

Examples of Current 1890 University Research

Name of University	Title of Project	Brief Overview of Research	Type of Research (see codes at bottom)
Tuskegee University	EVALUATION OF SWEETPOTATO BIOMASS AS FEEDSTOCK FOR BIOFUEL-THANOL PRODUCTION	Domestic production of biofuel such as ethanol can decrease the dependency on foreign oil, create jobs in the rural areas and help protect the environment . The overall goal of this project is to assess the use of sweetpotato biomass as potential feedstock for ethanol production from its starch and cellulosic materials	E
Tuskegee University	CONSERVATION SYSTEMS RESEARCH FOR IMPROVING ENVIRONMENTAL QUALITY AND PRODUCER PROFITABILITY	Coordinated plot and field-scale studies are underway to develop strategies for managing soils to reduce economic risks of short-term drought and increase farm profitability, improve soil quality, and enhance carbon storage.	S
Tuskegee University	IMPACT OF HOG AND TURKEY FARM PRODUCTION PRACTICES ON MOLECULAR EPIDEMIOLOGY OF CAMPYLOBACTER, SALMONELLA, AND EMERGING FOODBORNE PATHOGENS	Work is underway to monitor efficacy of on-farm intervention strategies targeting specific human health risk factors on turkey farms. Approaches: (1) Use optimized sampling strategies, enumeration, and molecular diagnostic tests to identify management practices resulting in high and low <i>Salmonella</i> and <i>Campylobacter</i> prevalence; monitor the efficacy of on-farm intervention strategies targeting specific risk factors. (2) Identify key virulence attributes to differentiate <i>Salmonella</i> and <i>Campylobacter</i> avirulent commensals from those pathogenic strains that pose a public health threat in humans, (3) develop molecular methods to assess the dynamics of the microbial intestinal flora throughout hog and turkey production (identifying microbes associated with gut colonization by, and population shifts of, foodborne pathogens), (4) determine prevalence and quantities of recognized foodborne pathogens, principally <i>Salmonella</i> but also <i>Campylobacter</i> and <i>Yersinia</i> , in hog carcasses and organs.	F
Tuskegee University	PRODUCTION OF VALUE-ADDED LIPIDS, BIOFUELS, AND BIOBASED PRODUCTS FROM FATS AND OILS	Studies are underway to expand the use of animal fats, vegetable oils, and their co-products by developing new and/or alternative processes to exploit the potential of these feedstocks as biobased products and biofuels. Targeted areas include: producing lipids with improved physical and/or nutritional properties; introducing branching into the linear fatty acids common to natural fats and oils; producing polyol fatty acids, amides, as functional or metalworking fluids; using natural and/or modified phospholipids as metalworking fluids and/or lubricant additives; developing alternative processes for producing biodiesel from intact oils and fats and/or less expensive lipid feedstocks; developing methodologies for	E

Examples of Current 1890 University Research

Name of University	Title of Project	Brief Overview of Research	Type of Research (see codes at bottom)
		improving the quality and performance of biodiesel fuels; and developing new uses for glycerol.	
Tuskegee University	DEVELOPMENT OF ACCURATE AND REPRESENTATIVE FOOD COMPOSITION DATA FOR THE U. S. FOOD SUPPLY	Work is underway 1) to collect updated analytical data on foods commonly consumed that contribute to the increased prevalence of obesity in the United States; 2) to compile analytical information in appropriate databases and release these to the public; 3) to enhance timely updating of nutrient databases; 4) to assay key contributors of energy and other nutrients affecting obesity and to monitor these nutrient changes in foods consumed by the U.S. population, including low-income minority populations, especially those of Hispanic, African American, and Native American heritage; 5) to compile and release changes to the food composition data in the USDA National Nutrient Database for Standard Reference (SR) and its related subset of more than 3,000 foods and 65 components which supports the NHANES: What We Eat in America Survey.	N
Tuskegee University	A MULTIDISCIPLINARY APPROACH TO REDUCE RISK OF CARDIOVASCULAR DISEASE, CANCER AND FOOD BORNE ILLNESSES IN THE BLACK COUNTIES OF ALABAMA	This project determines the effectiveness of the consumption and safety of indigenous foods and their bioactive components in rural Black Belt African-American communities of Alabama in preventing chronic diseases as cardiovascular diseases, cancer and food borne illnesses	N
Tuskegee University University of MD Eastern Shore Alabama A&M University Delaware State University Tennessee State Univ.	TUSKEGEE SMALL FARMER OUTREACH TRAINING AND TECHNICAL ASSISTANCE PROGRAM	Conduct outreach and technical assistance to encourage and assist socially disadvantaged farmers and ranchers to own and operate farms and ranches; and to provide information on loan application and farmer programs. Specific objective are: to develop and implement programs so that eligible farmers and their family members may apply for and acquire farm ownership, farm operating, equipment, housing, and youth loans; to develop and enhance business management and marketing skills for USDA borrowers; to develop the financial documentation of the farm and other applicable rural enterprises to the point where the owner graduates to a commercial lender; to develop a long-range base for self-sustaining farm business analysis services through existing associations and institutions; and to increase service to and participation of other socially disadvantaged and minority farmers and their family members.	S

Examples of Current 1890 University Research

Name of University	Title of Project	Brief Overview of Research	Type of Research (see codes at bottom)
Tuskegee University	INTEGRATED SWEETPOTATO PRODUCTION AND POSTHARVEST TECHNOLOGIES FOR ALABAMA	The sweetpotato is an underutilized crop in Alabama. This project uses an integrative and a multidisciplinary approach to develop and improve sweetpotato cultivars that, are pest resistant, have high nutrient content, excellent eating quality, have high dry matter and starch content, are adaptable to varied growing conditions in Alabama and can be used to develop value added and nutritionally enhanced sweetpotato products and as feedstock for biofuel.	E
Tuskegee University	INTEGRATION OF MOLECULAR AGRICULTURE AND HUMAN HEALTH: THE USE OF POULTRY FOR STUDIES ON CARDIOVASCULAR DISEASE	Factors such as diet, health, environment and genetic predisposition can affect the development of cardiovascular disease. Using poultry as a model, the study will elucidate the effect of diet, and genetic predisposition and other factors on human cardiovascular condition	N
Tuskegee University	INTEGRATED PEST MANAGEMENT AND FOOD SAFETY IN THE SMALL FARM ENVIRONMENT	The safety of our agriculture and food systems can be compromised by the presence of both pathogenic microorganisms (such as <i>Listeria sp.</i> , <i>Salmonella sp.</i> , <i>E. coli</i>) and pesticide residues. Many small farmers are not adequately informed of the dangers of pesticides and microbial contaminants and how to reduce the risks imposed by them. This project will collect baseline information on IPM and HACCP through a survey of farmers, and conduct experiments to determine the level of contamination by pathogenic organisms and insecticides. Finally a solution for mitigation will be developed and deployed.	F
Tuskegee University	DEVELOPMENT AND CHARACTERIZATION OF <i>SALMONELLA</i> MUTANTS FOR USE AS LIVE VACCINE	The objectives of this research are to develop and characterize an attenuated strain of the food-borne pathogen <i>Salmonella typhimurium</i> . This includes examining the ability of <i>Salmonella</i> yqhC mutant to cause infections in vitro cell culture system as well as in animal model of infection. Most importantly, this study will investigate the potential use of such mutant as a live attenuated vaccine for protection against <i>Salmonella</i> infections in animals. Reduction of <i>Salmonella</i> colonization and outbreaks in animals will significantly reduce incidences of salmonellosis in humans. Further, this work will define the immunological basis of host protection afforded by <i>Salmonella</i> yqhC mutant, which will provide valuable information necessary for effective vaccine designing.	F
Alabama A&M University	PHYSICAL MAPPING & ECO-TILLING FOR HIGHTHROUGHPUT	Develop a genomic framework by integrating physical map data with existing genetic map, and ECO-TILLING of new alleles for genes related to resistance, industrial, and nutraceutical traits. Development of a genetic population segregating for pest resistance, horticultural, and	N

Examples of Current 1890 University Research

Name of University	Title of Project	Brief Overview of Research	Type of Research (see codes at bottom)
	ALLELE MINING OF DISEASE RESISTANCE AND NUTRACEUTICAL GENES FOR PYRAMIDING IN SWEETPOTATO	nutraceutical traits. Construction of a BIBAC library, and making BAC pools and physical mapping for a multiple pest-resistant ARS cultivar. Genetic population will be characterized for the resistance and other traits. ECOTILLING will be used to identify genetic marker variants that may be correlated with these traits.	
Alabama A&M University	Biodiesel Classroom on Wheels	Alabama A&M University, Department of Natural Resources & Environmental Sciences and the Alabama Department of Agriculture and Industries, through the office of Commissioner of Agriculture and its Alternative Energy Unit, have reached an agreement to create an outreach program to expose, demonstrate and educate citizens of Alabama about proper procedures for producing high quality biodiesel on small scale basis. The program designated as “Biodiesel Classroom on Wheels” is a mobile system which can be taken to different locations around the state to provide hands-on demonstration and training in the process of producing biodiesel using locally available feedstock. Widespread exposures to small-scale biodiesel have been achieved by displaying the unit at state fairs, cooperative extension meetings and other agricultural related events.	E
Alabama A&M University	DEVELOPMENT OF PRODUCTION SYSTEMS FOR MEDICINAL PLANTS WITH HYPOGLYCEMIC PROPERTIES	Type II diabetes is a major epidemic in the US. Two vegetable and one culinary herb crops known to reduce blood sugar levels will be developed for production on small farms and for incorporation into nutritional therapy that could complement conventional drug therapy for managing diabetes.	N
Alabama A&M University	FOOD SAFETY EDUCATION FOR THE HARD-TO-REACH AND UNDERSERVED COMMUNITIES	This project will develop material and additional literature to strengthen the outreach or education component of a food safety education project. The project will also conduct a needs assessment pilot survey of fruit and vegetable growers in selected underserved communities in Alabama and Tennessee.	F
Alabama A&M University	EFFECT OF DIETARY LYCOPENE ON CARDIOVASCULAR	Plant constituents, including various carotenoids, are currently receiving attention for their potential health promoting effects. The present study is designed to investigate the influence of lycopene on atherosclerotic plaque formation or development, induced by feeding a high cholesterol diet. The potential beneficial effect of lycopene consumption would be to improve	N

Examples of Current 1890 University Research

Name of University	Title of Project	Brief Overview of Research	Type of Research (see codes at bottom)
	DISEASE IN RABBITS	the lipid profile and protect against oxidative stress.	
Alabama A&M University	RESEARCH ON MEDICINAL PLANTS WITH ANTIDIABETIC AND ANTI-COLON CANCER PROPERTIES	The medicinal plants research program aims to validate antidiabetic and anti cancer properties of plants that are easy to grow in the US. Four plant species, a herb (basil, <i>Ocimum tenuiflorum</i> , <i>Lamiaceae</i>), a vegetable fruit (bitter guord, <i>Momordica charantia</i> , <i>Cucurbitaceae</i>), a tuber crop (yacon, <i>Smallanthus sonchifolius</i> , <i>Asteraceae</i>), and an ornamental shrub (service berry, <i>Amalanchier alnifolia</i> , <i>Rosaceae</i>) have been selected for validation and identification of potential antidiabetic mechanisms and bioactivity against colo-rectal cancer using cell culture techniques and laboratory animal models. In this research, antidiabetic activity and mechanism in serviceberry (<i>Amelanchier alnifolia</i>) and anti colon cancer activity in basil (<i>Ocimum tenuiflorum</i>) were identified and confirmed using cell culture and laboratory rat model studies, respectively. Plant-based remedies can complement drug-based therapies in reducing cost of disease management. Both crops are edible and can be used as teas or in powdered forms. The research on basil production has shown that planting in 1st week of May with 225 kg of N/ha and using green colored plastic mulch enable the crop to produce greater whole plant and leaf biomass. Leaf extracts of <i>Ocimum tenuiflorum</i> known for a wider range of medicinal properties has greater levels of iso euginols and euginols than five other <i>Ocimum</i> species grown in North Alabama. The extracts can be added to health foods and market potential exists for developing nutraceutical products. Limited resource farmers can now grow basil <i>O. tenuiflorum</i> as a medicinal plant to cater to the medicinal plants industry.	N
University of Arkansas Pine Bluff Southern University and A&M College Alcorn State University	DELTA NUTRITION INTERVENTION RESEARCH INITIATIVE -	The objective of this cooperative research project is to evaluate the nutritional health in the Lower Mississippi Delta, to identify nutritionally responsive problems, and to design and evaluate interventions that may be sustained at the community level and implemented on a larger scale in similar areas of the United States. APPROACH: Developing capacity as necessary, the Lower Mississippi Delta Nutrition Intervention Research Initiative (Delta NIRI) Consortium will identify environmental and community characteristics related to nutritional status; measure dietary intake; assess nutritional risk factors; design, conduct, and evaluate interventions in the Lower Mississippi Delta. Southern University & A&M College (SU) Center of Excellence for Food, Nutrition, and Health Promotion (COE-FNHP) specifically will support	N

Examples of Current 1890 University Research

Name of University	Title of Project	Brief Overview of Research	Type of Research (see codes at bottom)
		community-based participatory research in Franklin Parish, LA, and other sites as mutually agreed upon. In addition, the Center will support dietary intake and food consumption assessments of the research investigations and activities of the Delta NIRI, design and test culturally appropriate nutrition intervention strategies to reduce food insecurity in the rural Lower Mississippi Delta (LMD) of low income children and their families.	
Delaware State University	ON-FARM TRANSFORMATION, STABILIZATION, AND UPGRADING OF PYROLYSIS BIO-OIL AS A BIOFUEL	On-farm production and application of bio-oil and biochar from organic waste through slow pyrolysis demonstrates great economic and environmental advantages. However, crude bio-oil is a corrosive, unstable, hard-to-ignite, and energy-low liquid that cannot be directly used as a fuel alternative. To boost the incentives for farmers to practice slow pyrolysis for harvesting bio-oil and biochar from agricultural byproducts, efficient techniques for transforming and upgrading pyrolysis bio-oil to a quality biofuel have to be available. This project aims to develop innovative transformation and stabilization technologies for on-farm upgrading pyrolysis bio-oil to utilizable fuels.	E
Delaware State University	PROMOTE LOW GLYCEMIC AND MONOUNSATURATED FATTY ACIDS RECIPES AS IMPORTANT STRATEGY FOR OBESITY REDUCTION AND MANAGEMENT OF TYPE II DIABETES	Obesity epidemic is associated with the consumption of calorie dense foods. Management of type II diabetes is a major health problem among low income Americans. This project is aimed at developing and promoting low-glycemic index recipes with high monounsaturated fatty acids as an intervention strategy to prevent/reduce obesity and manage type 2 diabetes.	N
Delaware State University	IMPLEMENTATION AND EVAL. OF EDUCATIONAL PROGRAM FOR PROMOTING HEALTHY EATING CHOICES AND PREVENTING WEIGHT GAIN IN ADOLESCENTS	Obesity in children and adolescents is a serious health problem with many health and social consequences that often continue into adulthood. Implementing preventing programs for youngsters is critical to controlling the obesity epidemic. The purpose of this project is to promote healthy eating choices and weight gain prevention among Delaware adolescence using food labels and 2005 Dietary Guidelines for Americans.	N
Delaware State University	EFFICIENT PRODUCTION OF ETHANOL FROM	Considerable progress has been made in ethanol production from agricultural products derived from corn, sugarcane, and cassava. Cassava (<i>Manihot esculenta</i>), also known as	E

Examples of Current 1890 University Research

Name of University	Title of Project	Brief Overview of Research	Type of Research (see codes at bottom)
	TRANSGENIC-SELF-PROCESSING CASSAVA (<i>MANIHOT ESCULENTA</i> CRANTS) PLANTS	manioc, which is grown worldwide (particularly in Africa, South America and most of Southeast Asia) as a food source for billion of people, raising the possibility that it could be used globally to alleviate dependence on fossil fuels. Cassava tubers are an excellent source of carbohydrates with 20-40% starch content. It grows in diverse environments especially in extremely harsh climatic conditions. Its starch is presently being used for large-scale ethanol production in many Asian and African countries. Conventionally, the starch is liquefied using α -amylase and amylopullulanase with glucoamylase, before the sugars are used as feedstock for ethanol fermentation. The enzymes used in this process are expensive and are produced with genetically engineered microbes. Engineering cassava tubers to express hyperthermophilic starch-hydrolyzing enzymes and removing the need to add costly enzymes should help reduce the cost associated with starch breakdown into sugars and increase ethanol yields.	
Florida A&M University	DEVELOPING FEEDSTOCK AND EVALUATING CONVERSION PROCESSES FOR BIOUELS	Biomass production and conversion for cellulosic ethanol, Biodiesel production from halophytes and specialty crops, demonstration of cellulosic ethanol and biodiesel production for biomass production research are being conducted through germplasm collection, evaluation, and utilization. Sweetgum and Eastern Cottonwood are the germplasm collection materials.	E
Fort Valley State University	INVESTIGATION OF NUTRITIONAL AND FUNCTIONAL CHARACTERISTICS OF GOAT MILK INFANT FORMULA AND SPECIALTY CHEESES	Development of value-added nutritionally functional dairy goat products such as infant formula, reduced fat and reduced cholesterol goat cheeses, iron fortified and CLA enhanced goat cheeses would be immensely important for the future enhancement and profitability of the dairy goat industry. Furthermore, the evaluation of food quality, shelf-life, sensory properties and physico-chemical changes during storage and ripening of the newly developed nutritionally and metabolically functional goat products would give enormous positive impacts on successful development and marketing of the products. Although the above mentioned parameters on value-added products may have been extensively studied for the cow milk based products, almost no scientific literature and research data are available on goat milk products. Therefore, this project addresses the development of aforementioned value-added goat milk products and scientific evaluation of various aspects of quality parameters of the developed dairy goat products.	N
Fort Valley State University	CONTROL OF <i>E. COLI</i> O157:H7 ON BEEF	This project is to control the pathogenic bacteria of <i>E. coli</i> O157:H7 on beef surfaces from application of low current electric pulse through a thin film of electrolyte on the surface of	F

Examples of Current 1890 University Research

Name of University	Title of Project	Brief Overview of Research	Type of Research (see codes at bottom)
	SURFACES USING ELECTRIC PULSE AND THIN-FILM ELECTROLYTE SOLUTION	beef. This project is to control the pathogenic bacteria of <i>E. coli</i> 0157:H7 on beef surfaces from application of low current electric pulse through a thin film of electrolyte on the surface of beef.	
Fort Valley State University	A STUDY OF PLANTS WITH MEDICINAL AND NUTRACEUTICAL VALUE	Products from <i>Scutellaria</i> have anti-cancerous properties, are inhibitory to HIV-1 and influenza viruses, and are useful in the treatment of a wide range of nervous conditions. <i>Centellaasiatica</i> products are used as a tonic for mental calm and clarity and for inflammation and burns. <i>Bacopa sp.</i> products are used for memory enhancement and to treat dermatitis, anemia, fever, diabetes, cough, anorexia, dyspepsia, dropsy arthritis, and mental conditions. Some fruits have unique properties as well, such as guava for treating gastrointestinal problems, diarrhea and dysentery, vomiting, stomach aches, diabetes, vaginitis, leucorrhea, and intestinal parasitosis. Peaches have bioactive compounds that help hair growth and blood circulation and relieve bladder inflammation and other urinary tract problems. The bioactive compounds in phalsa (fruit) can be used in cardiac and blood disorders, to reduce fever, and its roots alleviate coughing problems and for treating irritable intestines and bladder problems. Papaya is used to treat ulcers, swelling, toothaches, fever and sour stomach. The pulp is also used in facial creams, salves, and shampoos. All of these plants are being studied with the following objectives: developing efficient biotechnology protocols for regeneration and conservation of medicinal and nutraceutical plants; screening for useful bioactive components; genetic transformation to enhance and improve the desired quality characteristics and increase abiotic stress tolerance for wider adaptation.	N
Fort Valley State University	Biofuels Research	FVSU scientists are seeking alternatives to corn for ethanol production. The alternative crop species choice has been guided by their ability to grow on marginal soil not suited for food crops and having the potential ability to produce biofuel at least at par with corn. Thus, a research goal is to remove public perception that biofuel is in competition with food and at the same time develop sustainable biomass feedstock base for the US biofuel industry. They have zeroed in on two grain crops- pearl millet and sorghum, three grass species- napiergrass, energycane and switch grass, and one fast growing tree- paulownia. Instead of concentrating on one feedstock, they are working with a feedstock pool so as to increase the time span of its availability and thereby utilization of ethanol processing facility for better return on capital	E

Examples of Current 1890 University Research

Name of University	Title of Project	Brief Overview of Research	Type of Research (see codes at bottom)
		<p>invested on machinery. In pearl millet, the thrust of their research is to use molecular breeding to develop disease resistant varieties with high grain to alcohol conversion ratio. Towards this end, they have fingerprinted a diverse set of 90 lines taken from Africa, India and the US and are using this information for variety selection and breeding. In collaboration with a local sweet sorghum biofuel entrepreneur, FVSU scientists are in process of developing technologies to block transfer of sugars to head in order to increase juice yield and to increase the storage life of juice for processing into ethanol. The grass and tree rootstock work is in the early phase, but apart from developing their sustainable production method, FVSU scientists will also look into traits for higher ethanol conversion ratio. Since napiergrass and pearl millet have a common chromosome and genetic markers are not available in napiergrass, they intend to transfer genes of interest such as brown rib for easy biomass breakdown to facilitate conversion of napiergrass biomass to ethanol.</p>	
Kentucky State University	SMALL ORGANIC FARMS GROWING FOOD AND BIOFUEL CROPS: EFFECTS OF SCALE ON SUSTAINABILITY	<p>This study involves 1) comparing sustainability of food and biofuel feedstock production on small organic farms representing three production scales., 2) Comparing sustainability of corn, soybean, sweet sorghum, and sweet potato food and biofuel feedstock crops grown in small farm systems, 3) Determining market price thresholds at which feedstock production becomes more profitable than food production for each system. 4) Comparing resource-use efficiency of research plots to that of working organic farms operating at each of the scales studied.</p>	S
Kentucky State University	ANTICANCER AND NEUROPROTECTIVE PROPERTIES OF PAWPAW FRUIT EXTRACTS AND ACETOGENIN BIOAVAILABILITY	<p>Acetogenins are a group of compounds, exhibiting a wide range of bioactivities including anticancer property. However, the low content found in plant materials may be hampering the wider availability and therefore the use in clinical research. In addition, acetogenins may be bioavailable, the level of uptake or metabolism is unknown. While acetogenins are toxic to various cell types, antioxidant components in pawpaw fruit may reduce the toxicity to nerve cells, thereby giving neuroprotection. The purpose of the study is to optimize acetogenin extraction, to identify bioactive fractions, to determine the level of uptake and metabolism of acetogenins by cells with the use of cell culture based assays, and to investigate the effect of pawpaw antioxidant components, in relation to changes in cell antioxidant levels and apoptosis caused by acetogenins</p>	N
Kentucky State	AQUACULTURE AND	Kentucky's small/limited resource farms are struggling to survive in a global agricultural	S

Examples of Current 1890 University Research

Name of University	Title of Project	Brief Overview of Research	Type of Research (see codes at bottom)
University	LIVESTOCK INTEGRATED FARM ANALYSIS: AN ECONOMIC PERSPECTIVE OF LIMITED RESOURCE FARMERS IN KENTUCKY	marketing environment. Marketing and risk management tools successfully used by larger farms are less effective for small farms in Kentucky due to resource, education, and government program participation limitations. This project investigates economic, financial, and marketing viability of incorporating aquaculture and alternative livestock enterprises in small/limited resource farms in Kentucky	
Southern University And A&M College	EFFECTIVENESS OF EARLY NUTRITIONAL INTERVENTION STRATEGIES FOR ELEMENTARY SCHOOL TEACHERS IN LOUISIANA	The dilemma arises on how to provide adequate nutrition education to children with teaching time at a premium. One solution might be to provide elementary school teachers with useable nutritional intervention strategies to teach nutrition to children. Interventions that provide teachers with nutrition information, techniques, and procedures for use in helping children adopt a healthy diet and physical activity. To fill this need, nutrition intervention strategies will be provided for elementary school teacher's use with children to effect changes in food habits, nutrition knowledge, and physical activity. The question, with which this research will be concerned with, is how effective are nutrition intervention strategies on knowledge, food behavior, and physical activity of children?	N
University of MD Eastern Shore	DIVERSE GRASS SPECIES AS POTENTIAL SOURCES OF BIOFUEL, PHOSPHORUS HYPERACCUMULATION AND THEIR IMPACTS ON SOIL ORGANIC MATTER DYNAMICS	Various millets, sudangrass and switchgrass genotypes will be studied for their ability to produce high dry weight and conversion to biofuel (alcohol). Identification of grass genotypes that are non-food sources for high potential to give alcohol will not only provide alcohol for the transportation industry, and hence, reduce our dependence on imported petroleum oils for fuel, but also help to remove some of the high phosphorus from farm lands due to over application of poultry manure in the Delmarva region. The grasses to be grown in the Delmarva region are known to have high tolerance to drought; thus, they will be a most profitable addition to the sources of farm income in the Delmarva drought prone region. Future biofuel extraction plants will also have a ready source of feedstock.	E
University of MD Eastern Shore	DRY POULTRY LITTER INCORPORATION INTO NO TILL SOILS TO MINIMIZE TRACE ELEMENT AND NUTRIENT MOVEMENT TO THE	Land application of manure is one of the most sensitive and important water quality issues facing livestock farmers in the Chesapeake Bay Watershed today. Research has revealed that repeated application of manure to soil can enrich nitrogen (N) in groundwater and phosphorus (P) in surface runoff.). In the coastal plain soils of Maryland's Eastern Shore, leaching of P is also a significant source of P in ground and surface waters. Eutrophication of the Chesapeake Bay estuary is tied, in part, to all of these processes. This project will test the sub surface injection of manure which has been identified as a key to combating the accumulation of	C/E

Examples of Current 1890 University Research

Name of University	Title of Project	Brief Overview of Research	Type of Research (see codes at bottom)
	CHESAPEAKE BAY	water soluble nutrients and harmful trace elements at the surface of no till soils. In addition to minimizing dissolved nutrient runoff, this project will exam the effect of manure injection on ammonia volatilization reduction, reduced odor emissions and improve crop yields by placing manure nutrients in the rooting zone.	
University of MD Eastern Shore	MOLECULAR CHARACTERIZATION AND PREDICTIVE MODELING OF <i>SALMONELLA SPP.</i> RECOVERED FROM PROCESSED POULTRY	This study the prevalence and antimicrobial resistance of <i>Salmonella spp.</i> recovered from pre- and post-chill poultry carcasses was investigated. <i>Salmonella spp.</i> isolated from processed poultry is being analyzed by DNA fingerprinting to determine the genetic relationship. However, little information is available about the association between the presence of virulence factors in <i>Salmonella spp.</i> and their potential for causing human illness. In addition, there is lack of knowledge about the distribution of Salmonella contamination on the chicken carcass; especially for young chickens in the Cornish game hen class. Moreover, adequate information is not available about the development of predictive models for the growth of Salmonella in processed poultry as a function of strain variation under various environmental conditions. The purpose of this study is molecular characterization and predictive modeling of <i>Salmonella spp.</i> recovered from processed poultry.	F
University of MD Eastern Shore	PREVALENCE, GROWTH, SURVIVAL AND CONTROL OF <i>LISTERIA MONOCYTOGENES</i> IN BLUE CRAB (<i>CALLINECTES SAPIDUS</i>) MEAT	<i>Listeria monocytogenes</i> is a food borne pathogen constituting a major threat to the safety of our food supply. Recently, National Food Processor Association, US Department of Agriculture and the US Food and Drug Administration recognize that there is inadequate information about growth, survival and control of <i>L. monocytogenes</i> in ready-to-eat products especially in crab meat, thereby preventing the design of effective science-based intervention technologies and risk assessment to reduce human exposure to this pathogen. This lack of information also has a profound negative impact on the economics of the seafood industry. The purpose of this project is to develop and communicate improved control strategies in the crab meat industry for <i>L. monocytogrnes</i> through research and outreach activities.	F
University of MD Eastern Shore	NUTRITIONAL SURVEYS OF UNCULTIVATED SEA VEGETABLES FROM THE CHINCOTEAGUE BAY	Few studies have addressed nutritional benefits and antioxidant properties of sea vegetables. There is a need for continued, comprehensive research on "organic" and "natural" foods to develop increased awareness of the long-term health benefits of consumption of nutrient-rich seaweeds that are abundant in the coastal bays. The overall goal of this project is to advance the body of knowledge in applied natural sciences and human nutrition through initiating research on nutritional surveys of some of the abundant sea vegetable species in the	N

Examples of Current 1890 University Research

Name of University	Title of Project	Brief Overview of Research	Type of Research (see codes at bottom)
		Chincoteague Bay with the hope of opening avenues for applications of these nutrient-rich algae for food and nutraceutical products.	
Alcorn State Univ.	UTILIZING ASSISTED REPRODUCTIVE TECHNOLOGY TO BOOST EFFICIENCY OF BEEF PRODUCTION BY LIMITED RESOURCE FARMERS	Animals that grow and reproduce fast are key components for livestock operations to be profitable and consequently efficient. At present, the embryo transfer technique presents the best avenue to rapidly improve the genetics of cattle for traits intrinsically associated with profitability of the industry due to the genetic benefits transmitted to the offspring from both parents. Nevertheless, the technique is not currently as popularly used as artificial insemination in the cattle industry despite the benefits obtained by using genetically superior parents. The main reason for this phenomenon is the economic loss caused by embryo mortality occurring seven to ten days after the transfer. Therefore, the overall objectives of the proposed studies are to elucidate molecular mechanisms by which suitable uterine environments are generated by supplementation of an exogenous progesterone treatment, and to apply this knowledge to the development of embryo transfer systems for a higher pregnancy rate.	S
Lincoln University	AN INTERVENTION STUDY FOR OBESITY IN AFRICAN AMERICAN WOMEN	In a study conducted by LU, 20 White Caucasian women and 40 African-American women were recruited to study the differences in cardiovascular risk factors associated with obesity. This project also conducted an intervention study for obesity in African-American women since they have greater incidence of obesity and obesity-associated health problems. Half of the African American women participated in a weight-loss program and the other half was used as the control group. The weight-loss program included 12-week "slim-eating" nutrition education and tread-mill exercise program. African-American women had higher plasma triglyceride level. The blood pressure, plasma glucose and cholesterol were not affected by race. The participants who consistently participated in eating-slim nutrition education and exercise reduced body weight. The biochemical analysis of blood samples for cardiovascular risk factors will be reported later. The results of this study contribute to the overall knowledge of effective strategies for prevention and treatment of overweight and obesity and thereby, reduce health care costs.	N
Lincoln University	DEVELOPMENT OF A BIOSENSOR FOR <i>E. COLI</i> 0157:H7	Detection and identification of bacteria and food pathogens is an essential step in food safety inspection. A recently approved project in the area of food safety will develop a novel 3-dimensional (3-D) interdigitated microelectrode array (IDE) based impedance biosensor. This	F

Examples of Current 1890 University Research

Name of University	Title of Project	Brief Overview of Research	Type of Research (see codes at bottom)
		<p>biosensor will be capable of rapid detection and selective for accurate identification of <i>E. coli</i> O157:H7. This design is unique in the use of a 3-D IDE which increases the surface area compared to a single (2-D) IDE sensor. The increased surface area will enhance the sensitivity of impedance detection.</p> <p>The success of the proposed research will results in a handheld, user friendly, portable <i>E-Coli</i> (O157:H7) biosensors with high sensitivity and speed with broad range of applications in vegetables, fruits, unpasteurized milk, juice and unchlorinated water. This will enable food suppliers and packing companies to perform real time and accurate monitoring of food safety and make timely response (few minutes) to possible risks.</p>	
Lincoln University	SOIL, AIR AND WATER QUALITY STUDIES	<p>This project studies the soil-related environmental problems with foci on chemistry of environmental contaminants, environmental risk assessment, remedial technology, and soil-plant interactions. Activities include: 1) in situ metal immobilization (Pb, As) to reduce human exposure and ecological risks of contaminated soils and mine wastes; 2) phytotechnologies to enhance rhizodegradation of explosives (TNT, RDX) in soil; 3) nanotechnology to remove aqueous metal ions (Hg, Pb) from contaminated water; and 4) fluorescent emission spectroscopic technique to assess the formation potential of disinfection-by-products (DBP) in water. Results from these studies have substantially improved our fundamental understanding of the contaminant-environment interactions near surface ecosystem and would potentially lead to sustainable solutions to the environmental problems.</p> <p>Air Quality Studies: Conducting research on soil management practices on greenhouse gas (N₂O, CH₄ and CO₂) fluxes to improve our understanding of the relationship between static and dynamic soil variables and greenhouse gas fluxes in various ecosystems.</p> <p>Water Quality Studies: Acquiring knowledge on the effects of animal wastes from CAFOs on streams especially under local conditions, are important in understanding water quality changes and how it affects native fish species. Also understanding the distribution and fate of pollutants from animal wastes in environmental media (soil, sediment, surface and groundwater) and the potential public health risks are necessary.</p>	C/E
Lincoln University	MICROALGAL-DERIVED OILS AS A SOURCE OF BIODIESEL	A comprehensive, collaborative research program has been carried out with the goal of developing an innovative technology for economical production of microalgae-derived oils as the source of biodiesel. Over 200 microalgae strains from Missouri and other regions have	E

Examples of Current 1890 University Research

Name of University	Title of Project	Brief Overview of Research	Type of Research (see codes at bottom)
		<p>been collected, isolated and cultivated in order to identify algal strains and growth conditions for maximum biomass/oil yields. A demonstration project for the mass cultivation of microalgae via the large-scale, open-pond algae culturing system has also been created by establishing a collaborative research agreement with two Missouri electric power cooperatives (Associated Electric Cooperative, Inc. and Central Electric Power Cooperative) to construct a pilot (~10,000 gallons capacity) algae cultivation pool at their coal-fired power plant (Chamois, Missouri) and utilize the carbon dioxide from the flue gas from the fossil-fuel power plant. This carbon dioxide sequestration method is based on the photosynthetic biological fixation of CO₂ by microalgae, and can be an effective approach to mitigate global warming</p>	
North Carolina A&T State University	AN INTEGRATED PROCESS FOR PRODUCTION OF ETHANOL AND BIO-BASED PRODUCTS FROM LIGNOCELLULOSIC BIOMASS	<p>This multi-institutional and multi-disciplinary project is to investigate an integrated, technically and economically favorable bioprocess for the conversion of lignocellulosic biomass such as agricultural residues, forest residues and food processing wastes into fuel ethanol and other value-added bioproducts including xylo-oligosaccharides and activated carbon. Introduction of a well-understood process from this project into the rural area will have significant positive impacts on its economics by value-added processing of local biomass resources, creation of new jobs in the biobased area, the secure supplying of fuel ethanol as a petroleum fuel alternative, and evolution of a sustainable society through the development of bio-based products.</p>	E
North Carolina A&T State University	NC A&T HELPS FARMERS DECLARE ENERGY INDEPENDENCE	<p>Biodiesel, a liquid fuel which can be produced from virtually any oil seed, including canola and soy beans, is one answer to energy self-sufficiency. An A&T scientist points out that biodiesel is also relatively easy and affordable for any small business to produce with a small initial investment. Demonstrations at the University Farm show how a portable biodiesel “refinery “ can be used that is capable of producing 60 gallons at a time, and that can be built for \$7,500 or less. Funding for the equipment came from the State Energy Office. The ultimate goal, however, is to find enough farmers who are interested in organizing a cooperative so that farmers can earn alternative income while also helping the state wean itself off imported fuel. North Carolina’s Strategic Plan for Biofuels Leadership has a goal that 10 percent (560 million gallons) of the state’s liquid fuel will come from biofuels grown and produced in the state by 2017.</p>	E

Examples of Current 1890 University Research

Name of University	Title of Project	Brief Overview of Research	Type of Research (see codes at bottom)
North Carolina A&T State University	INVESTIGATING COLLABORATION AMONG CBO'S ADDRESSING POVERTY IN THE BLACK BELT REGION (BBR)	The Black Belt Region (BBR) is a crescent-shaped area of eleven states situated in the Southeastern United States, with the population of African-Americans constituting 12 percent or more. The region comprises 642 counties where persistent poverty continues to be a chronic problem. Although various studies have tackled the problem of how social capital in terms of civic engagement influences community development and economic development, to date none has determined how collaboration among these groups might produce action at the community level that can successfully address the problems that cause persistent poverty in the BBR. Researchers expect the approach of this study to contribute to formulating social and economic policies by seeking to effectively harness the characteristics and resources of groups in communities that heretofore have not had the capacity to effectively address effects of persistent poverty.	S
North Carolina A&T State University	ECONOMIC ASSESSMENT OF CHANGES IN TRADE ARRANGEMENTS, BIOTERRORISM THREATS & RENEWABLE FUELS REQUIREMENTS ON THE US GRAIN & OILSEED SECTOR	One of the most crucial problems facing the U.S. economy is the possibility of a terrorist attack on its food sector. International trade agreements and bioterrorism attacks will be analyzed to determine impacts on livestock flows between the U.S. and the Central American Free Trade Agreement (CAFTA) member nations and among NAFTA partners-U.S., Canada and Mexico. In addition, the potential economic losses from the beef/cattle industry as a result of the bioterrorism attack and how this impacts the U.S. poultry and pork industries will be analyzed.	G
North Carolina A&T State University	ADVANCING THE INTERNATIONAL TRADE CENTER TO SERVICE US ACCESS TO CHINA PORK MARKET	This project involves 1) establishing relations between North Carolina A&T State University and Nanjing Agricultural University (NAU) to develop scientific cooperation for this and future projects; 2. To collaborate with NAU in collecting information on Chinese meat consumption preferences (especially pork), and laws and regulation that explain the cultural and legal frameworks for China's livestock distribution system; and 3. To survey Chinese pork distributors in major cities such as Beijing, Nanjing and Shanghai on their business practices, performances and management philosophies.	G
Langston University	PERENNIAL FORAGES FOR SMALL FARMS	This project will assist underserved tenants and owners of small landholdings to improve farm income and enhance their resource base by resolving problems that constrain productivity and profitability of small farms. ARS will develop low-input approaches to increasing the supply and quality of forages produced on small farms, in cooperation with the faculty and staff of	S

Examples of Current 1890 University Research

Name of University	Title of Project	Brief Overview of Research	Type of Research (see codes at bottom)
		Langston University and its Grasslands Center of Excellence.	
Langston University	PREVALENCE AND FACTORS INFLUENCING CHILDHOOD OBESITY IN AFRICAN AMERICANS AND NATIVE AMERICANS IN OKLAHOMA	There is an increase in the prevalence of childhood obesity that parallels with adult obesity within the past decade. This is expectedly a problem with the African American and Native American populations. Studies on the prevalence and dietary factors contributing to childhood obesity among ethnic diverse groups are limited. The ethnic distribution of Oklahoma Native Americans 8.1%, which is the highest in the nation, African Americans 7.7%, Hispanics 3.1%, Asian Pacific Islanders 1.3% and 81% Caucasians. The African Americans and Native Americans have the highest rates of type II diabetes. Several studies consistently indicate that diabetes has increased significantly with the increased rates of overweight/obesity. This study examines the prevalence overweight/obesity and other factors influencing childhood obesity among African Americans and Native Americans.	N
South Carolina State University	COMPARATIVE STUDY ON THE IMPACT OF NAFTA ON SOUTH CAROLINA AND THE SOUTHEAST REGION	This project proposes to :Estimate the NAFTA dollar volume, output and employment trade creation in S.C.'s vegetable and fruit industries; assess alternative trade policy options and compare S.C.'s trade position with the Southeast region; evaluate the economics and non-economic factors affecting commodity trade flow from S.C. and the Southeast region to NAFTA countries; and establish computerized links between NAFTA expansion effect and 1890 Extension Outreach activities.	G
South Carolina State University	REGIONAL BENEFITS AND COSTS OF NAFTA	The purpose of the project is to evaluate regional impacts of NAFTA on specific commodities vegetable industries. The research will estimate the \$ amount of trade creation and diversion attributed to NAFTA alone in these industries and address major factors affecting trade flows of vegetables in SER.	G
South Carolina State University	HISTORICAL PATTERNS IN THE FORMULATION AND IMPLEMENTATION OF U.S. NUTRITION POLICIES IN SOUTH CAROLINA	Studies on nutrition, diets, health trends, and nutrition policy tend to take scientific, statistical, or health-science approaches and concentrate on present or recent conditions. This project, with its wider temporal scope, will make a unique contribution to the study of nutrition policy and its implementation in South Carolina in particular. This study should help to identify obstacles, both present and long-standing, at the federal, state, and local levels, which have prevented or distorted the implementation of governmental nutrition guidelines.	N
South Carolina State University	INVESTIGATIONS ON DNA DAMAGE IN DIABETES INVOLVING	The overall goal of the project is to identify and measure covalently modified DNA bases, resulting from glyoxidation reactions. The research proposed here will increase the knowledge base by understanding the pathogenic significance of damage to DNA, and RNA by	N

Examples of Current 1890 University Research

Name of University	Title of Project	Brief Overview of Research	Type of Research (see codes at bottom)
	GLYCOXIDATION REACTIONS	glycoxidation and lipoperoxidation reactions. It is anticipated that research in this area will lead to the discovery of a biomarker for diseases which result from complications in diabetes such as blindness, renal failure, coronary heart, and Alzheimer diseases.	
South Carolina State University	AN INTEGRATED APPROACH TO PREVENTION OF OBESITY IN HIGH RISK FAMILIES	Overweight and obesity have reached epidemic proportions in the United States. This project deviates from the traditional model of research informing practice by first exploring what is currently being done by practitioners with a concurrent exploration into more useable physical screening tools; these activities are followed by ethnographic studies of families with children between the ages of 4-10 years old to distinguish parental behaviors that override the obesogenic environment.	N
Tennessee State University	PROMOTING THE CONSUMPTION OF FRUITS AND VEGETABLES AMONG LIMITED RESOURCE POPULATIONS IN TENNESSEE	This project addresses the surge of new research suggesting that fruits and vegetables can help prevent nutrient-deficiency disorders and also reduce the risk of cardiovascular diseases and cancer; and low-income individuals and households tend to spend less on and consume fewer fruits and vegetables than do their higher-income counterparts. This research was designed to assess the availability of fruits and vegetables in stores which were easily accessible to the participants. A number of factors affect fruit and vegetable consumption, including accessibility, affordability, lack of motivation to eat more, cost, and specific preferences.	N
Tennessee State University	WIC PROGRAM CHANGES AND CHILDHOOD OBESITY PREVENTION	This project addresses childhood obesity prevention through research, extension and education. The project also seeks to enhance the effectiveness of the USDA WIC (Women, Infants and Children) supplemental nutrition program to improve dietary intake and prevent obesity among ethnically diverse, low income populations.	N
Tennessee State University	INTEGRATION OF SOLAR AND WIND ENERGY	This project entails studies on appropriate utilization of alternate sources of energy enabling end-users to switch from one energy source to another depending on climatic conditions.	E
Tennessee State University	SMART ECOSYSTEM MANAGEMENT	This project involves a network of sensors to monitor the flow of river water to preserve fish populations and redirect the flow of water, especially near power plants. Sensors are used to monitor chemical, biological and physical changes in the river.	C/E
Tennessee State	FOOD SAFETY - <i>LISTERIA</i>	This is a collaborative project to update databases relating to foodborne diseases and	F

Examples of Current 1890 University Research

Name of University	Title of Project	Brief Overview of Research	Type of Research (see codes at bottom)
University	RESEARCH	illnesses.	
Tennessee State University	STUDIES ON IMPROVING THE CONVERSION EFFICIENCY OF CELLULOSIC BIOMASS TO SIMPLE SUGARS	The objective of this project is to isolate genes that have higher efficiency in degrading cellulosic biomass from ruminal microbial populations and mushroom species growing on woodchips in their natural habitat.	E
Tennessee State University	CHARACTERIZING CONSUMER HANDLING, STORAGE, AND USE OF PRODUCT LABELS AND DATES TO DEVELOP RISK COMMUNICATION MESSAGES FOR READY-TO-EAT FOODS	The specific objectives of this project are to: 1. Examine consumer handling and storage of unopened and opened packages and use of product labels and dates for RTE foods. 1.1. Identify consumer handling and storage practices for RTE foods using Web-enabled panel survey followed by in-person interviews and food diaries 1.2 Understand consumer use of product labels and dates for RTE foods using Web-enabled panel survey followed by in-person interviews and food diaries 1.3 Characterize consumer beliefs about handling and storage of RTE foods using in-person interviews 2. Assess performance of home refrigerators and their potential contamination by foodborne pathogens. 2.1. Estimate temperature of home refrigerators 2.2 Quantify overall microbial contamination inside home refrigerator surfaces using microbial ATP bioluminescence assay 2.3 Measure prevalence of <i>Listeria monocytogenes</i> and <i>Salmonella</i> in home refrigerators 3. Use results from objectives 1 and 2 to determine differences in handling and storage practices and refrigerator conditions among at-risk and other demographic subpopulations. 3.1 Determine prevalence of high-risk consumer handling and storage practices and refrigerator conditions 3.2 Characterize high-risk behaviors for consumer handling, storage, and refrigerator conditions 3.3 Develop demographic profiles of consumers engaging in high-risk behaviors 4. Use results from objective 3 to develop, disseminate, and evaluate risk communication messages for RTE foods targeted to at-risk subpopulations or risky consumer handling and storage practices.	F
Tennessee State University	STRATEGIES FOR ENHANCING SMALL FARM VIABILITY	This work has the following objectives: (1) To analyze production, management systems, and marketing channels utilized by small farms and develop strategies to enhance their viability. (2) To Provide results that could assist policy making regarding small farms.	S
Prairie View A&M University	CAMPYLOBACTER GENOTYPIC SELECTION	The objectives of this project are: To determine the genotypic selection among <i>Campylobacter</i> genotypes in market-age broiler chickens, 2) identify conditions influencing <i>Campylobacter</i>	F

Examples of Current 1890 University Research

Name of University	Title of Project	Brief Overview of Research	Type of Research (see codes at bottom)
	AND REARRANGEMENT IN BROILER CHICKENS	genotypic selection in market-age broiler chickens during processing, and 3) determine frequency of <i>Campylobacter</i> genotypic recombination during multiple passages through broiler chicks. Flocks are being maintained until market-age in grower pens located at Prairie View A&M University. Day-of-hatch chicks will be inoculated with a cocktail containing a total of five genotypically diverse <i>Campylobacter coli</i> and <i>C. jejuni</i> primary poultry isolates. Carcass rinses, crop, and cecal sampling for <i>Campylobacter</i> will be carried out during grow-out and during processing of market-age birds. Carcass rinses of market-age birds will be obtained at preharvest, after scalding, de-feathering, de-cropping (pre-chill), and post-chill. <i>Campylobacter</i> genotypes from cultured samples will be examined by Pulsed Field Gel Electrophoresis for genotypic diversity and selection.	
Prairie View A&M University	DEVELOPMENT OF CENTER FOR BIODEGRADABLE POLYMER SYSTEMS	Approximately 150 million tons of plastics are produced yearly in the world and the usage and production are continuously increasing. These synthetic materials cause serious environmental pollution due to wasted and undegraded polymers. Plastic recycling alone can not solve this problem because recycling can not recover all the plastics consumed. PVAMU proposes to modify existing biodegradable polymer systems to improve the degradation time of these systems. The objectives are to: 1)Strengthen and establish a collaborative research program dealing with polymer systems, food, soil, the environment and health. 2)Develop and enhance an education and training program focusing on polymer systems studies and the environment.	C/E
Virginia State University	PURSLANE RESEARCH AT VIRGINIA STATE UNIVERSITY	Purslane contains important essential nutrients which must be supplied in diets, because the human body can not synthesize them. The uniqueness of the purslane plant is that it has the richest supply of Omega-3 fatty acids of any terrestrial vegetable yet examined. The main goal of the VSU research was to domesticate and evaluate purslane as a vegetable source of Omega-3 fatty acids in the U.S. for human and animal consumption, having obtained several types from various varieties from around the world. Researchers identified types that adapt well to Virginia's environmental and climatic conditions. The nutritional significance found in the adapted species were Omega-3 fatty acids, Vitamins E, C and B-carotene and its leaves, when eaten can increase the production of beneficial high density lipoproteins or good cholesterol. Thus, purslane holds promise for the estimated 60 million Americans whose	N

Examples of Current 1890 University Research

Name of University	Title of Project	Brief Overview of Research	Type of Research (see codes at bottom)
		blood cholesterol levels, combined with high triglyceride levels, place them at risk for coronary disease. (Patent #5,688,506 has been obtained for this work).	
Virginia State University	ENVIRONMENTAL RESEARCH AND OUTREACH PROGRAM	This program addresses issues in water quality, nutrient management, pesticide fate, best management practices (BMP), and wetland ecosystems. Studies are conducted to develop BMP for efficient and economical management of agricultural chemicals, evaluate and demonstrate the functional value of wetlands and riparian zones for water quality impacts, and determine the fate and transport of agricultural chemicals in the environment.	C/E
Virginia State University	ENERGY CONSERVATION AND BIOFUELS AS PART OF THE LAND-GRANT MISSION	<p>Virginia State University (VSU) is investing in newer technologies and renovating buildings to improve energy efficiency. The university has also called for individual awareness and responsibility when using campus facilities and is participating in the 'Green Commonwealth Challenge' competition issued as part of Executive Order 82 by the Governor of Virginia.</p> <p>The Agriculture Research Station of VSU also has a strong research program on biofuels. There is great potential for the integration of bioenergy crops in Virginia agriculture and current research is centered on the agronomy and processing of sweet sorghum and barley for bioethanol, and canola for biodiesel production. The university is also working in collaboration with the Virginia Clean Energy Business Incubator to study the feasibility of replacing declining tobacco acreage in south and southwest Virginia with biofuel crops.</p>	E
Virginia State University	FOOD SAFETY AND NUTRITION PROGRAM	This program aims to continually improve the safety and quality of our nation's food supply. It primarily focuses on examining foods and byproducts of food production for value-adding components and properties that may be useful for improving human nutrition and overall human health.	N
West Virginia State University	BIOFUELS RESEARCH	BioPlex is a multi-disciplinary research program at WVVSU's Agricultural and Environmental Research Station that is centered on the utilization of a 10,000 gallon anaerobic digester. Research is focused on economic and environment issues surrounding wastes from the poultry industry. Current research is looking to explain microbial roles involved in the digestion process, using molecular and genomic techniques. Scientists are focused on using this technology to turn organic wastes into economic and environmental assets such as: alternative fuels and bioenergy, organic fertilizers, and soil amendment for use in mine land	E

Examples of Current 1890 University Research

Name of University	Title of Project	Brief Overview of Research	Type of Research (see codes at bottom)
		reclamation.	
West Virginia State University	AGRICULTURAL WASTE UTILIZATION AND BIOENERGY PRODUCTION USING ANAEROBIC DIGESTION	The overall objective of this research program is to improve the use of agricultural waste as a renewable energy source. West Virginia State University operates a pilot plant thermophilic anaerobic digester which is the focal point of the research program in this proposal. The experiments for the next year are organized into three program objectives that integrate the themes of agricultural waste utilization, bioenergy production and anaerobic digestion. The objectives are as follows: 1. Improve anaerobic digester process control using heuristic and statistical methods, new chemical performance tests, and experimental tests of mixing methods. 2. Employ new genomics methods for understanding the metabolic basis of bioenergy recovery in anaerobic digesters. 3. Test the efficiency of thermophilic anaerobic digestion for bioenergy production as applied to agricultural waste from the bioprocessing industry.	E
West Virginia State University	BIOAVAILABILITY OF BY-PRODUCTS FROM THERMOPHILIC ANAEROBIC DIGESTION OF POULTRY WASTES	Feed costs in aquaculture range from 30-70% of operation. Much of the cost is attributed to the use of fish meals and fish oils which are becoming increasingly expensive, and the use of which is not environmentally sustainable. Thus, it is increasingly necessary that alternative protein sources are identified and developed for use in formulation of diets for the aquaculture industry. The overall objective of this proposal is to evaluate the nutritive value of recovered protein and macro-mineral elements (particularly phosphorus) from the thermophilic anaerobic digestion of poultry wastes.	S
West Virginia State	PLANT GENOMIC RESEARCH	Using genomic techniques, such as DNA marker technology, WV SU scientists are developing higher quality peppers, sweet potatoes, melons and tomatoes with increased levels of antioxidants, vitamins and medicinal properties; as well as superior taste, earlier fruit ripening and higher insect and disease resistance. These enhanced traits will allow smaller US growers to compete in the world market.	N

F = Food Safety

E = Energy

N = Nutrition

G = Global Food Security

C/E = Climate/Environmental Stewardship