

Acc No	Start/Term	Cooperator Point Of Contact [Name, Tele, E-Mail, Etc]	Project Title	Description	Expected Outcome	FY - GY Financial Commitment
0199067	3/01/2004 – 2/28/2007	Miller, D. R. 860-486-0142	Measurement and Total Accounting for Particulate Emissions from Agricultural Field Operations	The goal of this project is to measure pollution particles emitted to the air during agricultural in-field operations. The operations to be studied will include plowing, planting and harvesting. Accurate measurements will be made of these emissions and the pollution plume in the air will be tracked by laser radar until it disperses into the atmosphere or deposits on the ground.	The final products will include detailed recommendations for criteria, instrumentation, and techniques to measure and monitor particle emissions from a wide array of agricultural operations.	2004 \$466,130
0199106	5/01/2004 – 4/30/2005	Hsieh, Y. P. Phone: 850-599-3065 Fax: 850-561-2221 Email: yhsieh@famu.edu	Detecting Forest Fire Emitted PM2.5 Using a Novel Thermo Elemental Analysis Method	Develop a sensitive and convenient method for the identification and monitoring of prescribed burning emitted PM2.5 based on a scanning thermo-elemental analysis (STEA) technology. Test the developed technology on at least one field scale prescribed forest burning experiment.	Method for identification of PM from prescribed burning	2004 \$100,000
0199060	2/01/2004 – 1/31/2006	Radcliffe, J. S. Phone: 765-496-7718 Fax: 765-494-9347 Email: jradclif@purdue.edu	Quantification of Gas, Odor and Dust Emissions from Swine Wean-Finish Facilities	A multi-disciplinary swine nutrition and manure management research and extension project will be initiated to determine the effect of diet modification practices and manure storage times on baseline gas, odor, and dust emission.	Using specialized facilities and methodologies, the baseline emissions of common air pollutants (ammonia, hydrogen sulfide, methane, volatile organic compounds and dust) from confinement swine facilities will be determined.	2004 \$460,000

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0199008	2/01/2004 – 1/31/2006	Steven J. Hoff Phone: 515-294-6180 Email: hoffer@iastate.edu	Verification of Odor Dispersion Modeling for Siting of Livestock and Poultry Production Systems	Compare and standardize ambient level odor measurement methods from livestock and poultry production systems for evaluation of atmospheric dispersion models (ADM) for odor. Incorporate existing odor dispersion modeling techniques into one consistent tool capable of handling multiple sources in a community of multiple receptors. Disseminate the knowledge and use of a standardized ambient level odor footprint tool and odor dispersion characteristics to stakeholders.	To learn more about odor dispersion as affected by atmospheric stability, and how this knowledge can be used to develop siting tools for state and local planners.	2004 \$479,808
0199042	7/01/2004 – 6/30/2008	Wendy J. Powers Phone: 515-294- Fax: 515-294-5698 Email: wpowers@iastate.edu	Modeling the Source of Gaseous Emissions from Animal Feeding Operations	The project will identify the current deficiencies of the conceptual farm-level mass balance model proposed by the Committee on Animal Nutrition (NRC, 2003) that estimates emission concentrations and identify the relative proportion of each form of emission (ie., N ₂ , NO _x , N ₂ O, NH ₃) based on nutrient flows through a whole farm system, with emphasis on the animal component.	The project will collect baseline data from broilers, growing pigs, and lactating dairy cows for gaseous emissions and will establish the chemical form of elements emitted in the gaseous phase and the relative proportions of each chemical form emitted.	2004 \$479,958

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0199125	5/01/2004 – 4/30/2007	Joe P. Colletti Phone: 515-294-4912 Fax: 515-294-2995 Email: colletti@iastate.edu	Vegetative Environmental Buffers to Mitigate Odor and Aerosol Pollutants Emitted from Poultry Production Sites	The purpose of this study is to provide measurements of how good shelterbelts are in terms of trapping and reducing air pollutants coming from poultry farms. Several tree species will be evaluated in shelterbelts for their abilities to reduce odor, particulates, and ammonia.	Field and greenhouse studies will provide data to be used in modeling how odor and particulates flow and move in the air from poultry operations. Shelterbelt costs and impacts of governmental assistance programs on costs will be developed.	2004 \$440,205
0199043	2/01/2004 – 1/31/2007	Ham, J. Phone: 785-532-6119 Fax: 785-532-6094 Email: jayham@ksu.edu	Ammonia Losses from a Commercial Cattle Feedlot: Towards a Realistic NH3 Emissions Inventory for the Great Plains	Measure the fluxes of NH3 from a large block of pens at a commercial cattle feedlot for approximately two years. Fluxes of NH3 and aerosol NH4 will be measured with novel techniques that integrate over a very large sample area to quantify vertical and horizontal transport in the boundary layer. Constrain the atmospheric measurements by estimating the mass of feed nitrogen inputs into the study area and determine the fraction of the pen-surface nitrogen loading that is lost to the atmosphere as NHx.	Results will improve estimates of ammonia emissions from cattle production in the Great Plains and improve the U.S. ammonia inventory. The research will help quantify agriculture's impact on air quality and lead to improved strategies for reducing ammonia losses from cattle feedlots	2004 \$477,775

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0199045	3/01/2004 – 2/29/2008	Engel, R. E. Phone: 406-994-5295 Fax: 406-994-3933 Email: engel@montana.edu	Effect of Cropping Systems and Water on N2O Emission from Soil as Influenced by Fertilization and Crop Residues in the Northern Great Plains	To measure seasonal patterns and accumulative N2O emissions for four cropping systems and a perennial grass system applicable to the Northern Great Plains. To determine if, and how, best management practices for carbon sequestration in the Northern Great Plains affect N2O emissions. To quantify and contrast N2O emissions derived from N fertilizer and crop residues (wheat and legumes) under varying water regimes. To contrast field-measured losses of N2O against predicted N2O losses using IPCC methodology.	The goals of this project are to learn more about seasonal patterns and accumulative N2O emissions from agricultural soils in the Northern Great Plains under different cropping systems, water regimes, crop residue levels, and nitrogen fertility rates; and to determine if field-measured losses of N2O are consistent with estimates made using IPCC methodology.	2004 \$421,184
0199141	2/15/2004 – 2/14/2006	Tammo S. Steenhuis Phone: 607-255-2489 Fax: 607-255-4080 Email: tss1@cornell.edu	Emission of Nitrous Oxide and Ammonia from New York State Dairy Farms: Measurement, Modeling and Extension	To measure ammonia and nitrous oxide emissions from New York dairy farms using a range of manure management practices. To develop an overall farm model that simulates ammonia and nitrous oxide emissions. To develop publications and present training seminars to raise awareness and to effect change in farm practices. To develop ecohydrology and nutrient management course modules on nitrogen emissions from dairy farms.	The goal of this project is to quantify ammonia and nitrous oxide losses from large dairy farms in New York.	2004 \$400,365

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0199243	4/01/2004 – 3/31/2007	Aneja, V. P. Phone: 919-515-7808 Fax: 919-515-7802 Email: VINEY_ANEJA@NCSU.edu URL: www.meas.ncsu.edu/airquality	Characterization and Fate of Ammonia and Hydrogen Sulfide from Animal Feeding Operations: Their Emissions, Transport, Transformation, Deposition, and Impact on Fine Particulate Matter	Study the simultaneous emissions, transport, and fate of ammonia and hydrogen. Formulate the exchange of ammonia and hydrogen sulfide flux in terms of external properties, including physical, chemical, and biological status, and atmospheric processes. To improve current understanding of the cycling of reduced N and S compounds in the atmosphere, and to investigate the coupling of such compounds with atmospheric aerosols and other criteria pollutants responsible for the acidifying atmospheric load. Incorporate agricultural air quality in new introductory undergraduate and graduate courses. Develop and offer courses and short courses on agricultural air quality.	This project will lead to a detailed understanding of emissions of ammonia and gaseous sulfur compounds from confined animal feeding operations (CAFOs) and their impact on PM _{fine} and make scientific recommendations on potential solutions.	2004 \$479,818
0199063	2/01/2004 – 1/31/2006	Buser, M. D. Phone: 806-746-5353 Fax: 806-744-4402 Email: mbuser@lbk.ars.usda.gov	Inherent PM ₁₀ and PM _{2.5} Stack Sampling Errors Due to the Interaction of Particle Size and Sampler Performance Characteristics	The goals of the proposed research are to theoretically and experimentally define the inherent errors associated with EPA approved PM ₁₀ and PM _{2.5} stack samplers.	Project results could be used by agricultural industries and State Air Pollution Regulatory Agencies in assuring that agricultural operations and other industries are equally regulated.	2004 \$196,646

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0199179	2/15/2004 – 2/14/2006	Melody Avery Phone: 757-864-5522 Fax: 757-864-8197 Email: m.a.avery@larc.nasa.gov	Direct, Fast-Response Measurements of Gas-Phase Ammonia at a Swine Production Facility	The major objective of this study is to improve quantification of ammonia emissions from a working swine production facility for agricultural policy and planning purposes. To better quantify these emissions, accurate gas-phase ammonia measurements must be made fast enough to estimate ammonia fluxes, and to characterize diurnal ammonia flux variations.	This information will be provided to help scientists develop cost-effective, environmentally sound swine production systems to address the emerging environmental issue of ammonia emissions from farms.	2004 \$223,052
0199121	6/1/2004 – 5/31/2007	Narasimhan Larkin Phone: 206-732-7849 Fax: 206-732-7801 Email: larkin@fs.fed.us URL: http://www.fs.fed.us/pnw/airfire/aquipt/	An Air Quality Impacts Planning Tool (AQUIPT) for Improved Air Quality Management	The goal of the AQUIPT project is to create a new web-based tool for fast assessments of air quality impacts from user defined agricultural and forestry activities. AQUIPT will provide needed evidence for documenting impacts from activities and alternatives that fall under the National Environmental Policy Act (NEPA).	This project will aid in the assessment of air quality impacts from a variety of forest and agriculture emissions sources, with a particular focus on the use of controlled burning. By providing rapid assessments of alternative strategies, this project will help land managers plan activities, and help state, tribe, and regional to local air agencies plan monitoring or regulatory needs.	2004 \$475,059
0193776	10/1/2002 - 9/30/2004	Brandt, S.	Estimating a Health Production Model for Households with Asthmatic Children	This project will estimate the costs of childhood asthma and the distribution of health care resources in Massachusetts.	Develop a household health production function that explicitly incorporates a model of household risk perception and averting mitigating behavior. Use this model to estimate the cost of children's asthma morbidity in Massachusetts.	

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0185409	10/1/1999 - 9/30/2004	Wilhelm, L. R. 865-974-7266 lwilhelm@utk.edu	Systems for Controlling Air Pollutant Emissions and Indoor Environments of Poultry, Swine, and Dairy Facilities	This study will collect emissions data relating to animal confinement facilities and conditions and how they can be improved. This study has a focus on environmental quality and health of animals and human workers.	The use of high-acid liquid alum as a litter amendment has the potential to greatly reduce ammonia levels and emissions from broiler production facilities.	2002 \$ 37,708
0188872	8/1/2001 - 7/31/2004	Decker, D. J. 607-255-2224 cuaes@cornell.edu	Urban Silviculture	This integrated research and extension project addresses: the effects of trees and other vegetation on reducing local air pollutants, the types of vegetation that are effective, and the optimum sites for planting.	Potential impacts on species selection and urban landscape design for pollution abatement	2002 \$ 217,152
0188955	10/1/1999 - 9/30/2004	Malone, G. W. 302-856-7303 malone@udel.edu	Systems for Controlling Air Pollutant Emissions and Indoor Environments of Poultry, Swine, and Dairy Facilities	This project will evaluate technologies to improve both litter and indoor air quality. The goal of this project is to demonstrate a potential cost-effective, long-term approach of reducing surface and groundwater nutrients, odor, ammonia, dust, feathers, and	Develop and improve sustainable systems to reduce air pollution emissions from poultry, swine, and dairy buildings and improve indoor air quality.	2002

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				noises associated with poultry operations.		
0186035	10/1/1999 - 9/30/2004	VanWicklen, G. L. 706-542-0883 garrett@enr.uga.edu	Systems for Controlling Air Pollutant Emissions and Indoor Environments of Poultry, Swine, and Dairy Facilities	Methods to be evaluated include: indoor ozonation, wet pad scrubbing using evaporative cooling pads, and windbreak walls for reducing dust. Endotoxin and bacteria concentrations will be measured.	Methods for reducing or preventing gases and dust from livestock and poultry facilities. Protocols will be developed for measuring dust and odor emission rates. Will develop methods for quantifying dust-borne odorants.	2002 \$ 73,352
0187075	10/1/2000 - 9/30/2005	Robarge, W. P. 919-515-1454 wayne_robarge@ncsu.edu	Regional Impacts on Environmental Quality Via Atmospheric Emissions from Agricultural Ecosystems	This project measures the emissions of ammonia (NH ₃) and pesticides from agricultural operations and their deposition to the surrounding environment.	Collection of data to determine if in this situation transport of ammonia emissions across watershed basins is occurring.	2002 \$ 5,250
0187233	10/1/2000 - 9/30/2005	Ravlin, F. W. 330-263-3705 ravlin.1@osu.edu	Integrated Compost Production for Livestock Facilities	This study will evaluate high rise hog systems (a new animal housing system), and poultry and dairy systems composting their manure. To determine the concentration and fate of ammonia, greenhouse and odor causing gases generated in the manure composting area. To develop computational fluid dynamic models of gas	Potential impacts of this research are improved animal production systems with decreased air and water pollution, improved fertility management, improved off-farm markets for livestock production by-products, and reduced pathogen problems.	2002 \$ 12,920

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				movement in the houses to optimize fan placement and animal health.		
0187912	10/1/1999 - 9/30/2004	Bottcher, R. W. 919-515-6753 robert_bottcher@ncsu.edu	Systems for Controlling Air Pollutant Emissions and Indoor Environments of Poultry, Swine, and Dairy Facilities	This project will quantify beneficial effects of nutritional, manure management, air cleaning, and ventilation approaches to reduce adverse impacts of air pollutant emissions and poor indoor air quality.	Detailed measurements of emissions from livestock and poultry facilities over a longer period will provide needed information as to the effect of animal age and season of the year on the levels of emissions. Such information would be very useful in the control or manage the emissions as well as the equipment and methods used.	2002 \$ 199,591
0190244	8/27/2001 - 8/26/2006	Koziel, J. A. 806-359-5401 ja-koziel@tamu.edu	Agricultural Air Pollution: Chemical Characterization of Odors	In this project, new methods for detection, speciation and quantification of odors, odorous gases, and VOCs based on solid phase microextraction and GC-MS are being developed and tested in the field. A chemical database for all gases emitted from various CAFO sources is being developed to learn more about formation, speciation, quantification and control of odors from CAFOs.	Accurate measurement methods for gases associated with confined animal feeding operations (CAFOs) result in realistic estimates of emission fluxes and rates. These estimates can be used as a benchmark for environmental impact of CAFOs, The methods and measurements can be used for development and science-based testing of odor control technologies.	2002

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0190969	9/15/2001 - 9/14/2004	Jacobson, L. D. 612-625-8288 jacob007@umn.edu	Aerial Pollutant Emissions from Animal Confinement Buildings	The goal of this project is to reduce the impact of odors, gases, and particulate matter from animal facilities on the environment and society. Specifically, the project will determine baseline Target Air Pollutants (TAP) emission rates for six common types of animal confinement buildings from different sections of the United States.	The data collected will be used to determine emission factors of the various gas and dust parameters for animal production systems in the United States. The project plans are to determine long term emission rates of odor, H ₂ S, NH ₃ , CO ₂ and PM from hog and poultry production buildings.	2001 \$ 2,150,000
0191378	10/1/2001 - 9/30/2006	Good, C. 515-294-4544 cgood@iastate.edu	Animal Manure and Waste Utilization, Treatment, and Nuisance Avoidance for a Sustainable Agriculture	The method to measure gases, dusts, odors, pathogens from livestock systems needs further standardization. This research will provide methods to measure atmospheric air-borne contaminants to which workers and neighboring residents may be exposed. The result will be to identify or develop technologies that will result in fewer air-borne emissions from the livestock operations.	The projects described will help set criteria for performance standards for the livestock industry. Odor is considered the most important air quality issue the livestock industry. Secondly, the potential health effect of the neighbors living in the community of livestock facilities also generates some concern. These projects will help to identify the facts relating to the impact of air emissions generated from livestock facilities.	2002 \$ 18,467

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0192080	7/15/2002 - 7/14/2004	Flocchini, R. G. 530-752-9955 Flocchini@Crocker.UCDavis.edu	Agricultural Sources of PM-10 and Ozone Precursors	This research will produce scientifically valid and defensible PM-10, ammonia, and volatile organic compound emission factors for open lot cattle feeding operations.	This project will measure the rates of emission of Reactive Organic Gases from dairies in the San Joaquin Valley (SJV) in California. These data are critical to determining the source of tropospheric ozone in this district where national standards for ozone have not been attainable in the last decade.	2002 \$ 374,145
0095668	10/1/1999 - 9/30/2004	Southard, R. J. 530-752-7041 rjsouthard@ucdavis.edu	Pedological Studies of California Soils: Links to soil survey, soil quality, and air quality	Investigate soil impacts on air quality (PM10, PM2.5) in relation to agricultural management and health effects. Improve the diagnostic criteria and function of the US soil classification system, and the application of soil survey information to issues of environmental quality. Investigate mineralogy of agricultural and industrial dust, health effects of dust, and predication of PM sources from soil survey.	The dust research identifies soils likely to produce dust when disturbed, that dust might be reduced if soils are cultivated at soil water contents above the dust threshold, and that conservation tillage reduces dust in the field.	2002 \$ 4,986

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0084767	10/1/2000 - 9/30/2005	Janni, K. A. Univ. of Minnesota St. Paul, MN 55108	Environmental and Air Quality Assessment and Control of Livestock Facilities	Biofilters for treating ventilation air and emissions from manure storage units will be monitored to determine their effectiveness for removing airborne contaminants (ammonia, hydrogen sulfide, and odor). Biofilters of a range of scales will be evaluated including full-size units on commercial livestock facilities, smaller demonstration units, and lab-scale units.	The results of this work will help regulatory agencies make their determination whether or not these facilities 1) violate current air emission standards, or 2) have a significant impact on ambient air quality. The biofilter results help document the environmental impact and our understanding of biofilters. Biofilter design and management guidelines are available. Several livestock facilities in Minnesota are using biofilters.	2002 \$ 19,115
0083437	1/7/1998 11/30/2003	Parnell, C. B. 979-845-3985 c-parnell@tamu.edu	Engineering of Systems for Compliance with Air Pollution for Agricultural Operations	Design of air pollution abatement systems for cotton processing facilities including cotton gins, grain elevators and feed mills. Develop accurate emission factors for agricultural operations. Develop more accurate dispersion models. Measurement and control of odors. To assist managers of agricultural operations to economically comply with state and federal air pollution regulations	Results of this research are impacting the regulations of air pollution from agricultural operations. Emission factors resulting from this research for cattle feed yards, feed mills, broiler operations, and dairies have been adopted by a number of states. The resulting cost of compliance has been significantly impacted.	2002 \$ 3,529

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0192349	7/15/2002 - 7/14/2004	Schillinger, W. F. 509-235-1933 schillw@wsu.edu	PM-10 particulate emission prediction and control from agricultural lands in the pacific northwest Columbia Plateau	The purpose of this project is to: (1) Evaluate the agronomic and economic performance of wind erosion and dust emission control with conservation cropping systems and quantify their effectiveness through descriptive measurements and applications of the USDA National Wind Erosion Prediction Systems (WEPS) and; (2) Establish the theory, quantification, and verification of wind erosion estimates on agricultural lands with variable soils, climates, and cropping systems.	Develop low and moderate resolution base data for the Columbia Plateau in GIS format necessary to describe major input variables such as climate, soil, vegetation and farming practices required to estimate agricultural wind erosion and PM10 particulate emissions. Establish the theory, quantification, verification of simultaneous wind erosion and PM10 fluxes on agricultural lands in the Columbia Plateau with data from several intensively instrumented agricultural field sites and a portable wind tunnel for calibration of the USDA National Wind Erosion Prediction System.	2002 \$ 398,736
0176831	10/1/1997 - 9/30/2003	Carroll, J.J. Univ. of California Davis, California 95616	The National Atmospheric Deposition Program (NADP)	The major focus has been aircraft sampling of meteorological conditions and air quality in several areas of central California. Analysis and interpretation of these measurements have provided significant insight into the chemical composition of air pollutants in these areas and their transport and dispersion to rural areas.	These studies document the degree to which non-urban areas downwind of pollution sources are affected by emissions from urban, transportation and agricultural sources. In particular these areas often experience concentrations greater than those found in the urban areas themselves as they are exposed to the accumulation of all emissions along the traveled trajectory. Greater knowledge of the sources of these pollutants, transformations and dispersion and deposition into sensitive ecosystems are the first steps to reduce these impacts.	2002 \$ 12,136

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0194291	10/1/2002 - 9/30/2007	Flocchini, R. G. 530-752-1460 rgflocchini@ucdavis.edu	Air Emissions from Agricultural Operations	With the recent public interest in evaluating the effluent from agricultural practices and operations it is necessary to have scientifically sound data that provides emission information from these potential sources. This project provides information on particulate matter (PM10, PM2.5), ammonia, and volatile organic compounds that can be used to assess the contribution of agriculture to ambient air conditions.	Evaluate air emissions including but not limited to particulate matter (PM10, PM2.5), ammonia and volatile organic compounds associated with agricultural operations. These operations include land preparation, harvesting of crops, and activities within confined animal feeding operations (CAFOs). The objective is to provide accurate and transferable emission factors that can be utilized to assess the contributions of agricultural activities to ambient air quality.	2002
0184092	10/1/1999 - 9/30/2004	Good, C. 515-294-4544 cgood@iastate.edu	Systems for Controlling Air Pollutant Emissions and Indoor Environments of Poultry, Swine and Dairy Facilities	Animal housing facilities have a direct impact on animal and human performance as well as the outdoor environment. This project considers methods to improve animal environments as well as reduce and quantify emissions from animal facilities in an energy efficient manner. Alternative sources of energy for animal facilities are studied.	Identification of specific compounds that likely contribute to malodor and relate to observed differences in odors emanating from production facilities of different species, could be used in conjunction with species-specific siting tools. These results serve as a scientific basis for making management decisions and risk assessment associated with market-size broiler production and handling under thermally challenging conditions. By scientifically characterizing the feeding behavior of laying hens, baseline information will result that may help better quantify the welfare of birds.	2002 \$ 15,075

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0184353	10/1/1999 - 9/30/2004	Lacey, R. E. 409-845-3967 ron-lacey@tamu.edu	Systems for Controlling Air Pollutant Emissions and Indoor Environments in Poultry, Swine, and Dairy Facilities	This project addresses systems to control air emissions and indoor air environments in poultry, swine, and dairy facilities. Elements of the project include quantification of potential pollutants, removal of the pollutants, control of the thermal environment, and ventilation of the facilities.	Better design and control of these confined animal production systems can minimize the environmental impact and result in continued economic competitiveness for food production.	2002 \$ 87,086
0184900	10/1/1999 - 9/30/2004	Bucklin, R. A. 352-392-7728 bucklin@agen.ufl.edu	Systems for Controlling Air Pollutant Emissions and Indoor Environments of Poultry, Swine, and Dairy Facilities.	This project will improve monitoring of air pollutant emissions and indoor environments of poultry and livestock facilities. Research will use olfaction with house flies and other Diptera to measure attractiveness of airborne odor pollutants in coordination with an Olfactometer system developed at the Univ. of Florida to electronically measure airborne odors .	Develop an electronic nose to evaluate odors and to develop systems for controlling air pollutant emissions and indoor environments of poultry, swine and dairy facilities through improvement in monitoring systems which support changes in design to reduce pollutants.	2002 \$ 20,727
0187912	10/1/1999 - 9/30/2004	Bottcher, R. W. 919-515-6753 robert_bottcher@ncsu.edu	Systems for Controlling Air Pollutant Emissions and Indoor Environments of Poultry, Swine, and Dairy Facilities	This project will quantify beneficial effects of nutritional, manure management, air cleaning, ventilation, and environmental control systems approaches to reduce adverse impacts of air pollutant emissions and poor indoor air quality.	Detailed measurements of emissions from livestock and poultry facilities over a longer period will provide needed information as to the effect of animal age and season of the year on the levels of emissions. Such information would be very useful in the control or manage the emissions as well as the equipment and methods used.	2002 \$ 199,591

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