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REPORT
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AGRICULTURE, RURAL DEVELOPMENT, FOOD AND DRUG ADMINISTRATION, AND RELATED AGENCIES APPROPRIATIONS BILL, 2007

MAY 12, 2006.—Committed to the Committee of the Whole House on the State of the Union and ordered to be printed

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Mr. BONILLA, from the Committee on Appropriations, submitted the following

R E P O R T

together with

ADDITIONAL VIEWS

[To accompany H.R. 5384]

The Committee on Appropriations submits the following report in explanation of the accompanying bill making appropriations for Agriculture, Rural Development, Food and Drug Administration, and Related Agencies for fiscal year 2007.

COOPERATIVE STATE RESEARCH, EDUCATION, AND EXTENSION SERVICE

RESEARCH AND EDUCATION ACTIVITIES

2006 appropriation [1]	$670,081,000
2007 budget estimate	566,300,000
Provided in the bill	651,606,000
Comparison:	
2006 appropriation	−18,475,000
2007 budget estimate	+85,306,000

[1] Does not include $594,000 in grants that were funded as general provisions in FY2006.

COMMITTEE PROVISIONS

For Research and Education Activities, the Committee provides an appropriation of $651,606,000, a decrease of $18,475,000 below the amount available for fiscal year 2006 and an increase of $85,306,000 above the budget request.

For payments under the Hatch Act, the Committee provides an appropriation of $183,275,000, an increase of $6,306,000 above the amount available for fiscal year 2006 and an increase of $6,355,000 above the budget request. This funding level represents a 3 percent increase above the fiscal year 2006 funding level. The recommended funding level for this program is the first time this program has increased since fiscal year 1999.

For cooperative forestry research, the Committee provides an appropriation of $22,668,000, an increase of $660,000 above the amount available for fiscal year 2006 and an increase of $685,000 above the budget request. This funding level represents a 3 percent increase above the fiscal year 2006 funding level. The recommended funding level for this program is the first time this program has increased since 1999.

For the Evans-Allen Program (payments to the 1890 land-grant colleges, Tuskegee University, and West Virginia State University), the Committee provides an appropriation of $38,331,000, an increase of $1,116,000 above the amount available for fiscal year 2006 and an increase of $463,000 above the budget request. This funding level represents a 3 percent increase above the fiscal year 2006 funding level.

For the National Research Initiative, the Committee provides an appropriation of $190,000,000, an increase of $8,830,000 above the amount available for fiscal year 2006 and a decrease of $57,500,000 below the budget request. This funding level represents a 5 percent increase above the fiscal year 2006 funding level.

Applied Agricultural and Environmental Research.—The Committee provides $1,250,000, of which $150,000 is for Cal-Poly-San Luis Obispo, for Applied Agricultural and Environmental Research. This research will provide for technology transfer and information dissemination directly to producers, processors, and consumers. These funds shall be equally divided between California State-Fresno, California State-San Luis Obispo, California State-Pomona, and California State-Chico.

Agriculture water policy.—The Committee provides $882,000 for agriculture water quality in Georgia. The goal of this project is to establish a virtual center for water policy research in Georgia. This center will not involve construction of new buildings but rather

brings together key research and outreach activities on water policy in Georgia and across the Southeast. A distance learning program has been established and continues to be refined; Global Information Systems and Global Positioning Systems for mapping current and projected water use from wells, water permits and population growth is under way; and systems dynamics models will be used to create scenarios for water use. Accomplishments related to the current project include 90 percent completion of a report summarizing analyses of benefits and costs of a state wetlands policy and a recommended policy for Georgia; a white paper on community pricing structure changes is in review; design of an Aquifer Storage and Recovery Facility for the Flint River Basin is underway; a report on stakeholder consensus for research priorities in water management decision making along with a review of water management institutions in selected states is near completion; and design of a Farmer Portal is complete for a Data Management Database to make metering data useful to farmers for land and water resource decision making at the farm scale is complete, along with 60 percent of the data collection. In fiscal year 2001, $250,000 was provided in non-federal matching funds from state sources. In fiscal year 2002, approximately $1,200,000 was provided from state sources in non-federal matching funds, and a similar amount was provided in fiscal years 2003, 2004, and 2005. Fiscal year 2006 funds are expected to be slightly higher. These funds include state innovations grants and collaborations with the Georgia Soil and Water Conservation Commission.

Animal Waste Management.—The Committee provides $396,000 for animal waste management in Oklahoma. The goal of this research is to develop best management practices for the expanded animal industry that will protect ground water supplies from pollution of nutrients, salts, and pathogens; maintain air quality; and minimize odors derived from the entire swine-house, lagoon, land-application, soil-cropping, and/or rangeland production system, thus maintaining the quality of life in the rural sector. Sub-surface drip irrigation in the Panhandle region has shown significant water conservation over standard irrigation practices. An economic model was developed to maximize daily profits for the producer by choosing optimal feed ingredients. Non-federal support for this project for 2003 was in the form of state funding of $4,177,000 and industry funding of $24,500 for a total of $4,201,500. State funding includes research, salaries and construction of a $4,000,000 swine research and teaching facility to be completed in 2004. In 2004 state funds of $177,000 and industry funds of $60,500 were provided for the project.

Aquaculture.—The Committee provides $900,000 for aquaculture in Ohio. The Committee has previously directed that funds for this project be used in northwest and central lake counties, where aquifer levels are the highest in the state. There is concern that this directive has not been achieved. The Committee directs that a report be provided with respect to what steps are and will be taken to meet this directive. The goal of the program is to establish a program in Ohio to foster the development of a state-wide aquaculture industry. Research conducted under this program has provided science-based information on optimal fertilization regimens for yel-

low perch, tested size-grading strategies that may improve production efficiency, and results of sensory comparisons of farm-raised to wild-caught yellow perch concluded that farm-raised yellow perch compares favorably to wild-caught perch. Research using methods developed in the beef industry were used to determine if there are unique protein expression patterns that are correlated with specific traits that can be used to examine muscle in fish. In studies on yellow perch muscle proteins, five muscle proteins associated with body weight and nine muscle proteins associated with body length were identified. These proteins are currently undergoing primary sequence analysis for protein characterization. This information will be useful in identifying gene products unique to enhanced muscle growth and development and will allow for producers to develop useful breeding strategies for the production of yellow perch. The latest accomplishments report included information on the genetic trials on yellow perch. Preliminary data from studies looking at 36 strains of yellow perch for a selective breeding program, seem to show that a strain of yellow perch from North Carolina may perform better than others in aquaculture situations. In conjunction with collaborators at Washington State University, muscle satellite cells from yellow perch have been isolated and preserved. This is the first report of the establishment of isolated muscle satellite cells from yellow perch. Non-federal funding in support of the fiscal year 2003 initiative was $47,970, and $117,800 was made available in support of the fiscal year 2004 project. Non-federal funding used in support of this project in fiscal year 2005 was $130,442. Non-federal funding in support of this project comes primarily from state sources.

Center for Food Industry Excellence.—The Committee provides $1,567,000 for the Center for Food Industry Excellence in Texas. The goal of this project is to provide food safety research and educational support to food production and processing companies. The investigators have completed the objectives for 2004 fiscal year funding. They have developed a direct-fed microbial that reduces E. coli O157 in beef cattle. They optimized concentrations of organic acids and acidified sodium chlorite in treating beef carcasses to ensure the quality and safety of the final product. In outreach area, Texas Tech University developed a website for processors and consumers and started a new outreach publication, "TECHniques" for consumers and processors. They have developed 15 outreach bulletins and started a newsletter for the food industry. Objectives for fiscal year 2005 funding are in progress and will be completed in June 2007. According to the principal investigator, the non-federal sources and funds provided for this project for fiscal year 2003 include $667,627 from Commodity; $1,542,476 from Industry; and $257,800 from State and University; and for fiscal year 2004, $93,000 from Brashears-Nutrition Physiology Corporation; $138,258 from Brashears-National Cattleman's Beef Association; $6,000 from Supachill Technologies; $279,940 from National Cattlemen's Beef Association; $32,750 from National Pork Board; $64,923 from Texas Hair Sheep Association; $5,400 from Nebraska Beef of Omaha; $30,621 from Nutrition Physiology Corporation; $8,000 from Marks and Spencer of London; $50,000 from Endowment for Endowed Chair in Animal and Food Sciences; $36,150 from Tyson

Fresh Meats; $85,000 from National Cattlemen's Beef Association, National Pork Board, Cryovac, Inc; $80,285 from National Cattlemen's Beef Association; $34,100 from Wirebelt; and, $25,000 from Texas Tech University.

Climate Forecasting.—The Committee provides $3,602,000 for climate forecasting in Florida. The goal of this research is to improve climate forecasting and crop models to reduce risk for agricultural producers and the crop insurance industry. This is being accomplished by designing and developing a climate forecast information component, a state and region-wide agricultural outlook component, and a commodity-based component; and produce an Agriculture Climate Information and Decision Support system. Additional research at the Southeast Climate Consortium includes the integration of weather generators with climate models; the assessment of agricultural impact through the analysis of historical crop yields and simulated yield potentials; understanding forestry risk and its minimization; water quality assessment and policy analysis; and the development of crop management optimization toolkits and programs to explore optimal management options under different ENSO conditions and optimization criteria. The project accomplishments to date include: annual regional freeze forecasts; ENSO phase assessment; historic weather data by county; weather generator; coupled climate-ocean-land surface-crop modeling; bimonthly wildfire and forest risk forecasts; crop simulation model; historic yield data by county; assessments of yield response to climate; county level climate-crop yield forecasts; and cattle heat stress forecast. The program has greatly improved its prototype crop yield risk tool which helps analyze yield potential based on climate forecast and planting dates. The web based system is a Climate-Related Tool for Agriculture and Natural Resources Management and referred to as AgClimate Tools. The Climate Forecast Tool provides county level monthly climate forecasts of average precipitation and min/max temperatures; probabilities for these variables to help you analyze risk and observed values for the past five years. The crop yield risk tool helps analyze yield potential based on climate forecast and planting dates. The results are based on crop model simulations and are only available for a limited number of counties, depending on the crop selected. Crops under implementation are: peanuts for selected counties in Alabama, Georgia, and Florida; potato for Suwannee County, Florida; and Fresh Tomato for South Florida. In-kind support such as facilities, equipment, and administrative support are provided by each institution.

Cotton research.—The Committee provides $2,500,000 for cotton research in Texas. The goal of this project is to provide comprehensive multi-disciplinary research to improve cotton production in West Texas and expand the demand for cotton grown in the area. The research has made improvements in cotton varieties through traditional genetics and genetic engineering aimed at improving seedling establishment, increasing photosynthetic efficiency and yields, and developing resistance to pest and diseases. Cotton Economic and Marketing research projects have provided an analysis of feasibility and market impact of new technologies, improvement of pricing and market reporting, understanding market behavior, and factors related to international competitiveness. The estimate

for non-federal funds supporting the project were: 2003, $1,225,000; 2004, $1,350,000; and 2005, $1,400,000.

Data information system—REEIS.—The Committee provides $2,723,000 for the data information system. The original and ultimate objective of the system is to enable users to measure the impact and effectiveness of research, extension, and education programs. REEIS is meeting this goal by incrementally incorporating data from more and more programs, and continually expanding the data available for currently incorporated programs. In January 2003, the first fully operational release of REEIS was made available on the Internet. In 2004 and 2005, REEIS continued to operate and provide data from the following agencies: CSREES, Forest Service, National Agricultural Statistics Service, National Science Foundation, Patent and Trademark Office, and U.S. Census Bureau. Information is provided for the following topics: agricultural research efforts, forestry research efforts, statistics about students, institutions, faculty, and degrees related to agriculture, partner institution snapshots, food and nutrition efforts, 4–H programs, impact reports, agricultural snapshots of each state and outlying areas, agriculture related patents and citations, and Internet links to related agencies, institutions, and data bases. Data is routinely refreshed and made easier to retrieve by the addition or expansion of data storage capabilities. Also in 2005, the web user interface was redesigned and is now in compliance with USDA guidelines. Non-federal funding does not apply at this time. However, non-federal entities are making significant in-kind contributions as partners to the development of REEIS.

Dietary intervention.—Within funds provided for dietary intervention research, $800,000 is provided for Ohio State University, and $500,000 is provided for the University of Toledo. The goal of the research at Ohio State University project is to conduct a Phase I clinical trial to evaluate the toxicity and pharmacokinetics of uptake of black raspberries and their components in humans. This trial was initiated in June, 2003 and completed in November, 2004. A Phase Ib clinical trial to evaluate the ability of freeze-dried black raspberries to influence the progression of Barrett's esophagus in patients with gastroesophageal reflux disease, GERDl, was initiated in November, 2003 and is expected to be completed in June, 2006. Chemical analysis and studies of the component anthocyanins in freeze-dried black raspberries and in other berry types and their uptake into cultured cells were initiated in November, 2003. Some of these have been completed, and the ongoing studies are expected to be completed in June, 2006. In 2005, the University of Toledo began its research with the original goal to identify the specific dietary fat components in the western diet that reduce liver CEACAM1 levels and cause obesity and its progression to diabetes. This goal has three specific aims: to investigate whether macrophages are involved in high fat diet-induced insulin resistance; to investigate whether supplementing high fat with high sugar exacerbates the metabolic abnormality and leads to a more rapid onset of diabetes: and to apply genomics-based analysis to identify other proteins that may contribute to diet-induced insulin resistance. Most work will be completed on specific aim 1 this year with aim 2 and aim 3 in progress. It is not anticipated that work

on all three aims will be completed within the 2005–2006 time frame. The Ohio State University received $25,000 from the California Strawberry Association, $52,000 from the James Cancer Hospital Development Fund, and $216,000 from the Ohio Department of Agriculture for berry research in 2003. In 2004 and 2005, The Ohio State University received approximately $30,000 each year from the James Cancer Hospital Development Fund and $216,000 per year from the Ohio Department of Agriculture for berry research. The University of Toledo received no non-federal funds.

High value horticultural crops.—The Committee provides $775,000 for high value horticultural crops in Virginia. The goal of this grant is to build capacity in the area of renewal and sustainable resources at the Institute for Advance Learning and Research; this effort was conducted in close collaboration with the Departments of Forest and Horticulture and Virginia Polytechnic Institute and State University. Short term objectives of this undertaking are: (1) Organize and equip the plant tissue culture/agricultural biotechnology laboratory. (2) Solicit sub-licenses for the production of polyploid orchids, for the production of landscape ornamentals and other unique, high value horticultural crops. Initiate research on the novel varieties of ornamentals and new hybrid vegetable crops. In fiscal year 2003, the plant tissue culture/agricultural biotechnology laboratory was designed and equipped. Fast growing clones of loblolly pines that are to be used in Institute research were planted at the Reynolds Homestead. In fiscal year 2004, technicians were hired and participated in in-depth training at VPI&SU—Horticulture—, Georgia Institute of Technology—Biology—, and North Carolina State University—Plant Pathology. A horticulture graduate student was employed to teach and document protocols for orchid propagation. Three Danville-based faculty positions were filled in 2005: two molecular breeding faculty positions and a Virginia Plant Introduction Program Coordinator. Limited greenhouse space—under renovation—will be available for plant establishment at the Reynolds Homestead facility in Critz, Virginia—associated with VPI&SU Department of Forestry. As they become available, new ornamentals and trees developed through the program will be field tested in collaboration with the Virginia Nursery and Landscape Association. The VPI&SU Department of Horticulture and the IALR was awarded a grant from the Virginia Tobacco Indemnification and Community Revitalization Commission to establish test sites for plant introductions. The VPI&SU Department of Forestry has hired a new faculty member with expertise in forest tree genetics and functional genomics, to collaborate with researchers at the Institute. Collaborative meetings have been held with several potential partners, both educational and commercial, including North Carolina State University, CellFor, and HZPC. In fiscal year 2003, the source and amount of non-federal funds were: $15 million from Pittsylvania County and the city of Danville, Virginia; $2 million from a national tobacco settlement fund managed by the Virginia Tobacco Commission; and a small amount from other partners. In fiscal year 2004, non-federal funds included: Commonwealth of Virginia State Appropriation, $87,000; State Council of Higher Education for Virginia, Equipment Trust

Fund, $134,000; U.S. Department of Housing and Urban Development grant; VPI&SU provided funding for the principal investigators for time committed to executing this project; the IALR assumed utility payments for the lab involved in this project.

NE Center for Invasive Plants.—The Committee provides $425,000 for the NE Center for Invasive Plants in Connecticut, Vermont, and Maine. This is a new award in fiscal year 2006. The goal is to develop a multi-state, interdisciplinary research program to address the problems caused by invasive species that are important to New England and the nation. There are five main goals: (A) development of non-invasive, sterile landscape plants; (B) assessment of the ecological impact of invasive plants and ecological evaluation of new "super-sterile" cultivars; (C) assessment of the economic impact of invasive species in New England; (D) development of alternative native crops; and (E) public education and outreach efforts to limit and control invasive species. More than 12 faculty members at the University of Connecticut, University of Vermont, and University of Maine will be involved in this project. The total estimated amount contributed by the three universities in the form of faculty salary and associated fringe benefits based on the faculty time commitment to this project is $40,000 per year. In addition, no indirect costs will be charged to the project. The indirect cost of this project is about $66,300. Thus, the total amount contributed to this project from non-federal sources is more than $100,000.

PM–10 Study.—The Committee provides $387,000 for the PM–10 study in Washington. The goals of this research are to measure the PM–10 emission rates from significant crop and tillage practices, to determine the source of PM–10 emissions on soils in agricultural regions of the Columbia River Basin in the Pacific Northwest, and to explore cost-effective alternative agricultural practices to control these emissions. More recently, studies of finer PM–2.5 particulates have been included because of their recognized potential health risks. Studies in the Columbia River Basin are being conducted in Washington on a number of agricultural practices in the rain-fed and dryland croplands. Susceptible climatic and soil conditions and tillage and cropping practices have been identified and are being used to develop prediction tools to assist growers to adopt alternative practices to reduce potential air pollution by PM–10 and PM–2.5 particulate emissions. Direct seeding practices are also being tested for their efficacy in reducing dust emissions from wind erosion. Sixteen subprojects are currently funded by this project and a few of their accomplishments follow. PM–10 emission predictive maps based on soils databases and measured erodibility indices have been produced and used to modify USDA Conservation Reserve program eligibility. These data are also very useful for determining relative emissions for regional modeling work. Identification has been made of the mechanism by which Columbia Plateau soils erode during high wind events. Research has shown that direct suspension rather than saltation-induced sand blasting—common to many soils—was responsible for emission of PM–10-sized particles for significant parts of the Columbia Plateau region. Events of elevated PM–10 caused by wind erosion of the Columbia Plateau were not associated with increased mortality in Spokane. Post-harvest weed ecology approaches and how to manage them to

conserve soil water and control wind erosion have been developed. Estimates have been made of anthropogenic rates in comparison to non-anthropogenic rates of wind erosion that demonstrate the potential impact farming practices can have on dust deposition. Economics of various cropping systems at the producer level have been fairly well documented from the longer-term projects such that producers can make informed decisions pertaining to the adoption of alternative farming practices. The Northwest Columbia Plateau PM–10 Project Annual Conference has been held annually since the beginning of the project as a means of communication between researchers, extension educators, and stakeholders. The conference provides an opportunity to report on research results and also receive feedback from other scientists and stakeholders. This two-way communication is extremely valuable to both parties as a means to help understand research and also design future research. In California, the program was matched by State funds in the form of salaries, benefits, and operating costs. In Washington, there were no state or non-Federal funds in support of the PM–10 project in 1994 and 1995. In 1996, state support was $22,566, and in 1997, state support was $102,364. Similar funding was continued in 1998 through 2005.

Precision Agriculture/Tennessee Valley Research Center.—The Committee provides $599,000 for precision agriculture. The goal of this research is to evaluate precision technologies at the Tennessee Valley Research and Extension Center for application to site-specific farming and to timber harvesting, and support training in the use of those technologies. Recent work has examined the interaction of soil nutrients and soil physical properties on cotton yield. Cotton yield has also been examined in response to conservation tillage, variable rate nitrogen application, and irrigation. The use of thermal infrared remote sensing to detect crop stress has also been investigated. Multi-year studies that examine variable-rate nitrogen application for corn and wheat are continuing. A 2003 survey of 77 farmers and 34 agribusinesses regarding precision agriculture provided several measures of potential technology adoption and indicated high current interest by producers. Two Field Crop Days on precision farming attracted 200 growers in 2004, and were replicated in 2005. A herbicide applicator backpack with a Global Positioning System has been developed and fully tested to minimize herbicide use and improve efficiency. The estimate for non-federal funds, from state sources, providing support for this grant were estimated at $97,000 for fiscal year 2000; $157,000 for fiscal year 2001; $385,000 for fiscal year 2002; $225,000 for fiscal year 2003; $94,000 from industry for fiscal year 2004; and $740,000 for fiscal year 2005.

Shrimp aquaculture.—The Committee provides $4,200,000 for shrimp aquaculture in Arizona, Hawii, Mississippi, Massachusetts, South Carolina, Louisiana, and Texas. The goal of this program is to increase domestic production of marine shrimp through aquaculture. Key accomplishments under this program include: development of breeding programs for select lines of disease-resistant shrimp; identification of shrimp diseases that have affected world shrimp production; diagnostic tools for the detection of shrimp diseases; development of land-based shrimp culture systems; develop-

ment of genetics-based pedigree-tracking; development of biosecurity protocols that are used world-wide for the prevention of the spread of diseases in marine shrimp; and development of more-efficient shrimp feeds. Recent accomplishments include: further elucidation of molecular mechanisms of disease resistance; monoclonal antibodies developed and licensed for rapid field diagnosis of a common bacterial disease in shrimp; improved shrimp culture systems that reduce effluents; and development of new shrimp feeds that have lower inclusion rates of fish meal and fish oil. The Program Administrator estimates that approximately 50 percent of total funding for this research comes from individual Consortium institutions and from states where these institutions are located.

Water quality.—The Committee provides $500,000 for water quality in North Dakota. The original goal of this project included water management to control flooding in wet years and water conservation in dry years. Sulfite emissions from sugar beet refinery wastewater were successfully reduced and water audits at a corn processing facility reduced water use. Non-federal funds included: in fiscal year 2002, $60,000 in fees and $5,859 of non-federal funds were collected; in fiscal year 2003, $65,000 in fees and $21,370 in spin-off projects were obtained; in fiscal year 2004, $65,000 in fees and $108,066 in spin-off projects; and in fiscal year 2005, $55,000 in fees and $12,000 in spin-off projects were obtained.

Center for Innovative Food Technology.—The Committee provides $1,145,000 for the Center for Innovative Food Technology in Ohio. Building on the successful Great Lakes Signature Beef product CIFT shall make efforts to expand meat processing capabilities in northwest Ohio, identify other local food niche specialties from coastal Ohio and develop ways to bring them to broader regional and national markets.

Greenhouse Nurseries.—The Committee provides $726,000 for greenhouse nurseries in Ohio. This project is intended to develop marketing plans to showcase this industry that has branded itself as "Maumee Valley Growers", to help build a community identity as a floriculture center and expand value-added opportunities through ecotourism.

The following table reflects the amount provided by the Committee:

Cooperative State Research, Education, and Extension Service Research and Education Activities (Dollars in Thousands)			
	2006 Conference	2007 Budget	2007 House
Hatch Act	$176,969	$176,920	$183,275
McIntire-Stennis Cooperative Forestry	22,008	21,983	22,668
Evans-Allen Program	37,215	37,868	38,331
National Research Initiative	181,170	247,500	190,000
Special Research Grants	126,941	3,258	103,471
Improved Pest Control	14,650	14,856	14,952
Animal Health and Disease (Sec. 1433)	5,006	0	5,006
1994 Institutions Research Program	1,029	1,067	1,250
Joe Skeen Institute for Rangeland Restoration (NM,TX,MT)	990	0	1,000
Graduate Fellowship Grants	3,701	4,455	4,455
Institution Challenge Grants	5,423	5,445	5,445
Multicultural Scholars Program	988	988	988
Hispanic Education Partnership Grants	5,940	5,588	5,940
Secondary/2-year Post-secondary	990	990	990
Capacity Building Grants (1890 Institutions)	12,189	12,375	12,375
Payments to the 1994 Institutions	2,228	2,227	3,000
Alaska Native-serving and Native Hawaiian-serving Education Grants	3,218	2,967	0
Resident Instruction Grants for Insular Areas	495	495	500
Veterinary Medical Services Act	495	0	0
Higher Education Agrosecurity Program	0	5,000	0
Subtotal	601,644	543,982	593,646
Federal Administration:			
Ag-based Industrial Lubricants (IA)	544	0	0
Agriculture Development in the American Pacific	481	0	0
Agriculture Waste Utilization (WV)	683	0	0
Agriculture Water Policy (GA)	882	0	882
Alternative Fuels Characterization Laboratory (ND)	279	0	0
Animal Waste Management (OK)	392	0	396
Applied Agriculture and Environmental Research (CA)	990	0	1,250
Aquaculture (OH)	891	0	900
Aquaculture (PA)	218	0	0
Biodesign and Processing Research Center (VA)	941	0	0
Biotechnology Research (MS)	680	0	0
Botanical Research (UT)	891	0	0
Center for Agricultural and Rural Development (IA)	589	0	0
Center for Food Industry Excellence (TX)	1,353	0	1,567
Center for Innovative Food Technology (OH)	1,134	0	1,145
Center for North American Studies (TX)	990	0	1,000
Climate Forcasting (FL)	3,566	0	3,602
Connecticut Oyster Fisheries (CT)	0	0	400
Cotton Research (TX)	2,475	0	2,500
Council for Agriculture Science and Technology	148	0	0
Data Information System (REEIS)	2,561	2,723	2,723
Dietary Intervention (OH)	1,238	0	1,300
Electronic Grants Administration System	2,030	2,151	2,151

Feed Efficiency (WV)	158	0	0
Global Environmental Management	990	0	0
High Value Horticultural Crops (VA)	718	0	775
Hispanic Leadership in Agriculture (TX)	541	0	0
Greenhouse Nurseries (OH)	719	0	726
Information Technology (GA)	365	0	0
Livestock Marketing Information Center (CO)	172	0	0
Mariculture (NC)	314	0	0
Mississippi Valley State University, Curriculum Development	1,419	0	0
Monitoring Agricultural Sewage Sludge Application (OH)	1,274	0	1,287
NE Center for Invasive Plants (CT, VT, ME)	421	0	425
Ohio Center for Farmland Policy Innovation at OSU (OH)	0	0	0
Office of Extramural Programs (Grants)	419	443	443
Pasteurization of Shell Eggs (MI)	1,337	0	1,450
Pay Costs and FERS	3,081	3,561	3,561
Peer Panels	307	346	346
Phytoremediation Plant Research (OH)	771	0	779
PM-10 Study (WA)	383	0	387
Precision Agriculture, Tennessee Valley Research Center (AL)	593	0	599
Produce Pricing (AZ)	99	0	0
Rio Grande/Rio Bravo (TX) Physical Assessment	347	0	350
Rural Systems (MS)	305	0	0
Salmon Quality Standards (AK)	164	0	0
Shrimp Aquaculture (AZ, HI, MS, MA, SC, LA, TX)	4,158	0	4,200
Sustainable Agricultural Freshwater Conservation (TX)	1,832	0	2,050
University of Hawaii	2,970	0	0
Urban Silviculture (NY)	267	0	0
Utah State University Farming and Dairy Training Initiative (UT)	0	0	0
Vitis Gene Discovery (MO)	602	0	658
Water Pollutants (WV)	594	0	0
Water Quality (ND)	495	0	500
Wetland Plants (WV)	198	0	200
University of Wisconsin-Stevens Point, Geographic Information System	0	0	990
Total, Federal Administration	49,966	9,224	39,542
Other:			
Alternative Crops	1,175	0	1,175
Aquaculture Centers (Sec. 1475)	3,928	3,956	3,956
Critical Agricultural Materials Act	1,091	0	1,091
Sustainable Agriculture	12,276	9,138	12,196
Total, Other	18,470	13,094	18,418
Total, Research and Education Activities	$670,081	$566,300	$651,606

Cooperative State Research, Education, and Extension Service Research and Education Activities Special Research Grants (Dollars in Thousands)			
	2006 Conference	2007 Budget	2007 House
Advanced Computing Research and Education (UT)	$540	0	0
Advanced Genetic Technologies (KY)	639	0	0
Advanced Spatial Technologies (MS)	927	0	0
Aegilops Cylindricum (Jointed Goatgrass) (WA,ID)	351	0	$355
Agricultural Diversification (HI)	219	0	112
Agricultural Diversity/Red River Corridor (MN, ND)	616	0	622
Agriculture Science (OH)	564	0	0
Agriculture Water Usage (GA)	0	0	0
Agroecology (MD)	402	0	406
Air Quality (CA)	297	0	0
Air Quality (TX, KS)	1,558	0	1,574
Alliance for Food Protection (NE)	155	0	157
Alternative Nutrient Management (VT)	180	0	0
Alternative Salmon Products (AK)	1,088	0	0
Alternative Uses for Tobacco (MD)	329	0	0
Animal Disease Research (WY)	347	0	350
Animal Science Food Safety Consortium (AR, KS, IA)	1,418	0	1,432
Apple Fire Blight (MI, NY)	495	0	500
Aquaculture (AR)	203	0	205
Aquaculture (FL, CA, TX)	594	0	650
Aquaculture (WA, ID)	756	0	764
Aquaculture (LA)	326	0	429
Aquaculture (MS)	512	0	0
Aquaculture (NC)	322	0	325
Aquaculture (VA)	198	0	200
Aquaculture Product and Marketing Development (WV)	743	0	0
Armilliaria Root Rot (MI)	149	0	150
Asparagus Technology and Production (WA)	246	0	325
Avian Bioscience (DE)	99	0	0
Babcock Institute (WI)	594	0	600
Barley for Rural Development (MT, ID)	728	0	0
Beef Technology Transfer (MO)	256	0	0
Beef Improvement Research (TX, MO)	990	0	1,100
Berry Research (AK)	1,287	0	0
Biobased Nanocomposite Research (ND)	175	0	0
Biomass-based Energy Research (OK, MS)	1,188	0	1,200
Biotechnology (NC)	284	0	0
Biotechnology Research (IL)	99	0	0
Biotechnology Test Production (IA)	460	0	465
Bovine Tuberculosis (MI)	352	0	356
Brucellosis Vaccine (MT)	436	0	440
Center for Public Lands and Rural Economies (UT)	297	0	0
Center for Rural Studies (VT)	361	0	0
Chesapeake Bay Agroecology (MD)	311	0	354
Childhood Obesity and Nutrition (VT)	199	0	0
Citrus Canker/Greening (FL)	495	0	2,500
Citrus Tristeza	684	0	500
Competitiveness of Agricultural Products (WA)	672	0	679
Computational Agriculture (NY)	237	0	239
Cool Season Legume Research (ID, WA,ND)	558	0	564
Cotton Fiber Quality (GA)	0	0	0
Cotton Insect Management (GA)	489	0	0
Cranberry/Blueberry (MA)	158	0	160
Cranberry/Blueberry Disease and Breeding (NJ)	644	0	650
Crop Integration and Production (SD)	297	0	0
Crop Diversification Center (MO)	371	0	0
Crop Pathogens (NC)	322	0	325
Dairy and Meat Goat Research (TX)	149	0	150
Dairy Farm Profitability (PA)	495	0	500
Delta Rural Revitalization (MS)	248	0	0
Designing Foods for Health (TX)	1,980	0	2,000
Diaprepes Root Weevil (FL)	495	0	200
Drought Mitigation (NE)	220	0	222
Drought Management (UT)	792	0	0
Efficient Irrigation (NM, TX)	1,658	0	1,675
Environmental Biotechnology (RI)	637	0	643
Environmental Research (NY)	369	0	373
Environmental Risk Factors/Cancer (NY)	215	0	217

Environmentally Safe Products (VT)	743	0	0
Ethnobotany Research (AK)	248	0	0
Exotic Pest Diseases (CA)	1,910	0	1,929
Expanded Wheat Pasture (OK)	320	0	323
Feed Efficiency in Cattle (FL)	396	0	450
Feedstock Conversion (SD)	668	0	675
Fish and Shellfish Technologies (VA)	471	0	510
Food Chain Economic Analysis (IA)	412	0	416
Floriculture (HI)	348	0	352
Food and Agriculture Policy Research Institute (IA, MO)	1,596	0	1,712
Food Marketing Policy Center (CT)	573	0	579
Food Quality (AK)	272	0	0
Food Safety (AL)	1,135	0	0
Food Safety (OK, ME)	546	0	552
Food Safety (TX)	198	0	200
Food Safety Research Consortium	990	0	1,100
Food Safety Initiatives (ND)	1,411	0	1,411
Food Security (WA)	394	0	0
Food Systems Research Group (WI)	545	0	550
Forages for Advancing Livestock Production (KY)	386	0	0
Forestry Research (AR)	456	0	0
Fruit and Berry Crop Trials for Rural Villages (AK)	495	0	0
Fruit and Vegetable Market Analysis (AZ, MO)	347	0	350
Functional Genomics (UT)	1,470	0	0
Future Foods (IL)	659	0	706
Generic Commodity Promotions, Research and Evaluation (NY)	189	0	0
Bio-renewable Oils (MO)	733	0	0
Genomics (MS)	1,129	0	0
Geographic Information System	1,784	0	1,952
Global Change/ Ultraviolet Radiation	2,162	$2,425	2,425
Grain Sorghum (KS,TX)	729	0	786
Grapefruit Juice/Drug Interaction (FL)	341	0	344
Grass Seed Cropping for Sustainable Agriculture (WA, OR, ID)	446	0	450
Grazing Research (WI)	257	0	0
Greenhouse Crop Production (AK)	297	0	0
Hardwood Scanning (IN)	297	0	0
Horn Fly Research (AL)	198	0	200
Human Nutrition (IA)	644	0	750
Human Nutrition (LA)	699	0	806
Human Nutrition (NY)	574	0	600
Hydroponic Tomato Production (OH)	177	0	180
Illinois-Missouri Alliance for Biotechnology	1,158	0	1,270
Improved Dairy Management Practices (PA)	348	0	352
Improved Fruit Practices (MI)	210	0	212
Increasing Shelf Life of Agricultural Commodities (ID)	854	0	863
Infectious Disease Research (CO)	809	0	867
Institute for Biobased Products and Food Science (MT)	557	0	455
Institute for Food Science and Engineering (AR)	1,108	0	1,119
Integrated Fruit and Vegetable Research (GA)	253	0	306
Integrated Production Systems (OK)	252	0	255
International Arid Lands Consortium (AZ)	573	0	600
Iowa Biotechnology Consortium	1,757	0	1,757
Leopold Center Hypoxia Project (IA)	220	0	0
Livestock and Dairy Policy (NY, TX)	990	0	1,000
Livestock Genome Sequencing (IL)	807	0	865
Livestock Waste (IA)	263	0	0
Lowbush Blueberry Research (ME)	244	0	246
Maple Research (VT)	138	0	0
Meadowfoam (OR)	257	0	260
Michigan Biotechnology Consortium	549	0	555
Midwest Advanced Food Manufacturing Alliance (NE)	495	0	500
Midwest Agricultural Products (IA)	606	0	612
Midwest Poultry Consortium (IA)	675	0	682
Milk Safety (PA)	780	0	800
Minor Use Animal Drugs	582	582	582
Molluscan Shellfish (OR)	361	0	365
Montana Sheep Institute	591	0	597
Multi-commodity Research (OR)	349	0	353
National Beef Cattle Genetic Evaluation Consortium (NY, CO, GA)	871	0	930
National Biological Impact Assessment Program (VA)	261	251	264
National Center for Soybean Biotechnology (MO)	977	0	0
Nematode Resistance Genetic Engineering (NM)	138	0	0
Nevada Arid Rangelands Initiative (NV)	499	0	504
New Crop Opportunities (AK)	439	0	0
New Crop Opportunities (KY)	752	0	0
Oil Resources from Desert Plants (NM)	209	0	0

Organic Cropping (WA)	355	0	359
Organic Waste Utilization (NM)	92	0	0
Oyster Post Harvest Treatment (FL)	442	0	450
Ozone Air Quality (CA)	397	0	0
Pasture and Forage Research (UT)	223	0	0
Peach Tree Short Life (SC)	275	0	278
Perrenial Wheat (WA)	140	0	0
Pest Control Alternatives (SC)	279	0	282
Phytophthora Research (GA)	255	0	308
Phytophthora Research (MI)	495	0	500
Phytophthora Root Rot (NM)	180	0	0
Pierce's Disease (CA)	2,189	0	2,211
Plant, Drought, and Disease Resistance Gene Cataloging (NM)	231	0	279
Potato Research	1,482	0	1,497
Precision Agriculture (KY)	668	0	0
Preharvest Food Safety (KS)	200	0	202
Preservation and Processing Research (OK)	248	0	250
Protein Utilization (IA)	837	0	805
Rangeland Ecosystems (NM)	279	0	0
Regional Barley Gene Mapping Project (OR)	675	0	682
Regionalized Implications of Farm Programs (MO, TX)	851	0	860
Rice Agronomy (MO)	248	0	300
Ruminant Nutrition Consortium (MT, ND, SD, WY)	489	0	0
Rural Development Centers (LA)	228	0	150
Rural Obesity (NY)	185	0	187
Rural Policies Institute (NE, IA, MO)	1,193	0	1,205
Russian Wheat Aphid (CO)	303	0	320
Seafood and Aquaculture Harvesting, Processing and Marketing (MS)	0	0	0
Seafood Safety (MA)	453	0	458
Seed Technology (SD)	356	0	0
Small Fruit Research (OR, WA, ID)	439	0	443
Soil and Environmental Quality (DE)	292	0	295
Southwest Consortium for Plant Genetics and Water Resources (NM)	388	0	400
Soybean Cyst Nematode (MO)	794	0	852
Soybean Research (IL)	1,065	0	1,126
STEEP III -- Water Quality in Northwest	634	0	640
Sudden Oak Death (CA)	97	0	0
Sustainable Agriculture (CA)	510	0	565
Sustainable Agriculture (MI)	380	0	384
Sustainable Agriculture and Natural Resources (PA)	188	0	190
Sustainable Beef Supply (MT)	974	0	1,000
Sustainable Engineered Materials from Renewable Sources (VA)	693	0	750
Swine and Other Animal Waste Management (NC)	484	0	489
Tick Borne Disease Prevention (RI)	149	0	150
Tillage, Silviculture, Waste Management (LA)	495	0	500
Tri-state Joint Peanut Research (AL)	585	0	591
Tropical Aquaculture (FL)	209	0	211
Tropical and Subtropical Research/T-Star	9,453	0	9,548
Uniform Farm Management Program (MN)	295	0	289
Value-added Product Development from Agricultural Resources (MT)	401	0	0
Virtual Plant Database Enhancement Project (MO)	698	0	698
Viticulture Consortium (NY, CA, PA)	2,079	0	2,100
Water Conservation for Feedgrains/Feedstocks, (KS)	73	0	74
Water Use Efficiency and Water Quality Enhancements (GA)	489	0	500
Weed Control (ND)	380	0	0
Wetland Plants (LA)	557	0	563
Wheat Genetic Research (KS)	341	0	390
Wheat Sawfly Research (MT)	516	0	0
Wine Grape Foundation Block (WA)	319	0	322
Wood Utilization (OR, MS, NC, MN, ME, MI, ID, TN, AK,WV)	6,371	0	6,371
Wool Research (TX, MT, WY)	295	0	300
Subtotal, Special Research Grants	126,941	3,258	103,471
Improved Pest Control:			
Expert IPM Decision Support System	155	175	175
Integrated Pest Management	2,396	2,698	2,570
Minor Crop Pest Management (IR-4)	10,677	10,380	10,785
Pest Management Alternatives	1,422	1,603	1,422
Total, Improved Pest Control	14,650	14,856	14,952
Total, Special Research Grants	$141,591	$18,114	$118,423

Agroecology.—The Committee provices $406,000 for agroecology in Maryland. The goal of this project is to preserve farm and forest land in the Chesapeake Bay to prevent conversion to housing. Recent accomplishments include valuing ecosystem services from forest land such as carbon sequestration, wildlife habitat, and water filtration to prevent conversion to urban use. Cover cropping practices on cropland to reduce nitrates to the Bay are also being modeled to estimate improvements from increased cover crops. For fiscal years 2001–2005, the total State-appropriated non-federal funds are $271,000 per year.

Air quality.—The Committee provides $1,574,000 for air quality in Texas and Kansas. This research and technology-transfer initiative was created to form a Federal/state partnership that is: (1) characterizing odor, odorous gases, particulate matter, and green house gases from open-lot CAFO's; (2) developing and evaluating cost-effective abatement measures; (3) providing a sound, scientific basis for specific air pollution regulations, including appropriate emission factors for particulates, odor, and odorous gases for the Southern Great Plains; (4) determining the potential impact of these air contaminants on animal health and productivity with inferences related to human health concerns; and (5) providing technology transfer to the public and agricultural producers. The following are accomplishments to date by objective.

Objective 1. Emissions Characterizations. Multi-agency field sampling was conducted at a 50,000 head cattle feedlot in spring and summer 2004 and 2005. Hydrogen sulfide—H_2S—concentrations were 3 orders of magnitude lower than ammonia—NH_3–concentrations. Diurnal patterns were observed for both H_2S and NH_3 emissions, which varied with temperature. Both flux gradient/micromet and surface isolation flux chamber approaches were used with acceptable agreement. Simulated runoff holding pond surfaces produced low ammonia emissions. NH_3 emissions observed with flux chambers were much higher within 24 hours after urine deposition, as compared to a relatively dry feedlot surface.

Objective 2. Abatement Measures. Weight-drop test chambers—WDTC—produced regression relationships between vertical energy imparted on simulated dry feedlot surfaces and PM–10 emissions in relation to manure depth and moisture content, with 2″ depth and 20 percent surface moisture appearing to be potential threshold areas for PM–10 reduction. Horizontal mode of hoof activity will be simulated in future WDTC experiments. Record 12-month rainfall totals reduced field work on water curtain experiments. A surface applied urease inhibitor did not produce a significant reduction in NH3 emissions in a field scale experiment. Evaporation rate from a feedlot surface was 30–70 percent or less of overall grass-reference Evapotranspiration (ET), depending on temperature and other climatic variables, and hygroscopic absorption at night.

Objective 3. Scientific Basis of Emission Factors. Protocols were improved for particulate matter (PM) measurement, using co-located PM–10 and total suspended particles (TSP) samplers along with particle size distribution. A Gaussian (ISCST3) model provided accurate results for predicting PM–10 emissions from downwind concentrations, but a BLS model predicted 10-fold higher

emissions when used conjunctively with the ISCST3 model. Peak PM–10 and TSP concentrations in summer evenings were 10–20 times daytime concentrations, being accentuated by low-level inversions along with diurnal peaks of aggressive cattle activity. Development of refined emission factors for cattle feedyards and dairies is progressing, including a road dust component.

Objective 4. Animal Health. Ventilated calf exposure chambers to produce controlled concentrations of feedyard dust are nearly complete for a graduate student research project. Particle agglomeration in lung fluids is being examined as a potential mitigation factor in cattle exposure to feedlot PM.

Objective 5. Technology Transfer. A research peer review with industry participation was conducted with positive, constructive feedback for project focus. Coinvestigators produced 50 manuscripts, and made 38 scientific presentations.

Non-federal matching funds for this proposal were estimated at $817,000 for fiscal year 2002; $435,000 identified in 2003, $514,483 reported in 2004, $807,000 in 2005.

Animal disease.—The Committee provides $350,000 for animal disease research in Wyoming. The goal of this program when initiated in 2003 was to better understand the epidemiology and transmission of chronic wasting disease in free-ranging deer. Since initiated in 2003, the researchers have successfully identified chronic wasting disease-positive free-ranging deer in southeastern Wyoming. Data from these positive deer are still being analyzed for dispersal rates, migration patterns, survival rates, home range size, habitat use, daily activity patterns, and interaction of deer with cattle. Studies have also been expanded to characterize the impact of West Nile virus on greater sage-grouse in Wyoming. Data from this study confirms that West Nile virus may cause localized population declines or possibly localized extinctions in greater sage-grouse, and it was determined that the range-wide implications of West Nile virus in sage-grouse require more intensive and longer-term study. In fiscal year 2003, a total of $580,000 was contributed by the University of Wyoming, Wyoming Game and Fish Department, and other state appropriations. In fiscal year 2004, a total of $256,149 was contributed by other universities and miscellaneous sources. In fiscal year 2005, state contributions totaled $256,282, which included the University of Wyoming, Colorado Division of Wildlife, Wyoming Game and Fish Department, Wyoming Department of Health, and the Wyoming Livestock Board. Miscellaneous contributions for fiscal year 2005 totaled $64,852.

Animal Science Food Safety Consortium.—The Committee provides $1,432,000 for the Animal Science Food Safety Consortium in Arkansas, Kansas, and Iowa. The goals were to bring together several universities to provide research that is relevant to food safety. The Consortium focus continues to be methods of development for the isolation, detection, and quantification of microbial and chemical hazards and the elimination of those hazards. This research has also resulted in the expansion of research into risk assessment, economics, policy, and trade. The food safety work has enabled the consortium to address food security that may be a result of bioterrorism and/or natural disasters. Iowa State University is also supporting in the coming year an integrated risk and cost-based anal-

ysis of salmonella in the pork production chain. This project will suggest the segments of the pork production, processing, and delivery process where salmonella may be controlled most effectively, and the points at which control is cost-effective. The non-federal funds and sources provided for this project are as follows: fiscal year 2002, $2,520,750; fiscal year 2003, $1,361,562; fiscal year 2004, $2,097,086; and fiscal year 2005, $4,898,000.

Aquaculture (LA).—The Committee provides $429,000 for aquaculture in Louisiana. The goal of the research was to provide science-based information that specifically addressed the needs of the aquaculture industry in Louisiana and the Southern region. Over the years, the Aquaculture, Louisiana, program has led to advances in new stocking, culture, and harvest techniques for commercial crawfish production. New processing technologies for crawfish, catfish, and other aquaculture products have also been developed improving food quality and safety. Genetics research has led to the development of gene maps for commercial strains of channel catfish and has improved cryopreservation techniques for genetic banking of commercially-important aquaculture species. New, least-cost feed formulations that meet the nutritional needs of aquaculture species has led to reductions in feed costs. Recent accomplishments under this program have improved crawfish harvest efficiency through the use of improved winter baits, the use of square-mesh traps during harvest, and through the use of non-traditional pond-draining schedules. Additionally, there have been improvements made in disease control by the development of new vaccines for channel catfish. The university estimates that non-federal funding for this program is as follows: $603,489 in fiscal year 2002; $336,383 in fiscal year 2003; and approximately $310,955 in non-federal support was made available in support of this project in fiscal year 2004. The university estimates that $501,148 in non-federal support was made available for projects outlined in the FY 2005 submission coming primarily from state funds.

Biomass-based energy research.—The Committee provides $1,200,000 for biomass-based energy research in Oklahoma and Mississippi. The primary goal is to develop a cost-effective biomass conversion-to-ethanol production system utilizing a unique gasification-fermentation process. Breeding efforts for bermudagrass and switchgrass as energy crops have resulted in genetic improvement and new cultivar development. Additional biomass feedstocks such as cotton gin waste and sawdust have been processed to evaluate handling and storage, material composition, and synthesis gas yield and quality. Two gasifiers, a fluidized-bed reactor and a downdraft unit, have been optimized using switchgrass, bermudagrass, and corn fermentation waste as inputs. The bioreactor is ready to scale up to 100 liters, and an optimal growth medium for the biocatalyst has been formulated for cell growth. Optimization of trace metals for a second biocatalyst to be evaluated resulted in an increase of over 200 percent in ethanol production in routine culture. An economic analysis to determine the potential economies of scale from a coordinated biorefinery operation focused on harvesting and handling. Combined, the Oklahoma and Mississippi Agricultural Experiment Stations provide over $250,000 per year. Aventine Renewable Energy, Incorporated, for-

merly Williams Bio-Energy, committed a total of $200,000 through fiscal year 2005.

Efficient irrigation.—The Committee provides $1,675,000 for efficient irrigation in New Mexico and Texas. Research areas addressed include irrigation district studies; an irrigation technology center for education and training; legal and institutional barriers to efficient water use; evaluation of on-farm irrigation systems management; urban landscape and in-home water conservation; environment, ecology, and water quality protection; saline and waste water management and water use; satellite imagery for basinwide hydrology studies, salinity modeling, and technology; and project oversight, communications, biometric support, and accountability for the multi-components of this multi-state project. Accomplishments in 2005 reported by the project include: (1) development and organization of a project to conduct an extensive on-farm research demonstration in which growers were actively involved in the evaluation of limited irrigation programs; because the demonstration included most of the irrigated farms in the Rio Grande region, 311,000 to 413,000 acre-feet of water will be saved each year; (2) deficit irrigation was used in a study involving spinach production and resulted in a 23 percent water savings, equivalent to 1,100 acre feet or 361 million gallons of water per year; (3) researchers determined that by using monthly water budgets based on landscape size, potential evapotranspiration value, and landscape coefficient, homeowners could reduce their annual landscape water usage by 48 percent annually; and (4) utilizing seepage loss data, researchers concluded that by lining over 10 miles of canal in the Upper Rio Grande Valley, enough water could be salvaged to irrigate 1,000 acres of crops or provide water to 8,000 households; researchers are helping irrigation districts target canals that will result in the highest water conservation. In fiscal year 2004, the project received from state appropriated research and general accounts funds to support scientists' salaries and fringe benefits totaling $232,576; from Texas Higher Education Coordinating Board, El Paso Water Utilities, San Antonio Water System, and other state and municipal sources, $590,801; and from industry associations, $216,477. In fiscal year 2005, the project received from state appropriated research and general accounts funds to support scientists' salaries and fringe benefits totaling $239,554; from the American Water Works Research Foundation and Metropolitan Water District of Southern California, $246,697; from the International Boundary and Water Commission, $136,000; from other state and municipal sources, $703,413; and from industry associations, $31,000.

Environmental risk factors.—The Committee provides $217,000 for environmental risks factors in New York. The goals of this research are to evaluate the scientific information on pesticides, other chemicals, and diet, and the relationships of these factors to breast cancer risk. The following have been accomplished: (1) Established an expansion of a database of critical evaluations on current scientific evidence of carcinogenicity for selected agricultural chemicals; (2) Communicated obesity prevention and breast cancer risk reduction information to the public, researchers, health professionals, scientific community, agricultural community, Federal

agencies, and others in technical and non-technical formats; (3) Increased communication in rural and suburban areas in a variety of formats; and (4) A community needs assessment for obesity prevention and breast cancer reduction in rural areas. The non-federal funds and sources provided for this grant were as follows: $150,000 state appropriations for fiscal year 1996; $250,000 per year in state funds were provided for fiscal years 1997 and 1998; $350,000 state funds for 1999 and 2000; $250,000 state funds were received for fiscal year 2001; $350,000 was received from New York State for fiscal year 2002; $350,000 was received from New York State for fiscal year 2003; $450,000 for fiscal year 2004; $450,000 for fiscal year 2005; and $450,000 has been negotiated for fiscal year 2006.

Exotic pest diseases.—The Committee provides $1,929,000 for exotic pest diseases in California. The goal of this research is to improve the prevention and management of exotic pests and diseases affecting California's agricultural, urban, and natural systems. The long-term goal of the grants program is to develop a systematic methodology for dealing with exotic pests in risk assessment; early detection; and rapid development of control or eradication measures leading to improved Integrated Pest Management practices through biological, microbial, genetic, and chemical practices. Because a new exotic pest enters California every 60 days, the challenge is to have current scientific information available to prevent these introduced pests from becoming established. The project aims to establish a strategic, collaborative research approach to support urgently needed exclusion and prevention programs for potential introductions and proven management and eradication methods for established pests. To date, 83 research projects are yielding scientific knowledge on targeted pest species and to develop methods to control and manage the pests that are already in California or those species that pose a real threat to the State. In previous years, California commodity boards funded approximately $400,000 annually in research on invasive species; and the State of California funded approximately $600,000 annually in fruit fly research. Currently, California commodity boards are funding approximately $800,000 on invasive species research and $3 million for research on Pierce's Disease. The State of California and the University of California are funding approximately $230,000 in invasive species research.

Feedstock conversion.—The Committee provides $675,000 for feedstock conversion in South Dakota. The goal of this research was to develop the mission of the Sun Grant Initiative, to identify five leading universities as regional centers, to plan individual and collaborative activities at each center, and to establish a working relationship between these universities and Federal agencies. A nation-wide series of planning conferences and stakeholder input sessions have been conducted by each of five Centers. A report on these activities has been prepared, illustrating the widespread support and commitment to the Sun Grant Initiative, even from non-member institutions. Development of regional academic programs involving multiple institutions has been initiated, with curriculum planned on bio-based products and bio-energy. Regional assessments of available and current curriculum took place, as well as an analysis and projection of past, present, and future fuel use. The

key project leaders actively involved in enhancing networking within industries by helping to plan, and participating in, several professional and trade organization meetings. No non-federal funds have been identified for the purposes of this special grant.

Food and Agriculture Policy Institute.—The Committee provides $1,712,000 for the Food and Agriculture Policy Institute in Iowa and Missouri. The goal was to develop the analytical capability to assess and evaluate U.S. farm policies on the U.S. agricultural sector and disseminate this information to farmers, farm and other agricultural organizations, and public policymakers. The mission has been expanded to include assessment of trade and environmental policy impacts and their interaction with the agricultural sector at national, regional, and farm levels. The models in place are also used to assess fiscal and monetary policy implications and impacts of new technologies such as biotechnological innovations on the agricultural sector. Both institutions maintain large econometric models and datasets which are regularly updated to analyze farm and trade policy alternatives and the impacts of various programs on the several sub sectors of the agricultural economy. During the past year, the FAPRI prepared the final agricultural projections on world agricultural production, consumption, and trade. Major drivers of the 2005 baseline include continuing strong economic growth world wide, recovery from past weather shocks in key producing countries, recent SPS shocks, and the U.S. dollar's weakness in industrialized countries and its strength in Latin America. An outside review, re-evaluation of projections, and completion of the final baseline is also prepared. These final projections for domestic and world agricultural markets are found in the FAPRI 2005 U.S. and World Agricultural Outlook. FAPRI projections assume average weather patterns worldwide, existing policy, and policy commitments under current trade agreements. FAPRI projections do not include conjectures on potential policy changes, such as those resulting from the likely accession of China to the World Trade Organization. The FAPRI staff has made numerous public appearances throughout the U.S. to agricultural groups and Congressional committees and Executive branch groups addressing policy issues. The non-federal funds and sources provided for this grant are as follows: $260,355 State appropriations, $113,565 industry, and $37,913 miscellaneous for a total of $411,833 in 1991; $321,074 State appropriations, $51,500 industry, and $35,100 miscellaneous for a total of $407,674 in 1992; $234,796 State appropriations and $70,378 industry for a total of $305,174 in 1993; $78,286 State appropriations, $43,925 industry, and $29,750 miscellaneous in 1994 for a total of $151,961 in 1994; $80,155 State appropriations, $37,128 industry, and $42,236 miscellaneous for a total of $159,519 for 1995; $124,123 in State appropriations with no other funding for 1996; $79,000 in State appropriations, $50,000 industry, and $25,000 miscellaneous for a total of $154,000 in 1997; and $88,800 State appropriations, $75,200 industry, and $34,687 miscellaneous for a total of $198,687 in 1998. Also, there were $15,316 in private funds in 2003. No non-federal dollars 2005.

Global change/ultraviolet radiation.—The Committee provides $2,425,000 for global change/ultraviolet radiation. The USDA Global Change/Ultraviolet Monitoring and Research Network was de-

signed to provide accurate, geographicallydispersed data on ultraviolet radiation reaching the surface of the earth and to detect trends over time. Instruments have been deployed and are currently in operation at 33 monitoring sites across the United States and Canada, including Hawaii and Alaska, and a site in New Zealand which is located under the Antarctic ozone hole during part of the year. Data from these sites are available within 24 hours of collection via the Web. The United States Department of Agriculture is also a participant in the development of a central calibration facility at the Department of Commerce facilities in Boulder, Colorado. The purpose of the central calibration facility is to ensure uniform and acceptable calibration and characterization of all instruments used in interagency ultraviolet monitoring programs. Some project funds are expended each year to partially support studies by collaborators across the country to address plant, animal, and ecological impacts from ultraviolet exposure. This, of course, represents a small fraction of all the scientific studies being conducted with these data by the broader scientific community. No non-federal funds have been provided for this grant since 1995.

Human nutrition (IA).—The Committee provides $750,000 for human nutrition in Iowa. Researchers have found that the activity of soy sphingolipids in inhibiting cancer can be modulated by genetics and processing techniques. The omega–3 fatty acid content of walleye fillets was increased by feeding the fish non-marine lipids. PCBs were below detectable limits in the walleye fillets. The fillets with enhanced concentrations of omega–3 fatty acids do not have undesirable sensory attributes and were not more rancid after more than six months of freezer storage. Studies have demonstrated that resveratrol aglycone in grapes is active in the cell cycle arrest of colon cancer cells. Finally, investigators have determined the accessibility of rural elderly to fresh fruits, vegetables, high quality protein foods, and dietary supplements, examining the social and economic barriers to these important nutrients. They are formulating a public policy framework and conducting analyses to be used to better understand current food consumption patterns, their relationship to performance and health, and the development and evaluation of new policies and regulations which relate to changes in new technologies for foods.The non-federal funds and sources provided for this grant were as follows: $1,173,857 university and $2,087,789 private and state sources in 2002; and $887,503 university and $1,081,313 private and state sources in 2003; and $122,243 University and $1,949,366 private and state sources in 2004.

Michigan Biotechnology Consortium.—The Committee provides $555,000 for the Michigan Biotechnology Consortium. The goal of this research was to select and develop market-viable technologies for the production of industrial products from agricultural raw materials. Accomplishments for 2005 include improved extraction of protein from grains and switchgrass using an aqueous ammonia process; preparation of cellulose nanofibers from corn stover and characterization of them by transmission electron microscopy; identification and cloning of a gene encoding an enzyme that catalyzes conversion of carboxylic acid groups to aldehydes; and identification and cloning of two genes for enhancing succinic acid production

from glycerol containing waste streams. The source and amount of non-federal funds are as follows: in fiscal year 2002, $51,090 from industry and the State of Michigan; in fiscal year 2003, $100,000 from industry; and iIi fiscal year 2004, $163,097 from industry. There were no direct nonfederal funds in support of the project in fiscal year 2005.

Nevada arid rangelands initiative.—The Committee provides $504,000 for the Nevada arid rangelands initiative. The goal of this research was to develop research management and educational programs to promote healthy productive and sustainable use of Nevada rangeland. The project is based on four program goals, which were identified in partnership with rural communities and families and in consultation with other agencies and organizations with range concerns. The goals are: healthy rangeland for multiple uses; improved campus based education; healthy ranch, community, and county; and public land decision support models. A survey of pigmy rabbit population showed that they are present in much of the historical range, and an Endangered Species designation is not needed. Considerable progress has been made in range weed control, assessment of pinyon-juniper expansion and range management/wildlife interaction. The estimate for non-federal funds provided for this program from state funds by fiscal years: 2000, $237,000; 2001, $241,000; 2002, $525,000; 2003, $475,000; and 2004, $457,000. The non-federal support for this project in 2005 has been estimated at $415,000. In addition, a large number of state and Federal agencies and non-governmental organizations are cooperating with this project. Their contributions are not reflected in these estimates and are accounted for in their own projects.

Oyster post-harvest treatment.—The Committee provides $450,000 for oyster post-harvest treatment in Florida. The goal of this research was to increase the options and capacity for post-harvest treatments that can be used to reduce health risks associated with the consumption of raw oysters commercially processed in Florida. Recent program focus has been to develop and advance commercial use, regulatory recognition, and buyer confidence in freezing as an effective post-harvest process to reduce and eliminate problematic bacteria in oysters destined for raw consumption. A progress update for the approval of the use of irradiation in seafood was obtained from the National Fisheries Institute and the Federal Drug Administration's—FDA—Office of Pre-market Approval. In addition, contact has been established with SUREBEAM Corporation to obtain the cost of treating the product or to install a new treatment facility. Recently, technical trials are suggesting that irradiation could reduce potential pathogens from raw shellfish, but there are resulting concerns for subsequent product shelf-life, operational costs, and regulatory approvals that could restrict use of this technology. Specific accomplishments include: an active steering committee with participation from industry, government, and academia has been established; an industry survey has been conducted that documents compliance with the Federal mandates for program capacity goals; the steering committee and industry have compiled and discussed the different post-harvest technologies alternatives that are available and concluded that freezing, whole and halfshell oysters, was the best alternative for Florida. A new

product developed from this research includes FROSTED Oysters. Past accomplishments have conducted surveys to document post-harvest treatment capacity in the Florida oyster industry; a validation protocol for the use of freezing as a post-harvest treatment has been developed and sent to the FDA, the International Shellfish Sanitation Commission, and the Florida Department of Agriculture and Consumer Services' representatives for comment; and commercially-frozen oysters were evaluated to determine organoleptic characteristics. Non-federal funds used in support of this program in fiscal year 2004 were $58,000 coming primarily from state and industry sources. Non-federal funding supporting this project has not been made available to the agency.

Pierce's disease.—The Committee provides $2,211,000 for Pierce's disease in CA. The initial goal of the research was to control the spread of the glassy-winged sharpshooter in order to slow the spread of the disease. However, controlling the insect alone will not solve the problem in the long term. The over-arching goal of the research is to learn how to control the disease, preferably through the development of resistant grape clones, supplemented with integrated management methods. The total non-federal contribution to this project for fiscal year 2000 through 2006 is approximately $15 million. These funds are coming from the State of California, the viticultural industry in California, the Citrus Research Board and Almond Board of California and Kern and Tulare Counties, with the California Department of Food and Agriculture have all contributed funds.

Regional barley gene mapping project.—The Committee provides $682,000 for the regional barley gene mapping project in Oregon. The goal of this project has been to increase the profitability and sustainability of barley production. Specific goals are to develop a molecular map for important barley traits and provide molecular markers for barley breeders. The major accomplishment of this project in 2005 was the result of the fundamental tools and resources for barley genetics it has developed. These resources, the cumulative product of collaborative research in this project, were essential for securing one of only two highly competitive and prestigious USDA/CSREES Coordinated Agricultural Project awards, also known as a "CAP" award, in 2005. As indicated by the title of the successful project, "Leveraging genomics, genetics, and breeding for gene discovery and barley improvement", the award has leveraged every component of this project—from providing the seed money for development of the Barley Gene Chip to pioneering genetic mapping and dissection of quantitative traits. Over the next five years, the Barley CAP award will fund a national, coordinated effort to apply the latest genetic technologies, developed by this project, to barley variety development. The present project will continue to support complementary development of the tools and knowledge necessary for the next generation of progress.The non-federal funds and sources provided for this grant were as follows: $203,760 from industry in 1991; $212,750 from industry in 1992; $115,000 from industry in 1993; $89,000 from industry in 1994; and $35,000 from the State of Washington and $108,000 in other non-federal funding, for a total of $143,000 in 1995; $163,000 for 1996; $178,240 for 1997; for 1998, $147,000; for 1999, $156,000; for

2000, $154,000; for 2001, $70,000; for 2002, $60,000 from industry; and for 2003, $62,000 from industry, specifically from Anheuser-Busch, Inc. In addition, each researcher on the project contributes from 5 to 20 percent of their salary. In state funds—that is, excluding researchers from the USDA Agricultural Research Service that are associated with the project—this has been approximately $400,000 in 2002, $412,000 in 2003, and $424,000 in 2004.

Rural Policies Institute.—The Committee provides $1,205,000 for the Rural Policies Institute in Nebraska, Iowa, and Missouri. The goal of the Rural Policy Research Institute was to create a new model for providing timely, unbiased estimates of the impacts of policies and new policy initiatives on rural people and places. That model was developed. Policy analysis research and dissemination activities expanded in response to current and emerging issues in rural America. RUPRI facilitates panels of researchers who collaborate on topical areas and form the fabric of its research capacity. Their research is published and cited in academic journals, discussed in the media, and used by policy decision makers at all levels of government. In 2005 RUPRI hosted one international conference and Fellows program and six national conferences; participated in nine hearing or briefing testimonies at the national, regional, or state level; and published over 40 policy studies, white papers and working papers. The international conference was held in Abingdon, Virginia, and built on three previous conferences to emphasize the sharing of education, culture, and environment across nations with attention to implications for rural policy and governance. Over 300 people from 46 countries participated. RUPRI Fellows traveled to Brussels to study European Union policy in agriculture and rural development. Nationally, RUPRI provided organizational leadership for the National Rural Network, a consortium of 50 national organizations, institutions, and non-governmental entities working to create a framework for national rural policy. It also hosted a Rural Regional Innovation Policy Dialogue to build a common platform for rural development initiatives. Regionally, RUPRI began a Community Clustering Initiative, with funding from the Northwest Area Foundation, to strengthen governance in multi-community regions of the northwest. State level activities included a meeting of State Rural Policy Centers to study on-going initiatives, co-hosting the second annual Rural Policy Academy for state legislators, and collaboration on a Missouri Rural Entrepreneurship Initiative. It continued working in the areas of entrepreneurship, health policy, telecommunications, and poverty amelioration. It conducted six Home town Competitiveness Academies and eight Energizing Entrepreneurship Workshops. In 2005, RUPRI reconfigured its work in poverty and rural health to establish its Rural Human Services and Poverty Policy Center and formed a Rural Human Services National Advisory Committee.Aggregated non-federal funds to support RUPRI across the three involved universities include indirect costs, salary support from university and other non-federal sources, and various other grants, contracts, and reimbursable agreements. They amounted to $548,005 for fiscal year 2003; $629,299 for fiscal year 2004; and $1,681,287 for fiscal year 2005.

Small fruit research.—The Committee provides $443,000 for small fruit research in Oregon, Washington, and Idaho. The goal of this research was the genetic improvement of small fruit cultivars to enhance quality, yield, and marketability. This grant supports research using genetic material from national germplasm collections and the discovery of new isolates, which expand these genetic holdings. Studies supported by this project use advanced selections in breeding programs and approaches that utilize genetic engineering. Another industry wide-goal of this program is to identify new potentially harmful virus disorders in nursery stock and eliminate them prior to introduction into small fruit production systems. The selection and development of new small fruit varieties is essential to maintaining the competitiveness of the United States in the world market and in maintaining export advantages required for our international balance of trade. The Federal investment in this program leverages an additional 20 percent of additional funding from research investments contributed by the private sector. Annual combined contributions range from $60,000 to $80,000. Following peer review and grant ranking this project will fund the highest ranked proposals until the program's grant dollars are exhausted. Commodity groups and grower associations then review the remaining unfunded proposals and use their non-Federal resources to fund additional research based upon their commodities specific research needs.

Sustainable beef supply.—The Committee provides $1,000,000 for sustainable beef supply in Montana. The Montana Beef Network has three primary objectives: (1) develop and implement certification programs for feeder calves that have met beef quality assurance management protocols; (2) provide information from the feedlot and packing plant to the cow-calf producer to determine if feeder calves met industry requirements for quality, consistency, and yield of red meat; and (3) provide educational programs aimed at sharing results of research projects and methods to meet beef quality assurance standards with beef producers in Montana. To date, more than 1,200 producers are certified through the Beef Quality Assurance Program; more than 51,000 calves were enrolled in 2005 for source verification, age verification, and tracking carcass data; educational programs and hands-on demonstrations of animal identification were conducted throughout Montana; a website was developed for sharing information; and a newsletter was distributed in August through December of each year. Approximately $120,000 per year for each of fiscal years 1999, 2000, 2001, 2002, 2003, 2004, and 2005 were provided from state appropriations. In fiscal year 2000, the Montana Department of Agriculture contributed $15,000 and the Montana Stockgrowers Association contributed $5,000. Montana beef producers contributed $10,000 in fiscal years 2001, 2002, and 2003. In fiscal year 2004, the National Cattlemen's Beef Association contributed $100,000.

Tillage, silviculture, waste management.—The Committee provides $500,000 for tillage, siviculture, and waste management in Louisiana. The goal of this grant was to improve conservation tillage systems for Louisiana crops and to address manure issues from dairy and poultry operations. This project has improved local methods of conservation tillage to control erosion for cotton, corn, wheat,

and rice, as well as managing insect pests with the increased crop stubble under the warm, humid local conditions. Pollution from poultry has been managed by modifying the diet with phytase and virginiamycin to reduce phosphorus outputs and identify alternative manure uses on forage grasses and loblolly pine plantations. Dairy manure is being managed with solids separation and aerobic digestion to reduce E. coli pathogens and improve nutrient management. Research projects were supported by non-federal funds in the amount of $540,000.

Water use efficiency and water quality enhancements.—The Committee provides $500,000 for water use efficiency and water quality enhancements in Georgia. The goal of this research is to develop and expedite the implementation of new technologies to improve water use efficiency and water quality at both a state and watershed scale. Detailed information on three variable rate irrigation systems was collected on three Georgia farms, and water quality data on several sites has been collected with the goal of optimizing yield, water quality, and field cropping patterns with a minimum of water use. The project has developed and aided in the commercialization of a first generation commercial variable rate center pivot system and 25 of these have been installed with a 16 percent reduction in water consumption and improved crop productivity. Design of a next generation sensing system using wireless internet tools and solar power is complete, and work on integrating the sensors with the pivot controller is underway. Water quality monitoring has been installed on several sites, and results of a dissertation funded by this project have lead to recommendations for riparian buffers as crucial landscape Best Management Practices for reducing herbicide runoff from agricultural production on Georgia's coastal plain. In fiscal year 2002, approximately $337,000 was provided in non-federal matching funds. These funds were contributed by state agencies and non-profit organizations. Similar amount of matching funds were provided for fiscal years 2003, 2004, and 2005. It is anticipated that matching funds for 2006 will be similar.

Wood utilization.—The Committee provides $6,371,000 for wood utilization in Oregon, Mississipi, North Carolina, Minnesota, Maine, Michigan, Idaho, Tennessee, Alaska, and West Virginia. There were two goals in the original grant: (1) provide science that addresses the problems associated with harvesting, transporting, manufacturing, and marketing economical forest products in three regions, and (2) educate graduate students to be knowledgeable in wood as a renewable resource. The program has been expanded to include additional university research locations. These have included new regions of indigenous forests and specific manufacturing techniques. The following are new accomplishments with their impacts:

University of Alaska

1. Issue. Restructuring of the forest products industry by supporting efforts to develop new markets, processing technology, and value added products in order to stimulate the economy and create more jobs in rural Alaska.

2. Response: Sponsored a demonstration project on marketing a high-value wood product, Umbrella Swift, a specialty item used to

detangle yarn. Marketing was done using tradeshows, journal ads, and the World Wide Web.

3. Impact. Gross sales of the company increased by 225 percent over the course of the project and valuable information was gained on what type of marketing worked and what did not.

University of Minnesota, Duluth

1. Issue. The United States forest products industry is facing tremendous competitive pressures from global competition and increased raw material costs.

2. Response: Lean manufacturing production simulations, educational training and project facilitation programs have been developed and implemented to promote global competitiveness and sustainable growth for over 75 small and medium wood products manufacturers in Minnesota and across the Midwest United States.

3. Impact. Productivity improvements of 50–75 percent, cost reductions of 25–50 percent, and lead time reductions of 50–90 percent, with a financial impact of over $750,000.

Mississippi State University

1. Issue. Need to create a new inventory of Mississippi forests and quantify the economic impacts of the state's forest products industry, and improved the performance of timber harvesting firms and mills.

2. Response: The MSU Department of Forestry pursued research to provide quantitative data.

3. Impact. Research yielded a map of the state's forests to support a new inventory, improved the performance of timber harvesting firms—actually preventing two from going out of business for a loss of 42 jobs—, and reduced the need for mills to build more wood storage facilities, with a total economic impact of $7 million.

1. Issue. Enable furniture manufacturers to increase their competitiveness through improving the rational design of furniture frames and durable performance of their products.

2. Response: Evaluate and design computer based finite element modeling techniques and provide details on performance of structural components.

3. Impact. Implementation of this technology by a furniture manufacturer would save upwards of $1 million annually.

North Carolina State University

1. Issue. Need to improve competitiveness of furniture manufacturing.

2. Response: Developed and transferred technology for high speed manufacturing to U.S. based upholstered furniture manufacturers.

3. Impact. Several millions of dollars in increased revenue for U.S. based furniture manufacturers that would have otherwise been lost to overseas competition and enabled upholstered furniture manufacturers to continue to employ thousands of workers.

University of Idaho, University of Montana, Washington State University

1. Issue. Lignin is the second most abundant organic compound on earth and is currently a highly underutilized natural resource

and industrial byproduct. Among the many research steps taken toward new practical lignin applications is one involving the chemical modification of lignin to form processable thermoplastics. Such lignin-based materials could potentially be used as a direct substitute for petroleum based plastics.

2. Response: This preliminary research addressed the esterification reactions of kraft and agricultural-hydrolysis lignins, the byproducts of the kraft paper-making process and of ethanol production, respectively. These lignins were reacted with acetic, propanoic, butyric, and hexanoic acid anhydrides to form their respective lignin esters. The chemical structures of the resulting compounds were analyzed using proton nuclear magnetic resonance spectroscopy—lH–NMR—, diffuse reflectance Fourier transform infrared spectroscopy—DR–FTIR—, and pyrolysis gas chromatography/mass spectrometry—GC–MS. Thermal transitions were detected using differential scanning calorimetry—DSC—and dynamic rheology.

3. Impact. The results showed that kraft lignin was easily modified by esterification into thermally processable plastics. However, successful modification of the agricultural lignins has proven more difficult due to their highly condensed structure. The effect of phenolation—to selectively depolymerize lignin—prior to esterification of the lignins is being examined as a possible solution to these difficulties. Results also showed that the lignin ester thermal properties can be controlled by simple changes in esterification reaction parameters. Future work will look at the mechanical properties of the materials using dynamic mechanical analysis—DMA.

1. Issue. According to forest inventory data, grand fir—Abies grandis—is a predominant species in the forests of the Inland Northwest region. Western Wood Products Association statistics show that grand fir lumber represented approximately 35 percent—approximately one billion board feet—of all softwood lumber produced in the region in 2003. At sawmills within the region, grand fir lumber is considered one of the most difficult species to dry. Drying times are often more than 60 hours, energy consumption is high, and variable moisture content—pieces above the 19 percent MC grade specification—in dried lumber is common.

2. Response: Eighteen-hundred grand fir—Abies grandis—studs were kiln dried to determine effects of high-temperature drying and restraint on drying time, energy consumption, warp—bow, crook, and twist—, and moisture content variability. The results showed that a high-temperature drying schedule—240 degrees F—consumed approximately one-half the energy of a lower-temperature drying schedule typically used within the region and that drying time was cut in half. In addition, moisture variability and warp within high temperature dried lumber were no worse than in lumber dried with the conventional schedule. Results also showed that when restraint was added, warp in lumber dried with the high-temperature schedule was reduced in the top six courses of the stack.

Results of this research were presented at the Inland Northwest Kiln Drying Workshop at the University of Idaho during October 2005. Operators and supervisors of 22 dry-kilns attended the work-

shops and represented large and small lumber manufacturers in Idaho, Washington, and Montana.

3. Impact. This research has already benefited sawmills within the Inland Northwest region. Two sawmills have adopted this technology, and they have realized a 200 billion Btu savings in natural gas and wood energy per year which represents approximately 20 percent of all energy used at those plants. This is enough energy to heat and cool approximately 2,000 homes in Minneapolis for one year. Additionally, the long drying times for grand fir lumber at many of these mills create a "bottleneck" at the dry kilns. Operations and production at these sawmills could be improved with the use of high-temperature drying of grand fir lumber.

As a result of the 2005 Inland Northwest Kiln Drying Workshop, two large lumber manufacturers—Riley Creek Lumber and Stimpson Lumber—plan to use hightemperature drying of grand fir lumber. These companies manufacture a large proportion of the lumber in North Idaho. Energy savings could be increased by ten times the equivalent of 5.5 million cubic meters mentioned above. This is enough energy to heat and cool approximately 20,000 homes in Minneapolis for one year.

West Virginia University

1. Issue. The feasibility of stranding oak residues—slash from logging—was studied to see if a strand could be produced that would be acceptable for use in manufacturing oriented strand board-OSB—and if a method could be created to manufacture strands in commercial volumes.

2. Response: It was found that the stranding process needed to be significantly modified to produce oak strands with characteristics compatible with industry standards. Eventually, West Virginia University produced a stranding configuration that did create acceptable strands and are now working to modify one existing strander at the Weyerhaeuser Flatwoods OSB mill to this configuration for a full scale production test.

3. Impact. The dollar impact of this portion of research could be significant if the full scale production effort proves successful. Oak residues are widely available across the state of West Virginia and have no current value as furnish for OSB mill. The addition of oak residue as a raw material source for OSB would increase the value of oak residue 100-fold to landowners and loggers, while increasing the supply and lowering the overall cost of raw material to the mills, resulting in several million dollars in economic impact annually in West Virginia. This technology is also exportable to other parts of the Appalachian region and would have similar impact in states with OSB mills.

University of Tennessee

1. Issue. New process monitoring technology is needed to improve manufacturing efficiency of wood products, enhancing the competitive position of the industry in the face of globalization.

2. Response: A genetic algorithm/neural network—GANN—system was developed to predict the physical properties of wood composites. The GANN system was validated at one medium density fiberboard—MDF—and one OSB plant.

3. Impact. Use of the GANN system at the MDF test site resulted in a cost savings of $700,000 over a six-month period in 2005 due to reduced resin consumption. Validation is ongoing to assess impacts on further savings from reduced wood waste, faster throughput, and lower energy use.

University of Maine

Research at the University of Maine supported by Wood Utilization Research funding on optimizing oxygen delignification for use with high lignin pulps has been implemented commercially. A major paper company in Maine has invested $600,000 in new equipment, based on the experimental results, that significantly improved the bleaching process leading to a 40 percent reduction in bleaching cost and a reduction in chlorinated organics and chemical oxygen demand (COD) going to the wastewater treatment plant.

The following are non-federal funds provided by states:

—Mississippi State University non-federal funds were: State appropriations, $2,498,800; $2,178,725; $2,353,225; $2,331,691; $2,650,230; $2,778,535; $2,582,617; $2,543,017; $2,717,448; $2,993,888; and $3,217,908 for the years 1991–2001, respectively. In addition, industrial funds averaged $9,588,871 for the 5 years from 1995–2000 in support of Mississippi's research. For fiscal year 2002, state and industry contributions amounted to $3,870,884; for 2003, the State contributed $805,015; for 2004, State and industry contributed $1.1 million; and in 2005, $845,000.

—Oregon State University state appropriations were: $1,337,962; $1,394,304; $1,256,750; $1,252,750; $1,417,755; $1,117,000; $1,100,000; $1,352,000; $1,337,000; $1,492,000; and $976,000, for the years 1991–2001, respectively. Non-federal support for 2002 was $1,200,000; for 2003, $2,386,000; and for 2004, $1,672,885.

—Michigan State University non-federal contributions were $605,000; $590,000; $700,000; $600,000; $896,000; and $900,000 for the years 1997–2002, respectively. Non-federal funds for fiscal year 2003 were $850,000 and $767,400 for 2004.

—University of Minnesota-Duluth non-federal match were $590,000; $550,000; $560,000; $371,930; $307,532; $510,939; $1,506,000; $2,126,000; and $2,100,000 for the years 1994–2002, respectively. The non-federal match for fiscal year 2003 was $2,598,000; $200,000 for 2004 and $300,000 for 2005.

—North Carolina State University non-federal contributions were $60,000; $126,000; $165,000; $135,000; $163,216; $323,134; $369,122; $432,118; $346,380; and $364,530, for the years 1994–2003, respectively. Non-federal funds for fiscal year 2004 were $203,980 and $628,682 for 2005.

—University of Maine non-federal contributions were $6,000,000; $445,723; $459,100; $477,464; $526,210; $148,032; $619,898; $557,842; and $547,577, for the years 1994–2002, respectively. Non-federal funds for fiscal year 2003 were $529,500 and $518,235 for 2004.

Two centers were added in 1999:

—The University of Tennessee non-federal funds for 1999–2002 were $150,987; $241,696; $1,715,000; and $400,000, respectively. For 2003, it was $279,300 and $385,000 for 2004.

—The consortium of the Universities of Idaho and Montana and Washington State University non-federal funds for 1999–2001 were $305,000; $406,000; and $1,321,931, respectively. Non-federal funds for fiscal year 2003 were $551,468. Non-federal funds for fiscal year 2005 were $1,206,834.

—The University of Alaska, Wood Utilization Research Center, was added in 2000. The University of Alaska non-federal funds were $257,872; $5,800; and $75,000 for 2000, 2001, and 2002, respectively. For fiscal year 2003, it was $50,000.

—The latest addition—2004—is West Virginia University. Non-federal support for 2004 was $100,000 and $138,000 for 2005.

—Total non-federal funds provided by states and industries for fiscal year 2003 were $8,253,263.

Phytosensors for Crop Security and Precision Agriculture.—The Committee encourages the Service to engage in and promote activities to enhance, create, and combine technologies in biotechnology and photonics that produce crop plants for use as early-warning sentinels for the detection of plant diseases.

The Committee is concerned with the level of participation by 1890 Universities in the Department's research activities, particularly those administered by the Agricultural Research Service (ARS) and the Cooperative State Research, Education and Extension Service (CSREES). The Committee directs the Secretary to develop a demonstration program which encourages and fosters expanded cooperative, collaborative, and/or multi-state research opportunities between 1890 institutions and larger land grant institutions, and to report back to the Committee with an action plan as well as potential strategies to expand research collaborative opportunities for all 1890 Universities program by March 15, 2007.

NATIVE AMERICAN INSTITUTIONS ENDOWMENT FUND

2006 appropriation	$12,000,000
2007 budget estimate	11,880,000
Provided in the bill	11,880,000
Comparison:	
2006 appropriation	−120,000
2007 budget estimate	− − −

COMMITTEE PROVISIONS

For the Native American Institutions Endowment Fund, the Committee provides $11,880,000, a decrease of $120,000 below the amount available in fiscal year 2006 and the same as the budget request.

EXTENSION ACTIVITIES

2006 appropriation	$451,395,000
2007 budget estimate	430,727,000
Provided in the bill	457,042,000
Comparison:	
2006 appropriation	+5,647,000
2007 budget estimate	+26,315,000

COMMITTEE PROVISIONS

For Extension Activities, the Committee provides an appropriation of $457,042,000, an increase of $5,647,000 over the amount

available for fiscal year 2006 and an increase of $26,315,000 above the budget request.

The following table reflects the amount provided by the Committee:

Cooperative State Research, Education, and Extension Service Extension Activities (Dollars in Thousands)			
	2006 Conference	2007 Budget	2007 House
Smith-Lever Sections 3(b) and 3(c)	272,973	273,181	281,429
Smith-Lever Section 3(d):			
Farm Safety	4,517	0	4,517
Food and Nutrition Education (EFNEP)	62,008	62,280	62,634
Indian Reservation Agents	1,976	2,970	3,000
New Technologies for Ag Extension	1,485	2,970	1,985
Pest Management	9,860	10,652	10,152
Sustainable Agriculture	4,026	3,754	4,067
Youth at Risk	7,651	8,396	8,396
Youth Farm Safety Education and Certification	440	494	494
Total Section 3(d) Programs	91,963	91,516	95,245
1890 Colleges and Tuskegee	33,529	34,073	34,073
1890 Facilities Grants (Sec. 1447)	16,609	16,609	16,777
Renewable Resources Extension Act (RREA)	4,019	4,052	4,052
Rural Health and Safety Education	1,945	0	1,945
Extension Services at the 1994 Institutions	3,240	3,240	3,273
Grants to Youth Organizations	1,980	0	2,000
Subtotal	426,259	422,671	438,794
Federal Administration and Special Grants:			
Ag in the Classroom	856	742	742
Agricultural and Entrepreneurship Education (WI)	248	0	0
Alabama Beef Connection	842	0	850
Beef Producers Improvement (AR)	178	0	180
Conservation Technology Transfer (WI)	481	0	0
Dairy Education (IA)	227	0	229
Dairy Industry Revitalization (WI)	295	0	
Diabetes Detection, Prevention (PA,WA)	1,082	0	1,093
E-commerce (MS)	328	0	0
Efficient Irrigation (NM, TX)	2,302	0	2,825
Entrepreneurial Alternatives (PA)	330	0	0
Extension Specialist (MS)	131	0	0
Food Animal Residue Avoidance Database (FARAD)	798	0	806
Food Preparation and Marketing (AK)	328	0	0
Food Product Development (AK)	347	0	0
General Administration	6,853	7,314	7,314
Health Education Leadership (KY)	835	0	0
Income Enhancement Demonstration (OH)	1,235	0	1,247
Iowa Vitality Center	246	0	0
National Center for Agriculture Safety (IA)	239	0	0
National Wild Turkey Federation	232	0	225
Northern Aquaculture Demonstration (WI)	495	0	500
Nursery Production (RI)	292	0	295
Nutrition Enhancement (WI)	1,089	0	0
Ohio-Israel Agriculture Initiative	587	0	0
Oquirrh Institute	297	0	0
Pilot Technology Transfer (OK, MS)	297	0	300
Pilot Technology Transfer (WI)	248	0	250
Potato Pest Management (WI)	396	0	400
Range Improvement (NM)	242	0	244
Rural Business Enhancement (WI)	188	0	0
Rural Development (AK)	676	0	0
Rural Development Through Tourism (NM)	345	0	348
Rural Technologies (HI, WI)	312	0	0
Urban Horticulture (WI)	809	0	0
Urban Market Development/Garden Mosaics (NY)	270	0	200
Web-based Agriculture Classes (MO)	0	0	0
Wood Biomass as an Alternative Farm Product (NY)	186	0	200
Total, Federal Administration	25,136	8,056	18,248
Total, Extension Activities	$451,395	$430,727	$457,042

Farm Safety: AgrAbility.—Within the funds provided for Smith-Lever 3(d) for Farm Safety, the Committee recommends $4,517,000 for the AgrAbility program, which helps people with disabilities to be able to farm safely, efficiently, and profitably through on-the-farm education and assistance.

Ag in the classroom.—The Committee provides $742,000 for Ag in the classroom. In 1981, USDA initiated this program in response to the declining numbers of persons engaged in farming. USDA urged governors to convene small groups of state leaders knowledgeable about education and agriculture to develop recommendations and committees that would address methods for helping educate the public about agriculture. Over the years, Agriculture in the Classroom program activities have become focused on incorporating agriculture into core classroom curricula and educating teachers about the effectiveness of agriculture's use as a teaching tool. Since the target audience is persons with little knowledge about agriculture, Agriculture in the Classroom staff stress the usefulness of the activities to teach core curricula. Over the years, program staff have received numerous comments from workshop participants and teachers stating that they view agriculture differently, and always more positively, since becoming involved with Agriculture in the Classroom. State Agriculture in the Classroom program raise their own funds for individual program operation. These funds are from a number of sources. Some programs are state or university funded, others operate through farming organizations, and some are independently funded. Additionally, many state programs seek grants for additional program areas or raise their own funds through fund raising activities.

Alabama Beef Connection.—The Committee provides $850,000 for the Alabama Beef Connection. This program was originally designed to create a cattle marketing and communications framework for Alabama beef cattle producers. The number of beef cattle tracked through the Alabama Beef Connection has steadily increased since the project was initiated in fiscal year 2003. More than 17,500 calves have been enrolled in the program and are currently in feedlots. Thus far, carcass data have been obtained from about 40 percent of the cattle enrolled in the program. The carcass data from fiscal years 2003 and 2004 indicated that the average USDA yield and quality grade of carcasses from Alabama calves is not different than the current average of the beef industry in the United States. In addition, more than 20 county/regional producer meetings, 6 state meetings, and 2 national meetings were conducted to share information with beef producers regarding premises identification and individual identification of beef cattle. In fiscal years 2003 and 2004, approximately $30,000 per year from state funding and $20,000 per year from Alabama beef producers were provided for this project. In fiscal year 2005, approximately $101,500 was provided by state funding and the Alabama beef producers for this program.

Dairy education.—The Committee provides $229,000 for dairy education in Iowa. The original goals of this program were to retain and grow the business of existing dairy farm families, foster the development of new—beginning—family dairy operations, recruit dairy families from other regions to Northeast Iowa, improve the

image of the dairy industry, and support specialized dairy production and processing. These goals were to be realized by providing educational opportunities for current and future dairy industry participants; conducting applied research and demonstration that impacts the regional dairy industry; add value to milk and dairy products; be an advocate for the dairy farm family; provide training in production systems that provide environmental protection and enhancement; provide assistance for intergenerational transfers; provide educational opportunities for youth; and finally, be a community resource for economic development. Several demonstrations and research trials of practical importance to the dairy industry have been conducted or are in progress at the Center. Topics include Johne's disease, calfhood vaccinations, calf starter and accelerated calf growth, multiple milkings in early lactation, zero dry day periods, mastitis in purchased cows, barrier teat dips, and tails vs. docked tails in lactating cows. The Center collaborates with Iowa State University, the National Animal Disease Center, and private industry in these efforts.

A second dairy herd has been added at facilities adjacent to the Dairy Center. The new herd is rotationally grazed in warm months and housed in a composting bedded pack building in the winter months. Facilities are designed to demonstrate a low capital investment in milking and housing, a model for new dairy producers, and existing producers wanting to transition their operations. This grazing center complements the existing dairy production facility, providing the capacity to educate and demonstrate both styles of milk production and herd management. Overall student enrollment in the two year program has increased from 15 students to 90 students, and 112 degrees have been awarded in Dairy Technology, Dairy Science Technology, and Dairy Herd Management since the Dairy Center was created. Of the 2005 dairy science sophomore class, 40 percent are returning to their family farms, 26 percent will be herd managers or work in the industry, and 34 percent are continuing their education. Iowa's Dairy Story will surpass 5,000 reached this Spring, with 3rd, 4th, and 5th grade students from 18 different districts enrolled. Upgraded and expanded display areas were added in 2005. The curriculum connects students to the industry with lessons in history, science, human nutrition and health, and animal care.

The total amount of non-federal funds provided for this project for the fiscal year beginning July 1, 1999, was $4,898,796; for fiscal year 2000 the amount was $1,947,721; for fiscal year 2001, $1,487,190; for fiscal year 2002, $146,084; and for fiscal year 2003, $140,174. In fiscal year 2004, $313,000 was provided, including $293,000 from Northeast Iowa Community College, mostly for personnel dedicated to the Dairy Center, and $20,000 from memberships.

Diabetes detection and prevention.—The Committee provides $1,093,000 for diabetes detection and prevention in Pennsylvania and Washington. The original goal of this integrated extension outreach project was to develop and test a model to provide diabetes screening, prevention education, and case management services for selected rural and urban patient populations in Washington and

Hawaii. This goal has been expanded over the course of the grant to provide:

—screening for diabetes among selected rural and urban minority populations in Washington, Hawaii, New Mexico, West Virginia and Pennsylvania, using an innovative, non-invasive ocular fluorescence detection technology developed by scientists at The Joslin Diabetes Center, and blood glucose measures;

—culturally-sensitive and science-based diabetes education prevention and care materials to the targeted audience; and

—case management support and follow-up services for patient referrals.

In brief, the project has attempted to develop a diabetes program that can be delivered to under-served audiences who are outside the standard medical care system and by health professionals and educators without a medical diabetes background.

Since it began, the project has had many accomplishments. Following are several:

A. TRAINING, PROFESSIONAL DEVELOPMENT

Developed and presented a pre-conference workshop at the Society for Nutrition Education Conference in Salt Lake City, Utah on July 16, 2004. This "Diabetes Toolbox" session was aimed at CSREES personnel and partners from those states that do not receive direct funding from the current grant. Approximately 40 Extension health professionals attended the three-hour session. In addition to the "On the Road Program", the toolbox included the exercise video, diabetes-extension website access, a program from New Mexico called "Kitchen Creations", from Washington, "Living Well with Diabetes", and West Virginia's "Dining With Diabetes".

Developed and presented a one to two hour update and awareness for participants at the 2003 Priester National Health Conference, held April 2003 in Phoenix, Arizona, and attended by 35 extension health professionals.

Participants were introduced to the strategies being used by the partnering extension programs to deliver diabetes education, to recent scientific information about pre-diabetes and to Small Steps. "Big Rewards", the new education campaign launched by the Centers for Disease Control and the National Institutes of Health. Extension faculty from each of the 15 states represented at the session indicated an interest in participating in the project.

Developed and presented a one-day seven-hour pre-conference workshop for Extension health personnel, at the 2002 Priester National Health Conference, "Health Across the Life Span", held May 7–10 in Orlando, Florida. Fifty-six extension faculty and community health professionals participated in the conference. The focus of the workshop was innovations in educational strategies for involving Cooperative Extension in diabetes control and prevention activities; the workshop also provided updates on scientific advances in diabetes detection and treatment. The presenters were the project directors for the four partnering institutions. Extension faculty from 20 states indicated an interest in participating in the project.

Presented the project at the 2003, 2002, and 2001 National Diabetes Translation Conference sponsored by the Centers for Disease

Control and Prevention held in Boston, Massachusetts, St. Louis, Missouri, and Seattle, Washington, respectively. These presentations helped introduce the programs and networks of the Extension System to those of State Diabetes Control Programs and other non-traditional extension partners.

Benchmarked involvement of state extension faculty in diabetes education and prevention activities, and the nature of those activities, thereby establishing a basis for a shared vision about Extension's role in eliminating racial and ethnic health disparities.

Presented the Joslin/Extension partnering model to participants at Bridging the Gap, a national diabetes education conference sponsored by the West Virginia Extension Service, in Charleston, West Virginia.

Armed teaching and extension professionals in the human sciences land-grant and family and consumer sciences communities with the latest research-based information on diabetes, including information on prevention strategies, interrelationships among diabetes, diet and nutrition, physical activity, and obesity.

B. REACHING UNDER SERVED AND UN-REACHED AUDIENCES

Developed, field-tested, and published a culturally-sensitive and science-based instructional client handbook for use with the targeted audiences. More than 15,000 copies of "On the Road to Living Well with Diabetes", an 18-page, low literacy, easy-to-use guide for diabetes care, was disseminated through the project to partners, state diabetes control staff, and attendees at national conferences.

Developed and field-tested an enrollment questionnaire for initial screening of project participants and assessment of referral needs.

Developed, field-tested, and published an instructional chart as a companion to the client handbook, for use by Extension faculty with the targeted audience.

Held cooking demonstrations that can help educate individuals with diabetes to manage diabetes through diet.

Increased the Project's outreach to Native American Tribal Groups and Hispanic Americans. Two states—Hawaii and Washington—were included in the original earmark. The third state, New Mexico, was included in fiscal year 2002; West Virginia has been added during fiscal year 2003; Pennsylvania was added during fiscal year 2004.

C. COLLABORATION

Established new partnerships with more than 25 community-based agencies/institutions in the five participating states, which have led to enhanced opportunities to reduce diabetes.

Established a memorandum of understanding between the CSREES and the Joslin Diabetes Center. This document identifies the parties to be involved, the purpose and potential outcomes of the partnership, the background of the parties and their authority, the roles and responsibilities of the parties, and the duration of the partnership.

Established partnerships with the National Diabetes Education Program sponsored by the Centers for Disease Control and Prevention, the National Institute for Diabetes & Digestive & Kidney Dis-

eases, and the Office of Minority Health of the Department of Health and Human Resources.

Established partnerships between the Diabetes Control Program state offices and the Cooperative Extension programs in Washington, Hawaii, New Mexico, West Virginia, and Pennsylvania.

D. SCIENTIFIC ADVANCEMENT AND INFORMATION DISSEMINATION

Developed, tested, and validated the ocular fluorescence detection instrument.

Disseminated information on and promoted the educational campaigns of the National Diabetes Education Program, "Control Your Diabetes for Life", and "Small Steps, Big Rewards". Access to these resources—provided by the Centers for Disease Control and the National Institute for Diabetes, Digestive and Kidney Diseases—is facilitated by the Project.

Disseminated information on "Take a Loved One to the Doctor Day", part of the Department of Health and Human Service's Campaign, "Closing the Gap" to help close the health gap for racial and ethnic minorities.

Created a project website, to facilitate increased access to project information and partners. The website, based at The Joslin Diabetes Center, will be linked to the website at CSREES and websites at the participating institutions.

E. PROJECT OVERSIGHT

Conducted site visits to Hawaii, Washington, and New Mexico programs. These site visits to Hawaii, Washington, and New Mexico were conducted by staff from The Joslin Diabetes Center; the site visit to the Hawaii program was conducted by USDA staff.

Held four face-to-face planning meetings of the partnering institutions in Seattle, Washington; Orlando, Florida; Phoenix, Arizona; and Baltimore, Maryland, at which the partners achieved consensus on program priorities, future directions, and priority audiences across the three-state region.

Regular teleconference calls are held to review and examine progress toward goals and objectives.

In summary, the Project has been a catalyst in facilitating a broader understanding of diabetes, its consequences for individuals and families, and how it can be prevented and maintained. County Extension faculty increasingly participate in a variety of diabetes education training programs offered at local and state levels to enhance their knowledge of diabetes and new scientific information resulting from clinical trials and basic research.

Each of the partners, the Joslin Diabetes Center and the State Cooperative Extension programs in Hawaii, Washington, New Mexico, and West Virginia, provides financial support and in-kind services for the implementation of this project. Additional in-kind support, primarily in the form of diabetes awareness, education, and self-management materials, is provided by the National Institute for Diabetes and Digestive and Kidney Diseases of the National Institutes of Health and the Centers for Disease Control and Prevention. The Diabetes Control Offices in each of the participating states also provides support, largely via materials and technical expertise. Local community partners also provide assistance, for ex-

ample by offering equipment and space in facilities free of charge, or sharing professional expertise such as nurses and certified diabetes educators.

We estimate the following non-Federal support for the project: Fiscal Year 2002—$175,000; Fiscal Year 2003—$200,000; Fiscal Year 2004—$200,000

Efficient irrigation.—The Committee provides $2,825,000 for efficient irrigation in New Mexico and Texas. Subject areas addressed include irrigation district studies; irrigation education and training; institutional incentives for efficient water use; on-farm irrigation system management; urban landscape and in-home water conservation; environment, ecology, and water quality protection; saline and waste water management and water use; basin-wide hydrology studies, salinity modeling, and technology; and project oversight, communications, biometric support, and accountability for the multi-components of this multi-state project.

The project's 2005 accomplishments include: pipeline replacements saving a total of 939 acre-feet per year, which equals approximately 303 million gallons of water saved. A project aimed at increasing the use of drip irrigation and mulch systems for urban specialty crops has helped cooperators reduce water application by 29.3 percent. A team of engineers with Texas Cooperative Extension assisted the city of Brownsville with justification of an on-farm water metering program that results in an estimated water savings of 1,100 acre-feet or approximately 360 million gallons per year. Technical assistance such as this has saved districts $1.8 million in the cost of hiring consultants. New Mexico Cooperative Extension produced a series of crop commodity fact sheets on New Mexico agriculture detailing water management and efficient resource usage.

In 2003, the project received from state appropriated university accounts funds to support outreach personnel salaries and fringe benefits totaling $257,300; from the New Mexico Legislative Salt Cedar Control Funding, $5,000,000; from the Elephant Butte Irrigation District, $4,500,000; from other state and municipal sources, $260,550; and from industry associations and others, $60,355. In 2004, the project received from state appropriated university accounts funds to support outreach personnel salaries and fringe benefits totaling $265,020; from the New Mexico Legislative Salt Cedar Control Funding, $5,000,000; from the Elephant Butte Irrigation District, $4,500,000; from Cotton, Incorporated, $20,000; from other state and municipal sources, $86,600; and from industry associations and others, $8,000. In 2005, the project received from state appropriated university accounts funds to support outreach personnel salaries and fringe benefits totaling $272,971; from the Texas State Soil and Water Conservation board, $92,222; from the New Mexico Governor's Water Innovation Fund, $235,217; from other state and municipal sources, $528,522; and from industry associations and others, $55,000.

Food animal residue avoidance database.—The Committee provides $806,000 for food animal residue avoidance database. The original goal of this program was to ensure the production of safe foods of animal origin through the prevention and mitigation of violative chemical residues in food animal products. This has been ac-

complished, and continues to be accomplished through the establishment of a toll-free telephone hotline and website which provides residue avoidance advice and information. In addition, FARARD is unique in that it provides guidance through use of its databank by trained personnel to provide information on prevention and mitigation of violative chemical residues and supply recommended withdrawal intervals to allow safe extralabel use of drugs in food animals based on sound principles of residue avoidance. From fiscal years 2001 through 2004, state contributions from the participating land grant universities were estimated at $147,820 per year, and miscellaneous contributions at $2,500 per year. In fiscal year 2005, state contributions from the participating land grant universities were estimated at $133,173, and contributions from industry were $3,500.

Income enhancement demonstration.—The Committee provides $1,247,000 for income enhancement demonstration in Ohio. The original goal of this project was to develop new agricultural businesses and restructure and expand existing businesses in response to domestic and international challenges. However, in 2005 the Project was moved from the Ohio State University to the Edison Industrial Systems Center, and more specifically to a non-profit subsidiary of that company, the Innovative Food Technology Center. The proposal listed several target activities all of which are underway. Accomplishments in each area are as follows: Greenhouse/Nursery Project: thus far, studies on energy consumption and usage have been completed at seven greenhouse operations; Analyses have focused on boiler efficiencies, infiltration losses, design parameters, and the incorporation of new technologies, particularly those that use renewable fuels; the final results will be published in a summary report; and, interim reports are being published in several greenhouse newsletters. Direct Marketing Research: research on methods and requirements for growing and preparing items for sale to local institutions, including schools, universities, social programs, and restaurants; interim results are being published and circulated locally; and a final report will be prepared upon completion. Grape/Wine Industry Enhancement: Research was completed, and sensory evaluations completed, on minimally, non-thermally processed grape juices; marketing research is being conducted to determine the potential viability of such products; and a feasibility study has been completed to determine the economic scale necessary for economic viability of a grape seed extract cooperative venture. Waste-to-Energy Project: Matching funds in the amount of $50,000 were acquired for this project from the State of Ohio; a pilot anaerobic digester was designed and constructed in cooperation with the Agricultural Research and Development Center of the Ohio State University; this unit is being used to assess the viability of waste streams from food processing establishments, livestock operations, dairy operations, either alone or in combination; and, the date generated by this project will be used to evaluate the economic justification of anaerobic digestion for specific applications. The non-federal funds and sources provided to this project are as follows: The State of Ohio has appropriated the following funds: $65,000 from State appropriations and $39,000 from private sources for a total of $104,000 in 2002; for 2003, a total of

$244,125 were from non-federal sources; for fiscal years 2004, non-federal sources were not provided. In 2005, $50,000 was provided; and for 2006, non-federal funds in the amount of $100,000 will be contributed by the State of Ohio.

Nursery production.—The Committee provides $295,000 for nursery production in Rhode Island. The original goal of this project was to provide enhanced services and outreach programming to growers. Technical and extension support personnel were hired to increase outreach activities and diagnostic services to the Rhode Island green industry. An increased number of onsite problem solving visits were made to nurseries, greenhouses, and landscapers. Signage and an interpretive brochure were developed to enhance the educational value of the University of Rhode Island's plant demonstration garden. Information is now readily available to growers on the university's websites. Demonstrations of new technology are conducted. More than 100 accessioned trees and shrubs were planted, their performance is being assessed, and propagules are available to cooperating nurseries and arboreta. A new tree and shrub breeding program was initiated in 2005 to create improved, sustainable landscape plants. Application of research on reducing deer damage should have an immediate impact by reducing costs associated with damage by five to ten percent. The results of research on irrigation practices and modified container media requirements will increase production potential and reduce production costs by 10–30 percent. Our research on plant growth and marketing will boost industry sales and increase production potential by identifying plants that will stimulate consumer interest and increase purchasing. At the same time, information and practices for optimizing production potential of new crops will be generated for growers. It is estimated that new crops information and production standards will increase industry sales by 5–10 percent. Research on reducing damage by deer in nurseries and landscapes should have an immediate impact of $3,000 to $15,000 per nursery, and an overall impact in nurseries and homeowner landscapes through reduced costs associated with lost plants and reduced production of 5–10 percent. Research on sustainable roadside planters will have an impact on public enjoyment of scenic bikeways and associate thoroughfares. Farm safety programming was expanded to emphasize Lyme disease prevention, recognition, and treatment. Programs were conducted to promote crop insurance participation. Technology upgrades to Demonstration Greenhouse System, Media Analysis facility, and demonstration micro-irrigation system and continuously implemented. Continuous implementation of signage, landscape alterations, lighting and irrigation to increase value of Learning Landscape to the industry occurs. All diagnostic activities—turf, ticks, plant clinic, turf clinic, etc. have been consolidated. The source and amount of non-federal funds are as follows: in fiscal year 2003, the Nursery Industry contributed an estimated $200,000 in improvements installed in the Learning Landscape, a four-acre plant demonstration garden, $20,000 as an endowment, and $50,000 as start-up funds for a new position. In fiscal year 2004, the Rhode Island Nursery and Landscape Association contributed $55,000 to fund the development of the plant breeding program and to get research underway at the University of Rhode Is-

land evaluating the impact of invasive species regulations on the nursery industry in Rhode Island.

Pilot technology transfer projects.—The Committee provides $300,000 for pilot technology transfer projects in Oklahoma and Mississippi. The primary goal of these programs is to contribute to an increase in business productivity, employment opportunities, and per capita income by increasing information technology capital, locally and throughout the states, and applying information from Federal laboratories, Cooperative Extension, and other university departments and non-campus agencies. Specific program objectives are to enhance profitability for existing enterprises; aid in the acquisition, creation, or expansion of business and industry in the area; establish an effective response process for technological and industrial-related inquires; devise effective communication procedures regarding the program for the relevant audiences; and provide one-on-one and on-site engineering, technology, and management assistance to small-scale rural manufacturers. The Oklahoma Alliance for Manufacturing Excellence—Oklahoma's Manufacturing Extension Partnership—has received national acclaim for its noteworthy and effective partnership with the land-grant university.

In 2005, the impact of the Integrated Technology Transfer and Applications Engineering Programs resulted in the following benefits: Sales increased $6,908,800; Sales retained that would have otherwise been lost, $3,360,000; Cost savings, $2,322,443; Costs avoided, $884,200; 35 new jobs created at $75,511 per job equaling $2,642,885; 50 jobs retained at $75,511 per job equaled $3,775,550; Investment in new plant facilities and equipment, $2,559,200; Total benefits equaling $22,453,078.

Benefits resulting from the Mississippi project during 2005 include: Spanish language materials being made available via the Internet; multi-media learning modules added to Internet; digital image diagnosis of insect and plant disease; training of small business owners to develop web-based business sites. Numerous technologies, such as microcomputers, satellite receiver systems, geographic information systems, remote sensing technology, the Internet, computer networking, cellular communications, precision farming, specialized software, etc., have been evaluated and integrated into new and existing Cooperative Extension educational programs. All 82 county offices have been linked into a wide-area network. Since project inception, rural communities and governments have received hundreds of educational workshops to teach clientele how to best utilize these technologies.

For every Federal dollar invested in the Technology Transfer Project, the Oklahoma program currently leverages more than $6 in state support for engineering assistance to small manufacturers. In addition, Oklahoma State University is providing administrative support for the program through faculty and staff salaries. Oklahoma State funding in 2005 was $524,000. Mississippi State University has provided matching funds at least equal to the amount of Federal funds in the past ten years. For example, equipment expenditures for the Cooperative Extension Service to support new and emerging technology integration in the past two and a half years alone have been approximately $1,500,000.

INTEGRATED ACTIVITIES

2006 appropriation	$55,234,000
2007 budget estimates	19,120,000
Provided in the bill	55,234,000
Comparison:	
2006 appropriation	– – –
2007 budget estimate	+36,114,000

COMMITTEE PROVISIONS

For Integrated Activities, the Committee provides an appropriation of $55,234,000, the same as the amount available for fiscal year 2006 and an increase of $36,114,000 above the budget request.

The following table reflects the amount provided by the Committee:

Cooperative State Research, Education, and Extension Service
Integrated Activities
(Dollars in Thousands)

	2006 Conference	2007 Budget	2007 House
Water Quality	$12,738	0	$11,278
Food Safety	14,699	0	12,997
Regional Pest Management Centers	4,125	0	3,890
Crops at Risk from FQPA Implementation	1,375	0	1,275
FQPA Risk Mitigation Program for Major Food Crop Systems	4,419	0	4,219
Methyl Bromide Transition Program	3,075	0	3,075
Organic Transition Program	1,855	0	1,855
International Science and Education Grants Program	990	990	990
Critical Issues Program	737	2,475	1,000
Regional Rural Development Centers Program	1,321	1,378	1,378
Asian Soybean Rust	0	2,277	2,277
Homeland Security, Food and Agriculture Defense Initiative	9,900	12,000	11,000
Total, Integrated Activities	$55,234	$19,120	$55,234

OUTREACH FOR SOCIALLY DISADVANTAGED FARMERS

2006 appropriation	$5,940,000
2007 budget estimate	6,930,000
Provided in the bill	6,930,000
Comparison:	
2006 appropriation	+990,000
2007 budget estimate	– – –

COMMITTEE PROVISIONS

For the Outreach for Socially Disadvantaged Farmers and Ranchers Program, the Committee provides an appropriation of $6,930,000, an increase of $990,000 above the amount available for fiscal year 2006 and the same amount as the budget request.

OFFICE OF THE UNDER SECRETARY FOR MARKETING AND REGULATORY PROGRAMS

2006 appropriation	$717,000
2007 budget estimate	741,000
Provided in the bill	741,000
Comparison:	
2006 appropriation	+24,000
2007 budget estimate	– – –

COMMITTEE PROVISIONS

For the Office of the Under Secretary for Marketing and Regulatory Programs, the Committee provides an appropriation of $741,000, an increase of $24,000 above the amount available for fiscal year 2006 and the same amount as the budget request.

ANIMAL AND PLANT HEALTH INSPECTION SERVICE

SALARIES AND EXPENSES

2006 appropriation	$807,306,000
2007 budget estimate [1]	945,153,000
Provided in the bill	898,116,000
Comparison:	
2006 appropriation	+90,810,000
2007 budget estimate	−47,037,000

[1] The budget estimate does not include proposed user fees in the amount of $8,221,000.

COMMITTEE PROVISIONS

For the Animal and Plant Health Inspection Service, Salaries and Expenses, the Committee recommends an appropriation of $898,116,000, an increase of $90,810,000 above the amount appropriated in fiscal year 2006, and a decrease of $47,037,000 below the budget request.

The recommendation does not include $8,221,000 in Animal Welfare Act user fees, as proposed in the President's budget. The Committee does not recommend establishing such fees in annual appropriations acts, but will consider such fees should they achieve authorization.

The following table reflects the amounts provided by the Committee: