical thermodynamics and mass transfer for two years.
- Consultant in the senior year chemical unit operations laboratory course for three years.

**Summer 1967** Engineering Assistant. Rohm and Haas, Inc., Philadelphia, PA.

- Responsible for the operation and modification of a chemical separation train for formaldehyde from an acrylic acid process.

**Summer 1966** Technician. Battelle Memorial Institute, Columbus, OH.

- Responsible for constructing laboratory equipment for the formation of plutonium reactor core elements.

## EDUCATION

**Ph.D.** March 1978, Ohio State University, Department of Chemical Engineering. Dissertation: "The Dynamics of Phosphorous in the Alga, Chlorella Pyrenoidosa, and Its interactions with Inorganic Particulate." Major courses in advanced engineering transport phenomena, biological and environmental sciences. Member of Council of Graduate Students (departmental representative, 1973), College of Engineering Speaking Society, and Graduate Student Member of the Advisory Board (1973-1975).

**M.S.** June 1971, Ohio State University, Department of Chemical Engineering. Thesis: "The Dehydration of t-Butyl Alcohol Using Ion Exchange Resin." Major courses in advance chemical kinetics, advanced thermodynamics, and chemical process dynamics and simulation.

**B.Ch.E** June 1968, Ohio State University, Department of Chemical Engineering.

## PROFESSIONAL SOCIETIES

Associate Member, American Society of Agricultural Engineers, 1977 to present.

- Member, Technical Committee SE 412, Agricultural Sanitation and Waste Management, 1977 to present.
- Member, Technical Committee FE-71 Food Engineering Curriculum, 1981-1986.
- Organizing Committee, International Agricultural and Food Processing Waste Symposium, 1990,
  - Secretary.
- Member, Technical Committee SW-263, Land Application of Waste,
  - Secretary, 1986-1987
  - Vice-President, 1987-1988
  - President, 1988-1989
- Member Kentucky Section ASAE, 1977 to present,
  - Treasurer, 1983-1984
- National Meeting Session Organizer and Chair Economics and Process Variables of Controlled Anaerobic Digestion. 1979 Winter Meeting.
  - Biogas Generation-Operational Problems and Fixed Film Reactors. 1983 Summer Meeting.
  - Land Application of Animal Wastes. 1986 Summer Meeting.

- Animal Waste Management. 1986 Winter Meeting.
- Protection of Water Quality through Manure Management. 1990 Summer Meeting.
- Southeast Regional Agricultural Engineers Meeting, Meeting Committee Chair for Tours. Lexington, KY. September 29-October 2, 1986.
- Associate Member, American Institute of Chemical Engineers, 1969-present.
- Member, Louisville Section AIChE, 1977-present.
- Member, American Chemical Society, 1971 to present
- Member, American Association for the Advancement of Science, 1977 to present.
- Member, Board Technical Adviser, Kentucky Water Well Drillers Association 1989-1993.
- Member, Association Kentucky Extension Specialists, 1980 to present.
  - Member, Program Committee, 1989-1990.
  - Member, Membership Committee, 1992-93.
- Member, Kentucky Academy of Science.
  - Organizing Committee for Constructed Wetlands Symposium, 1990.

## **HONOR SOCIETIES**

- Gamma Sigma Delta—Honor Society of Agricultural, Initiated 1981.
- Sigma Xi—Honor Society of Scientific Research, Initiated 1982.
- Epsilon Sigma Phi—Honor Society for Extension Agents, Initiated 1982.

## **HONORS**

- Professional Development Recognition Certificate, American Institute of Chemical Engineers, 1978-1980, 1981-1983.
- Outstanding Extension Program. 1990. Water Quality. Kentucky Extension Specialist Association, February 16.
- Best Presentation. 1991. Bluegrass Cross Connection Prevention Association. Lexington, KY.
- Outstanding Service Award to Kentucky Swine Industry. 1994. Kentucky Pork Producers Association. January 22. Owensboro.
- Outstanding Extension Project. 1998. Sustainable Dairy Systems Training Project. Kentucky Extension Specialist Association, January 15.
- State Team Award for Excellence. 1999. Sustainable Dairy Systems Training Project. Epsilon Sigma Phi - National Honorary Extension Fraternity, February.
- Outstanding Extension Program. 2005. Master Cattleman. Kentucky Association of Extension Professionals, January.
- 2013 ASABE Superior Paper Award. GDN Maia, GT Sales, GB Day, RS Gates, JL Taraba. Characterizing Physical Properties of Gas-Phase Biofilter Media. Trans ASABE:55(5):1939-1950.

# EXTENSION

## EXTENSION GRANTS AND PROJECTS

### Grants - Funded

- 1989-90** Extension Water Quality. USDA-ES. Co-Leader (with Thomas Ilvento, Department of Rural Sociology; and Curtis Absher, Extension Agricultural Programs). Objective: Develop water quality extension publications and educational programs. \$25,000.
- 1990-91** Extension Water Quality. USDA-ES. Co-Leader (with Thomas Ilvento, Department of Rural Sociology; and Curtis Absher, Extension Agricultural Programs). Objective: Develop water quality extension publications and educational programs. \$35,000.
- 1991-92** Extension Water Quality. USDA-ES. Co-Leader (with Thomas Ilvento, Department of Rural Sociology; and Curtis Absher, Extension Agricultural Programs). Objective: Develop water quality extension publications and educational programs. \$40,000.
- 1995-97** Sustainable Dairy Systems Manual and Training. Co-Investigator (with Departments of Agricultural Engineering, Animal Science, Agricultural Economics, and Agronomy, Colleges of Agriculture, University of Kentucky and University of Tennessee). USDA Southern Regional SARE/ACE Project. \$210,000.
- 1997-99** Southern Region SARE Training with the Sustainable Dairy Systems Manual and Software. Co-Investigator (Departments of Agricultural Engineering, Animal Science, Agricultural Economics, and Agronomy, Colleges of Agriculture, University of Kentucky and University of Tennessee). USDA Southern Regional SARE/ACE Project. \$70,000.
- 1999-00** Johnson County Water Quality Project. Cooperator (with Brenda Cockerham, Home Agent Johnson County Extension). Pride Grant. \$5000.
- 1999** Liquid Dairy Manure Nutrient Management for Crop Production. **J.L. Taraba**, T. Hutchins and W. Thom. Extension Instructional TV Program Grant. UK College of Agriculture. \$20,000.

### Grants - Unfunded

- 1999** Liquid Manure Towed Hose Injection System. **J.L. Taraba**, T. Hutchins and S.A. Shearer. Extension Instructional TV Program Grant. UK College of Agriculture.

## **EXTENSION EDUCATION PROGRAMS**

### **DAIRY COW HOUSING AND WASTE MANAGEMENT**

#### **Agent, Specialist, Leader, Clientele Training:**

- 2011**     **Taraba, J.L.**. Managing Heat Stress in Dairy Facilities. Invited presentation at Kentuckiana Dairy Exchange, Ft Wayne IN. August 2-3. (85 attendees)
- 2012**
- Dairy Advancement Institute for Christian, Todd, and Trigg Counties. Amish/Mennonite dairy producer Workshops (Co-organizer).
    - Environmental Regulations, Water Quality Plans, and Waste Management Strategies (Presenter).
      - January 17-Todd Co.
      - January 19-Christian Co.
      - January 18-Trigg Co.
  - KY-TN Dairy Housing Program (Co-Organizer).
    - June KY
    - June Tennessee

### **MANAGEMENT OF COMPOST BEDDED LOOSE HOUSING DAIRY BARNs**

#### **Agent, Specialist, Leader, Clientele Training:**

- 2009**
- Compost Bedded Pack (CBP) Loose Housing Dairy Barns. Stakeholders Update. Bowling Green, KY. April 30. (25 - Extension Agents, clientele, KDDC). (Co-organized and presented).
    - Why the CBP works and why they may not work.
    - AFRI Proposal on Greenhouse gases
- 2011**
- Taraba, J.L. What We Know About Managing Compost Bedded-Pack Barns.
    - Client and Agent Training. Flemingsburg KY Lunch Workshop, February 9. (5 clientele, 3 Agents)
    - Client and Agent Training. Lebanon KY, March 18. (11 clientele, 3 Agents)
  - Taraba, J.L. Options for Managing Manure in Dairy Facilities. Client and Agent Training. Lebanon KY, March 18. (11 clientele, 3 Agents)
- 2012**
- Taraba, J.L. 2012. Environmental and Regulatory Factors that Affect Manure Management on Dairy Farms. Dairy Improvement Institute for Amish and Mennonite Communities.
    - Todd County, January 17. (18 Clients);
    - Christian County, January 19. (12 Clients)
  - Compost Dairy Barn Multi-State Workshop (TN KY OH) (Client, agents, agency and industry) Wooster OH: Dec 5 (45 attendees); Hopkinsville KY: Dec 13. (50 attendees)
    - Taraba, JL. Manure management challenges of liquid systems and an overview of the compost bedded pack system Bedded Pack Composting
    - Taraba, JL. Quality of compost and bedding issues
  - Kentuckiana Field Day Shelby County.

- Taraba, J.L. Research results for compost bedded dairy barn. August 1. 3 Handouts written summarizing research results of NRCS CIG Grant.
- 2013**
  - UK Dairy Research Showcase. 2013. University of KY. Lexington. June 19. (15 attendees, 35 on-line)
    - EA Eckelkamp, JL Taraba, JM Bewley. A Decision Support Tool for Bedding Cost Analysis for Compost Bedded Pack Barns
    - H Mussell, JM Bewley, M. Arnold, K. Jacobsen, JL Taraba, GB Day. The Effect of Compost Bedded Pack Barns on Organic Dairy Farms.
  - Taraba, J.L. 2013. Compost Bedded Loose Housing Dairy Barn. 2013 CAFÉ Roundup, Tour of UK BAE Department. By KY Legislators and KY Commodity Leaders (50 guests)
- 2014**
  - UK Dairy Research Showcase. 2014. University of KY. Lexington. July 16. (27 attendees from KDDC, KY Dept of Ag, Dairymen, NRCS)
    - JM Bewley, RA Black, FA Damasceno, EA Eckelkamp, GB Day, JL Taraba. Compost bedded pack barns as a lactating cow housing system for the Southeast.
    - Eckelkamp, EA, JL Taraba, RJ Harmon, KA Akers, JM Bewley. Somatic cell counts, mastitis infection prevalence, and mastitis pathogen distribution in compost bedded pack & sand freestall farms.
    - HA Mussell, JL Taraba, KL Jacobsen, JM Bewley. Assessment of the Potential for Compost Bedded Pack Barns in Sustainable Organic Dairy Farming Systems.
  - BAE booth at the 2014 National Farm Machinery Show in Louisville Feb. 12-15. JL Taraba, Ph.D., P.E., display for his research on “Compost Bedded, Loose Housing Barn for Dairy Cows.” Graduate research assistant John Evans displayed his team’s senior design project, the “Compost Aeration Tool.”
  - KDDC Fall Dairy Tour Field Day: Adair County. Compost Bedded Pack Barn Design and Management. Oct 30.
- 2015**
  - **JL Taraba.** 2015. What We Know About Managing Compost Bedded-Pack Barn/Waste System. Presentation to Kentucky Agriculture Science and Monitoring Committee – Executive Meeting, Sub-committee of the KY Agriculture Water Quality Authority. Kentucky State University Research Farm, Frankfort . March 11.
  - Tour Organizer and Leader for NRCS State Staff to visit 3 Compost Dairies in KY (18 people). March 17, 2015.
  - Tour Organizer and Leader for Elefant Fan Co. (Brazil) and Chiavassa Group (Argentina) to visit KY compost bedded and freestall dairies in KY (5 people). April 27-30, 2015.
  - JL Taraba. 2015. What We Know About Managing Compost Bedded-Pack Barn. Presented to Elefant Fan Co. and Chiavassa Group. April 27. Lexington KY.
  - Taiwan Delegation (4 people) gathering Information to develop and monitor water quality for planned agricultural research farm in Taiwan.

- JL Taraba. 2015. Developing Land Use Plan and Monitoring Water Quality at the Animal Research Center - 1996-2006. PPT Presentation, May 18, Lexington KY.
  - Led Tour of Animal Research Center. May 19.
  - Family Farm Field Day. 2015. What is a Compost Bedded Pack Dairy Barn (90 people). Klingenfus Harvest Home Dairy, Oldham County KY, September 26.
  - JL Taraba. 2015. Extension Program for animal waste management, Compost Barn Management, Barn Design. PPT presented to Dr Jimmy Henning, Asso Dean for Extension and Dr Gary Parker, Extension Director for Agriculture and Natural Resources Program. November 24. Lexington.
- 2016**
- Led Tour of UK Coldstream Dairy and 2 other Compost bedded Dairy Barns in KY for owner and advisors for **Adeco Agropecuaria**, Argentina. Sept 29-30, 2016.
  - Presentation of compost barn operation and structure design..Dannon Dairy Forum. UK Dairy Farm Tour, October 26 (150 people).
  - Lead tour of Compost Barns in KY for visiting Argentinian dairy group, December 2016.
- 2017**
- How to improve ventilation in confinement operations. PPT Presentation at Dairy Housing Strategies for Improving Milk Production and Quality Workshop. Southern Milk Quality Initiative Program.
    - Trenton KY, January 3
    - Knoxville TN, January 4
    - Brookhaven MS, January 5

## **MASTER CATTLEMAN PROGRAM – Environmental Stewardship**

### **Agent, Specialist, Leader Training:**

- 2002**
- Beef cattle confinement handling facilities: Environmental laws and regulations concerning water and air pollution. (Presenter) Clientele: Extension agriculture agents.
    - Glasgow, KY, July 19 (15 agents).
    - Versailles, KY, September 10 (18 agents).

### **Public Clientele Training:**

- 2004**
- Environmental Stewardship Module for Master Cattleman Program: 3-hour PowerPoint Presentation to 25-35 cattle growers and 3 Agriculture Extension Agents.
    - Shelbyville, KY, July 27.
    - Quicksand Research Station, August 19.
    - Taylor Co. Extension Office, August 26.

- Clay Co. Extension Office, September 21.
- Bourbon Co. Ext. Office, Dec. 2
- 2005**
  - Environmental Stewardship Module for Master Cattleman Program: 3-hour PowerPoint Presentation to 25-35 cattle growers and 3 Agriculture Extension Agents.
    - Tri-County Louisville, Jefferson Co., January 31.
    - Buffalo Trace, Brooksville, February 7.
    - KY River, Franklin Co., February 15.
    - South District 5, Pulaski Co., February 22.
    - Highlands, Lawrence Co., March 29.
    - Wilderness Trail, Rockcastle Co., March 31.
    - KY Heartland, Hardin Co., April 26.
    - Center of KY, Adair Co., June 7.
    - Clark, Fayette, Madison, Fayette Co., June 16.
    - Louisville, Oldham Co., June 28.
    - Northern KY, Boone Co., September 8.
    - Mammoth Cave, Metcalfe Co., October 4.
    - Gateway, Clark Co., November 8.
    - Elliott, Morgan, Rowan, Elliott Co., November 17.
  - Animal Research Center: Master Cattleman Field Day – Riparian Zone Grazing. (Presenter). Clientele: cattle growers and agriculture extension agents. October (80 people).
- 2006**
  - Environmental Stewardship Module for Master Cattleman Program: 3-hour PowerPoint Presentation to 25-35 cattle growers and 3 Agriculture Extension Agents.
    - Central Bluegrass, Harrison Co., February 16.
    - Buffalo Trace, Lewis Co., February 20.
    - South District 5, Pulaski Co., February 23.
    - Center of Kentucky, Green Co., March 9.
    - Louisville, Trimble Co., April 20.
    - Northern Kentucky, Boone Co., May 1.
    - Washington, Marion, Nelson, Marion Co., May 30.
    - Mammoth Cave West, Allen Co., June 27.
    - Mammoth Cave, Metcalfe Co., July 27.
    - Kentucky Heartland, Hardin Co., October 17.
    - Gateway, Montgomery Co., October 24.
  - Animal Research Center: Master Cattleman Field Day – Riparian Zone Grazing. (Presenter). Clientele: cattle growers and agriculture extension agents. October (70 people).
- 2007**
  - Environmental Stewardship Module for Master Cattleman Program: 3-hour PP Presentation to 25-35 cattle growers and 3 Agriculture Extension Agents.
    - Highlands Beef Cattle Association, Lawrence Co., February 13.
    - Pennyrile Area, Caldwell Co., February 20.
    - Buffalo Trace, Fleming Co., March 5.
    - Breckinridge, Grayson, Meade, and Ohio, Breckinridge Co., March 19.
    - Kentucky Heartland, Meade Co., May 15.

- Louisville Area, Henry Co., May 17.
- Wilderness Trail, Whitley Co., June 11.
- Southern District 5, Wayne Co., July 17.
- Northern Kentucky, Boone Co., October 29.
- Animal Research Center: Master Cattleman Field Day – Riparian Zone Grazing. (Presenter). Clientele: cattle growers and agriculture extension agents. October (95 people).
- 2008** • Environmental Stewardship Module for Master Cattleman Program: 3-hour PowerPoint Presentation to 25-35 cattle growers and 3 Agriculture Extension Agents.
  - Pennyrile Area, UKREC Princeton, February 26.
  - Gateway, Menifee Co., March 18.
  - Kentucky River Counties, Fayette Co., April 1.
  - Bluegrass, Nicholas Co., April 10.
  - Mammoth Cave West, Barren Co., September 15.
  - Northern Kentucky, Carroll Co., September 29.
  - South District 5, Russell Co., September 30.
  - Clark, Estill, Madison, Clark Co., November 3.
  - Mammoth Cave Area, Monroe Co., November 6.
  - Carter, Elliott, Morgan & Rowan, Morgan Co., December 4.
- Animal Research Center: Master Cattleman Field Day – Riparian Zone Grazing. (Presenter). Clientele: cattle growers and agriculture extension agents. October (55 people).
- 2009** • Environmental Stewardship Module for Master Cattleman Program: 3-hour PowerPoint Presentation to 25-35 cattle growers and 3 Agriculture Extension Agents.
  - South District 5, Russell Co., March 29.
  - Buffalo Trace, Mason Co., April 6.
  - Highlands, Johnson Co., June 2.
  - Louisville Area, Shelby Co., June 18.
  - Green River, Ohio Co., July 16.
  - Kentucky Heartland, LaRue Co., October 20.
  - Mammoth Cave West, Barren Co., October 27.
- Animal Research Center: Master Cattleman Field Day – Riparian Zone Grazing. (Presenter). Clientele: cattle growers and agriculture extension agents. September (25 people).
- 2010** • Master Cattleman Discussion Panel, KCA Annual Convention, Lexington KY, January 10 (30 clients and agents).
- Environmental Stewardship Module for Master Cattleman Program: 3-hour PowerPoint Presentation to 25-35 cattle growers and 3 Agriculture Extension Agents.
  - Pennyrile Area, Hopkins Co., February 15.
  - Madison, Garrard, Estill, Clark, Madison Co., February 15.
  - Breckinridge & Grayson Counties, Grayson Co., March 1.
  - Highlands, Magoffin Co., March 2.
  - Buffalo Trace, Bracken Co., March 22.
  - South District 5, Casey Co., March 25.
  - Northern Kentucky, Boone Co., May 10.
  - Wilderness Trail Area, Whitley Co., July 19.

- Kentucky Heartland, Hardin Co., August 17.

## **AIR EMISSIONS FROM ANIMAL FEEDING OPERATIONS.**

### **Agent, Specialist, Leader, Clientele Training:**

- 2005**
- **USEPA Air Emissions Consent Agreement For Animal Feeding Operations.** Inter-departmental Extension team 2-hr PowerPoint Presentation: Ammonia formation and transport module. (Presenter). Clientele: Animal growers, agriculture agents, organization leaders. (50 participants). March:
    - Flemingsburg
    - Columbia
    - Bowling Green
    - Lexington
    - Elizabethtown

## **ANIMAL WASTE MANAGEMENT**

### **Agent, Specialist, Leader Training:**

- 1980**
- Animal Waste Structures. Lake Cumberland Area SCS Engineers, Conservationists and Agents. December 16. (Presenter).
- 1981**
- Economics and Importance of Management for Waste Systems -I. Mammoth Cave Area SCS and Extension Agents. Cave City. June 10. (Organized and presented).
  - Economics and Importance of Management for Waste Systems -II. Mammoth Cave Area SCS and Extension Agents. Cave City. September 23. (Organized and presented).
- 1982**
- Environmental Law and Economics of Management for Waste Systems. Extension Specialists in Farm Analysis. Glasgow. September 22. (Organized and presented).
- 1985**
- Animal Waste Management. Agricultural Engineering Updates. (Co-organized and presented).
    - Princeton, September 17.
    - Glasgow, September 18.
    - Lexington, September 19.
- 1987**
- Land Application of Animal Manures. Kentucky Conservation Update Symposium for SCS Engineers, Conservationists and Extension Agents. (Presenter).
    - Princeton, February 19.
    - Lexington, March 5.
- 1989**
- Animal Waste BMPs and Equipment Update. Soil Conservation Service Update Workshop for SCS district conservationists and technicians from Western Kentucky. Princeton, March 29. (Presenter).
- 1990**
- Animal Waste BMPs. Training on Agricultural Water Quality Issues for County Agricultural Extension Agents. (Presenter).
    - Lexington, November 28.
    - Princeton, December 5.

- 1993**
  - Livestock Waste Management on Kentucky Farms (Environmental Regulations Impacting Animal Producers, Economics of Animal Waste Systems). Training for Soil Conservation Service Engineers, Conservationists and Technicians; Extension Agricultural Agents; State Division of Water Inspectors; Division of Conservation Field Personnel. (Presenter and organizer).
    - Bardstown, February 23-24.
    - Princeton, November 3-4.
    - Elizabethtown, November 15-16.
    - Cynthiana, November 17-18.
    - Somerset, November 30-December 1.
- 1994**
  - Livestock Waste Management on Kentucky Farms (Environmental Regulations Impacting Animal Producers, Economics of Animal Waste Systems). Training for Soil Conservation Service Engineers, Conservationists and Technicians; Extension Agricultural Agents; State Division of Water Inspectors; Division of Conservation Field Personnel. (Presenter and organizer).
    - Morehead, February 7-8.
- 1996**
  - Sustainable Dairy Systems Manual Training (Dairy Manure Management Component). Training for County Agricultural Agents and Extension Specialists from Kentucky and Tennessee. (Presenter).
    - Barren River State Park, KY, March 6-7.
    - Barren River State Park, December 2-5.
- 1997**
  - Sustainable Dairy Systems Manual Training (Dairy Manure Management Component). Training for County Agricultural Agents and Extension Specialists from Kentucky and Tennessee. (Presenter).
    - Holiday Inn North, Lexington, KY, May 27-28.
- 1998**
  - Sustainable Dairy Systems Manual Training (Dairy Manure Management Component). Training for County Agricultural Agents and Extension Specialists from Kentucky and Tennessee. (Presenter).
    - N. Reddington Beach, FL, August 24-26.
    - Charlotte, NC, September 21-23.
- 2000**
  - Southern Region Extension Agricultural Engineers and Housing Specialists Biennial Workshop: Effects of crude protein levels in broiler and swine feed on waste nutrient content and gas emissions. (Presenter) Clientele: Agricultural Engineering Extension. Specialists. Marriott Waterfront, Savannah, GA. September 11-13.
- 2002**
  - Creech Services Horse Muck Composting Sit. (Organizer). Clientele: Extension Specialists and Researchers. May 29. (7 people).
- 2009**
  - Grant County Field Day. Geotextile Gravel Pads for Winter Cattle Feeding Areas.
- 2010**
  - Dairy Waste Management Compliance and Variable Rate Irrigation Workshop. (Co-organizer). Clientele: Extension Agents, Specialists, Ag leadership. Edmonton, KY, May 7.

### **Clientele Training:**

- 1977**
  - Controlled Environment Calf Barn. (Presenter). University of Kentucky Dairy Field Day. June 24.

- 1978**
  - Odor Control. Agriculture. (Presenter). Home Workshop, McLean County. February 11.
  - Animal Waste Management. (Presenter).
    - Shelby County (2 meetings).
    - Grayson County.
    - Union County.
    - Mammoth Cave Area.
- 1979**
  - Waste Disposal Management Systems. (Presenter). Farm Home Week, College of Agriculture, Lexington. January 11.
  - Waste Management Systems and Regulations. (Presenter).
    - Washington County, January 25.
    - Union County, February 12.
    - Mammoth Cave Area, February 20.
    - Pulaski County, February 21.
    - Washington County, May 28.
    - Hart County, August 7.
- 1980**
  - Regulations and Economics of Swine Waste Management. (Presenter). Ohio County. February 5.
  - Waste Handling in a Dairy Barn. (Presenter). University of KY Dairy Field Day. June 10.
  - Dairy Waste Management. (Presenter). Pulaski County Field Day. July 24.
  - Dairy Waste Management. (Presenter). Pulaski, Wayne, Clinton Counties Dairy School. December 9.
- 1981**
  - Animal Waste Management and Odor Control. (Presenter). Shelby County. February 20.
  - Liquid Dairy Waste Management. (Presenter). Casey County Field Day. July 23.
  - Environmental Requirements and Economics of Hog Waste Management. (Presenter). Butler County. February 25.
- 1983**
  - Swine Waste Systems—Economics and State Permit Regulations. (Presenter). Renovating Swine Facilities Area Training.
    - Union County, February 23.
    - Hickman County, March 1.
    - Trigg County, March 2.
    - Breckenridge County, March 4.
    - Meade County, March 4.
  - Dairy Waste Management. (Presenter). Monroe County Short Course. July 19.
  - Storage of Liquid Dairy Manure. (Presenter). Pulaski County Field Day, July.
  - Earthen Structure for Liquid Dairy Waste. Lake Cumberland Area Field Day, August.
- 1984**
  - Irrigation of Liquid Dairy Manure. (Presenter). Lake Cumberland Area Field Day, July.
- 1989**
  - Nutrient Management from Animal Waste Systems/Best Management. (Presenter). Top Farmer Workshop—Improving the Efficiency of Kentucky Farmer. Lexington, August 6-9.
  - Animal Waste and Groundwater Water Quality. (Presenter). Boyle County Agricultural Field Day. July 27.
- 1991**
  - Waste Management and Water Quality. (Presenter). Muhlenberg Swine Lagoon Pump Demonstration. March 26.

- 1992**
  - Environmental Regulations Affecting Kentucky Animal Production. (Presenter). Madison County Winter School. February 6.
  - Solid Waste Management Permits for Agriculture. (Presenter). Graves County Business Development Week. March 26.
  - Animal Waste Handling Equipment. Upper Salt River-Taylorsville Lake HUA Field Days. (Presenter).
    - Spencer County. September 30.
    - Anderson County. October 1.
- 1993**
  - Water Quality and the Environment - Issues from a Banks Point of View. (Presenter). Mason County, July 28.
    - Ground Water Regulations and Animal Production. (Presenter). Meade County Field Day, August 13.
    - Beef Cattle Production and Water Quality. (Presenter). Morgan County Beef Cattle School, October 21.
    - Animal Waste Management Systems for Dairies. (Presenter). Anderson County Dairy Meeting, December 2.
- 1994**
  - Dairy Waste Management and Environmental Regulations. (Presenter). Metcalf County Dairy School. February 24.
- 1998**
  - Towed Hose Manure Injection Field Day. (Organizer). University of Kentucky Coldstream Farm, Lexington. March 25.
  - Farm Manure Application Strategies. (Presenter). Mercer County Agricultural Field Day. August 6.
- 2001**
  - Animal Waste Management. System and Water Quality Monitoring at the Animal Research Center - Woodford County.
    - KY ASAE Section. (Organizer). (20 people).
    - University of Georgia Agricultural Engineers. April 6. (Organizer). (10 students).
    - Soil and Water Conservationists - Indiana. July 26. (Organizer). (50 people).
- 2002**
  - Animal Waste Management. System and Water Quality Monitoring at the Animal Research Center - Woodford County.
    - UK Advance, May 21. (Organizer). (70 people).
- 2003**
  - Animal Waste Management. System and Water Quality Monitoring at the Animal Research Center - Woodford County.
    - Soil and Water Conservationists - Indiana. April 26. (Organizer). (35 people).
    - University of San Paulo, Brazil Agricultural Engineers. September. (Organizer). (5 faculty).
    - PLS 468G class project students. October. (Organizer). (6 students).
- 2004**
  - Animal Waste Management. System and Water Quality Monitoring at the Animal Research Center - Woodford County, KY.
    - NRC 301 class project students. April. (Organizer). (5 students).
    - UK Advance, August. (Organizer). (70 people).
    - KY Division of Water and KY Division of Solid Wastes and Division of Conservation. September. (Organizer). (10 agency people).
- 2005**
  - Animal Waste Management. System and Water Quality Monitoring at the Animal Research Center - Woodford County, KY.
    - UK Advance, August. (Organizer). (70 people).

- 2006** • Mercer County Dairy Field Day. Dairy Waste Management – Costs and Benefits. August 8. (Presenter). 2-sessions, (225 people).
- 2009** • Grant County Beef Cattle Field Day, Winter Feeding Area and Environmental Stewardship. July 10. (45 growers).

## **DRINKING WATER QUALITY**

### **Agent, Specialist, Leader Training:**

- 1985** • Private Water Treatment Systems. Agricultural Engineering Updates. (Co-organized and presented).
  - Princeton, KY, September 17.
  - Glasgow, KY, September 18.
  - Lexington, KY, September 19.
- 1987** • Water Quality. Homemaker Leader Training. (Organized and presented).
  - Mason County, September 30.
- Water Quality Programming for Area Lead Home Agent in Water Quality. October. (Organized and presented).
- 1988** • Water Quality. Homemaker Leader Training. (Organized and presented).
  - Pike County, March 24.
  - Boyd County, April 5.
- Domestic Water Quality Laws Treatment and Testing. Home Agent Update Training.
  - Lexington, KY, August.
  - Princeton, KY, August.
- Water Quality (Sources of Water, Threats to Water Quality, Testing and Treatment of Water, Cisterns and Carbon Filters). Agent Training for Agricultural, Home and 4-H Agents-Bluegrass and Fort Harrod Areas, Lexington, KY. December 21.(Co-organized and presented).
- 1989** • Extension Water Quality Task Force Education Goals. Outlook Conference and Selected Topics Seminar for College of Agriculture Faculty. Lexington, January 5. (Presenter).
  - Water Quality (Sources of Water, Threats to Water Quality, Testing and Treatment of Water, Cisterns and Carbon Filters). Agent Training for Agricultural, Home and 4-H Agents. (Co-organized and presented).
  - London, KY, April 11.
  - Princeton, KY, April 13 & 14.
    - Lexington, KY, May 2 & 11.
    - Elizabethtown, KY, May 4.
    - Paintsville, KY, May 12.
    - Columbia, KY, May 22.
- Carbon Filters. Updates on Special Water Quality Topics - Area Agriculture and Home Extension Agent Update. (Organizer and presenter).
  - Fort Harrod Area, June 12.
  - Bluegrass Area, June 13.
- 1990** • Water Quality of Private Water Supply (Issues of Kentucky Geology and Potential Contamination of the Water System, Educational Materials). Kentucky Private Well

- Water Testing Program Training (Organizing teams Extension, Conservation and Farm Bureau). (Co-organizer and presenter).
    - Louisville, KY, March 16.
    - Elizabethtown, KY, October 29.
    - Princeton, KY, November 1.
    - Lexington, KY, November 2.
- Update: Household Water Quality Issues (Private Water Testing Program, Treatment of Household Water Problems, Extension Programs in Water Quality). (Co-organizer and presenter).
  - Lexington, KY, September 26.
  - Princeton, KY, October 3.
- Wastewater Treatment/Household Hazardous Wastes. Training in 4H Waterwise Education Program. Lexington, KY. November 29. (Presenter).
- 1991**
  - Water Quality of Private Water Supply (Issues of Kentucky Geology and Potential Contamination of the Water System, Educational Materials). Kentucky Private Well Water Testing Program Training (Organizing teams Extension, Conservation and Farm Bureau). (Co-organizer and presenter).
    - Princeton, KY, September 4.
    - Elizabethtown, KY, September 5.
    - Lexington, KY, September 6.
    - Lexington, KY, May 19.
- Extension Water Quality Committee Agent Training Programs. (Co-organizer and presenter).
  - Multi Area Extension Conferences
    - Cave City, March 20.
    - Louisville, March 27.
  - Agriculture and Water Quality
    - Princeton, December 5.
    - Lexington, December 3.
    - Lexington, December 6.
  - Household Water Quality Issues
    - Princeton, April 3.
    - Lexington, April 30.
    - Lexington, October 2.
- Update - Agricultural Chemical Use Impacts on Kentucky Ground Water. (Organizer and presenter).
  - Governor’s Ground Water Advisory Committee. Frankfort, KY, March 18.
  - Kentucky SCS Administrators and Area Conservationists. Lexington, KY, December 4.
- 1992**
  - Water Quality of Private Water Supply (Issues of Kentucky Geology and Potential Contamination of the Water System, Educational Materials). Kentucky Private Well Water Testing Program Training (Organizing teams Extension, Conservation and Farm Bureau). (Co-organizer and presenter).
    - Lexington, May 19.
- 1996**
  - Southeast Regional Extension Water Quality Planning Meeting: Historical Perspective of KY Water Quality Program and KY Water Well Testing Program (Presenter). Clientele: Water Quality Ext. Specialists. Executive Inn West, Louisville, KY, October 29.

## **Public Clientele Training:**

- 1989**
- Water Contamination. Nicholas County Farm, Home City Night. Carlisle, February 27.
  - Water Quality-Home Environment. Bath County Young Farmer Management School. Owingsville, March 2.
  - Water Testing and Treatment, Well Contamination. Lyon County Water Quality Project. Eddyville, June 12.
  - Home Water Filtering Systems. Harrison County Field Day. July 29.
  - Bottled Water, Carbon Filters and Cisterns. Marion County Homemakers. October 17.
- 1990**
- Groundwater and Water Quality Standards. Perry County Drinking Water Clinic. May 15.
  - Water Quality Seminar. Jefferson County 4-H Camp. Feltner Camp, July 12.
  - Water Quality Testing and Treatment. Princeton Agricultural College Field Day. Princeton, July 19.
  - Water Testing and Treatment, Well Contamination. Agricultural Alumni Association Roundup. Exhibitor. Lexington, September 15.
  - Water Quality Testing and Treatment, Well Contamination. Eden Shale Beef Cattle Field Day. Owenton, October 20.
- 1991**
- Groundwater Water Quality. Water Quality Winter School - Franklin County. February 7.
  - Extension Water Quality/Solid Waste Programs. Louisville Area Extension Council. March 19.
  - Household Water Quality - Exhibit. Housing Showcase for 90s. Paintsville, May 11.
  - Water Quality. Jefferson County Environmental Education. Carlisle 4-H Camp, April 9.
  - Perry County Drinking Water Clinic.
    - Well Construction, Maintenance and Protection, May 15.
    - Water Filters, May 29.
  - Water Quality - Exhibit.
    - Bracken County Field Day, July 24.
    - Lincoln County Field Day, August 6.
    - Menifee County Field Day, August 26.
- 1992**
- Water Quality Program - Exhibit. Kentucky Feed and Grain Association Annual Meeting. Frankfort, February 22.
  - Chlorination of Cistern and Avoiding Cistern Contamination. Campbell County Cistern Management Program. Alexandria, August 8.
- 1993**
- Drinking Water Quality Issues for the Home. Caldwell County. Water Program, September 7.
  - Ground Water Regulations. Fayette County Environmental Grab Bag, October 7.
- 1995**
- Statewide Well Water Quality Study Results. Display and interactive computer program. (Presenter). Madison County Field Day. June 29.

## **ALTERNATE ENERGY SOURCES**

### **Agent, Specialist, Leader Training:**

- 1980** • Ethanol Fuel for Internal Combustion Engines. KY Vocational Agriculture Teacher's Conference. (Presenter). Hardinsburg, July 29.
- 1981** • Liquid Fuels and Energy from Biomass. Louisville Area Energy Day.(Organizer and presenter). Shelbyville, January 9.

**Public Clientele Training:**

- 1980** • Making Gasohol from Grain. (Presenter). Bath County Field Day. October 7.
- 1981** • Methane Fuel Generation and Use. Agricultural Energy Field Day. (Presenter). Princeton, KY, October 22.

**WATER QUALITY: SURFACE AND GROUND WATER, NONPOINT SOURCE POLLUTION**

**Agent, Specialist, Leader Training:**

- 1978** • Federal and State Laws Concerning Air and Water Pollution. Project PACE. (Presenter). Natural Bridge State Park, KY, December 13-14.
- 1979** • Solid Waste/Environmental Considerations. Project PACE. (Presenter). Bowling Green, May 23.
- 1980** • Groundwater Quality. Quinstate Community Development Forum (Community Development Specialists Regional States, Government Officials). (Presenter). Hickman, March 30-31.
- 1990** • Surface Water Analysis to Assess Ground Water. Agricultural Impacts on Groundwater Seminar for College of Agriculture. (Organizer and presenter), Lexington, August 27.
- 1991** • Composting. Extension Solid Waste Committee Agent Training - Multi Area Extension Conference. (Presenter).
  - Paintsville, February 13.
  - Lexington, February 27.
  - Hopkinsville, March 13.
  - Louisville, March 27.
- 1992** • Water Quality Seminar and Conference with Invited Speakers. UK College of Agriculture, Lexington. (Organizer).
  - Jerry Hatfield, May 11-12
  - Robert Luxmoore, June 1-2.
- Update: Agricultural Chemical Use Impacts on Kentucky Ground Water. (Organizer and presenter). Clientele:
  - Agricultural Interest Groups. Lexington. June 17.
  - College of Agriculture Administration. June 19.
  - Kentucky Water Interagency Coordinating Committee. Frankfort, April 30.
- Agricultural Impacts on Ground Water Quality. Soil Conservation Service Area 3 Water Quality Training Session. (Presenter). Clientele: County conservation personnel. Cynthiana, November 10.

- 1994** • Household Water Quality Issues (Private Water Testing Program, Treatment of Household Water Problems, Extension Programs in Water Quality). Annual Kentucky Sanitarians Workshop. Louisville, July 16. (Co-organizer and presenter). Clientele: County extension agents, county and local government officials, community organization leaders.
- 1995** • Annual UK Extension Dairy Conference: Groundwater Regulations and Agricultural Impacts on Water Resources. (Presenter). Clientele: (Dairymen and county agricultural extension agents.
  - Lexington, January 24.
  - Bowling Green, January 25.
  - Somerset, January 26.
- Crop Subcommittee Meeting, KY Agricultural Water Quality Authority: Agricultural Chemical Use Impacts on Kentucky Groundwater Resources – Assessment 1990-93 (SB-271). Presenter. Clientele: Extension agents, farmers, commodity group leaders, NCRS and FSC personnel, Division of Conservation and Division of Water personnel.
  - Elizabethtown, March 9.
- Southeast Regional Animal Science Extension Specialist Triennial Meeting: Development of Groundwater Regulations and Animal Waste Management Systems. Presenter. Clientele: Animal Science Extension Specialists.
  - Campbell House, Lexington, KY, October 23.

#### **Public Clientele Training:**

- 1990** • Groundwater Quality. Senior 4-H Conference Workshop. Lexington, June 12.
  - Water Quality Activities. Farm Bureau Night. Lexington, September 12.
- 1994** • Ground Water Regulations. Fleming County Farm and Home Day, February 24.

## **COLLEGE EXTENSION PUBLICATIONS**

**Taraba, J.L.** 1977. Controlled Environmental Calf Barn at Coldstream Dairy Center. Res. Rep. Dairy Field Day.

**Taraba, J.L.** 1980. Waste Management System at University of Kentucky Heifer Facility. 1980 Dairy Research Proceedings, Progress Report 249.

**Taraba, J.L.** and I.J. Ross. 1981. Minimizing Odor from Confinement Facilities by Management Practices. Extension Bul. No. AEN-48, University of Kentucky, College of Agricultural.

**Taraba, J.L.** and I.J. Ross. 1981. Feasibility of Manure Odor Control Using Commercial Products. Extension Bul. No. AEN-49, University of Kentucky, College of Agricultural.

**Taraba, J.L.** and I.J. Ross. 1981. Generation and Legal Regulation of Odors from Animal Manures. Extension Bul. No. AEN-50, University of Kentucky, College of Agricultural.

**Taraba, J.L.**, G.M. Turner, and R.B. Razor. 1981. The Use of Ethanol as an Unmixed Fuel for Internal Combustion Engines. Extension Bul. No. ASAE-14, University of Kentucky, College of Agriculture.

**Taraba, J.L.** and L. Piercy. 1982. Safe Use of Animal Waste Management Systems. Extension Bul. AEN-52, University of Kentucky, College of Agriculture.

**Taraba, J.L.** 1982. Water Supply Quality and Testing. Extension Bul. AEN-55, University of Kentucky, College of Agricultural. Reprinted 1988.

**Taraba, J.L.** 1982. Wastewater from a Dairy Milkhouse and Parlor. Extension Bul. AEN-54, University of Kentucky, College of Agriculture.

Holmes, E., **Taraba, J.L.** and G. Turner. 1986. Vegetable Oils for Emergency Fuel. Extension Bul. AEES-37. Reprinted 1988.

Burks, T.F., L.W. Turner, W.L. Crist, **J.L. Taraba** and R.S. Gates. 1988. Simulating Cow Throughput and Labor Efficiency in Dairy Parlors. Dairy Research Report. Progress Report 311. p 51-53. University of Kentucky. College of Agriculture.

Ilvento, T.L., **J.L. Taraba.** 1989. Understanding The Water System. Extension Bull. IP-1. University of Kentucky, College of Agriculture.

Ilvento, T.L., Heaton, **J.L. Taraba.** 1989. Summary Sheet. Understanding The Water System. Extension Bull. IP-1s. University of Kentucky, College of Agriculture.

Heaton L., T. Ilvento, **J.L. Taraba** 1989. Conserving Water at Home. Extension Bull. IP-2. University of Kentucky, College of Agriculture.

Heaton, L., **J.L. Taraba**, T. Ilvento. 1989. Hard Water - To Soften or Not to Soften. Extension Bull. IP-7. University of Kentucky, College of Agriculture.

**Taraba, J.L.**, Heaton, L. and T. Ilvento. 1990. Using Activated Carbon Filters to Treat Home Drinking Water. Extension Bull. IP-6. University of Kentucky, College of Agriculture.

**Taraba, J.L.**, Heaton, L. and T. Ilvento. 1990. Summary Sheet. Using Activated Carbon to Treat Home Drinking Water. Extension Bull. IP-6s. University of Kentucky, College of Agriculture.

**Taraba, J.L.**, T. Ilvento and L. Heaton. 1990. Cisterns for Kentucky. Extension Bull. IP-4. University of Kentucky, College of Agriculture.

**Taraba, J.L.**, T. Ilvento and L. Heaton. 1990. Picking a Cistern for Home Water Supply. Extension Bull. IP-4s. University of Kentucky, College of Agriculture.

Ilvento, T.M. and **J.L. Taraba**. 1992. Nitrates. Extension Bull. IP-31. University of Kentucky, College of Agriculture.

**Taraba, J.L.** 1991. Well Testing and Surveying - Kentucky. In Idea Exchange 2. USDA-ES: Water Quality Initiative.

**Taraba, J.L.** and R.M. Williams. 1994. Regulations in Kentucky Impacting Animal Waste Management. Dairy Research Report. Progress Report University of Kentucky, College of Agriculture.

Ilvento, T., **J.L. Taraba**, K. Henken and J.S. Dinger. 1994. Groundwater Education and Well Water Testing Program - Summary of Results. Extension Bulletin, University of Kentucky, College of Agriculture.

**Taraba, J.L.**, R. Bowling, R.S. Burns, T. Cross, S. Isaacs and R.M. Williams. 1997. Manure Management, Chp 10. In: Sustainable Dairy Systems Manual and Training. Southern Regional SARE/ACE Project. Colleges of Agriculture, University of Kentucky and University of Tennessee.

Turner, L.W., R. Bowling, R.S. Burns, M. Buschermohle, W. Crist, G. Grandle, P Scharko, S. Isaacs, and **J.L. Taraba**. 1997. Farmstead Planning, Chp. 3. In: Sustainable Dairy Systems Manual and Training. Southern Regional SARE/ACE Project. Colleges of Agriculture, University of Kentucky and University of Tennessee.

Rasnake, M., **J.L. Taraba**, D.H. Hines, I. Linville, P. Jackson, W.O. Thom, J. Cocanougher, and A. Abnee. 2001. Nutrient Management in Kentucky. Cooperative Extension. Publ. IP-71. University of Kentucky.

**Taraba, J.L.** 2003. Manure concerns. Equine Disease Quarterly **12**(4):5-6. Department of Veterinary Science, College of Agriculture, University of Kentucky, Lexington, KY.

Living along a Kentucky stream. 2003. Contributor and reviewer. College of Agriculture, Cooperative Extension Publication IP-73. University of Kentucky.

Coffey, R.D., D.G. Overhults, A.J. Pescatore, **J.L. Taraba**, D.M. Amaral-Phillips, G.R. Parker, W.L. Crist. 2005. Animal feeding operations air quality compliance agreement and national monitoring study. Fact Sheet. College of Agriculture, Cooperative Extension, University of Kentucky.

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Bewley, J.M. and **J.L. Taraba**. 2009. Compost-Bedded Pack Barns in Kentucky. Cooperative Extension Service Publication ID-178, University of Kentucky, College of Agriculture, Lexington, KY.

Vincelli, P., L. Meyer, R. Burris, T. Coolong, R. Bessin, J. Bewley, **J.L. Taraba**, T Barnes, R. McCulley, G. Wagner. 2011. Climate Change: A Brief Summary for Kentucky Extension Agents. Cooperative Extension Service Publication ID-191, University of Kentucky, College of Agriculture, Lexington, KY.

Osborne, A.R. and **J.L. Taraba**. 2012. Saving Water at Home. Cooperative Extension Service Publication HENV-202, University of Kentucky, College of Agriculture, Lexington, KY.

Bewley, J.M., **J.L. Taraba**, GB Day, R Black and FA Damasceno. 2012. Compost Bedded Pack Barn Design: Features and Management Considerations. Cooperative Extension Service Publication ID-206, University of Kentucky, College of Agriculture, Lexington, KY.

Black, RA, JM Bewley, JL Taraba, GB Day, & FA Damasceno. 2013. 2011 Kentucky Compost Bedded Pack Barn Project. Cooperative Ext. Serv. Publ. ID-213, University of Kentucky, College of Agriculture, Lexington KY.

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Heaton, L. and **J.L. Taraba**. 1989. Water Conservation in the Home. Video # V4-HED-0202. University of Kentucky, College of Agriculture.

**Taraba, J.L.** 1990. Testing Your Drinking Water Sources For Chemicals. University of Kentucky, College of Agriculture.

**Taraba, J.L.**, J. Dinger, J. Webb and T. Ilvento. 1991. Protection of Private Groundwater Drinking Supplies. University of Kentucky, College of Agriculture.

Smith, S. and **J.L. Taraba**. 1991. Agriculture and Groundwater Quality in Kentucky. University of Kentucky, College of Agriculture.

**Taraba, J.L.**. 1991. Wellhead Protection. In - Household Hazardous Wastes. Fayette County Video Extension Notes #67.

Ilvento, T. and **J.L. Taraba**. 1991. Instructional Video for Assembling and Taking down and Packing of Water Quality Display. Agricultural Engineering Video.

**Taraba, J.L.** 2009. Environmental Stewardship – Module for Master Cattleman Program: 4-hour PowerPoint Presentation. Extension Instructional Video. University of Kentucky, College of Agriculture.

Bewley, J.M. and **J.L. Taraba**. 2015. Compost Bedded Pack Barn. July 1. <https://www.youtube.com/watch?v=xidCDz1Sgaw>. College of Agriculture, Food, and Environment. University of Kentucky, Lexington.

Bewley, J.M. and **J.L.Taraba**. 2015. Alvin Kanagy Compost Bedded Pack Barn. July 29. [https://www.youtube.com/watch?v=i7lJYeB\\_xeM](https://www.youtube.com/watch?v=i7lJYeB_xeM). College of Agriculture, Food, and Environment. University of Kentucky, Lexington.

## INTERNET RESOURCES

- The University of Kentucky Animal Research Center, Woodford County @ [bae.uky.edu/UK-ARC/](http://bae.uky.edu/UK-ARC/)
- Water Quality Issues @ [bae.uky.edu/ext/WaterQuality/](http://bae.uky.edu/ext/WaterQuality/)
- Animal Research Center Surface and Groundwater Quality data mining site (1994-2008) @ [gis.bae.uky.edu/FarmData/main.cfm](http://gis.bae.uky.edu/FarmData/main.cfm)
- Power Point lectures and handouts for Natural Resource Systems. @ [www.bae.uky.edu/jtaraba/NRC380](http://www.bae.uky.edu/jtaraba/NRC380)
- Bewley, JM., R Black, **JL Taraba**, GB Day, and FA Damasceno. 2011. A Virtual Tour of Dairy Compost Bedded Pack Barn Designs and Features. PowerPoint Presentation for On-line Viewing. College of Agriculture, University of Kentucky.
- **Taraba, JL**, 2013. Manure management challenges of liquid systems and an overview of the compost bedded pack system. PPT on YouTube 633 views since 2/1/2013-11/15/2014.
- **Taraba, JL**, 2013. Quality of compost and bedding issues. PPT on YouTube 588 views since 2/1/2013-11/15/2014.
- Bewley, JM and **JL Taraba**. 2013. Compost Bedded Pack Barns. Penn State Technology Tuesdays Webinar Series: Cow-Centered Housing Series. <http://extension.psu.edu/animals/dairy/health/educational-programs/technology>. Webinar videos had 892 views 2013 and 313 views to 11/15/2014.
- Bewley, JM and **JL Taraba**. 2013. Kompostställe: Vorteile, Design, und Kosten (Compost Bedded Pack Barns: Benefits, Design, and Costs). Innovationsteam Milch Hessen. ([www.agrinet.de/i-team](http://www.agrinet.de/i-team))
- **JL Taraba**. 2013. Kompost-Freilaufställe für Milchkühe (Compost Bedded Loose Housing Dairy Barn). Innovationsteam Milch Hessen. ([www.agrinet.de/i-team](http://www.agrinet.de/i-team)).

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Williams, R.M. and **J.L. Taraba**. 1994. Animal Waste System Facility and Equipment Economic Evaluator.

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Bowling, R., **J.L. Taraba**, R. Burns, T. Cross, S. Isaacs. 1998. Manure Management Economics. In: Sustainable Dairy Systems Economic Evaluator Program. Southern Regional SARE/ACE Project. Colleges of Agriculture, University of Kentucky and University of Tennessee.

## **DEPARTMENTAL EXTENSION PUBLICATIONS**

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**Taraba, J.L.** and R.L. Fehr. 1980. Economics of Swine Waste Management. Animal Waste Management Memo No.1.

**Taraba, J.L.** 1980. Animal Waste Permits. Animal Waste Management Memo No. 2.

**Taraba, J.L.** 1980. Odor Control and Solids Reduction Products for Liquid Manure. Animal Waste Management Memo No. 3.

**Taraba, J.L.** 1980. City Dwellers Seeking Peace of Rural Life Get Rude Introduction to Modern Farming. Animal Waste Management Memo No. 4.

**Taraba, J.L.** 1989. New Animal Waste Structure Construction Permit Procedures. Animal Waste Management Memo No. 5.

**Taraba, J.L.** 1980. Pit Gas Claims Lives of Iowa Producer, Two Sons. Animal Waste Management Memo No. 6.

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**Taraba, J.L.** 1981. New Animal Waste Structure Permit Procedures. Bulletin No. AEU-5.

**Taraba, J.L.** 1981. Regulation of Hazardous Waste Disposal on Agricultural Land. Bulletin No. AEU-6.

**Taraba, J.L.** and M.A. Reid. 1981. Biogas Generating from Animal Manure—Economic Summary. Agricultural Engineering Alert.

Piercy, L.R. and **J.L. Taraba**. 1981. Safety Precautions with Liquid Manure Storage Systems. Bulletin No. AEU-7.

**Taraba, J.L.** 1983. Effects of Manure Handling Systems on Swine Health. Bulletin No. AEU-20.

**Taraba, J.L.** 1983. Increasing Fertilizer Returns Through Utilization of Swine Manure. Bulletin No. AEU-21.

- Taraba, J.L.** 1983. Salt Buildup in Flush Recycle Systems. Bulletin No. AEU-22.
- Taraba, J.L.** 1986. Rapid Method for Determining Nutrients in Liquid Dairy and Swine Manures. Bulletin No. AEU-31.
- Taraba, J.L.** 1987. Equipment Costs for Rapid Determination of Nutrients. Agricultural Engineering Alert. March 16.
- Taraba, J.L.** 1985. 1988. Acceptable Paints, Coatings, Sealants and Liners for Potable Water Systems. Bulletin No. AEU-28.
- Taraba, J.L.** 1988. Environmental Newsletters. Agricultural Engineering Alert, October 6.
- Taraba, J.L.** 1988. Drinking Water Analysis Costs. Bulletin No. AEU-37.
- Taraba, J.L.** 1988. What Is Your Farms Potential to Pollute Your Drinking Water Supply. Bulletin No. AEU-38.
- Taraba, J.L.** 1988. Lead in Your Drinking Water. Bulletin No. AEU-39.
- Taraba, J.L.** 1988. Bottled Water. Bulletin No. AEU-40.
- Piercy, L.R. and **J.L. Taraba.** 1988. How Safe Is Your Drinking Water? Bulletin No. AEU-42.
- Taraba, J.L.** 1989. Nutrient Management for Animal Water Systems. Agricultural Engineering Alert, August 7.
- Holmes, E. and **J.L. Taraba.** 1989. Design and Maintenance of Cisterns. Bulletin No. AEU-43.
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- Taraba, J.L.**, T.W. Ilvento and L.M. Heaton. 1991. Home Water Disinfection Methods. Bulletin No. AEU-52.
- Taraba, J.L.**, T.W. Ilvento and L.M. Heaton. 1991. Do You Need a Water Treatment Product? - What you need to know and ask before buying. Bulletin No. AEU-51.
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- Williams, R.M. and **J.L. Taraba**. 1992. Underground Farm Petroleum Storage Tanks. Bulletin No. AEU-62.
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## DEPARTMENTAL EXTENSION SLIDE SETS

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## DEPARTMENTAL TECHNICAL PUBLICATION

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## OTHER WRITTEN EXTENSION MATERIALS

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**Taraba, J.L.** 1989. Nutrient Management for Animal Waste Systems. Presentation Outline for the Top Farmer Workshop, Hyatt Regency, Lexington, KY, August 7.

Ilvento, T.W., L.M. Heaton and **J.L. Taraba**. 1990. Teaching Guide for IP-1 Understanding the Water System. Home Economics Program Notes, University of Kentucky, College of Agriculture.

Ilvento, T.W., **J.L. Taraba** and L.M. Heaton. 1990. Issues of Risk and Risk Assessment. Extension Water Quality Committee Paper.

Heaton, L.M., T.W. Ilvento and **J.L. Taraba**. 1990. Water Quality and Household Waste Products. Extension Water Quality Committee Paper.

Ilvento, T.W. and **J.L. Taraba**. 1990. Summary of Results of the 9 Counties in the Private Well Testing Program. Extension Water Quality Committee Paper.

Green River Water Quality Cost Share Program. 1989. For ASCS Special Project — Upper Green River.

Hutchens, T.K., **J.L. Taraba**, C.H. Wood, R.C. Warner, W.H. Fountain, W.O. Thom, A. Powell and C. Harker. 1991. Utilization of Newsprint for Animal Bedding. Solid Waste Task Force Paper. College of Agriculture, University of Kentucky.

Ilvento, T. and **J.L. Taraba**. 1991. Nitrates. Extension Water Quality Committee Paper.

Ilvento, T.M. and **J.L. Taraba**. 1991. Atrazines. Extension Water Quality Committee Paper.

Ilvento, T. and **J.L. Taraba**. 1991. Testing Private Water Sources. Extension Water Quality Committee Paper.

**Taraba, J.L.** and R.M. Williams. 1993. Summary of Impacted Surface Water Quality by Agricultural Nonpoint Sources. Handout to Extension Area Program Directors Meeting.

Ilvento, T. and **J.L. Taraba**. 1993. Groundwater Education and Well Water Testing Program. Extension Water Quality Committee Paper.

**Taraba, J.L.** 1993. Groundwater - Protecting a Critical Resource. Policy Development Article, KY Farm Bureau News, August.

**Taraba, J.L.** 1993. Ground Water Regulations. Ag Mail. University of Kentucky, College of Agriculture, February 22.

**Taraba, J.L.** 1993. Ground Water Consensus Meeting (Week 1). Ag Mail. University of Kentucky, College of Agriculture, February 25.

**Taraba, J.L.** 1993. Ground Water Regulations. Ag Mail. University of Kentucky, College of Agriculture, February 26.

**Taraba, J.L.** 1993. Ground Water Regulations (Week 2). Ag Mail. University of Kentucky, College of Agriculture, March 4.

**Taraba, J.L.** 1993. Ground Water Regulations (Week 2 1/2). Ag Mail. University of Kentucky, College of Agriculture, March 5.

**Taraba, J.L.** 1993. Ground Water Regulations (Week 3). Ag Mail. University of Kentucky, College of Agriculture, March 12.

**Taraba, J.L.** 1993. Ground Water Regulations (Week 5). Ag Mail. University of Kentucky, College of Agriculture, March 19.

**Taraba, J.L.** 1993. Ground Water Regulations (Week 5 1/2). Ag Mail. University of Kentucky, College of Agriculture, March 22.

**Taraba, J.L.** 1993. Ground Water Regulations (Week 6). Ag Mail. University of Kentucky, College of Agriculture, March 26.

**Taraba, J.L.** 1993. Ground Water Regulations (Week 6 1/2). Ag Mail. University of Kentucky, College of Agriculture, March 29.

**Taraba, J.L.** 1993. Ground Water Regulations (Week 7). Ag Mail. University of Kentucky, College of Agriculture, March 31.

**Taraba, J.L.** 1993. Ground Water Regulations (Week 8). Ag Mail. University of Kentucky, College of Agriculture, April 9.

**Taraba, J.L.** 1993. Ground Water Regulations (Week 9). Ag Mail. University of Kentucky, College of Agriculture, April 28.

**Taraba, J.L.** 1993. Ground Water Regulations # 10. Ag Mail. University of Kentucky, College of Agriculture, June 1.

**Taraba, J.L.** 1993. Ground Water Regulations # 11. Ag Mail. University of Kentucky, College of Agriculture, June 6.

**Taraba, J.L.** 1993. Ground Water Regulations. Ag Mail. University of Kentucky, College of Agriculture, June 9.

**Taraba, J.L.** 1993. Ground Water Regulations # 12. Ag Mail. University of Kentucky, College of Agriculture, June 21.

**Taraba, J.L.** 1993. Public Hearing for Ground Water Regulations. Ag Mail. University of Kentucky, College of Agriculture, September 21.

**Taraba, J.L.** 1993. Ground Water Regulations - Public Hearing 9/28/93. Ag Mail. University of Kentucky, College of Agriculture, October 6.

**Taraba, J.L.** 1993. Ground Water Regulations Update. Ag Mail. University of Kentucky, College of Agriculture, December 7.

**Taraba, J.L.** 1993. Ground Water Regulations Update #16. Ag Mail. University of Kentucky, College of Agriculture, December 13.

**Taraba, J.L.** 1994. Results of Kentucky Ground Water Education and Well Water Testing Program—News Release. Ag Mail. University of Kentucky, College of Agriculture, January 4.

**Taraba, J.L.** 1994. Well Water Testing Program Results - Ground Water Memo #19. Ag Mail. University of Kentucky, College of Agriculture, January 7.

**Taraba, J.L.** 1994. Ground Water Regulations Update #17. Ag Mail. University of Kentucky, College of Agriculture, January 5.

**Taraba, J.L.** 1994. Ground Water Regulations Update #20. Ag Mail. University of Kentucky, College of Agriculture, February 4.

**Taraba, J.L.** 1994. Ground Water Protection Regulations and Kentucky Agriculture. Handout Out to Update Meetings.

Ilvento, T. and **J.L. Taraba.** 1994. Groundwater Education and Well Water Testing Program—Summary of Results. Special Report—Extension Water Quality Committee Paper.

**Taraba, J.L.,** JM Bewley, EA Eckelkamp. 2012. Barn management requires that the operator know the moisture condition and temperature of the compost bed to achieve success. Harvest Home Dairy NRCS Compost Barn Project Preliminary Analyses. Kentuckiana Field Day Handout. July 31.

**Taraba, J.L.,** JM Bewley, EA Eckelkamp. 2012. Compost bed is dynamic and responds to seasonal weather changes. Harvest Home Dairy NRCS Compost Barn Project Preliminary Analyses. Kentuckiana Field Day Handout. July 31.

## **INVITED EXTENSION PRESENTATIONS**

**1977** Refeeding Animal Wastes, Kentucky Section Spring Meeting, American Society of Agricultural Engineers (ASAE), Rough River State Park, KY.

**1978** Recycling Swine Waste in Growing-Finishing Ration, Agricultural Engineering Seminar, University of KY.

**1979** Economics of Dairy Waste Management. Presented at 1979 Education Conference for Fieldmen and Sanitarians, Louisville, KY, February 28.

Potential Growth and Location of Animal Produced Manures in Kentucky and Impact on Water Quality. Presented at 4th Annual Governor's Conference on the Environment, Owensboro, KY, September 21.

**1980** Methane from Animal Manures, Spring Meeting Kentucky Section of ASAE, University of Kentucky, Lexington, KY. May 2.

Evaluation of Microbial Damage to Tobacco. Agricultural Engineering Seminar, University of Kentucky, Lexington, KY, May 2.

Effects of Surface Application of Animal Manures on the Quality of Surface Runoff. Symposium on Water Resources Research in Kentucky, Lexington, KY, June 2-3.

Dairy Waste Management. Presented at Grade A Producers Requirement Seminar for Fieldmen, Park City, KY, August 26.

On-Site Production of Methane. Presented at Kentucky Member Services Association Fall Meeting, Lexington, KY, October 23.

- 1981** Aflatoxin and Grain Drying. Panel discussion at 1981 Southeast Regional Meeting of ASAE, Atlanta, GA, February 1-4.
- Odor Generation of Animal Manures. Presented at 1981 Kentucky Section ASAE Meeting, Elizabethtown, KY, May 29.
- Methane Gas from Agricultural Waste. Presented to East German Agricultural Delegation. University of Kentucky, Lexington, KY.
- 1986** Overview of Poultry Waste Management. Presented at 1986 Kentucky Egg Council Annual Meeting. Barren River State Park, October 10.
- 1987** Land Application of Animal Manures. KY Conservation Update Symposium.  
— Princeton, KY, February 19.  
— Lexington, KY, March 5.
- Future Trends in Agricultural Engineering Education. Agricultural Engineering Seminar. March 6, University of Kentucky, Lexington, KY.
- Management of Horse Muck in Bluegrass. Southeast ASAE Student Rally. University of Kentucky, Lexington, KY, April 2-4.
- 1988** Agricultural Impact on Groundwater. Water Resource Monthly Seminar Series. Lexington, KY, September 7.
- 1989** Compost Process. Fayette Urban County Government Committee on Compost Site Regulation. Lexington, KY, February 9.
- Dairy Waste Management. Annual Meeting of Kentucky Association of Dairy Sanitarians Louisville, KY, February 23-24.
- Agricultural Ecology and Conservation - Groundwater and Sustainable Agriculture. Discussion Panel 21st Century Kentucky Agricultural Conference, Louisville, KY, February 9-10.
- Gasohol. Kentucky Corn Growers Association Annual Meeting. March 16, Morganfield, KY.
- Animal Waste Management - Overview. SCS Training Update, March 29-30. Princeton, KY.
- Groundwater Quality. Quinstae Forum: Rural Economic Development. March 30-31. Fulton, KY.
- Extension Water Quality Program. Kentucky Legislature Interim Committee on Agriculture. Lexington, KY, April 18.

Water Quality and Animal Waste Management. Top Farmer Workshop. Lexington. August 7-8.

Horse Muck and Water Quality. Horse Farm Managers Association. Lexington, October 10.

Planning Resource Allocations and Management for Handling Hazardous Materials in Building and on Building Sites -Discussion Panel Member. 6th National Symposium on Managing Asbestos and other Hazardous Materials in Buildings Lexington. November 1-3.

Rap Session - The Business of Consulting - Panel Discussion Member. ASAE National Meeting, New Orleans, December 12-16.

**1990** Animal Waste Management for Water Quality. University of Kentucky, Agronomy Seminar. Lexington, February 9.

Water Quality. Kentucky Pork Producers Association. Owensboro, KY, January 26-27.

Karst Topography. Southern Regional Water Quality Meeting. Little Rock, AK, April 17-19.

Macropores. Southern Regional Water Quality Meeting. Little Rock, AK, April 17-19.

Agricultural Impacts on Groundwater Quality. Groundwater Resource Network-Training Session.

-Blue Licks State Park, KY, April 26.

-Barren River State Park, KY, May 15.

Agricultural Production and Groundwater Quality. Panel member. The Unfinished Agenda: Protecting Kentucky's Groundwater. Frankfort, KY, August 15.

College of Agriculture Water Quality Program. Rotary Club, Elizabethtown, KY, June 12.

Water Quality Programs, College of Agriculture. Farm Bureau Night. University of Kentucky, Lexington, September 12.

Implementation of SB-271 by the College of Agriculture. 15th Annual Governor's Conference on the Environment. Capitol Plaza Hotel, Frankfort, KY, October 25.

Land Use Planning to Protect Groundwater Supplies. University and State Government Response to Rural Economic Challenges in 90's Conference. Radisson Hotel, Lexington, KY, October 31.

Overview of Kentucky Agriculture and Water Quality. 76th Annual Kentucky Academy of Science Meeting. Northern Kentucky University, November 9.

Overview of Kentucky Agriculture and Water Quality. Environmental Workshop. St. Catherine's College, November 13.

- 1991** Water Quality Program of the College of Agriculture Cooperative Extension Service. Bluegrass Cross Connection Association. Holiday Inn South, Lexington, KY, February 19.

Summary of Results of the 9 Counties in the Private Well Testing Program. Annual Meeting of the Kentucky Well Drillers Association. Cave City, KY, March 8.

Overview of Kentucky Agriculture and Water Quality. Kentucky Development Commission. Frankfort, KY, April 11.

Composting Yard Wastes. Meeting of the Kentucky Section of the American Agricultural Society. Lexington, KY, May 6.

Agricultural Chemical Use Impacts on Kentucky Groundwater Resources Program and Summary of Results of the Private Well Testing Program.

- Annual Meeting of the Soil and Water Conservation Districts Association. Louisville, KY, July 12.
- Kentucky Division of Water Staff. Frankfort, KY, August 23.
- 16th Annual Governor's Conference on the Environment. Hyatt Regency Hotel, Lexington, KY, September 13.
- Kentucky Water Interagency Coordinating Committee. Department of Agricultural Engineering, Lexington, KY, September 19.
- Meeting of the Kentucky-Indiana Sections of the American Society of Agricultural Engineers. Louisville, KY, October 5.
- Kentucky Congressional Agricultural Aides Update Program. University of Kentucky, Lexington, KY, October 5.
- Farm Bureau Soil and Water Advisory Committee. Louisville, KY, September 16.

- 1992** State Regulations: Impact on Livestock Management Decisions. Presented at Southern Agricultural Economics Association Symposium. Lexington, KY, February 2.

Building Plumbing Materials Effect on Drinking Water Quality. Presented to Bluegrass Cross-Connection Prevention Association. Lexington, KY, February 19.

Water Quality Research and Assessment (SB 271 Research). Presented at Water Quality and Kentucky Agriculture Conference. Louisville, KY, July 8.

Kentucky Watershed Management Activities. Southern Region Meeting of Extension Agricultural Engineers. San Antonio, TX, October 4-7.

Evaluation of Constructed Wetlands in Kentucky. Southern Region Meeting of Extension Agricultural Engineers. San Antonio, TX, October 4-7.

Agricultural Chemical Use Impacts on Kentucky Groundwater Resources Program and Summary of Results of the Private Well Testing Program.

- SCS Water Quality Workshop. Cynthiana Area Office, November, 10.
- Agricultural and Natural Resources Joint Legislative Committee, Frankfort, KY, November 23.
- Madison County Rotary Club, Richmond, KY, November 18.

**1993** Summary of Results of the Private Well Water Testing Program. Presented at KY Water Interagency Coordinating Committee (KWICC). Louisville, KY, February 3.

Animal Waste Handling Equipment. Presented at Animal Waste Systems Equipment Exposition. Cave City, KY, February 16.

Proposed Kentucky Groundwater Regulations. Presented at Livestock Waste Management on Kentucky Farms Workshop. Bardstown, KY, February 23-24.

Agricultural Chemical Use Impacts on Kentucky Groundwater Resources Program and Summary of Results of the Private Well Testing Program. Presentation to Kentucky Association of Conservation Districts Annual Area Meetings.

- Paris, March 8.
- Somerset, March 10.
- Bardstown, March 15.
- Kentucky Dam Village State Park, March 17.
- Bowling Green, March 18.
- Hazard, April 15.

Agricultural Chemical Use Impacts on Kentucky Groundwater Resources Program and Summary of Results of the Private Well Testing Program. Presentation to Groundwater Consensus Group. Frankfort, KY, March 9.

Agricultural Chemical Impacts on Groundwater: Assessment and Research. Presented to Corporate Executive Management Team and Board Chairman for Purdue Farms Inc. Agricultural Engineering Department, Lexington, KY, April 15.

Proposed Kentucky Groundwater Regulations Related to Agriculture. Presented at Kentucky Farm Bureau Environmental Seminars.

- Murray, KY, July 14.
- Bowling Green, KY, July 15.
- Lexington, KY, July 16.

Groundwater Quality in Kentucky: Well Water Testing and Agricultural Impacts Research and Assessment. Presented to visiting University Delegation from Mainland China. University of Kentucky, Lexington, KY, October 1.

Impact of Agricultural Protection on Groundwater Resources - SB-271. Kentucky Environmental Conference. Ft. Mitchell, KY, October 13-15.

Agriculture Nonpoint Source Pollution: Current Research in Kentucky. Nonpoint Source Pollution in Kentucky with Interstate Perspectives. Ohio River Basin Commission. Frankfort, KY, September 23.

Golf Course Groundwater. Kentucky Turfgrass Conference. Louisville, KY, November 1-4.

Ky Groundwater Regulations. 1993. Private Pesticide Users Certification Update Workshop, Satellite Program for KY. University of Kentucky Long Distance Learning Center. Lexington, KY, November 12.

**1994** Agricultural Impact on Groundwater Quality in Kentucky: Assessment and Research. Agriculture and Water Quality, Southern Region Sustainable Agriculture Opportunity Workshop (SARE), USDA. Lexington, KY, January 14-15.

Groundwater Protection, Panelist. KY Soybean Association Annual Meeting. Lake Barkley, KY, January 17.

Groundwater Regulations and Laws Affecting Dairy Farms. Annual Dairymen's Conference. Cooperative Extension Service.

- Lexington, KY, January 18.
- Bowling Green, KY, January 19.
- Somerset, KY, January 20.

Groundwater Regulations - The Impact on Industrial Vegetation Management Programs. Vegetation Management Association of Kentucky. Lexington, KY, March 1.

Proposed Kentucky Groundwater Regulations. Rotary Club. Elizabethtown, KY, May.

Tour Water Quality Project UK Woodford County Research Farm. KY Council of Chapters Annual Meeting, Soil and Water Conservation Society. Frankfort, KY, June 16.

**1995** Agriculture Water Quality Authority (SB-271) and Impact on Dairy Farms. Annual Dairymen's Conference. Cooperative Extension Service.

- Lexington, KY, January 19.
- Bowling Green, KY, January 20.
- Somerset, KY, January 21.

Agricultural Chemical Use Impacts on Kentucky Groundwater Resources – Assessment 1990-93 (SB-271). Kentucky Water Resources Research Institute Monthly Environmental Seminar. Ramada Inn, Lexington, KY, May 3.

- Elizabethtown AM Rotary Club: Environmental Regulations, Consensus Process and the Agricultural Community. Elizabethtown, KY, February 10.
- Biosystems and Agricultural Engineering Special Seminar: Agricultural Chemical Use Impacts on Kentucky Groundwater Resources – Assessment 1990-93 (SB-271). University of Kentucky. Lexington, KY, March 29.
- UK Office of International Affairs, Ukrainian Delegation Government Policy Training: Agricultural Environmental Regulation and Policy and Agricultural Impacts of Agriculture. University of Kentucky, Lexington, KY, May 1.
- Dairy Producers Association of Kentucky Conference. Milk Processing to Reduce Wastewater and Kentucky Ground Water Regulations. Louisville, KY, September 13.
- 1997** Kentucky Water Interagency Coordinating Committee. Water Quality Research at the University of Kentucky Animal Research Center. Versailles, KY, September 9.
- Kiwanas Club Meeting. Concentrated Swine Confinement Regulations. Lexington, KY, December 9.
- 1998** Agriculture Advancement Council State Meeting. (Presenter). Confinement Animal Production Systems and Water Quality Research at the Animal Research Center. Elizabethtown, KY, July 31.
- 2000** **Taraba, J.L.** Effects of crude protein levels in broiler and swine feed on waste nutrient content and gas emissions. Presented at 2000 Biennial Workshop, Southern Region Extension Agricultural Engineers and Housing Specialists. Savannah, GA, September 11-13.
- 2001** UK Animal Research Center environmental monitoring system and database. S-1004 USDA Regional Project Meeting. Snowbird, Utah, September 9-10.
- 2004** Historical and Current Water Quality Perspectives at the UK Animal Research Center. Animal Science Seminar, University of Kentucky, April 14.
- 2006** Monitoring at the Animal Research Center. Presentation and SB-271 Panel Discussion. Presented to SB-271 Advisory Committee. Radisson Plaza Hotel, October 3. Lexington, KY.
- 2009** Designing BMPs for Reduction of Nutrients: Animal Research Center Monitoring. Nutrient Loading in Karst Watersheds: A Review of Management Practices -- The Pleasant Grove Creek Project. Center of Excellence for Field Biology. Austin Peay State University, Clarksville, TN, June 11-12.

- Compost Bedded Pack Loose Housing Dairy Barn. Big Ass Fan Corp., Lexington KY. July 14.
- 2010** Nutrient Management and Environmental Stewardship for Dairies. UK National Competition Dairy Challenge Team. March 22.
- Compost Bedded Pack Loose Housing Dairy Barn. Visiting Faculty - Universidade Federal de Viçosa, Departamento de Engenharia Agrícola, Viçosa, Brasil, BAE Department, Lexington KY. February 25.
- 2011** Compost Bedded Loose Housing Dairy Barn. 2011 ASABE Annual Meeting, Tour of UK BAE Department. August 7. (25 guests)
- Managing Heat Stress in Dairy Facilities. Invited presentation at Kentuckiana Dairy Exchange, Ft Wayne IN. August 2-3. (85 attendees)
- 2012** New concept in dairy cow housing--compost bedded loose housing Dairy Barn. BAE Fall Seminar Series. University of KY. Biosystems and Agricultural Engineering Dept, October 12.
- 2013** Bewley, JM and **JL Taraba**. 2013. Compost Bedded Pack Barns. Penn State Technology Tuesdays Webinar Series: Cow-Centered Housing Series.
- 2015** **JL Taraba**. Dairy Compost Barn Construction and Management. Workshop for Applic Corpo. Patrocino MG, Brazil. Aug 6 2015 (17 field employees).
- JL Taraba**. Building Successful Compost Barns: What Do You Need To Know. Workshop for dairymen at Chiavassa Grupo. Carlos Pellegrini SF, Argentina. Aug 10, 2015 (35 local dairy producers).
- 2016** **JL Taraba**. Building Successful Compost Barns: What Do You Need To Know. (Bem sucedida do edifício Compost Barns: O que Você Precisa Saber). Workshop for local dairymen, consultants, and farm workers at Chiavassa Grupo. Carlos Pellegrini SF, Argentina (14 people). March 4, 2016.
- JL Taraba**. Building Successful Compost Barns: What Do You Need To Know. (Bem sucedida do edifício Compost Barns: O que Você Precisa Saber). Workshop for regional, national, government Agriculture officials, university researchers, and dairy consultants. Chiavassa Grupo. Carlos Pellegrini SF, Argentina (53 people). March 7, 2016.
- JL Taraba**. Building Successful Compost Barns: What Do You Need To Know. Workshop for Dairy consultants. Carlos Pelligrini, Buenos Aires, Argentina. (Nov. 7, 2016).
- JL Taraba**. Building Successful Compost Barns: What Do You Need To Know. Dairymen from Sante Fe Province. Carlos Pelligrini, Buenos Aires, Argentina. (Nov. 8, 2016).

**JL Taraba.** Building Successful Compost Barns: What Do You Need To Know. Dairymen from Chile and La Pampa and Cordoba Provinces, Argentina. Carlos Pelligrini, Buenos Aires, Argentina. (Nov. 11, 2016).

**JL Taraba.** 2016. Compost Bedded Pack Dairy Shelter Update. Penn State Tech Tuesday Webinar, November 22.

<https://meeting.psu.edu/p62piwxsibv/?launcher=false&fcsContent=true&pbMode=normal>

**2017 JL Taraba.** Managing Compost Bedded-Pack Barn/Waste System. Animal Care Compost bedded pack barns for dairy cows: USA knowledge and experience. EuroDairy Webinar. February 14.

## **PLAN SERVICE EXTENSION BLUEPRINTS**

**Taraba, J.L.** 1982. Dairy Manure Storage Facility. Plan Service No. KY II 723-34.

Holmes, E. and **J.L. Taraba.** 1989. 9694 Gallon Cistern, Plan Service No. KY II 8553-16.

## **MASS MEDIA**

### **Radio**

- 1977**
- Processing Manures by Ensilment before Refeeding.
  - The Use of Animal Wastes with Formulation of Animal Diets.
  - Winter Application of Animal Manures.
- 1978**
- Planning Animal Confinement Facilities with Odor Control in Mind.
  - Odor Control Additives for Animal Confinement Facilities.
- 1979**
- The Economics of Liquid Manure Injection.
  - Manure Handling Problems During the Winter
- 1980**
- Dairy Waste Management.
  - Water Pollution Control Permits for Animal Waste Structures.
  - Developing Livestock Waste Management Plan.
  - New Construction Permit Procedures for Animal Waste Structures.
- 1981**
- Odor Control for Animal confinement Facilities.
- 1982**
- The Danger of Manure Gases in a Liquid Manure Storage System.
  - Drinking Water Quality.
- 1983**
- Utilization of Swine Manure for Maximum Fertilizer Returns.
  - Salt Buildup in Flush Recycle System Pipes.
  - Hidden Costs to be aware of in Handling Liquid Animal Manures.

- 1984**
  - Odor Control for Animal Confinement Facilities.
  - Recent Trends in Animal Manure Utilization as Fertilizer.
- 1985**
  - Cistern Water—Its Protection and Treatment.
  - Manure Sampling for Nutrient Content.
- 1986**
  - Rapid Method for Determining Nutrients in Liquid Dairy or Swine Manures.
- 1987**
  - Right to Farm and Nuisance Suits.
- 1988**
  - Is Your Water Contaminated?
- 1989**
  - Lead in Your Drinking Water.
  - QuinState Forum on Ground Water Quality.
  - Private Water Well Quality Testing.
  - Carbon Filters for Household Drinking Water.
  - Contamination from Cistern Water with Roof Washer.
- 1990**
  - Well Construction and Maintenance.
  - Fewer than 6% of Kentucky Wells Contamination by Nitrates, Survey Finds.
  - Three Easy Ways to Purify Water for Drinking.
  - Take a Few Precautions to Keep Your Water Safe.
  - Do You Need a Water Treatment Product?
- 1991**
  - SB-271 Program Report.
  - Household Water Treatment.
- 1993**
  - Groundwater Regulation Update. May
- 1994**
  - KY Agricultural Water Quality Authority (SB-241). September.
  - Groundwater Quality in The Bluegrass Region, WEKU "Down to Earth," September.
- 1995**
  - Manure Application Considerations, January 9.
  - Become Environmentally Conscientious in Managing Animal Wastes, October 2.
- 1996**
  - Agricultural Water Quality Authority Statewide Water Quality Plan, February 19.
- 1998**
  - Confinement Animal Production and the Kentucky Water Quality Act, January 20.
  - Farm Manure Application Strategies. Bluegrass Agricultural Radio Network. September 6.
- 1999**
  - Agricultural Water Quality Plan, January 20.
  - AFO and CAFO: Nutrient Management, February 15.
  - Waste Management System Equipment Maintenance and Inspection, June 21.
  - Drought Effects on Liquid Animal Manure Storage, September 20.

- 2000**
  - Precision Nutrition to Reduce Environmental Impacts of Confinement Animal Production, June 26.
  - Drinking Water Testing Labs, August 21.
  - Protecting Your Water Supply, September 19.
- 2001**
  - Abandoned Feedlots and Manure Storage Lagoons Can Affect Your Well Water Quality, January 5.
  - Biofilters for Odor Reduction in Animal Facilities, October 3.
- 2002**
  - Manure Plant Nutrients, March 27.
  - AFO/CAFO Regulations, June 10.
- 2004**
  - Heavy Metals in Drinking Water, March 24.
  - Water Quality at the Animal Research Center, July 25.
- 2005**
  - Impacts of Cattle Grazing in Riparian Zone on Stream Water Quality, October.
- 2006**
  - Reducing Odors from Animal Confinement Facilities, March.

### **Television**

- 1980**
  - Earthen Structures for Manure Storage.
  - Planning for Waste Management Systems.
- 1983**
  - Injection of Liquid Animal Manures.
  - Salt Buildup in Recycle Flush Lagoon Systems.
  - Manure Nutrient Utilization.
  - Manure Handling in Severe Winters.
- 1989**
  - Carbon Filters. Fayette County Extension Note Shorts.
  - Bottled Water. Fayette County Extension Note Shorts.
  - Public Drinking Water Quality. Fayette County Extension Note Shorts.
  - Carbon Filter and Bottled Water. Fayette County Extension Notes Program.
  - Activated Carbon Water Filters. University of KY Public Information Release.
- 1991**
  - Down to Earth: Groundwater. Lex. Fay. Urban County Gov. Cable Ch. 9, November.

### **Exhibits**

- 1980**
  - Energy Alternatives for the 80s.
- 1981**
  - Biogas from Animal Manures.
- 1988**
  - Are You Polluting Your Own Well?

- 1989**      • Water Testing and Treatment.
- 1990**      • Fewer than 6% of Kentucky Wells Contaminated by Nitrates, Survey Finds.
- 1991**      • Water Quality Program — Extension, Well Testing, Agricultural Chemical Impacts.
- 2001**      • Precision Manure Nutrient Application with Towed Hose Injection Tool. Farm Machinery Show. Louisville, KY, February 14-17.
- 2002**      • Environmental Activities at the UK Animal Research Center - Woodford County. Princeton Field Day, July 17-18.
- Environmental Activities at the UK Animal Research Center - Woodford County. College of Agriculture Ag Roundup, September.

### **News Releases**

- 1988**      • How Safe is Your Drinking Water?, May.
- Private Water Sources a Potential Lead Hazard, December.
- 1989**      • Carbon Filters Offer Insurance to Home Owners, July.
- How to Insure Safe Drinking Water?, February.
- Groundwater Contamination Serious Concern in Certain Kentucky Locales, April.
- 1990**      • Fewer Than 6% of Kentucky Wells Contaminated by Nitrates, Survey Finds. August.
- Three Easy Ways to Purify Water for Drinking. October 19.
- Take a Few Precautions to Keep Your Water Safe. October 19.
- 1991**      • Biodiesel: An On-Farm Fuel Source.
- Water Treatment—First Aid for Sick Water.

### **Popular Press**

- 1983**      • Plugged Pipes and Pumps Can Plague. Pork Producers, August 5.
- 1985**      • Manure Handling System Reviewed. Dairymen News, August.
- 1986**      • How Does Your Lagoon Smell? Kentucky Farm, May.
- Coping with an Organic Problem. Bloodhorse, October.
- 1987**      • Rapid Method for Determining Nutrients in Liquid Dairy and Swine Manure. Kentucky Farmer, January.
- Right to Farm Statute Does Not Protect Every Agricultural Operation from Nuisance Suits. KY Farmer, April.
- Alternate Types of Horse Bedding. Miniature Horse World, December.

- 1988**
  - How Safe Is Your Drinking Water?, Kentucky Farmer, April.
  - Water Quality, Kentucky Farmer, June.
  - Lead in Your Drinking Water, Kentucky Farmer, December.
  - Are You Contaminating Your Own Well?, Kentucky Farmer, November.
- 1989**
  - What's your Farm's Potential to Pollute Your Drinking Water Supply. Kentucky Farmer, January.
  - Cistern Water Quality. Kentucky Farmer, August.
- 1990**
  - Cool Clear Water: Assessing KY's Groundwater Quality. Odyssey, F/W. UK Research Foundation Publ., University of Kentucky.
  - Water Wells Tested for Nitrates, Herbicides. Land, Air & Water, Kentucky Department for Environmental Protection, p.6. Fall 1990.
- 1991**
  - Interview for Well Testing Progress in Graves County. Ledger Independent, August 1.
- 2012**
  - P Vincelli, MA Arthur, TG Barnes, PM Bertsch, T Mueller, GJ Wagner, RT Bessin, RT Bessin, JM Bewley, DL Ingram, AL Meyer, **JL Taraba**, A Turkington. 2012. Ky. Voices: Humans contribute to climate change; accept the science to find solutions. Letter to the Editor. Lexington Herald Leader, July 11.
- 2013**
  - Bewley, JM, **JL Taraba**, GB Day, R. Black, and F. Damasceno. We've learned more about compost barns. Hoard's Dairyman. p. 328, May 10.
  - **Taraba, JL**, Bewley. J., GB Day, R. Black, and F. Damasceno. Considerations for Compost Barn Design. Hoard's Dairyman. p. 370 May 25.
- 2017**
  - Elizabeth Eckelkamp, Joseph Taraba, Robert Harmon, and Jeffrey Bewley. 2017. Compost barns take a cue from the weather - The temperature outside can impact a compost-bedded pack inside the barn. Hoard's Dairyman, p.13, January 10.

## **NEWS CONFERENCE**

- 1990**
  - Private Water Testing Program Results. Louisville, KY, August 24.

## **PROFESSIONAL SERVICE**

- Technical Advisor, Natural Resources Advisory Committee, Kentucky Farm Bureau, 1991-2010.
- Certified On-farm Odor/Environmental Assistance Program Assessor. 1999-2013.
- Ag Advisory Council Discussions, Participant. 2006.
- Water Quality Issues and Master Cattleman, Regional Conferences, Participant. 2006.
- Member, Southern Regional Extension Water Quality Planning Committee, 1988-1989.
- Member, Agricultural Chemical and Fertilizer Handling Containment and Rinsate Committee, Kentucky Fertilizer and Agricultural Chemical Association, 1989-1990.

- Member, Kentucky Well Drillers Association Board of Directors, 1988-1995.
- Technical Advisor, Water Advisory Committee, Kentucky Soil and Water Conservation Commission, 1992-1996.
- Member, Natural Resources and Environment Subcommittee, Ag Project 2000, 1993-1995.
- Member, Kentucky Water Interagency Coordinating Committee (KWICC), 1991-1998.
- Advisor, Governor's Water Quality Policy Committee, 1993.
- Member, Groundwater Consensus Group for Development of Kentucky Ground Water Regulations, Kentucky Cabinet of Natural Resources and Environmental Protection, 1993-1994.
- Member, Advisory Committee, Kentucky Pesticide Management Plan, Kentucky Department of Agriculture, 1991-1997.
- Member, State Coordinating and Technical Committee, Kentucky Groundwater Education and Well Water Testing Program, 1990-1993.
- Member, Ad Hoc Committee for Constructed Wetlands Evaluation, Kentucky Division of Water, 1992-1993.
- Member, Kentucky Groundwater Regulation Review Committee, Kentucky Department of Natural Resources and Environmental Protection, 1992.
- Member, Technical Review Committee, BMP Manuals for Construction and Animal Waste Management, Kentucky Division of Conservation, 1993-1994.
- Member, KY ASCS Water Quality Improvement Program (WQIP) Proposal Review Committee, 1993-1994.
- Member, Proposal Review Committee for Kentucky USEPA, Section 319 Grants, 1994.
- Member, Advisory Committee for KY A SYST Program, 1993-1994.
- Member, Advisory Committee to Public Works Department, Division of Sewers, on Educational Program for Home Pesticide Use and Disposal. Lexington-Fayette Urban County Government, 1994.
- Member, Technical Committees for BMP Manual development. KY Agriculture Water Quality Authority.
  - Animal Production, 1995-1998.
  - Crop Production, 1995-1997
  - Homestead Committees, 1995-1996.

# RESEARCH

## RESEARCH GRANTS AND PROJECTS

### State and Hatch Projects

**1978-81** Fermentation of Swine and Poultry Manure to Improve Their Nutritional Properties for Recycling as Feeds. Ky Experiment Station Project. Principal Investigator (with I. J. Ross (CI), Department of Agricultural Engineering; Gary Cromwell (CI) and John Begin (CI), Department of Animal Science). Objective: Determine the processing needed to enhance feed value of animal wastes.

**1979-81** Animal Waste Recycling and Treatment Systems. Regional Hatch Project SAW 77-02. Objective: Investigate the environmental impacts of alternative waste management systems.

**1979-84** Animal Waste Recycling and Treatment Systems. Regional Project-Hatch S-144. Principal Investigator (Kentucky). Objective: Assess non-point source pollution from land application of animal wastes.

- Secretary, 1981-1982.
- Vice Chairman, 1982-1983.
- Chairman, 1983-1984.
- Editor, Termination Report – 1985.

**1985-89** Animal Waste As Nutrient and Energy Resources In Warm Humid Climates. Regional Hatch Project. Principal Investigator (Kentucky). Objective: Assess the composting of Horse muck and the use of alternative beddings for horse stalls.

**1989-90** Above Project Extended.

**1991-96** The Impact of Agricultural Systems on Surface and Ground Water Quality. Regional Hatch Project S-249. Co-Investigator (with Gary K. Felton (PI), Department of Agricultural Engineering; Wilber W. Frye (CI) and William W. Witt (CI), Department of Agronomy). Objective: Develop research for development of ground water karst catchment water quality models.

**1992-96** Hydrograph Separation Analysis of Karst Flow Systems. Ky Experiment Station Project. Co-Investigator. (with Gary K. Felton (PI), Department of Agricultural Engineering; Wilber W. Frye (CI), Department of Agronomy; James C. Currens (CI), KY Geological Survey; Lyle V.A. Sendlein (CI), Department of Geological Sciences). Objective: Develop hydraulic flow models for ground water discharging from karst catchment springs.

**1995-99** Economic and Environmental Impacts of Water Quality Protection Policies on KY Agriculture. Kentucky Experiment Station Project. H.H. Hall, Agricultural Economics

(Co-PI); J.R. Skees, Agricultural Economics (Co-PI), **J.L. Taraba**, Biosystems and Agricultural Engineering (Co-PI). Objective: Develop and evaluate assessment tools for BMP development and agricultural environmental policy.

**1996-01** Improved Utilization of Forage by Beef Cattle While Grazed under Intensive Management. KY Experiment Station Project. B.T. Larson and D.L. Harmon, Animal Science (Co-PIs); **J.L. Taraba**, Biosystems and Agricultural Engineering (Collaborator). Objective: Evaluate economic and environmental impacts of rotational grazing on surface and groundwater resources.

**2001-07** Development and Evaluation of TMDL Planning and Assessment Tools and Processes. S-1004 USDA Regional Project.

**2006-12** Systems for Controlling Air Pollutant Emissions and Indoor Environments of Poultry, Swine, and Dairy Facilities. S-1025 USDA Regional Project.

**2008-13** Improving the Sustainability of Livestock and Poultry Production in the United States (OLD S1032) USDA Regional Project.

**2013-18** Animal Production Systems: Synthesis of Methods to Determine Triple Bottom Line Sustainability from Findings of Reductionist Research. S1032: USDA Regional Project.

### **Competitive Grants**

**1979-82** Effects of Surface Application of Animal Manures on the Quality of Surface Runoff. Kentucky Water Resources Research Institute. Co-principal Investigator (I.J. Ross (CPI) and Billy J. Barfield (CI), Department of Agricultural Engineering; and Roger Hemken (CI), Department of Animal Science). Objective: Determine the contaminants in the runoff from dairy waste manured pasture plots during rainfall events. \$12,710.

**1978-81** Evaluation of Post-Harvest Environmentally Created Damage to Burley Tobacco. USDA Cooperative Agreement. Co-Investigator (with L. Walton (CPI), Wiley Henson (CPI) and Hubert Casada (CI); Department of Agricultural Engineering; and R. Harold Burton (CI), Department of Agronomy). Objective: Determine the chemical and bacterial dynamics during the curing burley tobacco under different moisture and temperature conditions. \$121,400.

**1981-83** Effect of Moisture Content During Storage on Health-Related Properties of Burley Tobacco. USDA Cooperative Agreement. Co-Investigator (with Linus Walton (CPI), Wiley Henson (CPI), Hubert Casada (CI); Department of Agricultural Engineering; and R. Harold Burton (CI), Department of Agronomy). Objective: Determine the chemical and bacterial dynamics during the storage of hand-tied and baled burley tobacco under different moisture and temperature conditions. \$120,000.

- 1982-85** Modification of Tobacco Leaf Components Using Selected Microorganisms in Homogenized Leaf Curing. USDA Cooperative Agreement. Co-Principal Investigator (with Elmon E. Yoder (CPI) and Willey Henson (CI), Department of Agricultural Engineering; and R. Harold Burton (CI), Department of Agronomy). Objective: Develop liquid curing process for burley tobacco to reduce nicotine and nitrosamine and determine the native leaf microflora during the growing season. \$95,000.
- 1984-85** Above Project Extended, \$32,000.
- 1982-85** Particulate Deposition When Passing Gasification-Combustion Gases Through Grain. USDA-SEA. Co-Investigator (with Otto J. Loewer (PI), Gerald White (CI) and I.J. Ross (CI), Department of Agricultural Engineering). Objective: Determine the trapping efficiency of combustion byproducts that pass through in-bin drying grain. \$80,000.
- 1984-85** Composting Horse Muck.. Consolidated Consultants Inc. Principal Investigator. Objective: Develop design criteria for a continuous in-bin composting system for racetrack horse muck. \$22,000.
- 1986** Above Project Extended, \$3,500.
- 1985-86** Energy Generation Through Gasification-Combustion of Low Density Biomass. TVA. Co-Investigator (with Blaine F. Parker (PI), Department of Agricultural Engineering). Objective: Determine the if exhaust gas recirculation can be used to control gasification process for a low density biomass. \$51,000.
- 1986-87** Fires in Dark-Fired Tobacco Barns. Western Kentucky Dark Fired Growers Association. Co-Investigator (with Sam McNeill (CPI), Douglas G. Overhults (CPI) and I.J. Ross (CI); Department of Agricultural Engineering; and William C. Maksymowicz, Department of Agronomy). Objective: Develop new smoking process for curing dark fired tobacco to prevent barn fires. \$15,495.
- 1986-87** Alternate Horse Beddings. Anheuser Busch. Principal Investigator (with Steve Jackson and John P. Baker; Department of Animal Science). Objective: Determine the economic, management and health factors related to rice hulls, wood shavings and straw as horse stall bedding. \$8,000.
- 1990-94** Soil Amendment Application for Surface Mine Reclamation. Addington Resources Inc. Principal Investigator (with Gary K. Felton (CPI) and John N. Walker (CI); Department of Agricultural Engineering; and Tasos Karathanasis (CPI), Department of Agronomy). Objective: Determine the effect of yard waste compost on the hydraulic properties of reconstructed soils from Eastern Kentucky strip mine plot sites and the movement of heavy from topically applied sewage sludge on similar plot sites. \$108,330.
- 1991-94** The Role of Sediment in Nutrient Transport in a Karst Ground Water Catchment. USDA-CSRS. Co-Investigator (with Gary K. Felton (PI), Department of Agricultural Engineering; Wilbur W. Frye (CI), Department of Agronomy). Objective: Analyze the

importance of sediment to the overall chemical transport phenomena of a karst agricultural watershed. \$125,000.

- 1991-93** Agricultural Chemical Impacts on Kentucky Ground Water Resources. Ky. Legislative Special Funding. Co-Leader (with Department of Agronomy, Department of Geological Sciences, KY Geological Survey and Water Resources Research Institute). Objective: Assess the impact of agricultural chemical use on ground water at selected representative agricultural watersheds. \$65,000 (Annual Renewal).
- 1993-95** Agricultural Chemical Impacts on Kentucky Groundwater Resources. Ky. Legislative Special Funding. Co-Leader (with Department of Agronomy, Department of Geological Sciences, KY Geological Survey and Water Resources Research Institute). Objective: Assess the impact of agricultural chemical use on ground water at selected representative agricultural watersheds. \$70,000 (Annual Renewal).
- 1992-95** Agricultural BMP's and Surface Water-Ground Water Interaction in Karst Terrane. USDA-CSRS. Principal Investigator (with James Dinger (CI), KY Geological Survey; Lyle V.A. Sendlein (CI), Water Resources Research Institute; Gary K. Felton (CI), Department of Agricultural Engineering; Steve Coleman (CI), Division of Conservation). Objective: Define surface water/ground water interactions; document background water quality changes as agricultural land use changes; evaluate water quality off-site impact decision models on a karst watershed. \$225,000.
- 1994-95** Integrated Grazing Systems Planning and Decision Support for Improved Sustainability and Environmental Quality. Planning Grant, Sustainable Agriculture. Southern Region SARE/ACE Program, USDA-CSRS. Co-Investigator (with Larry W. Turner (CPI), Department of Agricultural Engineering; Otto J. Loewer (CPI), Department of Agricultural Engineering, University of Florida). Objective: Develop interdisciplinary, multi-agency and multi-state research and extension program on rotational grazing and environmental impacts. \$27,500.
- 1996-99** Subsurface Leaching Potential of Animal Waste Holding Ponds as a Function of Barrier Soil Moisture and Compaction Construction. USEPA Section 319 Grant. Co-Investigator (with Richard C. Warner (CPI) and Gary K. Felton (CI), Department of Agricultural Engineering; Matt Byers (CPI), Kentucky State University). Objective: Investigate the effect of construction practices on leaching of animal waste contaminants through lagoon soil liners. \$267,060.
- 1996-97** Reducing Phosphorus and Nitrogen Waste Production on Broiler Farms Through Diet Manipulation. R.S. Gates, Biosystems and Agricultural Engineering - PI; L.W. Turner, Biosystems and Agricultural Engineering (Co-PI); J.L. Taraba, Biosystems and Agricultural Engineering (Co-Inv.); and A.H. Cantor, Animal Science (Co-Inv). Heartland Lysine. \$30,000.
- 1997-98** Reducing Phosphorus and Nitrogen Waste Production on Broiler Farms Through Diet Manipulation. R.S. Gates, Biosystems and Agricultural Engineering - PI; L.W. Turner,

- Biosystems and Agricultural Engineering (Co-PI); J.L. Taraba, Biosystems and Agricultural Engineering (Co-Inv.); and A.H. Cantor, Animal Science (Co-Inv). Heartland Lysine \$15,000.
- 1995-98** Assessment of nitrate and pesticide impacts on bedrock aquifers in upland agricultural settings of the western coal field. J.S. Dinger, Kentucky Geological Survey (PI); **J.L. Taraba**, Biosystems and Agricultural Engineering (Co-PI); J.H. Grove, Agronomy (Co-Inv.); Water Quality Research and Education Program: Senate Bill 271 - Phase II. College of Agriculture, University of Kentucky. \$250,000.
- 1995-98** Runoff quality responses to cattle grazing strategy and grassed buffer zone length. D.R. Edwards, Biosystems and Agricultural Engineering (PI); **J.L. Taraba**, Biosystems and Agricultural Engineering (Co-PI); L.W. Turner, Biosystems and Agricultural Engineering (Co-Inv.); B.T. Larson, Animal Science (Co-Inv). Water Quality Research and Education Program: Senate Bill 271 - Phase II. College of Agriculture, University of Kentucky. Lexington. \$120,000.
- 1997** Multi-gas Monitoring System for Livestock Waste Research and New Sensor Development. L.W. Turner, Biosystems and Agricultural Engineering (PI); R.S. Gates, Biosystems and Agricultural Engineering (Co-PI); **J.L. Taraba**, Biosystems and Agricultural Engineering (Co-Inv); G.L. Cromwell, Animal Science (Co-Inv). UK Major Research Equipment Competition. \$30,000. College of Agriculture Matching Funds. \$15,000.
- 1997-98** Manipulation of Swine Diets to Reduce Odor and Harmful Gaseous Emissions from Manure. G.L. Cromwell, Animal Science (PI); L.W. Turner, Biosystems and Agricultural Engineering (Co-PI); R.S. Gates, Biosystems and Agricultural Engineering (Co-PI); **J.L. Taraba**, Biosystems and Agricultural Engineering (Co-Inv); National Pork Producers. \$25,000.
- 1996-98** Monitoring Impacts of Animal Research Center On Surface And Groundwater Quality. **J.L. Taraba**, Biosystems and Agricultural Engineering (PI); I.J. Ross, Biosystems and Agricultural Engineering (Co-PI); Water Quality Research and Education Program: Senate Bill 271 - Phase II. College of Agriculture, University of Kentucky. Lexington. \$122,000.
- 1997-99** Nonpoint Source Pollution Control Program Support. **J.L. Taraba**, Biosystems and Agricultural Engineering (Co-PI), S.A. Samson, Agricultural Rural Sociology, (Co-PI), J.H. Grove, Agronomy (Co-Inv.), and M.S. Coyne, Agronomy (Co-Inv.). USEPA - 319. \$54,000.
- 1998-00** Assessment of nitrate and pesticide impacts on bedrock aquifers in upland agricultural settings of the western coal field. J.S. Dinger, Kentucky Geological Survey (PI), G. Beck, Kentucky Geological Survey (Co-Inv.), **J.L. Taraba**, Biosystems and Agricultural Engineering (Co-PI), J.H. Grove, Agronomy (Co-Inv.). Water Quality Research and Education Program: Senate Bill 271 - Phase III. College of Agriculture, University of Kentucky. \$163,000.

- 1998-00** Reducing P and N waste production on broiler farms through diet manipulation. L.J. Turner, UK Biosystems and Agricultural Engineering (PI), R.S. Gates, UK Biosystems and Agricultural Engineering (CPI), **J.L. Taraba**, UK Biosystems and Agricultural Engineering (CPI), Heartland Lysine. \$60,000.
- 1998-01** Monitoring Impacts Of Animal Research Center On Surface And Groundwater Quality. **J.L. Taraba**, Biosystems and Agricultural Engineering (PI), and I.J. Ross, Biosystems and Agricultural Engineering (Co-PI). Water Quality Research and Education Program: Senate Bill 271 - Phase III. College of Agriculture, University of Kentucky. Lexington. \$253,000.
- 1998-01** Swine and Dairy Waste Management Using Precision Agriculture. S.A. Shearer, Biosystems and Agricultural Engineering (Co-PI), R.I. Barnhisel, Agronomy (Co-PI), and **J.L. Taraba**, Biosystems and Agricultural Engineering (Co-Inv.). Water Quality Research and Education Program: Senate Bill 271 - Phase III. \$119,200.
- 1998-01** Protection of Well-Water Supplies from Nitrate Contamination. J.S. Dinger, Kentucky Geological Survey (PI), P.G. Conrad, Kentucky Geological Survey (Co-PI), G. Beck, Kentucky Geological Survey (Co-Inv.), **J.L. Taraba**, Biosystems and Agricultural Engineering (Co-Inv.), J.H. Grove, Agronomy (Co-Inv.). Water Quality Research and Education Program: Senate Bill 271 - Phase III. \$140,700.
- 1999-03** Dairy Waste Utilization Tool Development and Demonstration. **J.L. Taraba**, Biosystems and Agricultural Engineering (PI), J.S. Dinger, Kentucky Geological Survey (Co-PI). Final Round EPA Review. USEPA-319. \$76,285.
- 1999-00** Nonpoint Source Pollution Control Program Support. **J.L. Taraba**, Biosystems and Agricultural Engineering (Co-PI), S.A. Samson, Agricultural Rural Sociology, (Co-PI), J.H. Grove, Agronomy (Co-Inv.), and M.S. Coyne, Agronomy (Co-Inv.). USEPA - 319. \$70,000.
- 2000-01** Fractionation and biological availability of suspended P in agricultural watersheds. M.S. Coyne, Agronomy (PI), **J.L. Taraba**, Biosystems and Agricultural Engineering (Co-PI), J.D. Crutchfield, Agronomy (Co-PI) and J.A. Thompson, Agronomy (Co-PI). Water Quality Research & Education Program: SB 271-Phase IV. College of Agriculture, University of Kentucky. \$24,000.
- 2000-03** Assessment of Potential Nitrate Contamination to Shallow Ground-water Systems in the Western Kentucky Coal Field and Jackson Purchase Area. J.S. Dinger, KGS (PI), G. Beck, KGS (CI), J.H. Grove, Agronomy (CI), **J.L. Taraba**, Biosystems and Agricultural Engineering (CI); Water Quality Research & Education Program: SB 271-Phase III. College of Agriculture, University of Kentucky. \$163,000.
- 2001-04** Monitoring Impacts of Animal Research Center on Surface and Groundwater Quality. **J.L. Taraba**, I.J. Ross, Biosystems and Agricultural Engineering (Co-PI). Water

Quality Research and Education Program: Senate Bill 271 - Phase III. College of Agriculture, University of Kentucky. Lexington. \$210,000.

- 2001-04** Biological Availability of Suspended P Fractions in Agricultural Watersheds. M. S. Coyne, Agronomy Department (PI), **J.L. Taraba**, Biosystems and Agricultural Engineering (Co-PI), and J. Crutchfield, Agronomy Department (Co-PI). Water Quality Research and Education Program: Senate Bill 271 - Phase III. College of Agriculture, University of Kentucky. Lexington. \$85,710.
- 2002** Measurement of Suspended Solids in Flowing Liquid Manure for Use in Precision Application of Plant Nutrients. S.A. Shearer and **J.L. Taraba**, Biosystems and Agricultural Engineering (PIs), Major Research Equipment Fund. Office of the Vice President for Research, University of Kentucky. \$12,907.
- 2002-04** Role of suspended sediment in facilitating pathogen transport in Inner Bluegrass karst aquifers. A. Fryar, Geol. Sci. (PI), G.M. Brion, Civil Eng. (Co-PI), M.S. Coyne, Agronomy (Co-PI), and **J.L. Taraba**, Biosystems and Agricultural Engineering (Co-PI). Quality Research & Education Program: SB 271-Phase IV. College of Agriculture, University of Kentucky. \$70,890.
- 2004-05** Monitoring impacts of animal research center on surface and groundwater quality. **J.L. Taraba**, Biosystems and Agricultural Engineering (PI), J.S. Dinger, KGS (Co-PI), and A.W. Fogle, KGS (Co-I), Biosystems and Agricultural Engineering. Water Quality Research & Education Program: SB 271-Phase V. College of Agriculture, University of Kentucky. \$70,000.
- 2005-07** Monitoring impacts of animal research center on surface and groundwater quality. **J.L. Taraba**, Biosystems and Agricultural Engineering (PI), J.S. Dinger, KGS (Co-PI), and A.W. Fogle, KGS (Co-I), Biosystems and Agricultural Engineering. Water Quality Research & Education Program: SB 271-Phase V. College of Agriculture, University of Kentucky. \$140,000.
- 2007-10** Gaseous production from impermeable swine waste storage tanks and its abatement using biofilters. USDA National Research Initiative Air Quality Program. G.B. Day V, J.L. Taraba (20%), R.S. Gates, A. Singh, S.F. Higgins and E.G. Wilkerson. \$487,087.
- 2007-13** Cane Run and Royal Spring Watershed Based Plan and Implementation. USEPA319(h). S.R. Workman, S.F. Higgins, A.C. Gumbert, L.E. Ormsbee, C. Agouridis, J.W. Stringer and J.L. Taraba, Cooperator (5%). \$1,868,178.
- 2010-12** Impact of Animal Position within Dairy Compost Bedded Pack Barns on Animal Performance and Implications for Barn Design. 2010 Precision Resource Management Phase VI Special Grant. J.M. Bewley (PI), T.S. Stombaugh(PI), E.S. Vanzant(Co-Inv), J.L. Taraba(Co-Inv). \$49,928
- 2011-14** Compost bedded pack barn housing system for dairy manure storage/treatment. USDA-NRCS 2011 Conservation Innovation Grant. Joseph L Taraba (PI), Biosystems and

Agricultural Engineering Department; Jeffrey M. Bewley (Co-PI), Animal & Food Sciences; George B Day V (Co-PI), Biosystems & Agricultural Engineering; Traci Missun (Co-PI), Oldham County Agriculture & Natural Resources Agent, University of Kentucky; Oldham County Conservation District (Coll.); Kentucky Livestock Coalition (Coll.). 3-years. \$264,000.

**2012-13** Preliminary Assessment of the Potential for Compost Bedded Pack Barns in Organic Dairy Farming Systems. Farmers Advocating for Organics Fund. JM Bewley AFS , M Arnold VDL; K. Jacobsen, Hort; JL Taraba, BAE; GB Day V,BAE; H.Mussell, AFS..\$4909

**2013-14** University of Kentucky, Compost Bedded Pack Dairy Barn Management; JM Bewley (Co-PI), Animal & Food Sciences, JL Taraba (PI), GB Day, Biosystems and Agricultural Engineering Department. Kentucky Agricultural Development Fund, Governor's Office of Agricultural Policy, Frankfort KY. \$53,875.

**2014-15** Compost Bedded Pack Dairy Barns: An Alternative Nutrient Management Strategy. MS Coyne, JL Taraba (Co-PI), L Hammond. KWRRI-USGS Student Research Enhancement Grant. \$5000.

**2014-15** Host Borlaug Fellow from Mexico on Greenhouse Gas (GHG) Emissions from Composting. JL Taraba(PI), MS Coyne, MR Reed. Borlaug Fellowship Program: Asia & Latin America, USDA-FAS. \$26,300.

**2015-17** Host Borlaug Fellow from Mexico on Greenhouse Gas (GHG) Emissions from Ruminant Manure. **JL Taraba (PI)**, M Sama, MR Reed. USDA-FAS Borlaug Fellow Program. \$29,000.

**2015-18** Phosphorus runoff potential and nitrogen flux emissions from compost generated in compost bedded dairy pack barns. **JL Taraba (PI)**, B Lee, D Edwards, M Sama, C Bolster.USDA-NRCS-KY CIG. \$75,000.

### **Competitive Grants -Pending**

### **Pre-Proposals Accepted**

**2009** Minimizing GHG emissions by determining operating conditions and materials that lead to dairy producer success using composted bedded packs (CBP) for loose housing. USDA AFRI Air Quality Program. **J.L. Taraba (PD)**, G.B. Day V (Co-PD), M.S. Coyne (Co-PI), J.M. Bewley (Co-PI), D.G. Overhults (Co-PI), and R.S. Gates (Co-PI, University of Illinois)). 3 years. \$600,000. (70% Accepted).

**2010** Establishment of Objective Benchmarking Criteria for Design and Management of Dairy Compost Bedded Pack Barns in the Southeast. Pre-proposal Southern Region Sustainable Agriculture Research and Education Program. J.M. Bewley (PI-ASC), **J.L. Taraba (Inv-BAE)**, G.B. Day V (Inv-BAE), M.S. Coyne (Inv-PLS), K. Jones (Inv-CLD ), C.D. Lee, (Cons-PLS) T.E. Conners (Cons-FOR), S. Bailey (Cons-ME), Cooperators from TN:

S.A. Hawkins (BESS), R. Almeida (ANSC), B. Gillispie(QML). \$239,100. (30% accepted)

Effect Of Moisture Content And Bedding Material On N<sub>2</sub>O And CH<sub>4</sub> Emissions In Composting Broiler Litter/Soil Incorporation Waste Systems. USDA NIFA Climate Change Program. **Taraba, J.L.** (PI-UK), G.B. Day (UK), M.S. Coyne (UK), A.J. Pescatore (UK), N. Lavanh (USDA-ARS), J.H. Loughrin (USDA-ARS), P. Silva (USDA-ARS). \$887,500. (60% accepted).

- 2011** Establishing of Objective Benchmarking Criteria to Design and Manage Dairy Compost Bedded Pack Barns in the Southeast. JM Bewley (PI) , Department of Animal and Food Sciences; JL Taraba, Biosystems and Agricultural Engineering Department; GB Day V, Biosystems and Agricultural Engineering Department; M Arnold, Veterinary Diagnostic Laboratory; K Jones, Department of Community and Leadership Development; CD Lee, Department of Plant and Soil Sciences; MS Coyne, Department of Plant and Soil Sciences; TE Conners, Department of Forestry; University of Kentucky, Lexington, KY. 2012 USDA-SARE Pre-proposal. 3-year. 238,000.

Compost bedded pack barn housing system for dairy manure storage/treatment. USDA-NRCS 2011 Conservation Innovation Grant Pre- proposal. Joseph L Taraba (PI), Biosystems and Agricultural Engineering Department; Jeffrey M. Bewley (Co-PI), Animal & Food Sciences; George B Day V (Co-PI), Biosystems & Agricultural Engineering; Traci Missun (Co-PI), Oldham County Agriculture & Natural Resources Agent, University of Kentucky; Oldham County Conservation District (Coll.); Kentucky Livestock Coalition (Coll.). 3-years. \$264,000.

### **Competitive Grants - Unfunded**

- 1977** The Effects of Dairy Wastewater Handling, Storage and Land Application on Pollutant Runoff Concentrations. USGS-KY Water Resources Research Institute. Principal Investigator (with I.J. Ross (CI), J. Bowden (CI) and B.J. Barfield (CI); Department of Agricultural Engineering). 3 years.
- 1977** Policy Analysis for State Environmental Management. USEPA. Co-Investigator (under University of Kentucky Center for Developmental Change). 3 years.
- 1978** The Effects of Dairy Wastewater Handling, Storage and Land Application on Pollutant Runoff Concentrations - Measurements and Modeling. USGS-KY Water Resources Research Institute. Principal Investigator (with I.J. Ross (CI), C. T. Haan (CI) and B.J. Barfield (CI); Department of Agricultural Engineering). 3 years.
- 1979** Potential Energy Management Options for Residential and Agricultural Systems. KY Department of Energy. Co-Investigator (with Otto J. Loewer (PI), Blaine F. Parker, Department of Agricultural Engineering). 3 years.
- 1981** Simulation of the Pollution in Runoff as Affected by Livestock Waste Disposal Practices. USGS-KY Water Resources Research Institute. Principal Investigator. 2 years. \$33,000.

- 1982** Microbial Contributions to Chemical Changes of Burley Tobacco During Curing. Tobacco and Health Research Institute. Principal Investigator (with Elmon E. Yoder, Department of Agricultural Engineering; and R. Harold Burton, Department of Agronomy). 3 years. \$96,470.
- 1984** Utilization of Low Density Fibrous Biomass Waste Products Through Gasification Combustion. TVA. Co-Investigator (with Otto J. Loewer (PI), Gerald M. White (CI) and Donald G. Colliver (CI); Department of Agricultural Engineering). 3 years. \$100,000.
- 1986** Initial Design and Budget for Continuous In-Bin Composting of Horse Muck. Consolidated Consultants Inc. Co-Investigator (with I.J. Ross). 1 year.
- 1987** Moisture Absorption, Holding Capacity and Transmission Characterization of Rebuilt Farmland. USDA-CSRS. Co-Investigator (with Gary K. Felton (PI) and Richard C. Warner (CI), Department of Agricultural Engineering; Richard I. Barnhisel (CI), Department of Agronomy). 3 years.
- 1987** Biomass Fueled Stirling Engine Powered Generator System Demonstration. USDA-CSRS. Principal Investigator (with William Houtman (CI), Sterling Power Systems; Blaine F. Parker (CI), Fred Payne (CI), and Donald G. Colliver (CI), Department of Agricultural Engineering. 3 years. \$484,783.
- 1987** Fruit and Vegetable Puffing. Co-Investigator (with Fred A. Payne (PI) and Scott Shearer, Department of Agricultural Engineering; and Claire L. Hicks, Department of Animal Science. Kentucky Experiment Station Project.
- 1987** Gas Analysis Equipment. University of Kentucky Major Equipment Grant Fund. \$14,500.
- 1990** Potential Use of Calcined Lime/Sewage Sludge Byproduct on Agricultural Land. Addington Resources Inc. Co-Principal Investigator (with Gary K. Felton (CPI), Department of Agricultural Engineering; A.D. Karathanasis (CPI), Department of Agronomy). 3 year. \$167,500.
- 1991** Characterization of Agricultural Pollutant Loads for a Karst Aquifer. USEPA. Co-Investigator (Gary K. Felton (PI), Department of Agricultural Engineering; John Thrailkill (CI), Department of Geological Science; James C. Currens (CI) and James Dinger (CI), KY Geological Survey, Lyle V.A. Sendlein (CI), Department of Geological Sciences). 3 Years \$330,000.
- 1992** Improvement of Crop Stand, Species Diversity and Soil Hydraulic Properties Through B Horizon Amendment During Soil Reconstruction after Strip Mining. Robinson Forest Funds. Co-Principal Inv. (Gary K. Felton (Co-PI), Department of Agricultural

- Engineering; A.D. Karathanasis (Co-Inv.) and W.O. Thom (Co-Inv.), Department of Agronomy). 3 years. \$101,300.
- 1992** Community Responses to Economic Development Proposals: Stumbling Block or Springboard. USDA-CSRS. Co-Investigator (with Lori Garkovich (PI), Rural Sociology; Stephan J. Goetz (CI) and Richard C. Ready (CI), Agricultural Economics, Thomas Grieder (CI), Rural Sociology). 3 years. \$300,000.
- 1992** Developing SCS's Local Capacity to Market Water Quality and Build Alliances. Cooperator. SCS. Co-Investigator (with Louis Swanson (PI), Rural Sociology). 3 years. \$121,700.
- 1994** Livestock Waste Management Design and Assessment Tools. Principal Investigator. Water Quality Research and Education Program: Senate Bill 271. College of Agriculture, University of Kentucky. Lexington. 3 years. \$88,000.
- 1994** Adaptation of Three Agricultural NPS Water Quality Models for Karst Regions. Principal Investigator with (G.K. Felton, A. Fogle, (Co-PIs), D. Keagy, and J.S. Dinger, Kentucky Geological Survey (Co-Invs.)). USDA NRI. 3 years. \$315,752.
- 1995** Integrating Grazing Systems Decision Support for Sustainability. Pre-proposal, Sustainable Agriculture. Southern Region SARE/ACE Program, USDA-CSRS. Co-Investigator (with Larry W. Turner (Co-PI), Department of Agricultural Engineering; Otto J. Loewer (Co-PI), Department of Agricultural Engineering, University of Florida). Objective: Develop interdisciplinary, multi-agency and multi-state research and extension program on rotational grazing and environmental impacts. 3 years. \$289,500.
- 1995** Integrating Grazing Systems Decision Support for Sustainability. Southern Region SARE/ACE Program, USDA-CSRS. Co-Investigator with (L.W. Turner, Biosystems and Agricultural Engineering (Co-PI), O.J. Loewer, Department of Agricultural Engineering, University of Florida (Co-PI) and others). 3 years. \$289,500.
- 1995** Pig diet manipulation to reduce offensive or harmful gaseous emission from excrement. Pork Producers Council. Co-Investigator with (L.W. Turner, Biosystems and Agricultural Engineering (PI), R.S. Gates, Biosystems and Agricultural Engineering (Co-PI), G.L. Cromwell, Animal Science (Co-Inv.)). 2 years. \$61,845.
- 1996** Effects on Stream Water Quality, Channel Morphology and Available Forage by Grazing Beef Cattle Continuously or Rotationally With or Without Buffer Zones. USDA-NRI. Co-Investigator with (B.T. Larson, Animal Science (PI), D.L. Harmon, Animal Science (Co-PI); D.R. Edwards, L.W. Turner, Biosystems and Agricultural Engineering (Co-Invs.), C.T. Dougherty, Agronomy (Co-Inv.)). 5 years.

- 1998** Towed Hose Animal Waste Injection Demonstration. Co-Investigator with (R. Coffey, Animal Science, J. Grove, Agronomy, and R.A. Fleming, Agricultural Economics). Preproposal to USDA SARE/ACE. 1999-01.
- 1998** Remote Sensing Data for Landuse and Changes in Cropping Patterns in Western Kentucky. Co-Investigator with (S.A. Samson, Rural Sociology, J.R. Skees, Agricultural Economics). Office of Earth Science, NASA. 1999-02.
- 1999** Effect of High Levels of Corn in Low Protein Diets on Broiler Performance and Litter Nitrogen and Ammonia. A.H. Cantor (PI) and A.J. Pescatore (PI), Animal Science; R.S. Gates (PI) and **J.L. Taraba** (PI), Biosystems and Agricultural Engineering. Kentucky Corn Promotion Council. \$11,300.
- 2001** Use of Geostatistics to Assess and Remediate High Nitrate from Long-abandoned Animal Concentration Areas. J.S. Dinger (PI), E. G. Beck (Co-PI), KY Geological Survey; J.H. Grove, Agronomy Department (Co-PI); **J.L. Taraba**, Biosystems and Agricultural Engineering Department (Co-PI). Nutrient Science for Improved Watershed Management Program, CSREES-USDA. \$676,037.
- 2001** Water Quality Monitoring Equipment for the ARC. **J.L. Taraba**, Biosystems and Agricultural Engineering (PI) and J.S. Dinger KGS (Co-PI). University of Kentucky Research Equipment Initiative 2001-2002. \$28,885.
- 2002** Storage, Treatment, and Utilization Strategies for Feedlot Manure to Reduce Impacts on Water and Air. **J.L. Taraba** (PI), J.R. Bicudo (Co-PI), D.R. Edwards (Co-PI), and R.S. Gates (Co-PI), Biosystems and Agricultural Engineering Department. National Integrated Water Quality Program, CSREES-USDA. \$575,686.
- Water Quality Monitoring Equipment for the ARC. **J.L. Taraba**, Biosystems and Agricultural Engineering (PI) and J.S. Dinger KGS (Co-PI) University of Kentucky Research Equipment Initiative 2001-2002. \$28,885.
- 2004** Assessment of the Occurrence Time of Diurnal Maximum/Minimum Stream Parameter Values as an Indicator of Stream Recovery Dynamics. **J.L. Taraba**, BAE (PD), Biosystems and Agricultural Engineering; A.W. Fogle, KGS (Co-PD), KY Geological Survey; R.C. Warner, BAE (Co-PD); Biosystems and Agricultural Engineering. USDA-CSREES, National Research Initiative. 3 years. \$100,000.
- 2007** Methane recovery in Brazilian dairy chain: pre-feasibility and feasibility studies and technological demonstration for energy use and environment improvement. R.S. Gates and **J.L. Taraba** (University of Kentucky), C.E.L. de Oliveira, J.A. Rabí, and R. Ribeiro (University of Sao Paulo, Pirassununga). Submitted to USEPA Methane to Markets program. 3 years. \$299,563.
- 2008** Methane recovery in Brazilian dairy chain: pre-feasibility and feasibility studies and technological demonstration for energy use and environment improvement. R.S. Gates and **J.L. Taraba** (University of Kentucky), L. Schideman (University of Illinois),

C.E.L. de Oliveira, J.A. Rabí, and R. Ribeiro (University of Sao Paulo, Pirassununga). Submitted to USEPA Methane to Markets program. 3 years. \$600,801.

**2009** Minimizing GHG Emissions by Determining Operating Conditions and Materials that Lead to Dairy Producer Success Using Composted Bedded Packs (CBP) for Loose Housing. USDA AFRI Air Quality Program. **J.L. Taraba** (PD), G.B. Day V (Co-PD), M.S. Coyne (Co-PI), J.M. Bewley (Co-PI), D.G. Overhults (Co-PI), and R.S. Gates (Co-PI, University of Illinois)). 3 years. \$600,000.

Establishment of Objective Benchmarking Criteria for Monitoring Dairy Compost Bedded Pack Barns in the Southeast. J.M. Bewley (PI), **J.L. Taraba** (Co-PI), G.B. Day V (Co-PI). Pre-proposal for Southern Region Sustainable Agriculture Research and Education Program. 3 years. \$215,100.

Establishing a multi-disciplinary, multi-state research team to assess and improve the sustainability of the dairy industry in the Southeastern United States. Planning Research Grant. Southern Region Sustainable Agriculture Research and Education Program. S. Hill (PI, Mississippi State University), J.M. Bewley (Co-PI), L. Garkovich (Co-PI), **J.L. Taraba** (Co-PI), L. Adams (Co-PI, Mississippi State University). 1 year. \$20,000.

Potential Use of Kenaf as a Bedding Material in Dairy Compost Bedded Pack Barns. New Crop Opportunities Center USDA Special Grant. J.M. Bewley (PI), C. Lee (Co-PI), **J.L. Taraba** (Co-PI), T. Conners (Co-PI). 1 year. \$9,380.

**2010** Effect Of Moisture Content And Bedding Material On N<sub>2</sub>O And CH<sub>4</sub> Emissions In Composting Broiler Litter/Soil Incorporation Waste Systems. USDA NIFA Climate Change Program. **Taraba, J.L.** (UK), G.B. Day (UK), M.S. Coyne (UK), A.J. Pescatore (UK), N. Lavanh (USDA-ARS), J.H. Loughrin (USDA-ARS), P. Silva (USDA-ARS). 2011-2015. \$887,500.

Factors controlling the emissions of greenhouse gases from livestock operations: Monitoring and modeling of fate and transport processes. USDA NIFA Climate Change Program. Mahmoud, R. (W.Ky.), G.B. Day (UK), J.H. Loughrin (USDA-ARS), N. Lavanh (USDA-ARS), P. Silva (USDA-ARS), **J.L. Taraba** (UK). 2011-2016. \$2,370,000.

U.S. Pork Center for Excellence Integrated, Sustainable Midwest Approaches to Climate Change for the Pork Industry. USDA NIFA CAP Climate Change Program. D. Meisinger (PD) U.S. Pork Center for Excellence. 2011-16. \$19,537,000. BAE-UK Sub-contract: G.B. Day, J.L. Taraba, D.G. Overhults. \$1,560,000.

Establishment of Objective Benchmarking Criteria for Design and Management of Dairy Compost Bedded Pack Barns in the Southeast. Southern Region Sustainable Agriculture Research and Education Program. J.M. Bewley (PI), **J.L. Taraba** (Co-PI), G.B. Day V (Co-PI), M.S. Coyne (Co-PI), K. Jones (Inv-CLD ), C.D. Lee, (Cons-PLS)

T.E. Conners (Cons-FOR), S. Bailey (Cons-ME), Cooperators from TN: S.A. Hawkins, R. Almeida, B. Gillispie. 2011-14. \$239,895.

Assessing the potential for compost bedded pack barns in sustainable dairy farming system. Farmers Advocating for Organics Fund. J.M. Bewley (PI), K. Jacobsen (Co-PI), M.S. Coyne (Co-PI), **J.L. Taraba** (Co-PI), G.B. Day V (Co-PI), L. Meyer (Co-PI), K Burdine (Co-PI). 2011-2012. \$49,986.

**2011** Establishing of Objective Benchmarking Criteria to Design and Manage Dairy Compost Bedded Pack Barns in the Southeast. JM Bewley (PI) , Department of Animal and Food Sciences; JL Taraba, Biosystems and Agricultural Engineering Department; GB Day V, Biosystems and Agricultural Engineering Department; M Arnold, Veterinary Diagnostic Laboratory; K Jones, Department of Community and Leadership Development; CD Lee, Department of Plant and Soil Sciences; MS Coyne, Department of Plant and Soil Sciences; TE Conners, Department of Forestry; University of Kentucky, Lexington, KY. 2012 USDA-SARE. 3-year. 238,000.

International Workshop on Opportunities and Challenges with Compost Bedded Pack Barns as an Alternative Dairy Housing System. Jeffrey Bewley, University of Kentucky (co-org); Ilan Halachmi, Isreal Agriculture Research Organization (ARO) (co-org); Joseph Taraba, UK (co-plan); George Day, UK (co-plan); Randi Black, UK (co-plan) Beni Lew, Biological Processes in Environmental Engineering (co-planner), ARO.(co-org);Michael Raviv, Inst. of Plant Sciences. Newe Ya'ar Research Center. ARO (co-org). The United States - Israel Binational Agricultural Research and Development (BARD) Fund. \$35,000.

**2012** Establishing of Objective Benchmarking Criteria to Design and Manage Dairy Compost Bedded Pack Barns in the SEt. JM Bewley (PI) ,ASC; JL Taraba,BAE; GB Day V,BAE; M Arnold, Vet Diag Lab; K Jones, Comm Lead Dev; CD Lee, PLS; MS Coyne, PLS; TE Conners,FOR; UKy, Lex, KY. 2012 USDA-SARE. 3-yr. 238,000.

University of Kentucky, Compost Bedded Pack Dairy Barn Management.; Jeffrey M. Bewley (Co-PI), Animal & Food Sciences and **Joseph L Taraba** (co-PI), Biosystems and Agricultural Engineering Department. Kentucky Agricultural Development Fund, Governor's Office of Agricultural Policy, Frankfort KY. 2013-2014. \$110,000.

***U.S. Pork Center of Excellence*** (USPCE): Integrated Approaches to Climate Change and Variability for the Midwest Pork Industry. USDA-NIFA CAP Climate Change Mitigation Program. Subcontract to Iowa State University. GB Day (PD), **JL Taraba** (Co-PI) and DG Overhults (Co-PI), 2012-2015, \$488,000.

Factors controlling the emissions of greenhouse gases from livestock operations: Monitoring and modeling for development of decision support tools. USDA-NIFA Climate Change Mitigation Program. Subcontract to Western Kentucky University. GB Day (PD), and JL Taraba (Co-PI). 2012-2015, \$500,000.

Mitigating GHG from Confined Animal Facilities with an Engineered Gas Phase Biofilter (GPB). USDA NIFA Climate Change Program. **Taraba, JL** (PI-UK), T Lim (Co-Inv. Univ of Missouri), GB Day (Co-Inv. UK), MS Coyne (Co-Inv. UK), N Lavanh (Coll. USDA-ARS), RS Gates (Coll. Univ Ill.). 4-year. \$750,000.

Creating environments that organize microbial functional groups in predictable ways as a function of gas-phase biofilter media particle size, type, and moisture content. MS Coyne (PI), Taraba, JL (co-PI), and GB Day (co-PI), NSF preproposal: Grant Opportunities for Academic Liaison with Industry (GOALI).

**2013** Application of Computational Fluid Dynamics to the Prediction of Airflow and Gas Dispersion in Compost Bedded Pack Barns in Kentucky. Flavio A Damasceno (PI) **JL Taraba (PI)**, J M Bewley (Co-PI), GB Day V (Co-PI). Brazilian National Counsel of Technological and Scientific Development (CNPq). 1-yr. Salary, travel for post-Doc position (~\$60,000/yr).

Improved Welfare through Better Design: Building Alternative Housing Systems Based on the Behavioral Needs of Dairy Cows and Heifers. PD Krawczel UTK, RJ Grant, HM Dann William H. Miner Agricultural Research Institute, J Bewley and JL Taraba. 2013 USDA AFRI Letter of Intent.

**2014** Assessing Compost Bedded Dairy Barn Management Alternatives on Performance and Economics of Dairy Cow Farm Production System. JL Taraba BAE (PD), JM Bewley AFS, SH Ward, Miss State Univ, MS Coyne PSS, MP Sama BAE, G Halich, AEC, LH Burdine AEC. 2015 USDA-SARE. 2015-2018. \$283,800.

Assessing the Performance of Mixing and Aeration Strategies for Composting Bedding/Manure in a Compost Bedded Dairy Pack Barn. MP Sama (PD), JL Taraba (Co-PD/PI), GB Day (Co-PD/PI), BAE; JM Bewley (Co-PD/PI) AFS. USDA-NIFA-AFRI. 2015-2017. \$317,082.

## SUMMARY OF EXTRAMURAL RESEARCH PROJECT ACTIVITY

Year	Fund Source/ Fund Agency	Subject	Amount	
<b><u>Station and Regional Research Projects - Funded</u></b>				
1978-81	PI	Station Hatch	Animal Wastes	
1979-81	CI	Regional Hatch S 77-02	Animal Waste Management	
1979-84	PI	Regional Hatch S-144	Animal Waste Management	
1985-90	PI	Regional Hatch	Animal Waste Management	
1991-96	CI	Regional Hatch S-249	Ground Water Quality	
1992-96	CI	Station Hatch	Karst Flow Systems	
1995-99	CPI	Station Hatch	Economic and Environmental Impacts	
1996-01	CPI	Station Hatch	Improved Utilization of Forage	
2001-06	CI	Regional Hatch S-1004	Development of TMDL Assessment Tools	
<b><u>Competitive Grants - Funded</u></b>				
1979-82	CPI	USGS/KyWRRRI	Waste Application BMP	\$ 12,710
1978-81	CI	USDA Coop. Agreemt.	Bacteria/Burley Tobacco	\$121,400
1982-83	CI	USDA Coop. Agreemt.	Bacteria/Burley Tobacco	\$120,000
1982-85	CPI	USDA Coop. Agreemt.	Bacteria/Curing Tobacco	\$127,000
1982-85	CI	USDA-SEA	Gasification Particulates	\$ 80,000
1984-86	PI	Consolidated Consul.	Horse Muck Composting	\$ 25,500
1985-86	CI	TVA	Gasification Biomass	\$ 51,000
1986-87	CI	W. KY Dark Tob. Grow.	Dark Tobacco Curing	\$ 15,495
1986-87	PI	Anheuser Busch	Alter. Horse Bedding	\$ 8,000
1989-90	CPI	USDA-ES	Extension Water Quality	\$ 25,000
1990-91	CPI	USDA-ES	Extension Water Quality	\$ 35,000
1991-92	CPI	USDA-ES	Extension Water Quality	\$ 40,000
1990-94	PI	Addington Res. Inc.	Reconstruct. Soil Amendment	\$108,330
1991-94	CI	USDA-CSRS	Karst Sediment Pollutant	\$125,000
1991-93	PI	KY Legislature (SB-271)	Ag. Chemical Impact	\$130,000
1993-95	PI	KY Legislature (SB-271)	Ag. Chemical Impact	\$140,000
1992-95	PI	USDA-CSRS	Ag BMP and Grdwtr Poll.	\$225,000
1994-97	CI	USEPA 319	Lagoon Liner Leakage	\$267,000
1994-95	CI	USDA/SARE/ACE	Integrated Grazing	\$ 27,500
1995-97	CI	USDA/SARE/ACE	Sustainable Dairy Systems	\$210,000
1995-98	CPI	KY Legislature (SB-271)	N and Pest. in Bedrock Aquifers	\$250,000
1995-98	CPI	KY Legislature (SB-271)	Grassed Buffer Runoff	\$120,000
1996-98	CPI	KY Legislature (SB-271)	Water Quality Animal Research Ctr.	\$122,000
1996-97	CPI	Heartland Lysine	Reducing P and N in Litter	\$ 30,000
1997-98	CPI	Heartland Lysine	Reducing P and N in Litter	\$ 15,000
1997	CI	UK Major Equipment	Multi-gas Monitoring	\$ 45,000
1997-98	CI	National Pork Producers	Manipulation Swine Diets	\$ 25,000
1997-98	PI	USEPA 319	NPS Program Support	\$ 54,000
1998-01	PI	KY Legislature (SB-271)	Water Quality Animal Research Ctr.	\$233,000
1998-00	CPI	KY Legislature (SB-271)	N and Pest. in Bedrock Aquifers	\$163,000
1998-01	CI	KY Legislature (SB-271)	Precision Farming Animal Waste	\$119,200

1998-00	CI	KY Legislature (SB-271)	Nitrate Contamination-Water Wells	\$140,700
1997-99	CI	USDA/SARE/ACE	Sustainable Dairy Systems	\$ 70,000
1999-00	CI	Pride Grant	Johnson County Water Quality	\$ 5,000
1999-03	PI	USEPA-319	Dairy Manure Tool Development	\$ 76,285
1999-00	PI	USEPA 319	NPS Program Support	\$ 70,000
1999	PI	UK Extension Video	Liquid Dairy Manure Nutrient	\$ 20,000
2000-03	CI	KY Legislature (SB-271)	Potential Contamination by Abandoned Feedlots	\$163,000
2001-04	PI	KY Legislature (SB-271)	Monitoring Water Impacts ARC	\$210,000
2001-04	CPI	KY Legislature (SB-271)	Biological Availability of P	\$ 85,710
2002	CPI	UK Major Equipment Fund	Measure Suspended Solids	\$ 12,907
2002-04	CPI	KY Legislature (SB-271)	Role of Suspended Sediment Bacteria Transport	\$ 70,890
2004-05	PI	KY Legislature (SB-271)	Monitoring Water Impacts ARC	\$ 70,000
2005-07	PI	KY Legislature (SB-271)	Monitoring Water Impacts ARC	\$140,000
2007-10	CI	USDA-NIFA	Gaseous Production and Abatement	\$487,087
2011-14	PI	USDA-NRCS CIG	Compost Bedded Dairy Barn	\$ 264,000
2012-13	CI	USDA-SARE	Compost Barn Clinical Mastitis	\$ 13,750
2012-13	CI	FAO Fund	Compost Barn for Organic Farming	\$ 4,909
2013-14	CI	Ky Ag Dev Fund	Compost barn Management	\$ 58,875
2014-15	CI	KWRRI-USGS	Compost Barn Nutrient Management	\$ 5,000
2014-15	PI	USDA-FAS	Borlaug Fellowship Training	\$ 26,300
2015-17	PI	USDA-FAS	Borlaug Fellowship Training	\$ 29,000
2015-18	PI	USDA-NRCS-KY	CIG	<u>\$ 75,000</u>
<b>TOTAL</b>				<b>\$5,164,548</b>

## PEER-REVIEWED ARTICLES

Brodkey, R.S., S.G. Nychas, **J.L. Taraba**, and J.M. Wallace. 1973. Turbulent Energy Production, Dissipation, and Transfer. *Physics of Fluids*, 16 (11), 2010-2011.

Brodkey, R.S., **J.L. Taraba**, S.G. Nychas, and J. M. Wallace. 1974. Reply to Comments by P. Bradshaw. *Physics of Fluids*, 17 (11), 2150.

Lacey, R.E., I.J. Ross, **J.L. Taraba**, and LR Walton. 1981. The Dynamics of the Ensiling of Swine Waste with Ground Shelled Corn. Proc. 4th Int. Symposium on Livestock Waste, Amarillo, Texas. ASAE, St. Joseph, MI. Publ No. 2-81. pp 31-33.

Naugle, B.I., I.J. Ross, **J.L. Taraba**, and G.L. Cromwell. 1981. The dynamics of the ensiling of swine waste with ground shelled corn. Proc. 4th Int. Symposium on Livestock Wastes, Amarillo, Texas. ASAE, St. Joseph, MI. Publ No. 2-81. pp 47-51.

McNeill, S.G., I.J. Ross, G.M. White, and **J.L. Taraba**. 1981. Drying Characteristics of Formed Poultry Excreta in Deep Bed Continuous Drying Systems. Proc. 4th Int. Symposium on Livestock Wastes, Amarillo, Texas. ASAE, St. Joseph, MI. Publ No. 2-81. pp 38-41, 51.

Bottom, J.D., and **J.L. Taraba**. 1982. Effects of Herbicides on Performance of Aerobic Dairy Lagoons. *Transactions of ASAE*, 25, 1026.

Sizemore, S.W., O.J. Loewer, **J.L. Taraba**, I.J. Ross, and G.M. White. 1984. Retention of Gasification-Combustion Products by Corn. *Transactions of ASAE* 27, 1546.

Walton, L.R., M.E. Casada, **J.L. Taraba**, J.H. Casada, W.H. Henson, and L.D. Swetnam. 1985. Storage of Burley Tobacco in Bales Bundles. *Transactions of ASAE*, 28, 1301.

Wieman, D.M., G.M. White, **J.L. Taraba**, I.J. Ross, C.L. Hicks, and B.E. Langlois. 1985. Production of Aflatoxin in Corn Under Controlled Environmental Conditions. *Transactions of ASAE*, 29, 1150.

Colliver, D.G., W.E. Murphy and **J.L. Taraba**. 1988. Residential Hot Water Heater Electrical Usage and Demand Reduction Using Reduced Element Sizes and Time Clock Controls. *ASHRAE Transactions*, 94 (Part 1) 1110-1122.

Payne, F.A., **J.L. Taraba**, and D. Saputra. 1989. A review puffing processes for Expansion of Biological Products. *Journal of Food Engineering*, 10 (3), 183-197.

Felton, G.K., and J.L. Taraba. 1994. A laboratory examination of organic matter degradation in a B horizon soil from post-mining reconstructed prime farmland soil. *International Journal of Surface Mining Reclamation and Environment*; 8(4): 153-157.

Anderson, T.P., **J.L. Taraba**, and R.R. Costin. 1994. Maintenance of Animal Waste BMPs and Water Quality in Reformatory Lake, Kentucky. Proceedings of the North American Lake Management Society.

Ferguson, N.S., R.S. Gates, A.H. Cantor, **J.L. Taraba**, A.J. Pescatore, M.L. Straw, M.J. Ford, L.W. Turner, and D.J. Burnham. 1998. The Effect of Dietary Protein and Phosphorus on Ammonia Concentration and Litter Composition in Broilers. *Poultry Science* **77**, 1085-1093.

Ferguson, N.S., R.S. Gates, **J.L. Taraba**, A.H. Cantor, A.J. Pescatore, M.J. Ford, and D.J. Burnham. 1998. The Effect of Dietary Crude Protein on Growth, Ammonia Concentration and Litter Composition in Broilers. *Poultry Science* **77**, 1481-1487.

Spruill, C.A., S.R. Workman, and **J.L. Taraba**. 2000. Simulation of daily stream discharge from small watersheds using the SWAT model. *Transactions of the ASAE*, 43(6): 1431-1439.

Liberty, K.R., and **J.L. Taraba**. 2001. Ammonia removal and degradation within laboratory-scale yard-waste compost biofilters. Proceedings 94<sup>th</sup> Annual Air and Waste Management Association Conference. Paper No. 980 (CD ROM). Orlando, Florida, June 24-28.

Liberty, K.R., and **J.L. Taraba**. 2002. Modeling ammonia removal and biotransformation within laboratory-scale yard-waste compost biofilters, Proceedings 95<sup>th</sup> Air and Waste Management Association Conference. Paper No. 42915 (CD ROM). Baltimore, Maryland, June 23-27.

Fogle, A.W., **J.L. Taraba**, and J.S.. 2003. Mass load estimation errors utilizing grab sampling strategies in a karst watershed. *J. American Water Resources Association*, **39** (6):1361-1372.

Coffey, M.E., S.R. Workman, **J.L. Taraba**, and A.W. Fogle. 2004. Statistical procedures for evaluating daily and monthly hydrologic model predictions. *Transactions of the ASAE*, 47(1):59-68.

Agouridis, C.T., D.R. Edwards, S.R. Workman, J.R. Bicudo, B.K. Koostra, E.S. Vanzant, **J.L. Taraba**. 2005. Streambank erosion associated with grazing practices in the humid region. *Transactions of the ASAE*, 48(1):181-190.

Reed, T.M., J.T. McFarland, A.E. Fryar, S.M. Rimmer, A.W. Fogle, and **J.L. Taraba**. 2010. Sediment discharges during storm flow from proximal urban and rural karst springs, central Kentucky, USA. *Journal of Hydrology*, **383**: 280–290.

Maia, G. D. N., G. B. Day V, R. S. Gates, **J. L. Taraba**. 2011. Biofilter media characterization using water sorption. *Transactions of the ASABE*, **54(4)**: 1445-1451.

Maia, G.D.N., G.B. Day, R.S. Gates, and **J.L. Taraba**. 2011. Ammonia Biofiltration and Nitrous Oxide Generation during the Start-Up of Gas-Phase Compost Biofilters. *Atmospheric Environment*, 46: 659-664.

Maia, G.D.N., G. T. Sales, G.B. Day, R.S. Gates, and **J.L. Taraba**. 2012. Characterizing physical properties of gas-phase biofilter media. *Transactions of the ASABE*, **55**(5): 1939-1950.

Maia, G.D.N., Day V, G.B., Gates, R.S., **Taraba, J.**, and Coyne, M.S. 2012. Moisture effects on greenhouse gases generation in nitrifying gas-phase compost biofilters. *Water Research* 46 (9), 3023-3031. doi:10.1016/j.watres.2012.03.007

**JM Bewley, JL Taraba, M Schutz, J Zulovich**. 2013. Guidelines for managing compost bedded-pack barns. . Guideline # 110. The Dairy Practices Council, Newtown PA. In: *Guidelines for Dairy Industry Relating to Sanitation and Milk Quality*. V2013.2. July.

RA Black, **JL Taraba**, GB Day, FA Damasceno, JM Bewley. 2013. Compost bedded pack dairy barn management, performance, and producer satisfaction. *Journal of Dairy Science*: 96 (12):8060-8074.

RA Black, **JL Taraba**, GB Day, FA Damasceno, MC Newman, KA Akers, CL Wood, KJ McQuerry, JM Bewley. 2014. The relationship between compost bedded pack performance, management, and bacterial counts. *Journal of Dairy Science*: 97(5):2669-2679.

Eckelkamp, E.A., **J.L. Taraba**, K.A. Akers, R.J. Harmon, J.M. Bewley 2016. Understanding compost bedded pack barns: interactions among environmental factors, bedding characteristics, and udder health. *Livestock Science* **190**, 35-42.

DOI: <http://dx.doi.org/10.1016/j.livsci.2016.05.017>

Eckelkamp, E.A., **J.L. Taraba**, K.A. Akers, R.J. Harmon, J.M. Bewley 2016. Sand bedded freestall and compost bedded pack effects on cow hygiene, locomotion, and mastitis indicators. *Livestock Science*, **190**, 48-57.

DOI: <http://dx.doi.org/10.1016/j.livsci.2016.06.004>

Albino, R.L., **J.L. Taraba**, M.I. Marcondes E.A. Eckelkamp and J.M. Bewley. 2017. Comparison of bacterial populations in bedding material, on teat ends, and in milk of cows housed in compost bedded pack barns. *Animal Production Science*. Accepted for Publication.

## INVITED PRESENTATIONS

**Taraba, J.L.** 1999. Research programs in Biosystems and Agricultural Engineering Department, University of Kentucky. ENESAD, Dijon, France. April 1.

**Taraba, J.L.** 1999. Agricultural impacts on groundwater quality in a karst geology. INRA - Station de Science du Sol, University of Bourgogne, Dijon, France. April 2.

**Taraba, J.L.** 2011. Utilizing biofilters for air emission reduction from confinement animal facilities - moisture control and GHG production. Invited presentation at Midwest Manure Summit, Green Bay WI. February 15-16. (250 attendees)

**Taraba, J.L.**, G.B. Day V, and J.M. Bewley. 2011. Design & Management of Compost Bedded Pack Shelters in KY. Invited presentation at Dairy Practices Council Annual Meeting. Manchester NH. November 2-4.

**Taraba, J.L.** 2011. Managing Heat Stress in Dairy Facilities. Invited presentation at Kentuckiana Dairy Exchange, Ft Wayne IN. August 2-3.

**Taraba, J.L.** 2012. Compost Bedded Pack Loose Housing Dairy Barn Field Study. Agricultural Engineering Dept. FEDERAL UNIVERSITY OF VICOSA – BRAZIL – AUGUST, 16.

**Taraba, J.L.** 2012. Precision Dairy Farming and Compost Bedded Pack Loose Housing Dairy Barn Research at UK Dairy Program. Animal Science Dept. FEDERAL UNIVERSITY OF VICOSA – BRAZIL – AUGUST, 16.

**Taraba, J.L.** 2012 New concept in dairy cow housing--compost bedded loose housing Dairy Barn. BAE Fall Semester Seminar Series. University of KY. Biosystems and Agricultural Engineering Dept, October 12.

**Taraba, JL**, JM Bewley. 2013. Facilities for ease the thermal stress of dairy cows in tropical environment. IV SIMLEITE – IV Simpósio Nacional de Bovinocultura Leiteira and II Simpósio Internacional de Bovinocultura Leiteira. The Dept of Veterinary Med.& Dept of Animal Science, Universidade Federal de Viçosa, Brasil, Oct 31. (~925 attendees: veterinarians, animal scientists, dairymen, equipment sales)

**Taraba, JL.** 2013. Effects of the thermal stress on the incidence of mastitis in dairy cattle. IV SIMLEITE – IV Simpósio Nacional de Bovinocultura Leiteira and II Simpósio Internacional de Bovinocultura Leiteira. The Dept of Veterinary Medicine & Dept of Animal Science, Universidade Federal de Viçosa, Brasil, Nov 1. (~225 attendees representing veterinarians, animal scientists, dairymen, equipment sales, students)

**Taraba, JL.** 2013. Compost Barn Mgmt. & Economics. Ruminant Cattle FeedMaster Mtg. Knox. TN. Feb.2.

**Taraba, JL.** 2013. Bedded Pack/Compost Barn. 39th Southern Dairy Conference Proceedings. Atlanta GA, January 23.

Bewley, JM and **JL Taraba.** 2013. Compost Bedded Pack Barns. Penn State Technology Tuesdays Webinar Series: Cow-Centered Housing Series.

**Taraba, JL.** 2014. Compost Bedded Pack Barns - Composting and Design Considerations. 2nd Farm Field Day, Innovations in Dairy Milk Production. Lins-SP, Brazil , April 26. (276 attendees; veterinarians, milk producers, dairy consultants and dairy equipment suppliers)

**Taraba, JL.** 2014. Facilities for easing thermal stress of dairy cows. Presentation to Consultants of FrontAgro, Sao Jose de Rio Preto-SP, Brazil , April 24. (6 dairy consultants and dairy equipment suppliers).

## ABSTRACTS

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Gates, R.S., A.J. Pescatore, M.J. Ford, **J.L. Taraba**, K. Liberty, A.H. Cantor, and D.J. Burnham. 2000. The effect of feeding low protein diets on ammonia emission and total ammoniacal nitrogen in broiler litter. Proceedings, National Poultry Waste Management Symposium, Springdale, AR. Pp. 169-180.

Gates, R.S., A.J. Pescatore, **J.L. Taraba**, A.H. Cantor, K. Liberty, M.J. Ford, and D.J. Burnham. 2000. Dietary manipulation of crude protein and amino acids for reduced NH<sub>3</sub> emission from broiler litter. Paper No. 004020. Presented at ASAE Annual Meeting. Milwaukee, WI. July 9-13.

Gates, R.S., A.J. Pescatore, J. Taraba, A.H. Cantor, K. Liberty, M.J. Ford, and D. Burnham. 2000. Dietary manipulation of crude protein and amino acids for reduced ammonia emission from broiler litter. ASAE Paper No. 00-4024. ASAE International Meeting, Milwaukee, WI. ASAE: St. Joseph, MI.

RS Gates, JL Taraba, K Liberty, AJ Pescatore, AH Cantor, MJ Ford, DJ Burnham. 2000. Dietary manipulation for reduced ammonia emission and TAN in broiler litter. Air pollution from agricultural operations. Proceedings of the Second International Conference, Des Moines, USA October 9-11. ASAE publication, 701P0003. Pp 147-156.

Turner, L.S., R.S. Gates, **J.L. Taraba**, J.L. Usry and J. Montegue. 2000. Dietary manipulation of sulfur for reduced H<sub>2</sub>S emission from swine waste. ASAE Paper No. 004025. Presented at ASAE Annual Meeting. Milwaukee WI. July 9-13.

Taylor, M.E., J. Crutchfield, **J.L. Taraba**, and M.S. Coyne. 2000. Fractionation and biological availability of suspended phosphorus in agricultural surface waters. Presented at ASA-CSSA-SSSA International Annual Meeting.

Shearer, S.A., R. Fleming, T.G. Mueller, T.S. Stombaugh, and **J.L. Taraba**. 2001. Optimization of animal nutrient application for reduced environmental loading using GIS. ASAE Paper No. 011014. ASAE 94th Annual International Meeting. Sacramento, CA. July 29-Aug. 1.

Liberty, K.R., and **J.L. Taraba**. 2002. Microbial dynamics within a yard-waste compost biofilter that degrades ammonia, odors and toxic air emissions. Water Environment Federation Specialty Conference, Albuquerque Convention Center, Albuquerque, New Mexico, April 28-May 1.

Agouridis, C.T., D.R. Edwards, S.R. Workman, J.R. Bicudo, **J.L. Taraba**, E.S. Vanzant, R.S. Gates. 2004. Streambank erosion associated with grazing practices in Central Kentucky. Paper No. 042227. Presented at 2004 ASAE Annual Meeting.

Agouridis, C.T., D.R. Edwards, E. Vanzant, S.R. Workman, B.K. Koostra, J.R. Bicudo, **J.L. Taraba**, R.S. Gates. 2004. Influence of BMPs on cattle position preference. Paper No. 042182. Presented at 2004 ASAE Annual Meeting.

Agouridis, C.T., D.R. Edwards, S.R. Workman, J.R. Bicudo, **J.L. Taraba**, E.S. Vanzant, R.S. Gates. 2004. Effects of cattle grazing and BMPs on stream water quality. Paper No. 042131. Presented at 2004 ASAE Annual Meeting.

Maia, G.D.N., R.S. Gates, E.G. Wilkerson, S.F. Higgins, A. Singh, **J.L. Taraba**, 2006. Characterization of headspace gases in ventilated and impermeable swine manure tanks and their abatement using biofiltration. Paper No. 064027. Presented at 2006 ASABE Annual International Meeting.

Del Nero Maia, G., R.S. Gates, G.B. Day V., G.T. Sales, A. Singh and **J.L. Taraba**. 2008. Contaminant gas generation as product of degraded ammonia during biofiltration. Paper No. 084630. ASABE Intl Mtg, 30 June – 3 July. St. Joseph, MI. ASABE.

Del Nero Maia, G., R.S. Gates, G.B. Day V., M.D. Montross and **J.L. Taraba**. 2008. Comparison of water sorption isotherms applied to compost biofilters of different particle sizes. Paper No. 084642. ASABE Intl Mtg, 30 June – 3 July. St. Joseph, MI. ASABE.

Del Nero Maia, G., G.B. Day V, R.S. Gates, **J.L. Taraba**, and N. Lovanh. 2009. Ammonia Removal and Nitrous Oxide Production in Gas-Phase Biofilters. Presented at the Simpósio Internacional sobre Gerenciamento de Resíduos de Animais – SIGERA. (1<sup>st</sup> International Symposium on Animal Waste Management). March 12<sup>th</sup> & 13<sup>th</sup>, 2009. Florianópolis – SC, Brazil.

Del Nero Maia, G., Day V, G. B.; Gates, R. S.; **Taraba, J.L.**; Sales, G. T.; Lovanh, N. **2009**. NH<sub>3</sub> removal and N<sub>2</sub>O production in gas-phase compost biofilters. Simpósio Intr'l sobre Gerenciamento de Resíduos de Animais - SIGERA 12 e 13 de março de 2009 - Florianópolis – SC.

Day V, G. B., R.S. Gates, **J.L. Taraba**, G. Del Nero Maia, T. Sales, and L. Dutra de Melo. 2009. Gaseous production from impermeable swine waste storage tanks and its abatement using biofilters. Poster. Nat'l Workshop: Agricultural Air Quality, CSREES NRI, Kansas City.

**J.L. Taraba**, G. B. Day V, R.S. Gates, G. Del Nero Maia, T. Sales, and L. Dutra de Melo. 2010. Effects of Moisture on Ammonia Abatement and Nitrous Oxide Generation in Compost-Based Biofilters. Poster. S-1025 Annual Regional Project Meeting: Systems for Controlling Air Pollutant Emissions and Indoor Environments of Poultry, Swine, and Dairy Facilities. May 18-20. Sacramento, California.

Dutra de Melo, L., G.B. Day V, **J.L. Taraba**, and G. Del Nero Maia. 2010. Assessment of a Moisture Application System for Compost Biofilters. Meeting Presentation. Paper No: 1009176. June 20-23, Pittsburgh PA., St. Joseph, Mich.: ASABE.

Souza, C.F., G.B. Day V, **J.L. Taraba**, R.S. Gates, and W.P.M. Ferreira. 2010. BIOG-C: Modeling the Volumetric Methane Production in the Anaerobic Digestion Process Applied to Swine Wastes. Paper No:1009181. June 20-23, Pittsburgh PA., St. Joseph, MI: ASABE.

Del Nero Maia, G., Day, G.B.; **Taraba, J. L.**; Gates, R. S.; Dutra de Melo, L. 2010. Relation of Ammonia Biofiltration and Nitrous Oxide Generation Affected by Moisture. Paper No: 1009189. June 20-23, Pittsburgh PA., St. Joseph, MI: ASABE.

Del Nero Maia, G., Day, G.B.; **Taraba, J. L.**; Gates, R. S.; Dutra de Melo, L., T. Sales. 2010. Effects of Media Moisture on Ammonia Abatement and Nitrous Oxide and Methane Generation in Compost-Based Biofilters. Carbon Markets – Expanding Opportunities/Valuing Co-benefits. A Special Workshop co-hosted by the Soil & Water Conservation Society and the National Wildlife Federation. St Louis MO. July 21.

Damasceno, F.A., G.B. Day V, **J.L. Taraba**, G. Del Nero Maia, R. Black, F. da C. Baêta. 2011. Determination of Thermal, Chemical and Physical Properties of Compost-Bedded Pack Barns in Kentucky. Paper No. 1110739. 2011 ASABE Annual International Meeting. August 7-10. Louisville KY.

Damasceno, F.A., R. Black, J. Bewley, G.B. Day V, **J.L. Taraba**, F. da C. Baêta. 2011. Compost-Bedded Pack Barns in Kentucky: A Descriptive Study. Paper No. 1111306. 2011 ASABE Annual International Meeting. August 7-10. Louisville KY.

Lucas Dutra de Melo, G. B Day V, **JL Taraba**. 2011. Effectiveness of Moisture Control on Ammonia Abatement in Compost Biofilters. Paper No. 1111298. 2011 ASABE Annual International Meeting. August 7-10. Louisville KY.

Maia, G., R. Gates, A. Green, G. B. Day V, **JL. Taraba**. 2011. Viability of the Infra-red Photoacoustic System on the Measurement of Greenhouse Gases and Ammonia. Paper No. 1111821. 2011 ASABE Annual International Meeting. August 7-10. Louisville KY.

Lucas Dutra de Melo, G. B Day V, **JL Taraba**. 2011. A Moisture Control System for Compost Biofilters. Paper No. 1111285. 2011 ASABE Annual International Meeting. August 7-10. Louisville KY.

Collins, B., JM Bewley, G.B. Day and **J.L. Taraba**. 2012. Alternate bedding materials for compost bedded pack barns. Poster. 11<sup>th</sup> Annual Posters at the Capital, Research and Scholarly Achievements of Undergraduates from Across the Commonwealth, Frankfort KY, January 26.

Collins, B., JM Bewley, G.B. Day and **J.L. Taraba**. 2012. Alternate bedding materials for compost bedded pack barns. Poster. Showcase of Undergraduate Scholars at The University of Kentucky. April 30.

Black, R.A., **J.L. Taraba**, G.B. Day, F.A. Damasceno, and J.M. Bewley. 2012. Potential cow-focused benefits of compost bedded pack dairy barns. Oral and Poster. Poster #024. 2012 Dairy Cattle Welfare Symposium, Guelph, Ontario CA. October 24-26..

Guilherme D. N. Maia, G. Tatiana Sales, George B. Day V, Richard S. Gates, and **JL Taraba**. 2012. Physical Characterization of Gas-Phase Biofilter Media. ASABE Paper No. 1337260. 2012 ASABE International Conference. Dallas TX July 29 Aug 1.

Flávio A. Damasceno, Igor Lopes, George B. Day V, **JL Taraba**, Fernando C. Baeta, and Douglas Overhults. 2012. Study of natural ventilation in reduced scale model of compost bedded pack barn Natural Ventilation in Compost Bedded Pack Barns Using Scale Models. Poster. Paper No 1345189. ASABE International Conference. Dallas TX July 29 Aug 1.

Hammond, L, **JL Taraba**, MS Coyne, and JM Bewley 2013. What Lies Beneath: Characterizing Nutrient Availability in Compost Bedded Pack Dairy Barns. Poster Presentation at 3rd Annual Research Showcase Tracy Farmer Institute for Sustainability and the Environment. UK Student Center. October 9. **Best Poster Award**.

Hammond, L, **JL Taraba**, MS Coyne, and JM Bewley. 2014. Compost Bedded Pack Dairy Barns: An Alternative Housing and Nutrient Management Strategy for Southern Dairies. Poster Presentation at Southern Sustainable Agriculture Working Group 23rd Annual Practical Tools and Solutions for Sustaining Family Farms Conference. January 17-18. Mobile, AL.

Hammond, L, MS Coyne and **JL Taraba**. 2014. Phosphorus Dynamics of Land-Applied Compost Bedded Pack Dairy Barn Product in Low and High Soil Test Phosphorus Environments. Poster and Paper. 44th Annual North Central Extension-Industry Soil Fertility Conference, November 19-20, 2014. Des Moines, IA.

Hammond, L, M Coyne, **JL Taraba**. 2014. Compost Bedded Pack Dairy Barn Nutrient Characteristics. Poster # 847. ASA\_CSSA\_SSSA 2014 Intl. Annual Meetings, Nov. 2-5, Long Beach, CA.

JT Evans, MP Sama, **JL Taraba**, G.Day. 2014. Calibration of Oxygen Sensors for use in Compost. Paper No.141903229. ASABE and CSBE | SCGAB Annual Intl Meeting. July 13–16. Montreal, Quebec Canada.

**Taraba, JL**. 2014. Compost Bedded Loose Housing Dairy Barn. Poster presented at S-1032 Annual Regional Project Meeting, Oct 20. Fayetteville AR.

**JL Taraba**. Sustainable Dairy Production Housing/Manure System: Compost Bedded Loose Housing (CBP) Dairy Barn. Waste To Worth 2015: Advancing Sustainability In Animal Agriculture. Livestock and Poultry Environmental Learning Center, eXtension. Seattle WA March 30 - April 3, 2015.

**JL Taraba**. Building Successful Compost Barns: What Do You Need To Know. Presented at Interleite Conference, Uberlandia MG, Brazil. Aug 4-5, 2015.

**JL Taraba** and JM Bewley. Compost Bedded Loose Housing (CBP) Dairy Barn for Sustainable Dairy Production. Session 30. Abstract 66th Annual Meeting of the European Federation of Animal Science. Book of Abstracts No 21, Page 320. Warsaw Poland. Aug 31- Sept 4 2015.

EA Eckelkamp, **JL Taraba**, RJ Harmon, KA Akers, JM Bewley. Comparison of mastitis, its indicators, and lameness in composted bedded pack and sand freestall farms. Session 30. Abstract 66th Annual Meeting of the European Federation of Animal Science. Book of Abstracts No 21, Page 322. Warsaw Poland. Aug 31- Sept 4 2015.

JM Bewley, RA Black, FA Damasceno, EA Eckelkamp, GB Day, **JL Taraba**. Compost bedded pack barns as a lactating cow housing system. Session 30. Abstract 66th Annual Meeting of the European Federation of Animal Science. Book of Abstracts No 21, Page 318. Warsaw Poland. Aug 31- Sept 4 2015.

Evans, JT, MP Sama, **JL Taraba**, GB Day. 2015. Effect of Tillage Methods on Oxygen Concentrations in Compost Bedded Pack Barns. ASABE Annual International Meeting. New Orleans, LA.

## RESEARCH REPORTS

**Taraba, J.L.**, I.R. Ross, J.D. Bottom, B.J. Barfield. 1983. Effects of Surface Application of Dairy Manure on Infiltration Rate and Quality of Surface Runoff. Research Report No. 138. Water Resource Research Institute, University of Kentucky, Lexington, 77 pp.

**Taraba, J.L.** (Editor). 1986. Animal Waste Utilization Systems. S-144 Regional Project Termination Report. USDA-CSRS. Washington DC.

**Taraba, J.L.** (Editor). 1991. Agricultural Chemical Use Impacts on Kentucky Groundwater Resources, 1991 Program Report. Core Planning Committee. College of Agriculture. University of Kentucky, 99 pp.

**Taraba, J.L.** (Editor). 1991. Agricultural Chemical Use Impacts on Kentucky Groundwater Resources, 1991 Program Report. Executive Summary. Core Planning Committee. College of Agriculture. University of Kentucky, 23 pp.

**Taraba, J.L.** (Editor). 1993. Agricultural Chemical Use Impacts on Kentucky Groundwater Resources, 1992 Status Report. Core Planning Committee. College of Agriculture, University of Kentucky, 124 pp.

**Taraba, J.L.** (Editor). 1993. Agricultural Chemical Use Impacts on KY Groundwater Resources, 1992 Status Report. Summary. Core Planning Committee, College of Agriculture. University of Kentucky, 10 pp.

Carey, D.I., J.S. Dinger, O.B. Davidson, R.E. Sergeant, **J.L. Taraba**, T.W. Ilvento, S. Coleman, R. Boone and L.M. Knoth. 1993. Quality of Private Ground-Water Supplies in Kentucky. Information Circular 44, Series XI. Kentucky Geological Survey, University of Kentucky. Lexington.

**Taraba, J.L.** (Editor). 1994. Agricultural Chemical Use Impacts on Kentucky Groundwater Resources, 1990-1993 Report. Core Planning Committee, Water Quality Research and Assessment Program. College of Agriculture, University of Kentucky.

**Taraba, J.L.** (Editor). 1994. Agricultural Chemical Use Impacts on Kentucky Groundwater Resources, Assessment Report 1990-1993. Water Quality Research and Assessment Program, Core Planning Committee. College of Agriculture, University of Kentucky.

**Taraba, J.L.**, J.S. Dinger, L.V.A. Sendlein, G.K. Felton, P.G. Conrad, J.C. Currens and D.M. Keagy. 1995. Agricultural Chemical Use Impacts on Kentucky Groundwater Resources – Assessment Report 1990-1993. Water Quality Research and Assessment Program. College of Agriculture, Kentucky Geological Survey, Kentucky Water Resources Research Institute, University of Kentucky.

Dinger, J.S., D.M. Keagy, S.A. Minns, **J.L. Taraba** and J.H. Grove. 1996. Assessment of nitrate and pesticide impacts on bedrock aquifers in upland agricultural settings of the western

coal field. Water Quality Research and Education Program: Senate Bill 271 - Phase II Annual Progress Report (W.O. Thom, ed.). College of Agriculture, University of Kentucky, Lexington.

Edwards, D.R., G.K. Felton, **J.L. Taraba**, L.W. Turner and B.T. Larson. 1996. Runoff quality responses to cattle grazing strategy and grassed buffer zone length. Water Quality Research and Education Program: Senate Bill 271 - Phase II Annual Progress Report (W.O. Thom, ed.). College of Agriculture, University of Kentucky. Lexington.

Dinger, J.S., E.G. Beck, **J.L. Taraba**, J.H. Grove and G.L. Secrist. 1997. Assessment of nitrate and pesticide impacts on bedrock aquifers in upland agricultural settings of the western coal field. pp. 6-17. Water Quality Research and Education Program: Senate Bill 271 - Phase II Annual Progress Report, 2<sup>nd</sup> Year (W.O. Thom, ed.). College of Agriculture, University of Kentucky. Lexington.

Edwards, D.R., B.T. Larson, **J.L. Taraba** and L.W. Turner. 1997. Runoff quality responses to cattle grazing strategy and grassed buffer zone length. Water Quality Research and Education Program: Senate Bill 271 - Phase II Annual Progress Report, 2<sup>nd</sup> Year (W.O. Thom, ed.). pp 79-82. College of Agriculture, University of Kentucky. Lexington.

**Taraba, J.L.**, I.J. Ross, A. Fogle and J.S. Dinger. 1997. Monitoring impacts of animal research center on surface and groundwater quality. Water Quality Research and Education Program: Senate Bill 271 - Phase II Annual Progress Report, 2<sup>nd</sup> Year (W.O. Thom, ed.). pp 83-94. College of Agriculture, University of Kentucky. Lexington.

**Taraba, J.L.** and J.S. Dinger. 1998. Land Use Impacts on Water Quality in Small Karst Agricultural Watersheds. Waterworks 4, (2) 1. Kentucky Water Resources Research Institute, University of Kentucky.

Cromwell, G.L., L.W. Turner, **J.L. Taraba**, R.S. Gates, M.D. Lindemann, S.L. Taylor, W.A. Traylor, W.A. Dozier and H.J. Monegue. 1998. Manipulation of Swine Diets to Reduce Odors and Harmful Gaseous Emissions from Manure. Swine Research Review, National Hog Farmer, December.

Ruffin, N., **J.L. Taraba** and S. Samson. 1999. The 1998 Kentucky Nonpoint Source Assessment Report. Kentucky Division of Water and College of Agriculture, University of Kentucky.

Dinger, J.S., E.G. Beck, **J.L. Taraba**, J.H. Grove and P.K. Fields. 1999. Assessment of nitrate and pesticide impacts on bedrock aquifers in upland agricultural settings of the western coal field. Water Quality Research and Education Program: Senate Bill 271 - Phase III Annual Progress Report, 1<sup>st</sup> Year (W.O. Thom, ed.). College of Agriculture, University of Kentucky. Lexington.

**Taraba, J.L.**, I.J. Ross, and A. Fogle. 1999. Monitoring impacts of animal research center on surface and groundwater quality. Water Quality Research and Education Program: Senate Bill

271 - Phase III Annual Progress Report, 1<sup>st</sup> Year (W.O. Thom, ed.). College of Agriculture, University of Kentucky. Lexington.

Shearer, S.A., R.L. Barnhisel, **J.L. Taraba** and S.F. Higgins. 1999. Swine and Dairy Waste Management Using Precision Agriculture. Water Quality Research and Education Program: Senate Bill 271 - Phase III Annual Progress Report, 1<sup>st</sup> Year (W.O. Thom, ed.). College of Agriculture, University of Kentucky. Lexington.

Dinger, J.S., E.G. Beck, P. Conrad, **J.L. Taraba**, J.H. Grove and P.K. Fields. 1999. Protection of Well-Water Supplies from Nitrate Contamination. Senate Bill 271 - Phase III Annual Progress Report, 1<sup>st</sup> Year (W.O. Thom, ed.). College of Agriculture, University of Kentucky. Lexington.

Cromwell, G.L., L.W. Turner, **J.L. Taraba**, R.S. Gates, M.D. Lindemann, S.L. Taylor, W.A. Traylor, W.A. Dozier and H.J. Monegue. 1999. Manipulation of swine diets to reduce odors and harmful gaseous emissions from manure. Research Report. National Hog Farmer, March 15: 39. National Pork Producers Council, Des Moines, IA.

**Taraba, J.L.**, G.B. Day and I.J. Ross. 1999. Manure management program - Animal Research Center. Biosystems and Agricultural Engineering Department. College of Agriculture. University of Kentucky. Lexington. 14 pp.

Shearer, S.A., **J.L. Taraba**, S.F. Higgins and R. L. Barnhisel. 2000. Swine and dairy waste management using precision agriculture. Waterworks. pp. 5, 8. Kentucky Water Resources Research Institute, University of Kentucky. Lexington.

Dinger, J.S., E.G. Beck, J.H. Grove, **J.L. Taraba** and S. Compton. 2001. Assessment of potential nitrate contamination to shallow ground-water systems in the Western Kentucky coal field and Jackson Purchase area. Progress Report. Water Quality Research & Education Program: SB 271-Phase III. College of Agriculture, University of Kentucky.

**Taraba, J.L.** and I.J. Ross. 2001. Monitoring impacts of animal research center on surface and groundwater quality. Final Report. Water Quality Research & Education Program: SB 271-Phase III. College of Agriculture, University of Kentucky.

Dinger, J.S., E.G. Beck, J.H. Grove, **J.L. Taraba** and S. Compton. 2002. Assessment of potential nitrate contamination to shallow ground-water systems in the Western Kentucky coal field and Jackson Purchase area. Final Report. Water Quality Research & Education Program: SB 271-Phase III. College of Agriculture, University of Kentucky.

Coyne, M.S., **J.L. Taraba** and J.D. Crutchfield. 2002. Biological availability of suspended P in agricultural watersheds. Final Report. Water Quality Research & Education Program: SB 271-Phase IV. College of Agriculture, University of Kentucky.

**Taraba, J.L.**, A.W. Fogle and J.S. Dinger. 2002. Monitoring impacts of animal research center on surface and groundwater quality. Progress Report. Water Quality Research & Education Program: SB 271-Phase IV. College of Agriculture, University of Kentucky.

Fogle, A.W., **J.L. Taraba** and J.S. Dinger. 2003. Mass load estimation errors utilizing economical sampling strategies in a karst watershed. Water Quality Research & Education Program: Final Report. SB 271-Phase IV. College of Agriculture, University of Kentucky

**Taraba, J.L.**, J.S. Dinger and A.W. Fogle. 2006. Monitoring impacts of animal research center on surface and groundwater quality. Water Quality Research & Education Program: Progress Report. SB 271-Phase V. College of Agriculture, University of Kentucky

Black, R.A., J.M. Bewley, **J.L. Taraba**, G.B. Day, and F.A. Damasceno. 2011. Kentucky Compost Bedded Pack Barn Project: Report to Respondents. College of Agriculture, University of Kentucky.

## **PEER REVIEW**

### ASABE

- Transactions ASABE 42 professional papers and 11 engineering standards for ASAE. 1977 to present.
- Blue Ribbon Awards 2011 for Publications and Blue Ribbon Awards 2011 Educational Aides.
- J Ag Safety and Health ASABE (2014),
- Applied Engineering in Agriculture 2013, 2016 (2).

Journal of the American Water Resources Association. 2004 (2 papers), 2005, 2006 (2 papers), 2007 (3 papers), 2012.

International Journal of Environmental and Waste Management, Reviewer, 1 paper, 2007.

Journal of Soil and Water Conservation. Reviewer, 2007, 2013.

Bioresource Technology. 1 paper 2011.

Atmosphere. 1 Paper 2012.

Book Chapter 10 for: Applied Research of Animal Manure: Challenges and Opportunities beyond the Adverse Environmental Concerns. Nova Science Publications 2013.

USEPA Animal and Poultry Waste Management Center, North Carolina State University, Project proposal reviewer. 2000 (5 proposals).

American Association for the Advancement of Science (AAAS). Research Competitiveness Foundation Program, Agriculture and Agricultural Engineering Panel (6 proposals) 2014

USDA-CSRS Water Quality Initiative ad-hoc reviewer, 1994.

## USDA-CSREES

- National Research Initiative. Ad-hoc reviewer, 1997, 1998, 1999(2), 2000(2), 2001, 2003.
- Small Business Innovation Research, Ad-hoc reviewer, 2001, 2003, 2007, 2008, 2011.

## USDA AFRI

- Engineering Products and Processes (Agricultural) Panel, 2013.

American Farm Bureau Research Foundation. External Proposal Reviewer for Water Quality Projects. 1998, (8 proposals).

Kentucky Science and Research Foundation, SBIR/STTR. 2005 (2 proposals), 2006, 2007 (3 proposals),

### External Peer Reviewer for Proposals:

- Enterprise Florida Inc. (State of Florida Funded), 1 Proposal, 2008
- Research North Dakota, North Dakota Department of Commerce – 2 proposals (2016).
- Life Science Trust (State of Missouri Funded)
  - 2 proposals, 2007
  - 1 proposal, 2008
- SEEDS: Ohio ARDC Research Enhancement Competitive Grants Program.
  - 3 proposals, 2011, 2013, 2014

Kentucky Down Under cave exhibit for American Cave Conservation Association. Cave City, KY, 1993.

Kentucky Division of Water, USEPA 319 proposals. 1994 (19 projects), 1995 (10 projects), 1996 (9 projects).

Water Quality Incentive Projects (WQIP) for Kentucky Agricultural Stabilization and Conservation Service. 1993, 1994, 1995 (5-10 projects each year).

UK Research Grants Competition, Research and Graduate Studies. 2000 (21 proposals).

UK Water Resource Research Institute, 1984-94 (1 to 3 proposals/year), 1995 (15 proposals), 1996 (15 proposals).

UK College of Agriculture Experiment Station Project Review Committee, 1983-1985.

### UK College of Agriculture Experiment Station Research

- Ad-hoc reviewer, 1987-1988, 1997, 1998, 1999, 2000.
- Precision Agriculture, 2002 (16 proposals), 2004 (8 proposals).

### UK College of Agriculture, Water Quality Research and Assessment. Program

- Phase II (SB-271), Proposal Review Committee. 1995 (16 proposals).

- Phase III (SB-271), Proposal Review Committee. 1997 (20 proposals).

UK College of Agriculture Extension. Ad-hoc publication reviewer. 2000.

Project proposal reviewer for water quality for Kentucky Leadership for Agricultural and Economic Sustainability Project (Kellogg grant to UK College of Agriculture, Department of Agricultural Economics). 1994-1996.

Judge for FFA National Meeting, Dairy Cattle Evaluation and Management Career Development Event, Louisville KY 10/29/2014

### **CONSULTATIONS**

- Consulted with builders, veterinarians, and dairymen equipment suppliers concerning compost bedded dairy barns:
  - International: Argentina, Brazil, Columbia, Slovenia, Canada, Netherlands, Denmark, Australia, Germany.
  - USA outside of KY: TX, MS, OH, IN, IL, MN, WI, PA, NC, TN, MO, VT, NH.
- Big Ass Solutions on HVLS fan spacing recommendations in dairy barns.
- Kentucky Industrial Assessment Center (KIAC), University of Kentucky. Consultant for municipal wastewater treatment facilities energy usage assessment – Danville and Glasgow.

### **OTHER**

Quality Assurance Monitor for USEPA Research Project "Demonstration and Evaluation of the Hydrologic Effectiveness of a Three-Layer Landfill Surface Cover Under Stable and Subsidence Conditions" Dept. of Agricultural Engineering. University of Kentucky. 1982-85.

# ACADEMIC TEACHING AND ADVISING

## Courses - Regular Assignment

**Waste Management for Biosystems, AEN 435G.** A study of the characteristics, treatment and utilization principles and the analysis and design of systems for managing waste from the production and processing of food and fiber. Lecture, 2 hours; laboratory, 3 hours. Prereq: MA 214 and BIO 108. 1992, 1994, 1995, 1998 (3 students), 2000 (5 students), 2001 (8 students; rating-3.3/4.0), 2002 (8 students), 2003 (1 student, tutorial), 2004 (3 students), 2009 (3 students), 2011 (4 students) 2012 (2 students), 2013 (1 student, tutorial), 2014 (6 students).

**Animal Waste Management, AEN 503.** A study of animal waste characteristics, treatment and utilization principles and the analysis and design of management systems. Lecture, 2 hours; Laboratory, 2 hours. Prereq: MA 214 and engineering standing. 1977-1980, 1982-1989, 1991.

**Topics in Advanced Environmental Control of Animal Housing Systems, BAE 625-001.** A systems approach will be used to introduce and discuss concepts which are integral to understanding controlled animal environments. We will focus mainly on Beef, Dairy, and Poultry owing to the needs and interests of you, the students, however, the concepts will be extendable to other species as well. We will cover topics on animals and how they affect their environment and conversely, the effects of the environment on the animals, the effects of structure(s), manure management, environmental controls, and feed & water. 2010F (coordinator and 1/3 course responsibility: 4 BAE students, 3 ASC students), as BAE 750 2012F (3ASC students).

**Introduction to Environmental Engineering, CE 351.** Introduce students to key concepts in water pollution, air pollution, risk assessment, wastewater and drinking water treatment, and environmental legislation. Lecture, 3 hour. Prereq: 1997 (63 students, Rating - 2.8/4.0), 1998 (34 students), 2002 (48 students, Rating – 1.9/4.0).

**Analysis of Natural Resource Systems, NRC 380.** An intermediate course that teaches the analysis of complex natural resource systems through case studies, with emphasis on the scientific basis of such systems. 3 hour, lecture. Prereq: NRC 301. 2005 (31 students), 2006 (24 students).

## Courses - Special Problems

### Special Problem, AEN 450.

- Alcohol for IC Engines. 3 hour credit, undergraduate course, 1980 (1 student - tutorial).
- Agricultural Waste Management. 3 hr credit, undergraduate course, 1996 (1 student).

### Special Problem, AEN 599.

- Facility Planning and Construction Practices. 3 hour graduate credit. Team taught; 5 hours of lecture on animal waste management and ethanol production from grain. 1980.
- Agricultural Waste Management. 3 hour graduate credit. 1984, 1998 (2 students), 2003 (1 student).
- Waste Management for Biosystems. 3 credit hours. 2008 Fall. 1 student. Independent Study.

#### **Special Problem, AEN 750.**

- Finite Difference Techniques in Transport Phenomena. 1 hour graduate credit. 1984-1985 (1 student - tutorial).
- Agricultural Non-Point Source Pollution. 1 hour graduate credit. 1986 (1 student - tutorial).
- Solid Liquid Settling Basin Management Practices. 1 credit hour. 2008 Fall. 1 student. Independent Study.

#### **Special Course, GEN 300.**

- French Study Tour. Burgundy Region Agricultural Study Tour, 2000. ENESAD, Dijon, France, May 8 - May 23. (Faculty - Advisor) 3-6 credit hours. 2000 Fall (4 Students).

### **Courses - Invited Lectures**

**Special Topics in Agronomy-Groundwater Regulations, AGR 597.** One hour lecture on consensus process of Kentucky Groundwater Regulation Development. 1994.

**Introduction to Resource and Environmental Economics, AEC 445G.** One hour lecture on agricultural impact on water resources and groundwater regulations. 1993, 1994, 1995, 1996, 1997, 1998.

**Swine Science, ASC 408G.** Invited 1-hour lecture on animal waste management. Fall, 1992.

**Energy and Physical Science in Environmental Systems. GS6xx.** 3-hour lecture on pollution systems. 1989-90.

**Energy and Mass Transfer in Agricultural Engineering, AEN 648.** 4, 1-hour lectures on distillation. 1979, 1981, 1986.

**Advance Processing, AEN 450.** 2-hour lecture on Microbial Kinetics. 1982.

**Homestead Planning, AEN 320.** 1-hour lecture on animal waste management, 1980-1985.

**Farm Water Management, AEN 543.** 4-hour lecture on animal waste management. 1983-1985, 1989.

**Grain Crops, AGR 412.** 1-hour lecture on alcohol production from grain.

**Advanced Processing, AEN 505.** 1-hour lecture on petroleum refining 1980.

**Natural Resource Policy Analysis. NRC 381.** 2-1½ hr lectures on Water Quality Policy and Policy Impacts, F 2003.

**Natural Resources Conservation and Management NRC 301.**

- 1-hour lecture: Karst Terrane and Agricultural Impacts on Water Quality S2004, S2005.
- 2-day Environmental Tour. Faculty advisor. S2004, S2005.

**Livestock Production Principles, ASC 382.**

- 1-Hour Lecture: Production Animal Ecology, F2009.
- 2-1 hour Lectures: Production Animal Ecology and CAFOs, F2010.
- 1 hr Lec. Production. Animal Ecology & CAFOs;F2011(25 stu).
- 1-Hour Lecture: Environmental and regulatory factors affecting manure management on dairy farms, S2012. (18 students)
- 1 hr Lec. Production. Animal Ecology & CAFOs; F2013 (25 students).

## **Advising**

Member of Graduate Faculty, 1986 to present.

### **Visiting Scientist.**

Cecilia de Fatima Souza, Ph.D., Professor. Departamento de Engenharia Agricola, Universidade Federal De Viçosa. Minas Gerais, Brasil. 36570-000. 2009-2010.

Flávio Alves Damasceno, Brazilian PhD student in Sandwich Program. Departamento de Engenharia Agricola, Universidade Federal De Viçosa. Minas Gerais, Brasil. 36570-000. 2010-2011.

Horacio Alvarado Raya October, 2014 – March, 2015. Profesor Investigador, Área de Biología, Universidad Autónoma Chapingo, Texcoco, State of Mexico, Mexico.

### **Directed Graduate Students: 5 Ph.D. and 6 M.S. Students.**

- Burl Naugle. 1981. The Dynamics of the Ensiling of Swine Waste with Ground Shelled Corn. Ph.D. Dissertation. Department of Agricultural Engineering. Co-advised (I.J. Ross, Director).
- Ron Lacey. 1981. Nutrient Changes in Poultry Manure During Batch Liquid Phase Anaerobic Fermentation. M.S. Thesis. Department of Agricultural Engineering. Co-advised (I.J. Ross, Director).

- D. Micheal Weiman. 1985. Production of Aflatoxin on Corn Under Controlled Environmental Conditions. M.S. Thesis. Department of Agricultural Engineering. Co-advised (Gerald M. White, Director).
- John D. Bottom. 1991. Effects of Dairy Manure Application Practices on Hydraulic Conductivity and Nonpoint Source Pollution. M.S. Thesis. Department of Agricultural Engineering. (Joseph L. Taraba, Director).
- Ali Hootkany. 1994. Hydraulic Conductivity Behavior of Soil Liners in Agricultural Waste Containment Facilities. M.S. Thesis. Biosystems and Agricultural Engineering Department. Co-advised (Richard C. Warner, Director).
- R. Michael Williams. 1998. Application of Superfund Risk Assessment to Production Agriculture. Ph.D. Dissertation. Biosystems and Agricultural Engineering Department. (Joseph L. Taraba, Director).
- Guillaume Cornileau, 1999. Fate of Chemicals in Plots Planted with Burley Tobacco. M.S. Thesis. Biosystems and Agricultural Engineering Department. (Director).
- Ken Liberty. 2004. Biofiltration for Odor reduction from Animal Production Facilities. Ph.D. Dissertation. Biosystems and Agricultural Engineering Department. (J.L. Taraba, Director).
- Guilherme del Nero Maia. 2010. Relation of Ammonia Biofiltration and Nitrous Oxide Production. Ph.D. Dissertation. Biosystems and Agricultural Engineering Department. (J.L. Taraba, Co-director with G.B. Day).
- Lucas Dutra de Melo. 2011. Development of a Moisture Control System for Compost Biofilters. M.S. Thesis. Biosystems and Agricultural Engineering Department. Completion Date: (J.L. Taraba, Co-director with G.B. Day).
- Flávio Alves Damasceno. 2012. PhD. Compost Bedded Pack Barns Systems and Computational Simulation of Airflow Through Naturally Ventilated Reduced Model. Departamento de Engenharia Agrícola, Universidade Federal De Viçosa. Minas Gerais, Brasil. Completed: August 2012. (Co-Director).

**Graduate Committees: 5 Ph.D. and 18 M.S. Students.**

- Robert H. Driver. 1981. Evaluation of a Fermentative Process to Increase the Microbial Protein Content of Rations Used for the Feed of Poultry. M.S. Thesis. School of Biological Sciences. (Ralph F. Wiseman, Director).
- Sherman D. Biggerstaff. 1984. Effect of Surface Mulching on Infiltration, Runoff, and Erosion on Reconstructed Soils. M.S. Thesis. Department of Agricultural Engineering. (Ian D. Moore, Director).

- Timothy J. Hampshire. 1987. .The Influence of Exhaust Gas Recirculation on Temperature, Energy Matter, and Clinkers within Fixed Bed Gasifier. M.S. Thesis. Department of Agricultural Engineering. (Blaine F. Parker, Director).
- Jon B. Armstrong. 1992. Analysis of Agricultural Non-Point Source Impact on the Ground Water in Hickman County, Kentucky. M.S. Thesis. Department of Geological Sciences. (Lyle. V.A. Sendlein, Director).
- Robert W. Malone. 1992. Transport of Benzene and Trichloroethylene Through a Landfill Soil Liner Mixed with Lignin Treated Coal Fines. M.S. Thesis. Department of Agricultural Engineering. (Richard C. Warner, Director).
- Steven K. Hampson. 1994. The Impact of Agricultural Practices on Epikarstic Ground Water Quality in the Inner Bluegrass Region of Kentucky. M.S. Thesis. Department of Geological Sciences.
- Ali Hootkany. 1994. Hydraulic Conductivity Behavior of Soil Liners in Agricultural Waste Containment Facilities. M.S. Thesis. Biosystems and Agricultural Engineering Department. (Richard C. Warner, Director).
- Christine Blanton. 1995. Hydraulic Conductivity of Earthen Liners in Agricultural Waste Containment Facilities: Evaluation of Field Construction Techniques. M.S. Thesis. Biosystems and Agricultural Engineering Department. (Richard C. Warner, Director).
- Julia Patton. 1998. The Environment and Economic Potential of Poultry Litter as a By-Product in Kentucky Farm Production. M.S. Thesis. Department of Agricultural Economics. (Jerry Skees, Director).
- Ali Hootkany. Ph.D. Candidate. Topic: Liner Construction for Waste Containment Facilities. Biosystems and Agricultural Engineering Department. (Richard C. Warner, Director). Left Program.
- Crystal Spruil. 1998. Hydrologic Assessment and Calibration of the SWAT Model for Small Watersheds in Central Kentucky. M.S. Thesis. Biosystems and Agricultural Engineering Department (Steve Workman, Director).
- Marilyn Coffey. 1999. Characterization of Small Karst Watershed with the SWAT Model. M.S. Thesis. Biosystems and Agricultural Engineering Department. (Steve Workman, Director).
- Nicklas Russell. Ph.D. Topic: Effects of Coal Fines on Bioremediation of Volatile Organic Compounds in Soil. Biosystems and Agricultural Engineering Department. Left Program.
- Sheila Myers. 2001. Nutrients and Bacteria in Runoff Treated with Animal Manure. M.S. Thesis. Biosystems and Agricultural Engineering Department. (D. R. Edwards, Director)

- John Barnett. 2004. Reduction of surface water contaminants through use of a seep berm. M.S. Thesis. Biosystems and Agricultural Engineering Department. (Richard C. Warner, Director).
- Carmen Agouridis. 2004. Cattle Production Practices in a Small grazed Watershed of Central KY. Ph.D. Dissertation. Biosystems and Agricultural Engineering Department. (D.W. Edwards, Director).
- Ken Casey. 2005. The Determination of Ammonia Emissions from Mechanically Ventilated Poultry Houses, An Examination of the Issues Involved. Ph.D. Dissertation. Biosystems and Agricultural Engineering Department. (R.S. Gates, Director).
- Glogerley Tatiana Sales. 2008. Assessment of Biofilter Media Particle Sizes for Removing Ammonia. M.S. Thesis. Biosystems and Agricultural Engineering Department. (Richard S.Gates, Director).
- Bless Adotey. 2011. Ph.D. Topic: Whole-Cell Modeling to Elucidate Dissolved Gas Effects on the Metabolism of *Clostridium thermocellum*. Biosystems and Agricultural Engineering Department. Completion Date: (S. Nokes, Director).
- Randy Black. 2012. MS AFS. Compost bedded pack barns: management practices and economic implications. (JM Bewley, Director)
- E.A. Eckelkamp. 2014. MS AFS. Interactions of compost bedded pack barn moisture and temperature with dairy cow mastitis and locomotion. (JM Bewley, Director).
- John T Evans. MS BAE. Topic: Tillage tool development for Compost bedded barn. Completion date 5/2015. (M Sama, Director)
- Leslie Hammond. MS PSS. Topic: Compost Bedded Pack Dairy Barn Nutrient Characteristics. Completion Date 5/2015. (MS Coyne, Director)
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Directed 2 Undergraduate Theses for ENESAD, Ingenieur des Techniques Agricoles, Dijon France.

- Guillaume Cornilleau. 1997. Transport dans le Sol des Intrants du Tabac: les Donnees du Terrain Comparees aux Previsions du Modele Opus. (Transport of Soil Applied Chemicals Used on Tobacco Crop: Field Data Compared to Simulated Results of the Opus Model).
- Anne Gueydon. 1998. Monitoring impacts of the Animal Research Center on Surface and Groundwater Quality in North Kentucky.

Outside Ph.D. Dissertation Examiner

- Department of Geography. Spring, 2006
- David John Price, Biological Sciences, 2007
- Waripas Jiumpanyarach, Agricultural Economics, 2008
- Department of Civil Engineering, Spring 2010
- Department of Geography. Summer, 2011
- Department of Geography. Spring, 2012
- Agriculture Economics, 2013
- Department of Geography, Summer 2014, Summer 2016

Advised 2 undergraduate students.

- Gary Cambron, 1986
- Robert B. Razor, 1980

#### **HOSTING OF VISITING SCIENTIST**

- Horacio Alvarado Raya October, 2014 – March, 2015. Profesor Investigador, Área de Biología, Universidad Autónoma Chapingo, Texcoco, State of Mexico, Mexico.
- Mario Cuchillo Hilario. January 2016 – May 2016. Profesor, Departamento de Nutrición Animal. Instituto Nacional de Ciencias Médicas y Nutrición “Salvador Zubirán” (INCMNSZ). Tlalpan, Ciudad de México. C.P. México.

# UNIVERSITY SERVICE

## University

- Kentucky Congressional Delegation Contact Committee, 1993.
- Committee on Research and Policy of the Kentucky Water Resources Research Institute, 1993-1996.
- Research Grants Competition Review Committee, Research and Graduate Studies – 2000.

## College of Agriculture

- Water Quality Advisory Committee, 1978-1983.
- Experiment Station Project Review Committee, 1983-1985.
- Selected reviewer for Experiment Station Research proposals, 1987-1988.
- Extension Water Quality Initiative Committee, 1988.
- Chairman, Core Planning Group for SB-271, 1990-1994.
- Extension Water Quality Task Force, 1988-1994.
- Extension Solid Waste Committee. 1990-1994.
- Broiler Litter Work Group, 1991-1997.
- Constructed Wetlands for Animal Waste Management Work Group, 1991.
- Organizing Committee for Symposium - Innovative Applications of Constructed Wetlands. Lexington, 1992.
- Planning Committee for Woodford County Animal Research Center. 1993-1998.
- Advisory Committee for Tenure and Promotion.
  - Alternate member, 1995.
  - Member and alternate chair, 1996.
- Water Quality Research and Assessment Program-Phase II (SB-271), Proposal Review Committee. 1995-1996.
- Water Quality Research and Assessment Program-Phase III (SB-271), Proposal Review Committee. 1997-1998.
- Animal Waste Management System Design for Princeton Swine Research Center. 1998-1999.
- Water Quality Research and Assessment Program Committee (SB-271) - 1999.
- Planning Committee for Woodford County Animal Research Center. 1999-2003.
- Environmental and Natural Resources Issues Task Force. Member - Nutrient Management Focus Group - 2000-2004.
- County Extension Review Team for Metcalfe and Monroe Counties. 2001.
- Nutrient Management Focus Group, Task Force. 2001-2004.
- Facility and Land Management Committee for Animal Research Center. 2001-2006.
- Nutrient Management subcommittee for Animal Research Center. 2001-2006.
- Natural Resource Conservation and Management Steering Committee Member. 2004-2006.
- CAFE Search Committee: Director UK Ag Equine Program, 2016

## **College of Engineering**

- Ad Hoc Committee on Freshman Chemistry, 1978.
- Undergraduate Teaching Committee, 1985-87.

## **Department of Agricultural Engineering**

- Student Recruitment and Outreach Committee, 1982-1984, 1997-1998, 2016-2017.
- Graduate Committee, 1981-1982.
- Extension Planning Committee, 1990-2017.
- Graduate Student and Research Committee, 2006-2010, 2014-2016.
- Research Committee, 1981-1983, 1984-1994, 2002-2004.
  - Chairman, 1988-1990, 1994-1995.
- Seminar Committee, 1980-1981, 1996-1999.
  - Chairman, 1996-1999.
- Exhibit and Tour Committee, 1979-1980.
  - Chairman, 1979-1980.
- Social Committee, 1978-1979.
- Undergraduate Curriculum Development Committee, 1988-1990.
- Faculty Advisor for Student Branch ASAE, 1989-1992.
- Faculty Advisor for University of Kentucky Branch of Alpha Epsilon, National Agricultural Engineering Honor Society, 1992-1993.
- Recording Faculty Secretary, 1994-98, 2001-2002.
- Promotion and Tenure, 2015-2017.
- Stream and Watershed Science and Graduate Certificate Committee, 2016-2017.
- Search Committee: Extension Structures and Environment Position, 2016.
- Search Committee: Water Quality Research Position, 2016.
- Stream and Watershed Science and Graduate Certificate Committee, 2016-2017.
- Student Recruitment and Outreach Committee, 2016-2017.

## **CIVIC, COMMUNITY ORGANIZATIONS SERVICE**

- United Way, Department Coordinator, 1978-1980, 1991.
- Member, Newman Center (Holy Spirit Catholic Church), 1977 to present.
  - Pre-K Sunday School Committee, 1988-1989.
  - Liturgy Minister, 1996-2001.
- Fayette County Board of Education
  - Member, Spanish Immersion Magnet Program Expansion Proposal Committee, 1992-1998.
  - Member, Spanish Immersion Program Middle School Selection Committee, Fayette County Board of Education, 1993-1994.
  - Member, Spanish Immersion Program Development Committee for Middle School, Fayette County Board of Education, 1994-1995.
- Maxwell Elementary School
  - Member, Subcommittee on Technology, Site Based School Council, 1994-1996.
- Los Amigos Parent Organization, Lexington Fayette County Spanish Magnet School Program
  - Member, Focus Committee, 1991
  - 1st Vice-President, Board 1992-1994
  - Chairman, Long Range Planning Committee, 1992-1995
  - President, 1996
- Member, Bryan Station High School Traditional School Planning Committee, 1996-1997.
- Organizing Committee of the Gardenside Neighborhood Association, 1998.
- Board member Regency Pointe Condominium Owners Association, 2011-2016.