

2016 Explanatory Notes
National Institute of Food and Agriculture

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NATIONAL INSTITUTE OF FOOD AND AGRICULTURE

Purpose Statement

Section 7511(f)(2) of the Food, Conservation, and Energy Act of 2008 amends the Department of Agriculture Reorganization Act of 1994 (7 U.S.C. 6971) by establishing an agency to be known as the National Institute of Food and Agriculture (NIFA). On October 1, 2009, all authorities administered by the Administrator of the Cooperative State Research, Education, and Extension Service were transferred to the Director of the NIFA. NIFA continues to advance knowledge for agriculture, the environment, human health and well-being, and communities.

Research and Education Activities

Research and Education programs administered by NIFA are the U.S. Department of Agriculture's principal entree to the university system of the United States for the purpose of conducting agricultural research and education programs as authorized by the Hatch Act of 1887, as amended (7 U.S.C. 361a-361i); the McIntire-Stennis Cooperative Forestry Act of 1962, as amended (16 U.S.C. 582a et seq.) (McIntire-Stennis Act); the Competitive, Special, and Facilities Research Grant Act, as amended (7 U.S.C. 450i) (the 1965 Act); the National Agricultural Research, Extension, and Teaching Policy Act of 1977, as amended (7 U.S.C. 3101 et seq.) (NARETPA); the Small Business Innovation Development Act of 1982 (Pub. L. 97-219, as amended (15 U.S.C. 638), Section 630 of the Act making appropriations for Agriculture, Rural Development and Related Agencies' programs for fiscal year ending September 30, 1987, and for other purposes, as made applicable by Section 101(a) of Pub. L. 99-591, 100 Stat. 3341, National Defense Authorization Act for Fiscal Year 2012 (Pub. L. 112-81); the Equity in Educational Land-Grant Status Act of 1994 (7 U.S.C. 301 note) (the 1994 Act); the Agricultural Research, Extension, and Education Reform Act of 1998 (Pub. L. 105-185), as amended (AREERA); the Food, Agriculture, Conservation, and Trade Act of 1990 (Pub. L. 101-624) (FACT Act), the Farm Security and Rural Investment Act of 2002 (Pub. L. 107-171) (FSRIA), the Food, Conservation, and Energy Act of 2008 (Pub. L. 110-246) (FCEA), and the Agricultural Act of 2014 (2014 Farm Bill, Public Law 113-79). Through these authorities, the U.S. Department of Agriculture (USDA) participates with State and other cooperators to encourage and assist the State institutions in the conduct of agricultural research and education through the State Agricultural Experiment Stations (SAES) of the 50 States and the territories; by approved Schools of Forestry; the 1890 Land-Grant Institutions and Tuskegee University, West Virginia State University, and Central State University (7 U.S.C. 321 et seq., as amended by Pub. L. 113-79); 1994 Land-Grant Institutions (7 U.S.C. 301 note, as amended by Pub. L. 113-79); by Colleges of Veterinary Medicine; and other eligible institutions. The appropriated funds provide Federal support for research and education programs at these institutions.

The State institutions conduct research on the problems continuously encountered in the development of a permanent and sustainable agriculture and forestry system, and in the improvement of the economic and social welfare of rural and urban families. Because of differences in climate, soil, market outlets, and other local conditions, each State has distinct problems in the production and marketing of crops and livestock. Farmers, foresters, and rural people in the individual States naturally look to their SAES, universities, and colleges for solutions to the State and local problems and request services to help meet changing conditions.

The Department's higher education mission is carried out in strong alliance with States, universities, and the private sector. NARETPA designated USDA as the lead Federal agency for higher education in the food and agricultural sciences. Through NIFA, USDA has implemented that charge with a broad array of initiatives to link teaching, research, and extension; to improve the training of food and agricultural scientists and professionals; and to strengthen the quality of education programs throughout the nation.

Appropriations and additional provisions for research and education activities are authorized under the following Acts:

1. Hatch Act - Payments to agricultural experiment stations under the Hatch Act of 1887 as amended (7 U.S.C. 361a-361i), the Agricultural Experiment Stations Act of August 11, 1955 (Pub. L. 84-352); the Education Amendments of 1972 (Pub. L. 92-318); District of Columbia Public Postsecondary Education Reorganization Act (Pub. L. 93-471); NARETPA (Pub. L. 95-113), as amended; Omnibus Territories Act of October 15, 1977 (Pub. L.

95-134); Act of March 12, 1980 (Pub. L. 96-205); Education Amendments of 1980 (Pub. L. 96-374); Act of December 24, 1980 (Pub. L. 96-597); Agriculture and Food Act of 1981 (Pub. L. 97-98); Act of December 8, 1983 (Pub. L. 98-213); Act of October 5, 1984 (Pub. L. 98-454); Food Security Act of 1985 (Pub. L. 99-198); Act of August 27, 1986 (Pub. L. 99-396); FACT Act; Federal Agriculture Improvement and Reform Act of 1996 (FAIR Act) (Pub. L. 104-127); AREERA; FSRIA; FCEA; and the 2014 Farm Bill (Pub. L. 113-79).

Funds under the Hatch Act are allocated to the SAES of the 50 States, the District of Columbia, Puerto Rico, Guam, the Virgin Islands, Micronesia, American Samoa, and the Northern Mariana Islands for research to promote sound and prosperous agriculture and rural life.

Eligible State institutions are required to submit a Plan of Work to NIFA for approval before Hatch Act funds are distributed. The Hatch Act provides that the distribution of Federal payments to States for fiscal year 1955 shall become a fixed base, and that any sums appropriated in excess of the 1955 level shall be distributed in the following manner:

- 20 percent equally to each State;
- not less than 52 percent to the States as follows: one-half in an amount proportionate to the relative rural population of each State to the total rural population of all States, and one-half in an amount proportionate to the relative farm population of each State to the total farm population of all States;
- not less than 25 percent for multi-State, multi-disciplinary, multi-institutional research activities to solve problems concerning more than one State; and
- 3 percent for the administration of the Act.

Federal funds provided under the Hatch Act to State institutions must be matched with non-Federal funding on a dollar-for-dollar basis. Matching requirements for the insular areas of the Commonwealth of Puerto Rico, the Virgin Islands, Guam, Micronesia, American Samoa, the Northern Mariana Islands, and the District of Columbia are subject to the matching requirements of an amount equal to not less than 50 percent of the formula funds distributed to each insular area and the District of Columbia as stated in the Hatch Act, as amended by section 7404 of the FCEA. These provisions also state that the Secretary may waive the matching funds requirement of an insular area and the District of Columbia for any fiscal year if the Secretary determines that the government of the insular area or the District of Columbia will unlikely meet the matching requirement for the fiscal year.

Section 7(c) of the Hatch Act allows unexpended funds to be carried over for use during the following fiscal year. In accordance with provisions of AREERA, at least 25 percent of available Hatch Act funds must be used to support multi-State research; States also must expend 25 percent, or two times the level spent in fiscal year 1997 (whichever is less), on activities that integrate cooperative research and extension.

The three percent of funds appropriated under the Hatch Act for administration includes the disbursement of funds and a continuous review and evaluation of the research programs of the SAES supported wholly or in part from Hatch funds. NIFA encourages and assists in the establishment of cooperation within and between the States, and also actively participates in the planning and coordination of research programs between the States and the Department at the regional and national levels.

2. McIntire-Stennis Act - The McIntire-Stennis Cooperative Forestry Act of October 10, 1962, (16 U.S.C. 582a et seq.) as amended by Section 7412 of FCEA; and subject to provisions of Pub. L. 96-374; Pub. L. 97-98; Pub. L. 99-198; FACT Act; FAIR Act; and Section 7101 of Pub. L. 113-79.

The McIntire-Stennis Act authorizes funding of research in State institutions certified by a State representative designated by the governor of each State. The Act provides that appropriated funds be apportioned among States as determined by the Secretary. The Secretary annually seeks the advice of the Forestry Research Advisory Council (Council) to accomplish efficiently the program purpose. The Council consists of not fewer than sixteen members representing Federal and State agencies concerned with developing and utilizing the Nation's forest resources, the forest industries, the forestry schools of the State-certified eligible institutions, SAES, and volunteer public groups concerned with forests and related natural resources. Determination of apportionments follows consideration of pertinent factors including areas of non-Federal commercial forest land, volume of timber cut from growing stock,

and the non-Federal dollars expended on forestry research in the State. Section 7412 of FCEA amended the McIntire-Stennis Act to include 1890 Institutions (as defined in section 2 of AREERA (7 U.S.C. 7601)) as eligible for consideration in these determinations. The Act also provides that payments must be matched by funds made available and budgeted from non-Federal sources by the certified institutions for expenditure on forestry research. Section 7101 of Pub. L. 113-79 allows eligible State institutions to declare their intention not to be considered a cooperating forestry school, and to alternatively be considered as a Non-Land-Grant College of Agriculture. Such a declaration would remain in effect until September 30, 2018.

3. Payments to 1890 Colleges, including Tuskegee University and West Virginia State University – Section 1445 of NARETPA; Act of October 28, 1978, (Pub. L. 95-547); and subject to provisions of Pub. L. 97-98; Pub. L. 99-198; FACT Act; FAIR Act; AREERA; FSRIA; FCEA; and Section 7129 of Pub. L. 113-79 authorizing support of continuing agricultural research at colleges eligible to receive funds under the Act of August 30, 1890, including Tuskegee University. The general provisions section 753 of Pub. L. 107-76 makes West Virginia State University eligible to receive funds under this program. Section 7129 of Pub. L. 113-79 makes Central State University eligible to receive funds under this program beginning in fiscal year 2016. Eligible State institutions are required to submit a Plan of Work to NIFA for approval before these formula funds are distributed. The agricultural research programs at the 1890 Land-Grant Colleges and Universities are designed to generate new knowledge which will assist rural underprivileged people and small farmers to obtain a higher standard of living. Therefore, there is a high concentration of research effort in the areas of small farms, sustainable agriculture, rural economic development, human nutrition, rural health, and youth and elderly. Congress authorized appropriations in an amount not less than 15 percent of the amounts appropriated each year under Section 3 of the Hatch Act. The Act allows 3 percent for administrative expenses by the Secretary. Distribution of payments made available under section 2 of the 1965 Act for fiscal year 1978 are a fixed base and sums in excess of the 1978 level are to be distributed as follows:

- 20 percent equally to each State;
- 40 percent in an amount proportionate to the rural population of the State in which the eligible institution is located to the total rural population of all States in which eligible institutions are located; and
- 40 percent in an amount proportionate to the farm population of the State in which the eligible institution is located to the total farm population of all the States in which eligible institutions are located.

Section 1445(a)(2) of NARETPA (7 U.S.C. 3222(a)(2)), as amended by section 7122 of FCEA requires that funds appropriated for this program be not less than 30 percent of the Hatch Act appropriation. Section 1445(a) allows unexpended funds to be carried over for use during the following fiscal year. Section 1449 (7 U.S.C. 3222d), requires that Federal funds be matched by the State from non-Federal sources. For fiscal year 2007 and each fiscal year thereafter, not less than 100 percent of formula funds to be distributed must be matched. The Secretary of Agriculture may waive the matching funds requirement above the 50 percent level for any fiscal year for an eligible institution of a State if the Secretary determines the State will be unlikely to satisfy the matching requirement. Allotments to Tuskegee University and Alabama A&M University shall be determined as if each institution were in a separate State.

4. Animal Health and Disease Research - Section 1433 of NARETPA (7 U.S.C. 3195, as amended by Pub. L 113-79), provides for support of livestock and poultry disease research in accredited schools or colleges of veterinary medicine or SAES that conduct animal health and disease research. These funds provide support for new research initiatives and enhance research capacity leading to improved animal health, reduced use of antibacterial drugs and improved safety of foods of animal origin. In accordance with amendments made by Section 7111 of Pub. L. 113-79, allocated funds may only be used to meet the expenses of conducting animal health and disease research, publishing and disseminating the results of such research, and contributing to the retirement of employees subject to the Act of March 4, 1940 (7 U.S.C. 331); for administrative planning and direction; and to purchase equipment and supplies necessary for conducting research described above. These funds shall be distributed as follows:

- 4 percent shall be retained by the Department of Agriculture for administration, program assistance to the eligible institutions, and program coordination;
- 48 percent shall be distributed in an amount proportionate to the value of and income to producers from domestic livestock and poultry in each State to the total value of and income to producers from domestic livestock and poultry in all the States; and

- 48 percent shall be distributed in an amount proportionate to the animal health research capacity of the eligible institutions in each State to the total animal health research capacity in all the States.

Eligible institutions must provide non-Federal matching funds in States receiving annual amounts in excess of \$100,000 under this authorization. In the event the annual appropriation for this program exceed \$5 million in a fiscal year, Section 7111 of Pub. L. 113-79 authorizes a new competitive grant program under this authority which would be implemented to address the critical needs of animal agriculture by funding eligible entities to conduct research to promote food security, and on the relationship between animal and human health, and to develop and disseminate to the public tools and information based on the research conducted above and sound science.

5. Research Grants - Section 2(c) of the 1965 Act (7 U.S.C. 450i(c)), as amended; and subject to provisions of NARETPA; Pub. L. 97-98; Critical Agricultural Materials Act, (Pub. L. 98-284); Pub. L. 99-198; FACT Act; FAIR Act; and AREERA authorizes Special Research Grants for periods not to exceed three years to SAES, all colleges and universities, other research institutions and organizations, Federal agencies, private organizations or corporations, and individuals. Grants are made available for the purpose of conducting research to facilitate or expand promising breakthroughs in areas of the food and agricultural sciences. AREERA expanded the purposes under this authority to include extension or education activities. Special Grants are awarded on a non-competitive or competitive basis involving scientific peer and merit review processes. Included in Special Grants are:

Minor Crop Pest Management pursuant to Section 2(c) of the 1965 Act (7 U.S.C. 450i(c)), as amended supports the work of the IR-4 program, which is the principal public program supporting the registration of pesticides and biological control agents for use on specialty crops. The IR-4 program provides coordination, funding, and scientific guidance for both field and laboratory research to develop data in support of registration packages to be submitted to the Environmental Protection Agency. Program investments are guided by a priority-setting process that engages commodity producers, State and Federal research scientists, and extension specialists. Funds are awarded on a competitive basis under the program.

Global Change UV-B Monitoring pursuant to Section 2(c) of the 1965 Act (7 U.S.C. 450i(c)), as amended, supports a climatological network which includes 38 climatological sites: 35 in the U.S., two in Canada, and one in New Zealand. The program supports action items for informing decisions and modeling efforts as outlined in the U.S. Global Change Research Program strategic plan.

Potato Research pursuant to Section 2(c) of the 1965 Act (7 U.S.C. 450i(c)), as amended, grants are awarded that develop and test improved potato varieties for commercial production. Targeted aspects of improvement include increased yields, quality, and market appeal; resistance to diseases, insects, and stress; and regional adaptability. The program also supports development of technologies to improve early generation and marker-assisted selection for resistance to critical and market-limiting insect pests and diseases. Funds are awarded on a competitive basis under the program.

Critical Agricultural Materials pursuant to the Critical Agricultural Materials Act, Pub. L. 98-284(7 U.S.C. 178 et. seq.), as amended, research grants are competitively awarded that support product development, demonstration, and validation of product performance under operational field conditions. Specific focus is on paints, coatings, adhesives for composites, and aerial delivery systems or components that are manufactured from domestically produced agricultural materials and are of strategic and industrial importance to benefit the economy, defense and general well-being of the Nation.

Aquaculture Centers grants pursuant to section 1475(d) of NARETPA (7 U.S.C. 3322) support aquaculture research, development, demonstration, and extension education to enhance viable and profitable U.S. aquaculture production to benefit consumers, producers, service industries, and the American economy. Funds are awarded on a competitive basis through a regional system.

Supplemental and Alternative Crops pursuant to section 1473D of NARETPA (7 U.S.C. 3319d) grants are awarded to conduct fundamental and applied research related to the development of new commercial products derived from natural plant material for industrial, medical, and agricultural applications. Funds are awarded on a competitive basis under the program.

Sustainable Agriculture Research and Education - Funds are competitively awarded for grants for sustainable agriculture and education as follows:

Sections 1621 and 1622 of the FACT Act (7 U.S.C. 5811 and 7 U.S.C. 5812 respectively) work to increase knowledge of and help farmers and ranchers to adopt practices that are profitable, environmentally sound, and good for communities. Grants are awarded by four regional administrative councils for administration of projects that address crop and livestock production and marketing, stewardship of soil and other natural resources, economics and quality of life.

Sections 1628 and 1629 of the FACT Act (7 U.S.C. 5831 and 7 U.S.C. 5832 respectively) funds are used to address the activities described in sections 1628 and 1629 of the FACT Act. The purpose of the program is the development of technical guides, handbooks, education and training for Cooperative Extension System agents, and other agricultural professionals in the university system, private sector, or other government agencies, involved in the education and transfer of technical information concerning sustainable agriculture. Funds are used for statewide planning of sustainable agriculture programs on a regional basis.

6. Alfalfa and Forage Research Program pursuant to Section 1672 of FACT Act (7 U.S.C. 5925) supports research into the improvement of yields, pest pressures, creation of new uses of alfalfa and forages for bioenergy, and the development of new storage and harvest systems.

7. Aquaculture Research pursuant to Section 2(c) of the 1965 Act (7 U.S.C. 450i(c)), as amended supports aquaculture research to address issues related to genetics, disease, systems, and economics.

8. Agriculture and Food Research Initiative - Subsection (b) of the 1965 Act (7 U.S.C. 450i(b)) as amended by section 7406 of FCEA and section 7404 of Pub. L. 113-79 establishes an Agriculture and Food Research Initiative (AFRI) to make competitive grants for fundamental and applied research, extension, and education to address food and agricultural sciences (as defined under section 1404 of NARETPA). The Secretary is authorized to award competitive grants to State agricultural experiment stations; colleges and universities; university research foundations; other research institutions and organizations; Federal agencies; national laboratories; private organizations or corporations; individuals; or any group consisting of two or more of the aforementioned entities. Grants will be awarded to address critical issues in United States agriculture in areas of global food security and hunger, climate change, sustainable bioenergy, childhood obesity, food safety, and water in agriculture. Addressing these critical issues will engage scientists and educators with expertise in:

- A) Plant health and production and plant products;
- B) Animal health and production and animal products;
- C) Food safety, nutrition, and health;
- D) Bioenergy, natural resources, and environment;
- E) Agriculture systems and technology; and
- F) Agriculture economics and rural communities.

Of the amount of funds made available for research, no less than 60 percent shall be used for fundamental research and no less than 40 percent shall be used for applied research. No less than 30 percent of the amount allocated for fundamental research shall be made available to make grants for research to be conducted by multidisciplinary teams and no more than 2 percent may be used for equipment grants. In addition, awards may be made to assist in the development of capabilities in the agricultural, food, and environmental sciences (e.g., new investigator and strengthening awards). In accordance with section 7404 of Pub. L. 113-79, entities established under a commodity promotion law or a State commodity board (or other equivalent State entity) may directly submit to the Secretary for consideration proposals for requests for applications that specifically address particular issues related to the priority areas. Eligible applicants include State agricultural experiment stations, colleges and universities, university research foundations, other research institutions and organizations, Federal agencies, national laboratories, private organizations or corporations, individuals, and any group consisting of two or more entities identified in this sentence.

To the maximum extent practicable, NIFA, in coordination with the Under Secretary for Research, Education, and Economics (REE), will make awards for high priority research, education, and extension, taking into consideration, when available, the determinations made by the National Agricultural Research, Extension, Education, and Economics Advisory Board. Integrated research, education and extension activities under this program are authorized pursuant to the authority found in section 406 of AREERA (7 U.S.C. 7626) and at an amount no less than 30 percent of the funds made available under this authority.

9. Small Business Innovation Research (SBIR) Program - The Small Business Innovation Development Act of 1982 (Pub. L. 97-219, as amended) (15 U.S.C. 638), Section 630 of the Act making appropriations for Agriculture, Rural Development and Related Agencies' programs for fiscal year ending September 30, 1987, and for other purposes, as made applicable by Section 101(a) of Pub. L. 99-591, 100 Stat. 3341 authorizes a competitive program for SBIR. The Small Business Innovation Development Act was designed to strengthen the role of small, innovative firms in Federally funded research and development. Section 5102 of the National Defense Authorization Act for Fiscal Year 2012 (Pub. L. 112-81) amends the Small Business Innovation Development Act to allow the set aside of appropriations for extramural research and development for awards to eligible small firms as follows:

- Not less than 2.8 percent of appropriations in fiscal year 2014;
- Not less than 2.9 percent of appropriations in fiscal year 2015;
- Not less than 3.0 percent of appropriations in fiscal year 2016; and
- Not less than 3.2 percent of appropriations in fiscal year 2017 and each fiscal year thereafter.

Additionally, Section 5141 of the National Defense Authorization Act for Fiscal Year 2012 (Pub. L. 112-81) allows not more than 3 percent of program funds for fiscal years 2013 through 2015 for administration, oversight, and contract processing costs to conduct the SBIR program.

The SBIR Program is a three-phased effort, but only Phase I and Phase II, the feasibility and follow-on research and development phases respectively, are eligible for support with USDA funds. Firms are encouraged to secure Phase III funding for the commercialization phase from other public or private sources. The research areas supported under the SBIR program address critical issues in U.S. agriculture in the areas of global food security and hunger, climate change, sustainable bioenergy, childhood obesity, and food safety. Addressing these critical issues will engage small businesses with expertise in a number of areas including plant and animal production and protection, forests and related resource sciences, soil and water resources, food and nutrition sciences, rural development, biofuels and biobased products, aquaculture, and small and mid-sized farms. NIFA administers the SBIR program for USDA, including the funds set aside for SBIR from other USDA agencies.

10. Biotechnology Risk Assessment Research Grants Program (BRAG) – Section 1668 of FACT Act and as amended in section 7210 of FSRIA authorizes competitively awarded research grants to identify and develop appropriate management practices to minimize physical and biological risks associated with genetically engineered animals, plants, and microorganisms. Under BRAG, at least 2 percent of appropriations for biotechnology related research is set aside for awards under this program. NIFA and the Agricultural Research Service jointly administer this program.

BRAG supports the generation of new information that assists Federal regulatory agencies in making science-based decisions about the effects of introducing into the environment genetically engineered organisms, including plants, microorganisms (including fungi, bacteria, and viruses), arthropods, fish, birds, mammals, and other animals excluding humans. The program also supports applied and/or fundamental risk assessment research, which is defined as the science-based evaluation and interpretation of factual information in which a given hazard, if any, is identified, and the consequences associated with the hazard are explored.

11. 1994 Institutions Research - The 1994 Act (7 U.S.C. 301 note, as amended by Pub. L. 113-79) authorizes a competitive research grants program for institutions designated as 1994 Institutions. The program allows scientists at the legislatively eligible 1994 Institutions to participate in agricultural research activities that address tribal, national, and multi-State priorities. Pursuant to Section 7402 of Pub. L. 113-79, 1994 Institutions may work with the Agricultural Research Service or at least 1 of the other land-grant colleges or universities, a Non-Land-Grant College of Agriculture, or cooperating forestry schools.

12. Farm Business Management and Benchmarking Program – Section 7208 of FCEA amended FACT Act (7 U.S.C. 5925f) by adding section 1672D which authorizes the competitive program to improve the farm management knowledge and skills of agricultural producers, and establish and maintain a national, publicly available farm financial management database to support improved farm management. Funds are awarded on a competitive basis under the program.

13. Sun Grant Program – Section 7526 of the Food, Conservation, and Energy Act of 2008 (7 U.S.C. 8114), as amended and reauthorized by section 7516 of Pub L. 113-79 established this program for grants to sun grant centers and subcenters to enhance national energy through the development, distribution, and implementation of biobased energy technologies. Through biobased energy and product technologies, activities are supported that promote diversification, and the environmental sustainability of, agricultural production in the U.S., and economic diversification in rural areas of the U.S. Funds are also used to enhance the efficiency of bioenergy and biomass research and development programs through improved coordination and collaboration among USDA, Department of Energy, and land-grant colleges and universities.

14. Capacity Building for Non-Land Grant Colleges of Agriculture (NLGCA) – Section 7138 of FCEA (7 U.S.C. 3319i) established this competitively awarded grants program to assist the NLGCA Institutions in maintaining and expanding the capacity of the NLGCA Institutions to conduct education, research, and outreach activities relating to agriculture, renewable resources, and other similar disciplines. Section 7101 of Pub. L. 113-79 defined eligibility for this program and a certification process was implemented accordingly.

15. Federal Administration (direct appropriation) - Authority for direct appropriations is provided in the annual Agriculture, Rural Development, Food and Drug Administration and Related Agencies Appropriations Act. These funds are used to provide support services in connection with the planning and coordination of all research and education programs administered by NIFA, including grants management and reporting services.

16. Higher Education - Section 1417 of NARETPA (7 U.S.C. 3152), was amended by section 7106 of FCEA to provide eligibility to the University of the District of Columbia to receive grants and fellowships for food and agricultural science education. This program is also subject to provisions found in NARETPA; Pub. L. 97-98; Pub. L. 99-198; Second Morrill Act of 1890; Act of June 17, 1988, (Pub. L. 100-339); FACT Act; Equity in Educational Land-Grant Status Act of 1994, (Pub. L. 103-382); FAIR Act; AREERA; Pub. L. 106-78, Aviation and Transportation Security Act of November 19, 2001, (Pub. L. 107-71), and National Veterinary Medical Service Act of December 6, 2003, (Pub. L. 108-161) (NVMSA).

Institution Challenge, Multicultural Scholars, and Graduate Fellowship Grants Program - Funds are awarded for grants and fellowships for food and agricultural sciences education as follows:

Institution Challenge Grants pursuant to section 1417(b)(1) are designed to strengthen institutional capacities, including curriculum, faculty, scientific instrumentation, instruction delivery systems, and student recruitment and retention, to respond to identified State, regional, national, or international educational needs in the food and agricultural sciences, or in rural economic, community, and business development. All Federal funds competitively awarded under this program must be matched by the universities on a dollar-for-dollar basis from non-Federal sources.

The Higher Education Multicultural Scholars Program pursuant to section 1417(b)(5) increases the ethnic and cultural diversity of the food and agricultural scientific and professional workforce, and advances the educational achievement of minority Americans. This competitive program is designed to help the food and agricultural scientific and professional workforce achieve full participation by members of traditionally underrepresented racial and ethnic groups. It is open to all colleges and universities granting baccalaureate or higher degrees in agriculture, forestry, natural resources, home economics, veterinary medicine, and closely allied fields. Federal funds provide 75 percent of the four-year scholarship awards; the remaining 25 percent is contributed by the grantee institutions.

Higher Education-Graduate Fellowships Grants pursuant to section 1417(b)(6) are awarded on a competitive basis to colleges and universities to conduct graduate training programs to stimulate the

development of food and agricultural scientific expertise in targeted national need areas. The program is designed to attract highly promising individuals to research or teaching careers in areas of the food and agricultural sciences where shortages of expertise exist. Typically graduate students in the food and agricultural sciences require a minimum of four years to complete a doctoral degree. The USDA fellowships program provides support for doctoral study for three years, and the universities are expected to support the student's fourth year of dissertation research.

The Secondary Education, Two-year Postsecondary Education, and Agriculture in the K-12 Classroom Program, authorized by section 1417(j) of NARETPA as amended (7 U.S.C. 3152 (j)), is designed to promote and strengthen secondary education in agribusiness and agriscience, and to increase the number and/or diversity of young Americans pursuing college degrees in the food and agricultural sciences. The intent of the program is to encourage teachers creatively to incorporate elements of agriscience and agribusiness into secondary education programs. Section 7109 of FCEA amended section 1417(j) of NARETPA to include support for current agriculture in the classroom programs for grades K-12. Proposals address targeted need areas of curricula design and instructional materials development; faculty development and preparation for teaching; career awareness; linkages between secondary, 2-year post-secondary, and institutions of higher learning; or education activities promoting diversity in students seeking degrees in agribusiness and agriscience. All Federal funds competitively awarded under this program must be matched by the institution on a dollar-for-dollar basis from non-Federal sources.

The 1890 Institution Teaching, Research, and Extension Capacity Building Grants Program pursuant to 1417(b)(4) stimulates the development of high quality teaching, research, and extension programs at the 1890 Land-Grant Institutions and Tuskegee University, West Virginia State University, and Central State University (per Section 7129 of Pub. L. 113-79) to build their capabilities as full partners in the mission of the Department to provide more, and better trained, professionals for careers in the food and agricultural sciences. This competitive program is designed to strengthen institutional teaching, research, and extension capacities through cooperative programs with Federal and non-Federal entities, including curriculum, faculty, scientific instrumentation, instruction delivery systems, student experimental learning, student recruitment and retention, studies and experimentation, centralized research support systems, and technology delivery systems, to respond to identified State, regional, national, or international educational needs in the food and agricultural sciences, or rural economic, community, and business development. Section 7107 of FCEA amended section 1417(b)(4) of NARETPA (7 U.S.C. 3152(b)(4)) to expand extension capacity.

The USDA-Hispanic Serving Institutions Education Partnerships Grants Program pursuant to section 1455 of NARETPA (7 U.S.C. 3241) is the foundation for USDA efforts to better serve Hispanic Americans and to prepare them for careers in agriscience and agribusiness. This competitive program expands and strengthens academic programs in the food and agricultural sciences at Hispanic-serving colleges and universities, including two-year community colleges that have at least 25 percent Hispanic enrollment. Section 7128 of FCEA amended section 1455 to require that all grants made under this program be awarded on a fully competitive basis, and removed the requirement for consortia in subsection (b)(1).

The Native American Institutions Endowment Fund, authorized by the 1994 Act provides for the establishment of an endowment for the legislatively eligible 1994 Institutions (Tribally-controlled colleges). The interest derived from the endowment is distributed to the 1994 Institutions on a formula basis. This program will enhance educational opportunities for Native Americans by building educational capacity at these institutions. The institutions are also able to use the funding for facility renovation and construction. On the termination of each fiscal year, the Secretary shall withdraw the income from the endowment fund for the fiscal year, and after making adjustments for the cost of administering the endowment fund, at 4 percent, distribute the adjusted income as follows. Sixty percent of the adjusted income is distributed among the 1994 Institutions on a pro rata basis, the proportionate share being based on the Indian student count. Forty percent of the adjusted income is distributed in equal shares to the 1994 Institutions.

The Tribal Colleges Education Equity Grants Program - The 1994 Act authorizes the use of funds to benefit those entities identified as the 1994 Land Grant Institutions. Funds are distributed on a formula basis and may be used to support teaching programs in the food and agricultural sciences in the targeted need areas of: 1) curricula design and instructional materials development; 2) faculty development and preparation for teaching; 3) instruction delivery

systems; 4) student experimental learning; 5) equipment and instrumentation for teaching; and 6) student recruitment and retention. Section 7402 of FCEA amended section 532 of the 1994 Act by adding Ilisagvik College. Section 7402 of the Agricultural Act of 2014 amended section 532 of the 1994 Act by adding College of the Muscogee Nation and Keweenaw Bay Ojibwa Community College, effective October 2014. Also FCEA amended section 534 to authorize that funds payable to a 1994 Institution be withheld and redistributed to other 1994 Institutions in the event that the Institution declines to accept funds or fails to meet the accreditation requirements of section 533.

The Alaska Native Serving and Native Hawaiian-Serving Institutions Education Grants Program, originally authorized by section 759 of Agriculture, Rural Development, Food and Drug Administration, and Related Agencies Appropriations Act, 2000, Pub. L. 106-78, and redesignated as section 1419B of NARETPA (7 U.S.C. 3156), is aimed at recruiting, supporting and educating minority scientists and professionals, and advancing the educational capacity of Native-serving institutions. Funds may be used to support projects in the targeted areas of: 1) enhancing educational equity for under-represented students; 2) strengthening educational capacities, including libraries, curriculum, faculty, scientific instrumentation, instruction delivery systems, and student recruitment and retention; 3) attraction and retention of undergraduate and graduate students; and 4) cooperative initiatives to maximize the development of resources such as faculty, facilities and equipment to improve teaching programs. Additionally, section 7112 of FCEA permits consortia to designate fiscal agents for the members of the consortia and to allocate among the members funds made available under this program. Funds are awarded on a competitive basis under the program.

Grants for Insular Areas Program - Funds are awarded for grants to insular areas of the Puerto Rico, the U.S. Virgin Islands, Guam, American Samoa, the Northern Mariana Islands, Micronesia, the Marshall Islands, or the Republic of Palau for resident instruction and distance education as follows:

Resident Instruction Grants pursuant to section 1491 of NARETPA (7 U.S.C. 3363) and (7 U.S.C. 3222b-2), as amended, is designed to enhance teaching programs in extension programs in food and agricultural sciences that are located in the insular areas. Funds may be used that enhance programs in agriculture, natural resources, forestry, veterinary medicine, home economics, and disciplines closely allied to the food and agriculture production and delivery systems. Funds also may be used to acquire, alter, or repair facilities or relevant equipment necessary for conducting agricultural research. Funds are awarded on a competitive basis under the program.

Distance Education Grants pursuant to section 1490 of NARETPA (7 U.S.C. 3362), as amended, is designed to strengthen the capacity of insular area institutions. Funds may be used to enhance the capability of the institutions to carry out collaborative distance food and agricultural education programs using digital network technologies. Funds are awarded on a competitive basis under the program.

The Veterinary Medicine Loan Repayment Program, authorized by section 1415A of NARETPA (7 U.S.C. 3151a) as amended, provides for a loan repayment program for a specified payment amount of qualifying educational loans of veterinarians for geographical areas that have a shortage of veterinarians; and areas of veterinary practice that the Secretary determines have a shortage of veterinarians, such as food animal medicine, public health, epidemiology, and food safety. FCEA amended section 1415A to require NIFA to give priority to agreements with veterinarians for the practice of food animal medicine in veterinarian shortage situations and prohibits transfer of funds to the Food Safety and Inspection Service under the National Veterinary Medical Service Act. Funds are awarded on a competitive basis under the program.

Extension Activities

The mission of the Cooperative Extension System, a national educational network, is to help people improve their lives through an educational process that uses scientific knowledge focused on issues and needs. Cooperative Extension work was established by the Smith-Lever Act of May 8, 1914, as amended. This work is further emphasized in Title XIV of NARETPA to fulfill the requirements of the Smith-Lever Act, the Cooperative Extension Service in each State, the District of Columbia, Puerto Rico, the U.S. Virgin Islands, Guam, American Samoa, the Northern Marianas and Micronesia, conduct educational programs to improve American agriculture,

communities of all sizes, and strengthen families throughout the United States. This publicly funded, out-of-the-classroom educational network combines the expertise and resources of Federal, State and local partners. The partners in this unique system are:

- NIFA of USDA;
- Cooperative Extension Services at land-grant universities throughout the United States and its territories; and
- Cooperative Extension Services in nearly all of the 3,143 counties or county equivalents in the United States.

Thousands of Extension employees and millions of volunteers support this partnership and magnify its impact. Strong linkages with both public and private external groups are also crucial to the Extension System's strength and vitality.

1. Smith-Lever 3 (b) & (c) - Smith-Lever 3 (b) & (c) formula funds of the Smith-Lever Act, 7 U.S.C. 343 (b)(3), as amended, comprise approximately two-thirds of the total Federal funding for extension activities. These funds are allocated to the States on the basis of the rural and farm population of each State and the territories. States can utilize funds for locally determined programs, as well as for high priority regional and national concerns.

In accordance with section 4 of the Smith-Lever Act, eligible State institutions are required to submit a Plan of Work to NIFA for approval before Smith-Lever 3 (b) & (c) formula funds are distributed. Of the funds authorized under section 3(c), four percent shall be allotted for Federal administrative, technical, and other services, and for coordinating the extension work of the Department and the several States, Territories, and possessions. The remaining balance of funds formula distribution is:

- 20 percent is divided equally among the States;
- 40 percent is paid to the several States in the proportion that the rural population of each bears to the total rural population of the several States as determined by the census; and
- 40 percent shall be paid to the several States in the proportion that the farm population of each bears to the total farm population of the several States as determined by the census.

States must expend 25 percent, or two times the level spent in fiscal year 1997 (whichever is less), on cooperative extension activities in which two or more States cooperate to solve problems that concern more than one State. This also applies to activities that integrate cooperative research and extension.

Smith-Lever 3(b) and (c) funding provided to an 1862 Land-Grant Institution must be matched with non-Federal funding on a dollar-for-dollar basis. Matching requirements for the insular areas of the Commonwealth of Puerto Rico, the U.S. Virgin Islands, Guam, Micronesia, American Samoa, and the Northern Mariana Islands are subject to the matching requirements of an amount equal to not less than 50 percent of the formula funds distributed to each insular area. These provisions also state that the Secretary may waive the matching funds requirement of an insular area for any fiscal year if the Secretary determines the government of the insular area will be unlikely to meet the matching requirement for the fiscal year.

2. Smith-Lever 3(d) - These funds are allocated to the States to address special programs or concerns of regional and national importance. Section 7403 of FCEA amends section 3(d) of the Smith-Lever Act (7 U.S.C. 343(d)) to expand eligibility to the 1890 Land-Grant Institutions and required that funds be awarded on a competitive basis with the exception of the Expanded Food and Nutrition Education Program in which funds are distributed on a formula basis. Section 7417 of FCEA provided eligibility for these programs to the University of the District of Columbia. The following extension programs are supported under the Smith-Lever 3(d) funding mechanism and other specific authorizations:

Expanded Food and Nutrition Education Program – These funds are awarded to the 1862 and 1890 Land-Grant Institutions according to a statutory formula provided in section 1425 of NARETPA (7 U.S.C. 3175) which is amended by section 7116 of FCEA. Funds are used to provide low-income youth and families with information to increase nutrition knowledge and improve nutritional practices. Funds are awarded to the eligible institutions as

follows: (1) FY 1981 bases; (2) \$100,000 to each institution; (3) a percentage of the increase in funding that exceeds the FY 2007 appropriated level (i.e., 14 percent for FY 2014 and thereafter) distributed to the 1890 Land-Grant Institutions according to the prorata population for each institution at or below 125 percent of the poverty level; and the remainder to the 1862 Land-Grant Institutions according to the prorata population for each institution at or below 125 percent of the poverty level.

Farm Safety and Youth Farm Safety Education and Certification Program – The Rural Health and Safety Education Act of 1990, section 2390 of the FACT Act (7 U.S.C. 2661) – The Farm Safety program provides competitively awarded projects to Extension working with non-profit disability organizations in conducting AgrAbility projects designed to assist farmers and ranchers with disabilities to stay in agricultural production. The competitively-awarded Youth Farm Safety Education and Certification Program provides funding to states to conduct training and certification needs of youth working in agriculture.

Children, Youth, & Families At Risk - This program focuses on America's children, youth and families to help promote and provide positive, productive, secure environments and contributions to communities and the Nation. Projects are awarded competitively to focus on the national outcomes for youth and families which include early childhood, school age youth, teens, and family outcomes with emphasis on science and reading literacy, and building youth and family program and community capacity.

Federally-Recognized Tribes Extension Program (formerly Extension Indian Reservations) - Section 1677 of the FACT Act, 7 U.S.C. 5930 – Competitively awarded projects to State Extension Services are implemented by Federally Recognized Tribes to provide assistance and educational programs in agriculture, community development, youth development, and other societal issues facing Native Americans on reservations..

New Technologies for Agricultural Extension - Competitively awarded projects that support an Internet-based tool that provides fast and convenient access to objective, peer-reviewed, and researched-based information, education, and guidance on subjects that include food safety, homeland security, natural resources and environment, youth development, families, nutrition and health, and other agricultural related topics.

3. Payments to 1890 Colleges and Tuskegee University and West Virginia State University - Section 1444 of NARETPA, (7 U.S.C. 321-329), provides support to the 1890 Land-Grant Colleges and Universities for fostering, developing, implementing and improving extension educational programs to benefit their clientele. The general provisions, section 753, of Pub. L. 107-76 designated West Virginia State University as eligible to receive funds under any Act of Congress authorizing funding to 1890 Institutions, including Tuskegee University. Section 7129 of Pub. L. 113-79 designates Central State University as an eligible 1890 Land-Grant Institution. Eligible State institutions are required to submit a five-year Plan of Work to NIFA for approval before these formula funds are distributed. Section 7121 of FCEA amended section 1444(a)(2) (7 U.S.C. 3221(a)(2)) to require that at least 20 percent of the total appropriations for each fiscal year under the Smith-Lever Act be allocated for payments to 1890 Institutions for extension activities. Funds will be distributed as follows:

- 4 percent to NIFA for administrative, technical, and other services;
- Payments to States in fiscal year 1978 are a fixed base. Of funds in excess of this amount:
- 20 percent is distributed equally to each State;
- 40 percent is distributed in an amount proportionate to the rural population of the State in which the eligible institution is located to the total rural population of all States in which eligible institutions are located; and
- 40 percent is distributed in an amount proportionate to the farm population of the State in which the eligible institution is located to the total farm population of all States in which eligible institutions are located.

In accordance with section 1449(c) of NARETPA (7 U.S.C. 3222d), Federal funds provided under section 1444 must be matched by the State from non-Federal sources. Section 1449(c) provides that the Secretary of Agriculture may waive the matching funds requirement above the 50 percent level for any fiscal year for an eligible institution of a State if the Secretary determines that the State will be unlikely to satisfy the matching requirement.

Allotments to Tuskegee University and Alabama A&M University shall be determined as if each institution were in a separate State. Four percent of the funds appropriated under this program is set-aside for Federal Administration.

4. 1890 Facilities (Sec. 1447) - Section 1447 of NARETPA, 7 U.S.C. 3222b, funds are used to upgrade research, extension, and teaching facilities at the eligible 1890 land-grant colleges, including Tuskegee University, West Virginia State University, and Central State University (per Section 7129 of Pub. L. 113-79). Funds are distributed on a noncompetitive formula basis.

5. The Renewable Resources Extension Act - Renewable Resources Extension Act of 1978, 16 U.S.C. 1671-1676, provides funding for expanded natural resources education programs. Funds are distributed primarily by formula to 1862 and 1890 Land-Grant Institutions for educational programs, and a limited number of special emphasis national programs.

6. Rural Health and Safety Education – Rural Health and Safety Education Act of 1990, section 2390 of the FACT Act 7 U.S.C. 2662 note-This program competitively awards projects that focus on issues related to individual and family health education in one or more of the following areas: 1) healthy living behaviors, family interaction and environmental attributes in rural areas; 2) health literacy and its impact on health status in rural and farm families; and/or 3) related issues of health promotion and health care to rural individuals and families. Land-grant colleges and universities are eligible to receive funds under the Act of July 2, 1862 (7 U.S.C. 301 et seq.), and the Act of August 30, 1890 (7 U.S.C. 321 et seq.), including Tuskegee University, West Virginia State University and the University of the District of Columbia. Applications may also be submitted by any of the Tribal colleges and universities designated as 1994 Land-Grant Institutions under the Educational Land-Grant Status Act of 1994 (7 U.S.C. 2662(i)).

7. Federal Administration (direct appropriation) - Provides a portion of the general operating funds for the Federal staff, and national program planning, coordination, and program leadership for the extension work in partnership with the States and territories. Agriculture in the Classroom (AITC) program is administered under the federal administration line. AITC advances agricultural literacy through a grassroots network of State coordinators, school teachers, agribusiness leaders, and other educators by supporting initiatives that include expanding outreach to underrepresented populations; regional demonstration projects; integration of information technology to reduce program delivery costs; and outstanding teacher recognition initiatives.

8. Extension Services at the 1994 Institutions - The 1994 Act authorizes appropriations for Native American communities and Tribal Colleges for extension activities as set forth in the Smith Lever Act. Funding is awarded on a competitive basis to legislatively eligible institutions. Section 7402 of the Agricultural Act of 2014 amended section 532 of the 1994 Act by adding College of the Muscogee Nation and Keweenaw Bay Ojibwa Community College, effective October 2014.

9. Food Animal Residue Avoidance Database Program (FARAD) – Section 7642 of AREERA authorizes the FARAD program. The program is a computer-based decision support system designed to provide livestock producers, extension specialists, and veterinarians with practical information on how to avoid drug, pesticide, and environmental contaminant residue problems.

10. Women and Minorities in Science, Technology, Engineering, and Mathematics Fields - Section 7204 of FCEA amended section 1672 of the FACT Act which provides for competitively awarded grants to increase participation by women and underrepresented minorities from rural areas in the field of science, technology, engineering, and mathematics. Additionally, priority will be given to eligible institutions that carry out continuing programs funded by the Secretary.

11. Beginning Farmer and Rancher Development Program - Section 7409 of the Agricultural Act of 2014 amended section 7405 of FSRFA and made available, until expended, the enacted amount of \$20,000,000 for each of FY 2014 through FY 2018. The purpose of this mandatory, competitive program is to support the nation's beginning farmers and ranchers by making competitive grants to new and established local and regional training, education, outreach, and technical assistance initiatives that address the needs of beginning farmers and ranchers. To be eligible for a grant under this authority, an applicant must be a collaborative State, tribal, local, or regionally-based network or

partnership of public or private entities which may include a State cooperative extension service; a Federal, state, or tribal agency; a community-based or school-based agricultural educational organization; or non-governmental organization; a college or university (including an institution offering associate's degree) or a foundation maintained by a college or university; or any other appropriate partner.

All grantees are required to provide a 25 percent match in the form of cash or in-kind contributions. The maximum amount of an award is \$250,000 and the maximum project period is three years. In accordance with Section 7409 of Pub. L. 113-79, not less than 5 percent of the funds used to carry out the program for a fiscal year shall be used to support programs and services that address the needs of limited resource beginning farmers or ranchers; socially disadvantaged farmers or ranchers who are beginning farmers or ranchers; and farmworkers desiring to become farmers or ranchers. Not less than 5 percent of the funds used to carry out the program for a fiscal year shall be used to support programs and services that address the needs of veteran farmers and ranchers.

12. Biodiesel Fuel Education Program - The goals of this program as established in Section 9006 of FSRIA were to stimulate biodiesel consumption and the development of a biodiesel infrastructure. Congressionally mandated funding will support competitively awarded grants to address the need to balance the positive environmental, social, and human health impacts of biodiesel utilization with the increased per gallon cost to the user. Biodiesel Education projects will focus on the development of practical indicators or milestones to measure their progress towards achieving the following objectives:

- A) Enhance current efforts to collect and disseminate biodiesel information;
- B) Coordinate with other biodiesel educational or promotional programs, and with Federal, State, and local programs aimed at encouraging biodiesel use, including the Energy Policy Act of 2005 program;
- C) Create a nationwide networking system that delivers biodiesel information to targeted audiences, including users, distributors, and other infrastructure-related personnel;
- D) Identify and document the benefits of biodiesel (e.g., lifecycle costing); and
- E) Gather data pertaining to information gaps and develop strategies to address the gaps.

Mandatory funding in the enacted amount of \$1,000,000 is to be made available for each of FY 2014 through FY 2018 to carry out this program.

13. Agriculture Risk Management Education Program - Section 133 of the Agricultural Risk Protection Act of 2000 amended the Federal Crop Insurance Act to establish a competitive grants program for educating agricultural producers on the full range of risk management activities. These activities include futures, options, agricultural trade options, crop insurance, cash forward contracting, debt reduction, production diversification, marketing plans and tactics, farm resources risk reduction, and other appropriate risk management strategies. This program brings the existing knowledge base to bear on risk management issues faced by agricultural producers and expands the program throughout the Nation on a regional and multi-regional basis. Mandatory funding in the enacted amount of \$5,000,000 is to be made available annually for competitive awards.

Integrated Activities

The following programs are included under the integrated activities account:

Section 7129 of FCEA amended section 406(b) of AREEERA (7 U.S.C. 7626(b)) by adding Hispanic-serving agricultural colleges and universities (HSACUs) to the eligibility for section 406 funds. HSACUs are defined in section 1404(10) of NARETPA as colleges and universities that (1) qualify as Hispanic-serving institutions; and (2) offer associate, bachelors, or other accredited degree programs in agriculture-related fields. The following programs are provided pursuant to the authority found in section 406. Funding for all programs is provided on a competitive basis.

1. Water Quality - This program assists the State Agricultural Experiment Stations and the Cooperative Extension System to become viable partners with other State and Federal agencies in addressing water quality problems of National importance.

2. Methyl Bromide Transition Program - This program is designed to support the discovery and implementation of practical pest management alternatives for commodities affected by the methyl bromide phase-out. The program focuses on short- to medium-term solutions for all commodities at risk using either combinations of presently available technologies or some newly developed practices.
3. Organic Transition Program - This program supports the development and implementation of biologically based management practices that mitigate the ecological, agronomic and economic risks associated with a transition from conventional to organic agricultural production systems.
4. Crop Protection/Pest Management - This program will support IPM projects that respond to pest management challenges with coordinated state-based, regional and national research, education, and extension programs. Activities also will promote further development and use of IPM approaches.

Additional authorities for integrated programs include:

1. Regional Rural Development Centers - Section 2(c)(1)(B) of the 1965 Act (7 U.S.C. 450i(c)(1)(B)) provides funds at four regional centers in Pennsylvania, Mississippi, Utah, and Michigan. Programs are designed to improve the social and economic well-being of rural communities in their respective regions. These funds are distributed competitively according to the extent of the problem that requires attention in each state.
2. Food and Agriculture Defense Initiative Program - Section 1484 of NARETPA (7 U.S.C. 3351) provides for the support and enhancement of nationally-coordinated plant and animal disease diagnostic networks and support activities to identify and respond to high risk biological pathogens in the food and agricultural system. The diagnostic networks currently supported are the National Plant Diagnostic Network (NPDN) and the National Animal Health Laboratory Network (NAHLN). These networks are state/federal partnerships that are used to increase the ability to protect the Nation from plant and animal disease threats by providing surveillance, early detection, mitigation, and recovery functions that serve to minimize these threats. The Extension Disaster Education Network (EDEN) is supported under this program also. EDEN is a collaborative national effort that is led by state Cooperative Extension Services (CES) to provide disaster education resources for CES educators to use to help farmers and other public sectors in the event of disasters, including agricultural disasters.
3. Organic Agriculture Research and Extension Initiative - Section 7211 of the Agricultural Act of 2014 amended section 1672B of the FACT Act to provide the enacted amount of \$20,000,000 for FY 2014 through FY 2018 for the Organic Agricultural Research and Extension Initiative. The purpose of this congressionally mandated program is to make competitive grants to support research, education, and extension activities regarding organically grown and processed agricultural commodities and their economic impact on producers, processors, and rural communities.
4. Specialty Crop Research Initiative - Reauthorized by Section 7306 of the Agricultural Act of 2014 which amends Section 412 of AREERA of 1998 (7 U.S.C. 7632). Section 412 of the AREERA of 1998 established a specialty crop research and extension initiative to address the critical needs of the specialty crop industry by developing and disseminating science-based tools to address needs of specific crops and their regions. The Specialty Crop Research Initiative (SCRI) competitive grants program was established to solve critical industry issues through research and extension activities. Specialty crops are defined as fruits and vegetables, tree nuts, dried fruits, and horticulture and nursery crops including floriculture. SCRI will give priority to projects that are multistate, multi-institutional, or trans-disciplinary; and include explicit mechanisms to communicate results to producers and the public. Projects must address at least one of the following five focus areas:
 - A) Research in plant breeding, genetics, and genomics to improve crop characteristics;
 - B) Efforts to identify and address threats from pests and diseases, including threats to pollinators;
 - C) Efforts to improve production efficiency, productivity, and profitability over the long term;
 - D) New innovations and technology, including improved mechanization and technologies that delay or inhibit ripening; and
 - E) Methods to prevent, detect, monitor control, and respond to potential food safety hazards in the production and processing of specialty crops.

Eligible applicants for grants under this authority include Federal agencies, national laboratories, colleges and universities, research institutions and organizations, private organizations or corporations, State agricultural experiment stations, individuals, and groups consisting of two or more entities defined in this sentence. Mandatory funding in the enacted amount of \$80,000,000 is to be made available for FY 2014 and each year thereafter to carry out the SCRI.

Of the monies available to the SCRI, \$25,000,000 is reserved, for each of the fiscal years 2014 through 2018, to carry out the Emergency Citrus Disease Research and Extension Program. Section 7306 of the Agricultural Act of 2014 establishes a competitive research and extension grant program to combat diseases of citrus by:

- 1) Conducting scientific research and extension activities, technical assistance and development activities to combat citrus diseases and pests, both domestic and invasive, which pose imminent harm to the U.S. citrus production and threaten industry viability; and
- 2) Providing support for the dissemination and commercialization of relevant information, techniques, and technologies.

In carrying out the Emergency Citrus Disease Research and Extension Program, priority will be given to projects that address the research and extension priorities established pursuant to subsection (g)(4) of section 1408A of the National Agricultural Research, Extension, and Teaching Policy Act of 1977 (7 U.S. C. 3123a).

Section 7306 of the Agricultural Act of 2014 added a requirement that, in addition to the scientific peer review NIFA regularly conducts, a panel of specialty crop industry representatives review and rank SCRI applications for merit, relevance, and impact. In addition, Section 7306 requires increased consultation between NIFA and the Specialty Crops Committee of the National Agricultural Research, Education, Extension and Economics Advisory Board.

Biomass Research and Development Initiative

The purpose of this initiative, authorized under Section 9008 of FSRFA, is to competitively award grants, contracts, and financial assistance to eligible entities to carry out research and development and demonstration of: (1) Biofuels and biobased products; and (2) the methods, practices, and technologies, for the production of biofuels and biobased products. This program was transferred on October 1, 2008, from Rural Development to NIFA. Awardees are required to cost share at 20 percent for research activities and 50 percent for demonstration. Waiver authority for the cost share requirement is provided to the Secretary. To be eligible for an award, an applicant must be an institution of higher education, a National Laboratory, a Federal research agency, a State research agency, a private sector entity, a nonprofit organization, or a consortium of two or more of the entities defined in this sentence. Mandatory funding is made available in the enacted amount of \$3,000,000 for each FY 2014 through FY 2017.

This initiative requires the Secretary of Agriculture and the Secretary of Energy, in consultation with the Environmental Protection Agency and heads of other appropriate departments and agencies to direct the initiative in the following three areas:

- A) Feedstocks development;
- B) Biofuels and biobased products development; and
- C) Biofuels development analysis.

Community Food Projects

Section 25 of the Food Stamp Act of 1977 (7 U.S.C. 2034), as amended by the Agricultural Act of 2014 and the Food and Nutrition Act of 2008, authorized funding in support of competitively awarded Community Food Projects (CFP). The objectives of the CFP Program are to increase the food self-reliance of communities; promote comprehensive responses to local food, farm, and nutrition issues; develop innovative linkages between the public, for-profit, and nonprofit food sectors; and encourage long-term planning activities and comprehensive multi-agency approaches. Projects are intended to bring together stakeholders from the distinct parts of the food system and to foster understanding of national food security trends and how they might improve local food systems. Mandatory funding is made available in the enacted amount of \$5,000,000 in FY 2014 and \$9,000,000 for each of FY 2015 through FY 2018.

For NIFA program coordination and planning are carried out by staff located entirely in the Washington, D.C. area. As of September 30, 2014, there were 361 permanent full-time employees and 41 other employees.

Agency Audit Reports

OMB Circular A-133 Audits

The audits below were completed during fiscal year 2014.

FY	Audit Report Number	Grantee	Year Ending
2010	10-1020	Marshall Public Schools	2010
2010	10-1049	American Samoa Community College	2010
2010	10-1050	Seattle Children's Hospital	2010
2010	10-1053	Christiana Care Health System, Inc.	2010
2010	10-1055	Villanova University	2010
2010	10-1056	National Tribal Development Association	2010
2011	11-1021	Africare	2011
2011	11-1024	Delaware State University	2011
2011	11-1025	Georgetown University	2011
2011	11-1030	The Shaw University, Inc.	2011
2011	11-1036	State of Colorado	2011
2011	11-1039	Christiana Care Health Systems, Inc.	2011
2011	11-1042	Indian Nation Conservation Alliance	2011
2011	11-1043	Morehouse Council on Aging, Inc	2011
2011	11-1045	Partners Healthcare	2011
2011	11-1046	Smithsonian Institution	2011
2012	12-1007	Cambridge Public Health Commission	2012
2012	12-1008	Kentucky State University	2012
2012	12-1009	School District of Denmark	2012
2012	12-1010	School District of Granton	2012
2012	12-1012	Seattle Children's Hospital	2012
2012	12-1013	The Shaw University, Inc.	2012
2012	12-1015	University of Missouri System	2012
2012	12-1016	Yeshiva University	2012
2012	12-1017	American Samoa Community College	2012
2012	12-1018	Delaware State University	2012
2012	12-1019	Georgetown University	2012
2012	12-1020	Northeastern Illinois University	2012
2012	12-1021	State of Colorado	2012
2012	12-1023	State of Florida	2012

FY	Audit Report Number	Grantee	Year Ending
2012	12-1024	State of Wisconsin	2012
2012	12-1026	Salish Kootenai College, Inc.	2012
2012	12-1027	National Audubon Society, Inc.	2012
2012	12-1028	The Ecological Society of America	2012
2012	12-1031	Arkansas Land and Farm Development Corporation	2012
2012	12-1033	St. Luke's Roosevelt Hospital Center	2012
2012	12-1035	University of Puerto Rico	2012
2012	12-1036	University of The Virgin Island	2012
2012	12-1037	Africare	2012

The audits below are ongoing in fiscal year 2015.

FY	Audit Report Number	Grantee	Year Ending
2001	01-1007	College of Micronesia Land Grant Program	2001
2001	01-1016	Northern Marianas College	2001
2002	02-1013	Northern Marianas College	2002
2003	03-1015	Northern Marianas College	2003
2006	06-1007	College of Micronesia	2006
2006	06-1058	The Ohio State University	2006
2006	06-1060	University of Missouri System	2006
2007	07-1013	Northern Marianas College	2007
2007	07-1028	The Ohio State University	2007
2007	07-1032	University of Missouri System	2007
2007	07-1049	Territory of American Samoa	2007
2009	09-1001	American Samoa Community College	2009
2009	09-1008	College of Micronesia	2009
2009	09-1027	Northern Marianas College	2009
2010	10-1001	University of Wyoming	2010
2010	10-1005	State of Wisconsin	2010
2010	10-1018	Joslin Diabetes Center, Inc.	2010
2010	10-1019	Kentucky State University	2010
2010	10-1038	University of Illinois	2010
2010	10-1047	College of Menominee Nation	2010
2010	10-1051	Northern Marianas College	2010
2010	10-1052	College of Micronesia	2010
2010	10-1054	Jefferson County Commission	2010
2011	11-1001	Kentucky State University	2011

FY	Audit Report Number	Grantee	Year Ending
2011	11-1010	Mississippi Association of Cooperatives, Inc.	2011
2011	11-1013	Lincoln University	2011
2011	11-1022	American Samoa Community College	2011
2011	11-1023	Arkansas Land and Farm Development Corp	2011
2011	11-1027	State of Connecticut	2011
2011	11-1028	State of Texas C/O Comp of Public Account	2011
2011	11-1029	State of Wisconsin	2011
2011	11-1031	Universidad Central Del Caribe, Inc.	2011
2011	11-1032	University of Illinois	2011
2011	11-1033	Yeshiva University	2011
2011	11-1034	Jefferson County Commission	2011
2011	11-1038	University of Puerto Rico	2011
2011	11-1040	College of Marshall Island	2011
2011	11-1041	Growing Power, Inc.	2011
2011	11-1044	Northern Marianas College	2011
2011	11-1047	University of the Virgin Island	2011
2012	12-1011	School District of Thorp	2012
2012	12-1014	State of Texas C/O Comptroller of Public Accounts	2012
2012	12-1022	State of Connecticut	2012
2012	12-1025	University of Illinois	2012
2012	12-1029	Emory University	2012
2012	12-1030	Indian Nations Conservation Alliance	2012
2012	12-1032	State of Colorado	2012
2012	12-1034	Growing Power, Inc.	2012
2013	30749	Africare	2013
2013	181715	Community Chest Inc.	2013
2013	183783	Cornell Cooperative Extension of Suffolk County	2013
2013	203312	Donald Danforth Plant Science Center	2013
2013	230937	Food Bank Coalition of San Luis Obispo County	2013
2013	222093	Great Northern Corporation	2013
2013	49169	Illinois Migrant Council	2013
2013	217263	Irwin and Robert D. Goodman Community Center, Inc.	2013
2013	185045	Klamath Tribal Health & Family Services	2013
2013	238973	Northeast Organic Farming Association of New York, Inc.	2013
2013	15516	Public Health Solutions	2013
2013	213151	Rural Community Development Resources	2013
2013	187145	Republic of Palau	2013
2013	12543	St. Luke's Roosevelt Hospital Center and Affiliates	2013

FY	Audit Report Number	Grantee	Year Ending
2013	38426	Easter Seals Tristate LLC	2013
2013	10969	Boyce Thompson Institute for Plant Research, Inc.	2013
2013	237261	California Farmlink	2013
2013	187512	Chelan County	2013
2013	222332	Cornell Cooperative Extension Association of Jefferson County	2013
2013	187721	Cornell University Cooperative Extension of Albany County	2013
2013	177883	County of Dane	2013
2013	187889	County of Ulster, New York	2013
2013	158417	County of Wayne	2013
2013	182040	Ecumenical Ministries of Oregon	2013
2013	217597	Healthy Communities Coalition of Lyon and Storey Counties	2013
2013	45995	Hoosier Uplands Economic Development Corporation and Affiliates	2013
2013	194265	Hopland Band of Pomo Indian	2013
2013	196118	Intertribal Agricultural Council	2013
2013	231014	Journey's End Refugee Services, Inc.	2013
2013	118676	Kaiser Foundation Health Plan, Inc. and Subsidiaries and Kaiser Foundation	2013
2013	241630	Montefiore Health System	2013
2013	195045	Okanogan County	2013
2013	232481	Paleontological Research Institution	2013
2013	239921	South Carolina Eat Smart Move More Coalition	2013
2013	170349	State of South Carolina	2013
2013	205618	Stroud Water Research Center, Inc.	2013
2013	221179	The Social and Health Research Center, Inc.	2013
2013	101129	University of the Incarnate Word	2013
2013	222116	The Waterworks Board of the Town of Section, Alabama	2013
2014	204427	Ajo Community Health Center DBA Desert Senita Community Health Center	2014
2014	97664	Arkansas Children's Hospital	2014
2014	150621	Bay Mills Community College	2014
2014	101742	Baylor College of Medicine	2014
2014	101232	Baylor University	2014
2014	123573	Cal Poly Corporation	2014
2014	141358	City Colleges of Chicago Community College District No. 508	2014
2014	83394	Clafin University	2014
2014	2626	Clark University	2014

FY	Audit Report Number	Grantee	Year Ending
2014	127000	Community Partners	2014
2014	48368	Dominican University	2014
2014	170751	Dorchester County School District Two	2014
2014	227188	Food Bank of Delaware, Inc.	2014
2014	3877	Franklin County Community Development Corporation	2014
2014	124397	Hebbs-Sea World Research Institute	2014
2014	122394	Humboldt State University Sponsored Programs Foundation	2014
2014	64366	Luther College	2014
2014	148662	Michigan Technological University	2014
2014	50642	Midwestern University	2014
2014	170378	Orangeburg-Calhoun Technical College	2014
2014	5982	Roger Williams University	2014
2014	231855	Snowy Mountain Development Corporation	2014
2014	101117	St. Edward's University, Inc.	2014
2014	88388	St. Thomas University, Inc.	2014
2014	231358	The Broad Institute, Inc.	2014
2014	170375	Trident Technical College	2014
2014	107889	University Corporation at Monterey Bay	2014
2014	199681	Kashia Band of Pomo Indians of the Stewarts Point Rancheria	2014
2014	175033	San Juan County	2014
2014	183764	Catholic Charities of Northeast Kansas, Inc. and Subsidiary	2014
2014	150117	Charlotte Public Schools	2014
2014	240925	Drake University	2014
2014	142099	Joliet Junior College Community College District 525	2014
2014	35229	Lafayette College	2014
2014	108418	Mountain State Group, Inc.	2014
2014	80320	Old Dominion University Research Foundation	2014
2014	122380	San Jose State University Research Foundation	2014
2014	77824	The George Washington University	2014
2014	162414	University of Cincinnati	2014
2014	211695	University of South Carolina	2014
2014	25212	Ursinus College	2014
2014	145869	Western Kentucky University	2014
2014	170383	York Technical College	2014

OIG Reports

The audits below were completed during fiscal year 2014.

OIG Audit Report Number	Audit Report Name
50703-01-23	Trade Adjustment Assistance for Farmers Program. Final report issued 10/1/2013.

The audits below are ongoing in fiscal year 2015.

OIG Audit Report Number	Audit Report Name
50501-06-12	Trade Adjustment Assistance for Farmers Program
50601-03-31	Trade Adjustment Assistance for Farmers Program

GAO Studies

The reports below were completed during fiscal year 2014.

GAO Report Number	Report Name
GAO-14-374 (Job Code 131224)	STEM Survey. Final report issued 6/9/2014.
GAO-14-539 (Job Code 197232)	Oversight of Internal Controls for Grants. Final report issued 7/30/2014.
GAO-14-430 (Job Code 361454)	Freshwater: Supply Concerns Continue and Uncertainties Complicate Planning. Final report issued 5/22/2014.
GAO-14-431 (Job Code 361530)	SBIR & STTR Programs' Expenditure Compliance for FY 2012. Final report issued 6/6/2014.
GAO-14-407 (Job Code 540257)	Alternative Fuels for Aviation. Final report issued 5/8/2014.

The reports below are ongoing in fiscal year 2015.

GAO Report Number	Report Name
GAO Job Code 131296	Gender Differences in Federal STM Research Programs
GAO Job Code 250741	Consumer Product Safety Duplication, Overlap, and Fragmentation
GAO Job Code 250774	Small Business Venture Capital
GAO Job Code 361488 (GAO-14-736)	Federal Actions to Respond to Ocean Acidification. Final report issued 10/14/2014.
GAO Job Code 361517	Climate Change for Public Insurance Programs
GAO Job Code 361531 (GAO-14-755)	USDA Climate Change Efforts. Final report issued 10/16/2014.
GAO Job Code 361562	Federal Veterinarian Workforce
GAO Job Code 361569	Climate Change & Public Health
GAO Job Code 361591	SBIR & STTR Programs' Expenditure Compliance for FY 2013

GAO Report Number	Report Name
GAO Job Code 361600	Federal Actions to Promote Bee Health
GAO Job Code 361615	Emerging Swine Diseases
GAO Job Code 361617	Aquatic Invasive Species
GAO Job Code 460635	Technologies in the Municipal Water Sector

NATIONAL INSTITUTE OF FOOD AND AGRICULTURE

Available Funds and Staff Years (SYs)

(Dollars in thousands)

Item	2013 Actual		2014 Actual		2015 Estimate		2016 Estimate	
	Amount	SYs	Amount	SYs	Amount	SYs	Amount	SYs
National Institute of Food and Agriculture:								
Discretionary Appropriations.....	-	-	-	-	-	-	\$1,507,663	417
Mandatory Appropriations.....	-	-	-	-	-	-	145,000	-
Biomass Research and Development Initiative:								
Mandatory Appropriations.....	-	-	\$3,000	-	\$3,000	-	3,000	-
Research and Education Activities:								
Discretionary Appropriations.....	\$744,055	233	777,644	229	791,953	247	-	-
Extension Activities:								
Discretionary Appropriations.....	475,854	148	469,191	145	471,691	154	-	-
Mandatory Appropriations.....	5,000	-	60,000	-	25,000	-	-	-
Integrated Activities:								
Discretionary Appropriations.....	21,482	6	35,317	6	30,900	9	-	-
Mandatory Appropriations.....	-	-	100,000	-	100,000	-	-	-
Sequestration.....	-33,470	-	-360	-	-9,344	-	-	-
Rescission.....	-60,996	-	-	-	-	-	-	-
Adjusted Appropriation.....	1,151,714	387	1,444,792	380	1,413,200	410	1,655,663	417
Transfers In (Congressional Relations).....	102	-	102	-	-	-	-	-
Balance Available, Start of Year.....	204,187	-	244,767	-	393,958	-	-	-
Other Adjustments.....	37,916	-	14,642	-	-	-	-	-
Total Available.....	1,393,919	387	1,704,303	380	1,807,158	410	1,655,663	417
Lapsing Balances.....	-3,012	-	-38	-	-	-	-	-
Balance Available, End of Year.....	-244,767	-	-393,958	-	-	-	-	-
Obligations.....	1,146,140	-	1,310,307	-	1,807,158	-	1,655,663	-
Other Appropriations:								
Biodiesel Fuel Education Program.....	-	-	1,000	-	927	-	1,000	-
Community Food Projects Program.....	5,000	-	5,000	-	9,000	-	9,000	-
Total, Other Appropriations.....	5,000	-	6,000	-	9,927	-	10,000	-
Total, Appropriations.....	1,151,140	-	1,316,307	-	1,817,085	-	1,665,663	-
<u>Obligations under other USDA appropriations:</u>								
Research and Education Activities:								
Agricultural Research Service:								
Biotechnology Risk Assessment.....	1,498	-	1,447	-	1,447	-	1,447	-
Forest Service:								
Biotechnology Risk Assessment.....	63	-	108	-	63	-	63	-
Salary, Benefits and Operating Expenses for Detailees.....	19	-	9	-	-	-	-	-
National Atmospheric Deposition Program.....	219	-	220	-	200	-	200	-
Foreign Agricultural Service:								
Salary, Benefits and Operating Expenses for Detailees.....	-	-	17	-	-	-	-	-
Various agencies sharing cost of the USDA Small Business Innovation Research Program (SBIR).....	2,018	-	2,208	-	2,208	-	2,208	-
Various research agencies sharing cost of the Current Research Information System (CRIS).....	-	-	-	-	-	-	-	-
Research Information System (CRIS).....	640	-	640	-	640	-	640	-
Other Anticipated Reimbursements:								
Subtotal, Res./Ed. Other USDA Appropriations.....	4,457	-	4,649	-	7,558	-	7,558	-

Item	2013 Actual		2014 Actual		2015 Estimate		2016 Estimate	
	Amount	SYs	Amount	SYs	Amount	SYs	Amount	SYs
Extension Activities:								
Agricultural Marketing Service:								
Grant Writing Workshop.....	-	-	1,000	-	-	-	-	-
AAPI/Hmong Resource Center.....	-	-	25	-	-	-	-	-
Food and Nutrition Service:								
Study SNAP-Ed Activities.....	-	-	4,000	-	-	-	-	-
Natural Resources Conservation Service:								
AAPI/Hmong Resource Center.....	-	-	100	-	-	-	-	-
Rural Development:								
AAPI/Hmong Resource Center.....	-	-	100	-	-	-	-	-
Other Anticipated Reimbursements:								
Subtotal, Extension Other USDA Appropriations.....	-	-	-	-	2,000	-	2,000	-
Total, NIFA Other USDA Appropriations.....	4,457	-	9,874	-	9,558	-	9,558	-
Other Federal Funds:								
Research and Education Activities:								
US Air Force:								
US Army Strong Bonds Initiative.....	1,100	-	-	-	-	-	-	-
KSU-USAF 2014 FAP Research Project.....	-	-	2,268	-	1,000	-	-	-
Sexual Assault Research.....	-	-	400	-	-	-	-	-
Army Corps of Engineers:								
Enhanced the Inland Waterways Module of RECONS.....	-	-	121	-	-	-	-	-
Road Mapping & Attribute Data Collection Pilot.....	-	-	83	-	-	-	-	-
Recreation Survey Review.....	-	-	83	-	-	-	-	-
Web-based Recreation Area/Facilities Asset Management System.....	220	-	-	-	-	-	-	-
FAP.....	1,327	-	-	-	-	-	-	-
Department of Commerce:								
NOAA National Atmospheric Deposition Program.....	224	-	231	-	208	-	208	-
Department of Defense:								
Support Students of Military Service Members.....	-	-	400	-	-	-	-	-
Gifted Education Program.....	-	-	400	-	-	-	-	-
Healthy Base Initiative Measurement & Evaluation Strategy.....	550	-	-	-	-	-	-	-
MEDICAID Tech Assistance.....	50	-	-	-	-	-	-	-
EFMP Clearinghouse Family Support Provider Survey.....	33	-	-	-	-	-	-	-
Expanding High Quality Preschool Access.....	-	-	350	-	-	-	-	-
Traumatic Brain Injury.....	1,417	-	681	-	600	-	-	-
FAP Commanders & Seniors Enlisted Training Project.....	-	-	500	-	-	-	-	-
Evaluation Plan Development for DoD Care & Development for Children & Youth.....	-	-	500	-	-	-	-	-
DoD Family Program Evaluation Plan Development/Implementation Project.....	-	-	1,500	-	-	-	-	-
EFMP Benchmark Study.....	-	-	200	-	-	-	-	-
Ready & Resilient Program/Portfolio Evaluation.....	-	-	204	-	-	-	-	-
Environmental Protection Agency:								
NOAA National Atmospheric Deposition Program.....	489	-	478	-	435	-	435	-
Department of Human Service:								
Foreign Animal Disease Countermeasure Program.....	12	-	-	-	-	-	-	-
Department of Interior:								
Geological Survey, National Atmospheric Deposition Program.....	642	-	670	-	609	-	609	-
National Park Service, National Atmospheric Deposition Program.....	408	-	409	-	372	-	372	-
Bureau of Land Management, National Trends Network.....	56	-	57	-	51	-	51	-
Fish and Wildlife Service 4-H Awards Program.....	-	-	-	-	-	-	-	-
Tennessee Valley Authority:								
Support of National Trends Network.....	27	-	28	-	-	-	-	-
Other Anticipated Reimbursements.....	-	-	-	-	5,538	-	5,538	-
Subtotal, Res./Educ. Other Federal Funds.....	6,555	-	9,563	-	8,813	-	7,213	-

Item	2013 Actual		2014 Actual		2015 Estimate		2016 Estimate	
	Amount	SYs	Amount	SYs	Amount	SYs	Amount	SYs
Other Federal Funds:								
Extension Activities:								
Department of Defense:								
Army Reserve Family Readiness Programs.....	1,000	-	1,000	-	-	-	1,000	-
Army Substance Abuse Program, Ft-Hood.....	38	-	64	-	60	-	60	-
4-H Military Partnership Project.....	1,800	-	-	-	900	-	600	-
4-H Military Youth Program.....	-	-	-	-	500	-	500	-
Army Youth Development Program.....	500	-	500	-	-	-	-	-
Air Force Partnership & Outreach and Support.....	-	-	900	-	-	-	-	-
Community Info Service/Survivor Outreach Program, Ft. Hood.....	-	-	-	-	500	-	500	-
Community Early Monitoring & Warning System Behavior Health.....	3,000	-	4,000	-	-	-	-	-
Child Care Curriculum Project.....	5,000	-	-	-	-	-	-	-
Clearinghouse for Military Family Readiness.....	2,510	-	2,510	-	2,000	-	1,800	-
Continuation of Military Extension Internship Program.....	550	-	550	-	-	-	-	-
Extension Activities:								
Comprehensive Solider Fit Trainer.....	52	-	-	-	-	-	-	-
Child and Deployment Support Camp.....	550	-	-	-	880	-	880	-
Family Life Skills, Fort Bliss (TX AgriLife Extension Services).....	1,107	-	1,203	-	1,100	-	1,100	-
Family Advocacy for Fort Drum Army Community Services.....	569	-	-	-	400	-	800	-
Family Advocacy for Fort Drum Staffing Codes.....	256	-	-	-	-	-	-	-
Family Life Skills, Ft, Campbell.....	-	-	370	-	-	-	-	-
Family Advocacy Program Ft. Sam Houston.....	1,375	-	381	-	-	-	-	-
Family Advocacy Program and New Parent Support, Fort Hood.....	-	-	1,363	-	1,000	-	1,000	-
Families with Special Needs/EFMPs Educationa Directory Maintenance.....	-	-	110	-	-	-	-	-
Military Family Learning Network eXtension.....	1,477	-	1,577	-	1,500	-	1,300	-
Military Family Learning Networks Leadership & Core Support.....	-	-	830	-	-	-	-	-
Project YES.....	1,068	-	440	-	-	-	-	-
Project Military REACH.....	990	-	660	-	-	-	-	-
Reintegration Camps.....	-	-	880	-	-	-	-	-
Relocation Assistance Program, Ft. Hood.....	109	-	79	-	60	-	55	-
Staffing Costs Ft. Drum Army Community Services.....	-	-	862	-	-	-	-	-
Substance Abuse Program Ft. Sam Houston.....	441	-	403	-	375	-	375	-
Substance Abuse Program Ft. Hood.....	-	-	436	-	325	-	310	-
Support of the Substance Abuse Program.....	343	-	-	-	-	-	-	-
Teen Adventure Camps.....	880	-	1,210	-	880	-	880	-
Virtual Lab School.....	1,100	-	1,100	-	1,000	-	1,000	-
Department of Health and Human Services:								
Extension Disaster Education Network.....	50	-	-	-	-	-	-	-
Education and Outreach for the Health Insurance.....	1,375	-	750	-	-	-	-	-
Department of Housing and Urban Development:								
IPM Training to Public Housing Authorities.....	300	-	300	-	-	-	-	-
Healthy Homes.....	80	-	250	-	-	-	-	-
Department of Interior:								
Fish and Wildlife 4-H Award.....	10	-	-	-	-	-	-	-
U.S. Department of Navy:								
Child Care Virtual Lab.....	435	-	-	-	1,000	-	1,000	-
Child Abuse Reporting and Identification/Prevention.....	165	-	-	-	-	-	-	-
4-H Military Partnership Project.....	1,130	-	-	-	1,000	-	1,000	-
Child Care Training & Technical Assistance.....	-	-	3,300	-	-	-	-	-
Navy Youth Sports and Fitness Project.....	-	-	2,755	-	-	-	-	-
Other Anticipated Reimbursements.....	-	-	-	-	17,000	-	17,000	-
Subtotal, Extension Other Federal Funds.....	28,260	-	28,783	-	30,480	-	31,160	-
Total, NIFA Other Federal Funds.....	34,815	-	38,346	-	39,293	-	38,373	-
Total, NIFA Available Funds.....	1,190,412	387	1,364,527	380	1,865,936	410	1,713,594	417

The Native American Interest Endowment Fund is included in the Research and Education Activities Discretionary Appropriations amount.

NATIONAL INSTITUTE OF FOOD AND AGRICULTURE

Permanent Positions by Grade and Staff Year Summary

Item	<u>2013 Actual</u>	<u>2014 Actual</u>	<u>2015 Estimate</u>	<u>2016 Estimate</u>
	Wash. D.C.	Wash. D.C.	Wash. D.C.	Wash. D.C.
Senior Executive Service.....	8	8	8	8
GS-15.....	73	74	74	74
GS-14.....	55	52	52	52
GS-13.....	48	54	57	60
GS-12.....	67	71	73	74
GS-11.....	26	28	34	36
GS-10.....	5	5	5	5
GS-9.....	27	29	33	33
GS-8.....	13	12	13	13
GS-7.....	44	37	40	41
GS-6.....	18	9	18	18
GS-5.....	7	7	7	7
GS-4.....	2	2	2	2
GS-3.....	2	2	2	2
GS-2.....	0	0	0	0
Total Permanent Positions.....	395	390	418	425
Unfilled, EOY	-20	-29	-13	-8
Total, Perm. Full-Time Employment, EOY	375	361	405	417
Staff Year Estimate.....	387	380	410	417

NATIONAL INSTITUTE OF FOOD AND AGRICULTURE

Appropriation Language

The estimates include appropriation language for this item as follows (new language underscored; deleted matter enclosed in brackets):

National Institute of Food and Agriculture

For payments to agricultural experiment stations, for cooperative forestry and other research, for facilities, for payments to States, the District of Columbia, Puerto Rico, Guam, the Virgin Islands, Micronesia, the Northern Marianas, and American Samoa for cooperative extension activities, for integrated activities, for research, education, and extension grant programs, including necessary administrative expenses, and for other expenses, \$1,503,058,000, which shall be for the purposes, and in the amounts, specified in the table titled "National Institute of Food and Agriculture" in the report accompanying this Act: *Provided*, That of the amounts provided in the table for the Hatch Act and Evans-Allen research, \$12,500,000 shall be available only for competitively awarded capacity grants for eligible recipients of Hatch Act funding and \$2,500,000 shall be available only for competitively awarded capacity grants for eligible recipients of Evans-Allen funding, respectively, notwithstanding the provisions of the Hatch Act or 7 U.S.C. 3222: *Provided further*, That institutions receiving funds competitively-awarded under the previous proviso shall provide funds or in-kind support from non-Federal sources in an amount equal to the amount of funds received and 7 U.S.C. 3371 shall not apply to such grants: *Provided further*, That of the amounts provided in the table for Smith-Lever Act 3(b) and (c) extension and 1890 extension services, \$4,000,000 shall be available only for competitively awarded capacity grants for eligible recipients of Smith-Lever Act 3(b) and (c) funding and \$1,000,000 shall be available only for competitively awarded capacity grants for eligible recipients of 1890 extension services funding, respectively, notwithstanding the provisions of the Smith-Lever Act or 7 U.S.C. 3221: *Provided further*, That institutions receiving funds competitively awarded under the previous proviso shall provide funds or in-kind support from non-Federal sources in an amount equal to the amount of funds received, and 7 U.S.C. 3371 shall not apply to such grants: *Provided further*, That funds for research grants for 1994 institutions, education grants for 1890 institutions, the agriculture and food research initiative, veterinary medicine loan repayment, the public-private partnerships for Innovation Institutes, grants management systems, Hispanic serving institutions education grants, tribal college education equity grants, Alaska native-serving and native Hawaiian-serving institutions, grants for insular areas, extension services at 1994 institutions, facility improvements at 1890 institutions, and the competitively awarded capacity awards programs shall remain available until expended: *Provided further*, That each institution eligible to receive funds under the Evans-Allen program receives no less than \$1,000,000: *Provided further*, That funds for education grants for Alaska Native and Native Hawaiian-serving institutions be made available to individual eligible institutions or consortia of eligible institutions with funds awarded equally to each of the States of Alaska and Hawaii: *Provided further*, That funds for education grants for 1890 institutions shall be made available to institutions eligible to receive funds under 7 U.S.C. 3221 and 3222: *Provided further*, That not more than 5 percent of the amounts made available by this or any other Act to carry out the Agriculture and Food Research Initiative under 7 U.S.C. 450i(b) may be retained by the Secretary of Agriculture to pay administrative costs incurred by the Secretary in carrying out that authority: *Provided further*, That institutions eligible to receive funds under 7 U.S.C. 3221 for cooperative extension receive no less than \$1,000,000: *Provided further*, That funds for cooperative extension under sections 3(b) and (c) of the Smith-Lever Act (7 U.S.C. 343(b) and (c)) and section 208(c) of Public Law 93-471 shall be available for retirement and employees' compensation costs for extension agents: *Provided further*, That funds for the Food and Agriculture Defense Initiative shall remain available until September 30, 2017.

Research and Education Activities

[For payments to agricultural experiment stations, for cooperative forestry and other research, for facilities, and for other expenses, \$786,874,000, which shall be for the purposes, and in the amounts, specified in the

table titled "National Institute of Food and Agriculture, Research and Education Activities" in the explanatory statement described in section 4 (in the matter preceding division A of this consolidated Act): Provided, That funds for research grants for 1994 institutions, education grants for 1890 institutions, capacity building for non-land-grant colleges of agriculture, the agriculture and food research initiative, veterinary medicine loan repayment, multicultural scholars, graduate fellowship and institution challenge grants, and grants management systems shall remain available until expended: Provided further, That each institution eligible to receive funds under the Evans-Allen program receives no less than \$1,000,000: Provided further, That funds for education grants for Alaska Native and Native Hawaiian-serving institutions be made available to individual eligible institutions or consortia of eligible institutions with funds awarded equally to each of the States of Alaska and Hawaii: Provided further, That funds for education grants for 1890 institutions shall be made available to institutions eligible to receive funds under 7 U.S.C. 3221 and 3222: Provided further, That not more than 5 percent of the amounts made available by this or any other Act to carry out the Agriculture and Food Research Initiative under 7 U.S.C. 450i(b) may be retained by the Secretary of Agriculture to pay administrative costs incurred by the Secretary in carrying out that authority.]

Hispanic-Serving Agricultural Colleges and Universities Endowment Fund

For the Hispanic-Serving Agricultural Colleges and Universities Endowment Fund under section 1456(b) (7 U.S.C. 3243(b)) of the National Agricultural Research, Extension, and Teaching Policy Act of 1977, \$10,000,000, to remain available until expended.

Native American Institutions Endowment Fund

For the Native American Institutions Endowment Fund authorized by Public Law 103-382 (7 U.S.C. 301 note), \$11,880,000, to remain available until expended.

[Extension Activities]

[For payments to States, the District of Columbia, Puerto Rico, Guam, the Virgin Islands, Micronesia, the Northern Marianas, and American Samoa, \$471,691,000, which shall be for the purposes, and in the amounts, specified in the table titled "National Institute of Food and Agriculture, Extension Activities" described in the explanatory statement described in section 4 (in the matter preceding division A of this consolidated Act): Provided, That funds for facility improvements at 1890 institutions shall remain available until expended: Provided further, That institutions eligible to receive funds under 7 U.S.C. 3221 for cooperative extension receive no less than \$1,000,000: Provided further, That funds for cooperative extension under sections 3(b) and (c) of the Smith-Lever Act (7 U.S.C. 343(b) and (c)) and section 208(c) of Public Law 93-471 shall be available for retirement and employees' compensation costs for extension agents.]

[Integrated Activities]

[For the integrated research, education, and extension grants programs, including necessary administrative expenses, \$30,900,000, which shall be for the purposes, and in the amounts, specified in the table titled "National Institute of Food and Agriculture, Integrated Activities" in the explanatory statement described in section 4 (in the matter preceding division A of this consolidated Act): Provided, That funds for the Food and Agriculture Defense Initiative shall remain available until September 30, 2016.]

Explanation of Change

The change adds the Hispanic-Serving Agricultural Colleges and Universities Endowment Fund and retains the Native American Institutions Endowment Fund in the research and education account. It also deletes the remaining language contained in separate research and education, extension, and integrated accounts and incorporates the

language into one agency account. The language includes the new innovation institutes and the new competitive capacity awards program, with funds to remain available until expended. It also adds to the list of no-year funds several programs for minority serving institutions.

In 1994, the Extension Service (ES) and Cooperative State Research Service (CSRS) were merged into the Cooperative State Research, Education, and Extension Service (CSREES) which in 2009 became the National Institute of Food and Agriculture as required by the 2008 Farm Bill. ES and CSRS each had their own appropriations account. After the 1994 merger, the ES account was renamed Extension Activities and the CSRS account was renamed Research and Education Activities. The 1998 Farm Bill established a new Integrated Research, Education, and Extension Competitive Grants Program (Section 406). An Integrated Activities account was established in FY 2000 for programs funded under this authority. Since then NIFA has been working to integrate research, education, and extension activities across many of its programs. NIFA proposes to organize the funding lines within a single NIFA account rather than the current three accounts. Merging all funding lines within a single account structure will mirror the organization as a National Institute with a unified mission and offer opportunities to streamline administration of funds. The merge will not impact the function or funding level of any program, but it will help simplify the management of funds within the financial systems.

NATIONAL INSTITUTE OF FOOD AND AGRICULTURE
Lead-Off Tabular Statement

Budget Estimate, 2016.....	\$1,503,058,000
2015 Enacted.....	<u>1,289,465,000</u>
Change in Appropriation.....	<u>+213,593,000</u>

Summary of Increases and Decreases

(Dollars in thousands)

Program	2013 Actual	2014 Change	2015 Change	2016 Change	2016 Estimate
Discretionary Appropriations:					
Hatch Act.....	\$218,577	\$25,124	-	-	\$243,701
<i>Competitive Capacity Awards Program</i>	-	-	-	\$12,500	12,500
McIntire-Stennis Cooperative Forestry.....	30,459	+3,502	-	-	33,961
Evans-Allen Program (1890 Colleges and Tuskegee University).....	47,074	+5,411	-	+5,515	58,000
<i>Competitive Capacity Awards Program</i>	-	-	-	+2,500	2,500
Animal Health and Disease (Sec. 1433).....	3,699	+301	-	-4,000	-
Aquaculture Centers (Sec. 1475).....	3,699	+301	-	-	4,000
Critical Agricultural Materials Act.....	1,000	+81	-\$1,081	-	-
Agriculture and Food Research Initiative.....	275,569	+40,840	+8,591	+125,000	450,000
Innovation Institutes.....	-	-	-	+80,000	80,000
Food and Agriculture Resiliency Program for Military Veterans.....	-	-	-	+2,500	2,500
Sustainable Agriculture.....	13,384	+9,283	-	-	22,667
Supplemental and Alternative Crops.....	763	+62	-	-825	-
Farm Business Management and Benchmarking Program.....	1,341	+109	-	-1,450	-
Sun Grant Program.....	2,312	+188	-	-2,500	-
Alfalfa and Forage Research Program.....	-	+1,350	-	-1,350	-
Capacity Building for Non-Land-Grant Colleges of Agriculture.....	4,162	+338	-	-4,500	-
1994 Research Program.....	1,666	+135	-	+113	1,914
Higher Education Programs:					
Fellowship Grants, Challenge Grants and Multicultural Scholars Program....	8,324	+676	-	-9,000	-
Native American Institutions (Equity Grants).....	3,084	+355	-	+215	3,654
Hispanic Education Partnership Grants.....	8,526	+693	-	-	9,219
Secondary/2-year Post-secondary.....	832	+68	-	-900	-
Capacity Building Grants (1890 Institutions).....	17,883	+1,453	-	+1,074	20,410
Alaska Native-serving and Native Hawaiian-serving Edu. Grants.....	2,954	+240	-	-	3,194
Grants for Insular Areas.....	1,526	+274	+200	-200	1,800
Veterinary Medical Services Act.....	4,430	+360	+210	-	5,000
Federal Administration:					
Grants Management Systems.....	7,242	+588	-	+2,000	9,830
GSA Rent and DHS Security Expenses.....	-	-	+6,311	-6,311	a/
Other General Administration.....	13,801	+859	+84	+5,681	20,425

a/ Funds for rent and security costs are shifted to the General Administration funding line in 2016.

Program	2013 Actual	2014 Change	2015 Change	2016 Change	2016 Estimate
Special Research Grants					
Agroclimatology - Global Change, UV-B monitoring.....	1,299	+106	-	-	1,405
Other Special Research Grants.....	2,775	-75	-	-2,700	-
Improved Pest Control:					
Expert IPM Decision Support System.....	142	-142	-	-	-
Integrated Pest Management.....	2,185	-2,185	-	-	-
Minor Crop Pest Management (IR-4).....	11,018	+895	-	-	11,913
Pest Management Alternatives.....	1,297	-1,297	-	-	-
Smith-Lever Sections 3(b) and 3(c).....	271,269	+28,731	-	-	300,000
<i>Competitive Capacity Awards Program</i>	-	-	-	+4,000	4,000
1890 Colleges, Tuskegee Univ. & WV State University.....	39,299	+4,621	-	+4,430	48,350
<i>Competitive Capacity Awards Program</i>	-	-	-	+1,000	1,000
Smith-Lever 3 (d):					
Expanded Food and Nutrition Education Program.....	62,682	+5,252	-	-	67,934
Federally Recognized Tribes Extension.....	2,804	+235	-	-	3,039
New Technologies for Ag Extension.....	1,430	+120	-	+200	1,750
Pest Management.....	9,151	-9,151	-	-	-
Sustainable Agriculture.....	4,333	-4,333	-	-	-
Youth at Risk.....	7,012	+1,383	-	-	8,395
Youth Farm Safety Education and Certification.....	-	-	-	-	-
Farm Safety and Youth Farm Safety Education & Cert.....	4,254	+356	-	-	4,610
1890 Facilities Grants (Sec. 1447).....	18,205	+1,525	-	+1,973	21,703
Extension Services at the 1994 Institutions.....	3,979	+467	-	+278	4,724
Food Animal Residue Avoidance Database (FARAD).....	923	+327	-	-1,250	-
Food Safety Outreach Program.....	-	-	+2,500	+2,500	5,000
Grants to Youth Organizations.....	673	-673	-	+1,000	1,000
Renewable Resources Extension Act (RREA).....	3,414	+646	-	-	4,060
Rural Health and Safety Education.....	1,384	+116	-	-1,500	-
Women and Minorities in STEM Fields.....	369	+31	-	-400	-
Food Agriculture Defense					
Initiative(Homeland Security).....	5,525	+1,155	+20	-	6,700
Water Quality.....	4,152	+348	-4,500	-	-
Crop Protection/Pest Management.....	-	+17,143	+57	-	17,200
Regional Pest Management Centers.....	3,690	-3,690	-	-	-
Methyl Bromide Transition Program.....	1,842	+154	+4	-2,000	-
Organic Transition Program.....	3,690	+310	-	-	4,000
Regional Rural Development					
Centers Program.....	921	+77	+2	-	1,000
Total Discretionary Appropriation.....	<u>1,142,023</u>	<u>+135,044</u>	<u>+12,398</u>	<u>+213,593</u>	<u>1,503,058</u>
Endowment Funds:					
Native American Institutions Endowment Interest Fund.....	(4,946)	(139)	(6)	(-474)	(4,605)
Hispanic -Serving Ag. Colleges and Universities Endowment Fund.....	-	-	-	10,000	10,000
Native American Institutions Endowment Fund.....	11,880	-	-	-	11,880
Total Endowment Funds.....	<u>11,880</u>	<u>-</u>	<u>-</u>	<u>10,000</u>	<u>21,880</u>
Total Funds.....	<u>1,153,903</u>	<u>+135,044</u>	<u>+12,398</u>	<u>+223,593</u>	<u>1,524,938</u>

NATIONAL INSTITUTE OF FOOD AND AGRICULTURE

Project Statement

(On basis of adjusted appropriations)
(Dollars in thousands and Staff Years (SYs))

Program	2013 Actual		2014 Actual		2015 Estimate		Inc. or Dec.		2016 Estimate	
	Amount	SYs	Amount	SYs	Amount	SYs	Amount	SYs	Amount	SYs
Discretionary Appropriations:										
Hatch Act.....	\$218,577	-	\$243,701	-	\$243,701	-	-	-	\$243,701	-
Competitive Capacity Awards Program.....	-	-	-	-	-	-	+\$12,500	-	12,500	-
McIntire-Stennis Cooperative										
Forestry Research Program.....	30,459	-	33,961	-	33,961	-	-	-	33,961	-
Evans-Allen Payments to 1890										
Colleges and Tuskegee University.....	47,074	-	52,485	-	52,485	-	+5,515	-	58,000	-
Competitive Capacity Awards Program.....	-	-	-	-	-	-	+2,500	-	2,500	-
Animal Health and Disease										
Research, Section 1433.....	3,699	-	4,000	-	4,000	-	-4,000	-	-	-
Special Research Grants										
Other Special Research Grants.....	2,775	-	2,700	-	2,700	-	-2,700	-	-	-
Agroclimatology (Global Change).....	1,299	-	1,405	-	1,405	-	-	-	1,405	-
Total Special Research Grants.....	4,074	-	4,105	-	4,105	-	-2,700	-	1,405	-
Improved Pest Control										
Expert IPM Decision Supp. System.....	142	-	-	-	-	-	-	-	-	-
Integrated Pest Management.....	2,185	-	-	-	-	-	-	-	-	-
Minor Crop Pest Mgmt, IR-4.....	11,018	-	11,913	-	11,913	-	-	-	11,913	-
Pest Management Alternatives.....	1,297	-	-	-	-	-	-	-	-	-
Total Improved Pest Control.....	14,642	-	11,913	-	11,913	-	-	-	11,913	-
Innovation Institutes.....										
Food & Ag Res Program for Military Vets.....	-	-	-	-	-	-	+80,000	-	80,000	-
Critical Agricultural Materials Act of 1984....	1,000	-	1,081	-	-	-	+2,500	-	2,500	-
Alfalfa Forage and Research Program.....	-	-	1,350	-	1,350	-	-1,350	-	-	-
Aquaculture Centers, Section 1475.....	3,699	-	4,000	-	4,000	-	-	-	4,000	-
Sustainable Agriculture.....	13,384	-	22,667	-	22,667	-	-	-	22,667	-
1994 Institutions Research Program.....	1,666	-	1,801	-	1,801	-	+113	-	1,914	-
Supplemental and Alternative Crops, Section 1473D.....										
Capacity Building for Non-Land Grant	763	-	825	-	825	-	-825	-	-	-
Colleges of Agriculture.....	4,162	-	4,500	-	4,500	-	-4,500	-	-	-
Agriculture and Food Research Initiative.....	275,569	-	316,409	-	325,000	-	+125,000	-	450,000	-
Farm Business Management and Benchmarking Program.....										
Sun Grant Program.....	1,341	-	1,450	-	1,450	-	-1,450	-	-	-
Sun Grant Program.....	2,312	-	2,500	-	2,500	-	-2,500	-	-	-
Federal Administration (direct appropriation):										
Grants Management Systems.....	7,242	-	7,830	-	7,830	-	+2,000	-	9,830	-
GSA Rent and DHS Security Expenses.....	-	-	-	-	6,311	-	-6,311	-	a/	-
Other General Administration.....	13,292	-	14,108	-	14,192	-	+6,233	-	20,425	-
Ag in the Classroom.....	509	-	552	-	552	-	-552	-	-	-
Total Federal Administration.....	21,043	-	22,490	-	28,885	-	+1,370	-	30,255	-

a/ Funds for rent and security costs are shifted to the General Administration funding line in 2016.

NATIONAL INSTITUTE OF FOOD AND AGRICULTURE

Project Statement

(On basis of adjusted appropriations)
(Dollars in thousands and Staff Years (SYs))

Program	2013 Actual		2014 Actual		2015 Estimate		Inc. or Dec.		2016 Estimate	
	Amount	SYs	Amount	SYs	Amount	SYs	Amount	SYs	Amount	SYs
Higher Education:										
Inst. Challenge, Multicultural Scholars, and Graduate Fellowship Grants.....	8,324	-	9,000	-	9,000	-	-9,000	-	-	-
1890 Institution Capacity Building Grants.....	17,883	-	19,336	-	19,336	-	+1,074	-	20,410	-
Hispanic Serving Institutions Education Grants Program.....	8,526	-	9,219	-	9,219	-	-	-	9,219	-
Tribal Colleges Education Equity Grants Program.....	3,084	-	3,439	-	3,439	-	+215	-	3,654	-
Secondary/2-Year Post Secondary.....	832	-	900	-	900	-	-900	-	-	-
Veterinary Medical Services Act.....	4,430	-	4,790	-	5,000	-	-	-	5,000	-
Alaska Native-serving and Native Hawaiian-Serving Institutions.....	2,954	-	3,194	-	3,194	-	-	-	3,194	-
Grants for Insular Areas.....	1,526	-	1,800	-	2,000	-	-200	-	1,800	-
Total Higher Education Grants.....	47,559	-	51,678	-	52,088	-	-8,811	-	43,277	-
Endowment Funds:										
Native American Institutions Endowment Fund.....	(11,880)	-	(11,880)	-	(11,880)	-	-	-	(11,880)	-
Native American Institutions Endowment - Interest Earned.....	4,946	-	5,085	-	5,079	-	-474	-	4,605	-
Hispanic Serving Agricultural Colleges and Universities.....	-	-	-	-	-	-	(10,000)	-	(10,000)	-
Total Endowment Fund.....	4,946	-	5,085	-	5,079	-	-474	-	4,605	-
Smith-Lever Sections 3(b) and 3(c).....	271,269	-	300,000	-	300,000	-	-	-	300,000	-
<i>Competitive Capacity Awards Program</i>	-	-	-	-	-	-	+4,000	-	4,000	-
1890 Colleges, Tuskegee University & WV State University.....	39,299	-	43,920	-	43,920	-	+4,430	-	48,350	-
<i>Competitive Capacity Awards Program</i>	-	-	-	-	-	-	+1,000	-	1,000	-
Smith-Lever, Section 3d Programs:										
AgrAbility/Farm Safety.....	4,254	-	4,610	-	4,610	-	-	-	4,610	-
Expanded Food and Nutrition Education Progi	62,682	-	67,934	-	67,934	-	-	-	67,934	-
Federally Recognized Tribes Extension.....	2,804	-	3,039	-	3,039	-	-	-	3,039	-
New Technologies for Ag Extension.....	1,430	-	1,550	-	1,550	-	+200	-	1,750	-
Pest Management.....	9,151	-	-	-	-	-	-	-	-	-
Sustainable Agriculture.....	4,333	-	-	-	-	-	-	-	-	-
Children, Youth, and Families at Risk.....	7,012	-	8,395	-	8,395	-	-	-	8,395	-
Total Section 3d Programs.....	91,666	-	85,528	-	85,528	-	+200	-	85,728	-

NATIONAL INSTITUTE OF FOOD AND AGRICULTURE

Project Statement

(On basis of adjusted appropriations)
(Dollars in thousands and Staff Years (SYs))

Program	2013 Actual		2014 Actual		2015 Estimate		Inc. or Dec.		2016 Estimate	
	Amount	SYs	Amount	SYs	Amount	SYs	Amount	SYs	Amount	SYs
Rural Health and Safety Education.....	1,384	-	1,500	-	1,500	-	-1,500	-	-	-
1890 Facilities Grants (Sec. 1447).....	18,205	-	19,730	-	19,730	-	+1,973	-	21,703	-
Grants to Youth Organizations.....	673	-	-	-	-	-	+1,000	-	1,000	-
Food Safety Outreach.....	-	-	-	-	2,500	-	+2,500	-	5,000	-
Renewable Resources Extension Act (RREA)	3,414	-	4,060	-	4,060	-	-	-	4,060	-
Extension Services at the 1994 Institutions....	3,979	-	4,446	-	4,446	-	+278	-	4,724	-
Food Animal Residue Avoidance Database....	923	-	1,250	-	1,250	-	-1,250	-	-	-
Women and Minorities in STEM Fields.....	369	-	400	-	400	-	-400	-	-	-
Food Agriculture Defense Initiative (Homeland Security).....	5,525	-	6,680	-	6,700	-	-	-	6,700	-
Water Quality.....	4,152	-	4,500	-	-	-	-	-	-	-
Crop Protection/Pest Management.....	-	-	17,143	-	17,200	-	-	-	17,200	-
Regional Pest Management Centers.....	3,690	-	-	-	-	-	-	-	-	-
Organic Transition Program.....	3,690	-	4,000	-	4,000	-	-	-	4,000	-
Methyl Bromide Transition Program.....	1,842	-	1,996	-	2,000	-	-2,000	-	-	-
Regional Rural Development Centers Program.....	921	-	998	-	1,000	-	-	-	1,000	-
Subtotal, Discretionary Appropriations	1,146,970	-	1,282,152	-	1,294,544	-	+213,119	-	1,507,663	-
Mandatory Appropriations:										
Food Insecurity Nutrition Incentive.....	-	-	35,000	-	-	-	+20,000	-	20,000	-
Biomass R&D Initiative.....	-	-	3,000	-	2,781	-	+219	-	3,000	-
Risk Management Education Program.....	4,745	-	4,640	-	4,635	-	+365	-	5,000	-
Beginning Farmers and Ranchers.....	-	-	20,000	-	18,540	-	+1,460	-	20,000	-
Emergency Citrus Disease Research.....	-	-	25,000	-	23,175	-	+1,825	-	25,000	-
Specialty Crop Grant Program.....	-	-	55,000	-	50,985	-	+4,015	-	55,000	-
Organic Research and Extension Init.....	-	-	20,000	-	18,540	-	+1,460	-	20,000	-
Total Adjusted Appropriation.....	1,151,715	-	1,444,792	-	1,413,200	-	+242,463	-	1,655,663	-
Rescissions, Transfers, and Seq. (Net).....	94,467	-	360	-	9,344	-	-9,344	-	-	-
Total Appropriation.....	1,246,182	-	1,445,152	-	1,422,544	-	+233,119	-	1,655,663	-
Transfers In:										
Congressional Relations.....	102	-	102	-	-	-	-	-	-	-
Total	102	-	102	-	-	-	-	-	-	-
Rescission.....	-33,470	-	-	-	-	-	-	-	-	-
Sequestration.....	-60,997	-	-360	-	-9,344	-	+9,344	-	-	-
Balance Available, SOY.....	204,187	-	244,767	-	393,958	-	-393,958	-	-	-
Recoveries, Other (Net).....	37,915	-	14,642	-	-	-	-	-	-	-
Total Available.....	1,393,919	-	1,704,303	-	1,807,158	-	-151,495	-	1,655,663	-
Lapsing Balances.....	-3,012	-	-38	-	-	-	-	-	-	-
Balance Available, EOY.....	-244,767	-	-393,958	-	-	-	-	-	-	-
Total Obligations.....	1,146,140	387	1,310,307	380	1,807,158	410	-151,495	+7	1,655,663	417

NATIONAL INSTITUTE OF FOOD AND AGRICULTURE
RESEARCH AND EDUCATION
Project Statement
Obligations Detail and Staff Years (SYs)
(Dollars in Thousands)

Program	2013 Actual		2014 Actual		2015 Estimate		Inc. or Dec.		2016 Estimate	
	Amount	SYs	Amount	SYs	Amount	SYs	Amount	SYs	Amount	SYs
Discretionary Obligations:										
Hatch Act.....	\$216,417	-	243,681	-	\$243,701	-	-	-	\$243,701	-
<i>Competitive Capacity Awards Program</i>	-	-	-	-	-	-	+\$12,500	-	12,500	-
McIntire Stennis-Cooperative Forestry Research Program.....	30,459	-	33,961	-	33,961	-	-	-	33,961	-
Evans Allen-Payments to 1890 Colleges and Tuskegee University.....	47,074	-	52,485	-	52,485	-	+5,515	-	58,000	-
<i>Competitive Capacity Awards Program</i>	-	-	-	-	-	-	+2,500	-	2,500	-
Animal Health and Disease Research, Section 1433.....	3,699	-	4,000	-	4,000	-	-4,000	-	-	-
Special Research Grants:										
Other Special Research Grants.....	2,775	-	2,700	-	2,700	-	-2,700	-	-	-
Global Change, UV-Monitoring.....	1,299	-	1,405	-	1,405	-	-	-	1,405	-
Total Special Research Grants.....	4,074	-	4,105	-	4,105	-	-2,700	-	1,405	-
Improved Pest Control										
Expert IPM Decision Supp. System.....	142	-	-	-	-	-	-	-	-	-
Integrated Pest Management.....	2,185	-	-	-	-	-	-	-	-	-
Minor Crop Pest Mgmt, IR-4	11,018	-	11,913	-	11,913	-	-	-	11,913	-
Pest Management Alternatives.....	1,297	-	-	-	-	-	-	-	-	-
Total Improved Pest Control	14,642	-	11,913	-	11,913	-	-	-	11,913	-
Innovation Institutes	-	-	-	-	-	-	+80,000	-	80,000	-
Food/Ag. Resiliency for Military Vets.....	-	-	-	-	-	-	+2,500	-	2,500	-
Critical Agricultural Materials Act of 1984.....	1,981	-	1,095	-	25	-	-25	-	-	-
Alfalfa Forage and Range Program.....	-	-	1,350	-	1,350	-	-1,350	-	-	-
Aquaculture Centers, Section 1475.....	3,699	-	4,000	-	4,000	-	-	-	4,000	-
Sustainable Agriculture.....	13,384	-	22,667	-	22,667	-	-	-	22,667	-
1994 Research Program.....	1,366	-	1,189	-	3,598	-	-1,684	-	1,914	-
Supplemental and Alternative Crops, Section 1473D.....	763	-	825	-	825	-	-825	-	-	-
Capacity Building for Non-Land Grant Colleges of Agriculture.....	4,162	-	180	-	8,820	-	-8,820	-	-	-
Agriculture and Food Research Initiative.....	270,383	-	286,885	-	583,846	-	-133,846	-	450,000	-
Farm Business Management and Benchmarking Program.....	1,341	-	1,450	-	1,450	-	-1,450	-	-	-
Sun Grant Program.....	2,312	-	2,500	-	2,500	-	-2,500	-	-	-
Federal Administration (direct appropriation):										
Grants Management Systems.....	7,242	-	7,830	-	7,830	-	+2,000	-	9,830	-
GSA Rent and DHS Security Expenses.....	-	-	-	-	6,311	-	-6,311	-	-	-
Other General Administration.....	13,340	-	14,156	-	14,192	-	+6,233	-	20,425	-
Ag in the Classroom.....	509	-	552	-	552	-	-552	-	-	-
Total Federal Administration.....	21,091	-	22,538	-	28,885	-	+1,370	-	30,255	-

NATIONAL INSTITUTE OF FOOD AND AGRICULTURE
RESEARCH AND EDUCATION
Project Statement
Obligations Detail and Staff Years (SYs)
(Dollars in Thousands)

Program	2013 Actual		2014 Actual		2015 Estimate		Inc. or Dec.		2016 Estimate	
	Amount	SYs	Amount	SYs	Amount	SYs	Amount	SYs	Amount	SYs
Higher Education:										
Inst. Challenge, Multicultural Scholars, and Graduate Fellowship Grants.....	8,683		10,210		13,465		-13,465		-	
1890 Institution Capacity Building Grants	18,225		20,504		19,382		+1,028		20,410	
Hispanic Serving Institutions Education Grants Program.....	8,526		9,219		9,219		-		9,219	
Tribal Colleges Ed Equity Grants Program.....	3,084		3,439		3,439		+215		3,654	
Secondary/2-Year Post Secondary.....	832		900		900		-900		-	
Veterinary Medical Services Act.....	251		1,801		12,417		-7,417		5,000	
Alaska Native-serving and Native Hawaiian-Serving Institutions.....	2,954		2,954		3,194		-		3,194	
Grants for Insular Areas.....	1,526		1,800		2,000		-200		1,800	
Total Higher Education Grants	44,081		50,827		64,016		-20,739		43,277	
Endowment Funds:										
Native American Institutions										
Endowment Fund (NAIEF).....	(11,880)		(11,880)		(11,880)		-		(11,880)	
NAIEF - Endowment - Interest Earned.....	7,211		5,580		6,454		-1,849		4,605	
Hispanic Serving Agricultural Colleges and Universities.....	-		-		-		(10,000)		(10,000)	
Total Endowment Fund.....	7,211		5,580		6,454		-1,849		4,605	
Smith-Lever Sections 3(b) and 3(c).....	270,417	-	299,982	-	300,000	-	-	-	300,000	-
<i>Competitive Capacity Awards Program.....</i>	-	-	-	-	-	-	+4,000	-	4,000	-
1890 Colleges, Tuskegee Univ. & WV State Univ.....	39,299	-	43,920	-	43,920	-	+4,430	-	48,350	-
<i>Competitive Capacity Awards Program.....</i>	-	-	-	-	-	-	+1,000	-	1,000	-
Smith-Lever, Section 3d Programs:										
Farm Safety and Youth Farm Safety Education and Certification.....	4,254	-	4,610	-	4,610	-	-	-	4,610	-
Expanded Food and Nutrition Education Program.....	62,682	-	67,934	-	67,934	-	-	-	67,934	-
Federally Recognized Tribes Extension.....	2,804	-	3,039	-	3,039	-	-	-	3,039	-
New Technologies for Ag Extension.....	1,430	-	1,550	-	1,550	-	+200	-	1,750	-
Pest Management.....	9,151	-	-	-	-	-	-	-	-	-
Sustainable Agriculture.....	4,333	-	-	-	-	-	-	-	-	-
Youth at Risk.....	7,012	-	8,395	-	8,395	-	-	-	8,395	-
Total Section 3d Programs.....	91,666	-	85,528	-	85,528	-	+200	-	85,728	-

NATIONAL INSTITUTE OF FOOD AND AGRICULTURE
RESEARCH AND EDUCATION
Project Statement
Obligations Detail and Staff Years (SYs)
(Dollars in Thousands)

Program	2013 Actual		2014 Actual		2015 Estimate		Inc. or Dec.		2016 Estimate	
	Amount	SYs	Amount	SYs	Amount	SYs	Amount	SYs	Amount	SYs
Rural Health and Safety Education.....	1,384	-	1,500	-	1,500	-	-1,500	-	-	-
1890 Facilities Grants (Sec. 1447).....	17,752	-	2,901	-	48,935	-	-27,232	-	21,703	-
Grants to Youth Organizations.....	673	-	-	-	-	-	+1,000	-	1,000	-
Food Safety Outreach Program	-	-	-	-	2,500	-	+2,500	-	5,000	-
Renewable Resources Extension Act (RREA).....	3,414	-	4,060	-	4,060	-	-	-	4,060	-
Extension Services at the 1994 Institutions.....	3,979	-	4,446	-	4,446	-	+278	-	4,724	-
Food Animal Residue Avoidance Database.....	923	-	1,250	-	1,250	-	-1,250	-	-	-
Women and Minorities in STEM Fields.....	369	-	400	-	400	-	-400	-	-	-
Food Agriculture Defense Initiative.....	-	-	-	-	-	-	-	-	-	-
(Homeland Security).....	5,543	-	6,634	-	6,967	-	-267	-	6,700	-
Water Quality.....	4,152	-	4,500	-	-	-	-	-	-	-
Crop Protection/Pest Management.....	-	-	17,143	-	17,200	-	-	-	17,200	-
Food Safety.....	-	-	-	-	-	-	-	-	-	-
Regional Pest Management Centers.....	3,690	-	-	-	-	-	-	-	-	-
Organic Transition Program.....	3,690	-	4,000	-	4,000	-	-	-	4,000	-
Methyl Bromide Transition Program.....	1,842	-	1,996	-	2,000	-	-2,000	-	-	-
Regional Rural Development	-	-	-	-	-	-	-	-	-	-
Centers Program.....	921	-	998	-	1,000	-	-	-	1,000	-
International Science and Education Grants Program.....	-	-	-	-	383	-	-383	-	-	-
Subtotal, Discretionary Obligations.....	1,137,853	-	1,230,489	-	1,602,690	-	-95,027	-	1,507,663	-
Mandatory Appropriations:										
Food Insecurity Nutrition Incentive Program.....	-	-	44	-	34,956	-	-14,956	-	20,000	-
Biomass R&D Initiative.....	3,532	-	41	-	8,451	-	-5,451	-	3,000	-
Risk Management Education Program.....	4,755	-	4,644	-	4,821	-	+179	-	5,000	-
Beginning Farmers and Ranchers.....	-	-	-	-	38,540	-	-18,540	-	20,000	-
Emergency Citrus Disease Research.....	-	-	89	-	48,175	-	-23,175	-	25,000	-
Specialty Crop Grant Program.....	-	-	55,000	-	50,985	-	+4,015	-	55,000	-
Organic Research and Extension Initiative.....	-	-	20,000	-	18,540	-	+1,460	-	20,000	-
Subtotal, Mandatory Obligations.....	8,287	-	79,818	-	204,468	-	-56,468	-	148,000	-
Total Obligations	1,146,140	387	1,310,307	380	1,807,158	410	-151,495	+7	1,655,663	417
Lapsing Balances.....	3,012	-	38	-	-	-	-	-	-	-
Balance Available, End of Year.....	244,767	-	393,958	-	-	-	-	-	-	-
Total Available	1,393,919	387	1,704,303	380	1,807,158	410	-151,495	+7	1,655,663	417
Transfers In (Congressional Relations).....	-102	-	-102	-	-	-	-	-	-	-
Rescission.....	33,470	-	-	-	-	-	-	-	-	-
Sequestration.....	60,997	-	360	-	9,344	-	-9,344	-	-	-
Balance Available, Start of Year.....	-204,187	-	-244,767	-	-393,958	-	+393,958	-	-	-
Recoveries, Other (Net).....	-37,915	-	-14,642	-	-	-	-	-	-	-
Total Appropriation	1,246,182	387	1,445,152	380	1,422,544	410	233,119	+7	1,655,663	417

NATIONAL INSTITUTE OF FOOD AND AGRICULTURE

Justification of Increases and Decreases

NIFA research, education, and extension activities support all USDA Strategic Goals.

The activities also support the USDA Research, Education and Economics Mission Area Action Plan goals. Goals include:

- Goal 1. Local and Global Food Supply and Security;
- Goal 2. Responding to Climate and Energy Needs;
- Goal 3. Sustainable Use of Natural Resources;
- Goal 4. Nutrition and Childhood Obesity;
- Goal 5. Food Safety;
- Goal 6. Education and Science Literacy; and
- Goal 7. Rural Prosperity/Rural-Urban Interdependence.

In addition to the activities and functions specifically described in the budget request, current year and budget year base funds will be used to carry out activities and functions consistent with the full range of authorities and activities delegated to the agency.

1. An increase of \$125,000,000 for Agriculture and Food Research Initiative (AFRI) (\$325,000,000 available in 2015) as follows:

The AFRI program supports the creation, delivery, and application of new knowledge in a broad range of agriculturally relevant areas including food production, farm efficiency and profitability, ranching, renewable energy, management and stewardship of natural resources, adapting to and mitigating the impacts of climate change, forestry, aquaculture, rural communities and entrepreneurship, human nutrition, food safety, social sciences, rural human ecology, biotechnology, and conventional breeding. Program activities support all the REE Action Plan Goals.

NIFA's priority for 2016 is to promote a holistic approach to ensure that public, plant, animal, environmental, and economic health of our nation are protected in the context of the burgeoning population pressures, need to ensure food security while adapting to variable climate, protecting our nation's natural resources, and ensuring public health and well-being. The 2016 Budget seeks to increase AFRI funding by \$125 million over the 2015 enacted level.

The AFRI program supports research, education, and extension in the six Farm Bill program priorities: plant health and production and plant products; animal health and production and animal products; food safety, nutrition, and health; bioenergy, natural resources, and environment; agriculture systems and technology; and agriculture economics and rural communities. Funding at the \$450 million level will support new initiatives on Pollinator Health, Antimicrobial Resistance, and Feedstocks for Biobased Products, along with increased funding for the AFRI Education and Literacy Initiative and provide partial support for increased funding of fundamental research in the AFRI Foundational Program. Base funding will support new initiatives on Phenomics and the Food Animal and Plant Microbiome, as well as provide additional increased funding for the Foundational Program.

Fundamental scientific research is supported through AFRI's Foundational Program, and focused problem-solving efforts are supported through various Challenge Area Programs. The Foundational Program will continue to be organized along the lines of the six Farm Bill priority areas listed previously, along with the Exploratory Research Grants (ERG) and Critical Agricultural Research and Extension (CARE) programs. Additional high-priority science will be supported in collaboration with other Federal science agencies under the AFRI Interagency Programs.

The Challenge Area Programs include: Food Security; Water for Agriculture; Sustainable Bioenergy Production; Climate Variability and Change; Childhood Obesity Prevention; and Food Safety. With base funding, existing grants in all Challenge Areas made in previous years will be supported, and will also provide opportunities for new grants.

The base funding request of \$325 million will support continuing AFRI priorities, along with new agriculture and health initiatives in the areas of Plant and Animal Breeding, Phenomics, and the Food Animal and Plant Microbiome. The additional \$125 million requested in the 2016 Budget will be used primarily to support new agriculture-and-health initiatives in the areas of Pollinator Health and Antimicrobial Resistance, and Feedstocks for Biobased Products.

Of the \$125 million additional funding requested in the 2016 Budget, NIFA proposes to use \$33.5 million (appropriated funds) to fund new awards on Antimicrobial Resistance and \$27 million (appropriated funds) for new awards to address Pollinator Health. The remaining \$64.4 million will be used to increase support for new awards in Challenge Area Programs (primarily in the Water for Agriculture and Climate Variability and Change programs), to increase support for the AFRI Education and Literacy Initiative, and to increase funding for the Foundational Program. All of these priorities are congruent with stakeholder priorities and requests.

As part of the President's Government-wide pollinator initiative and in response to a number of studies and calls for action, NIFA's **Pollinator Health Initiative** will support projects to address biological, environmental, and management factors contributing to the wide-scale decline of honey bees and other pollinators. Of the additional requested funds, \$27 million will be used to establish this initiative in the Food Security Challenge Area and the Foundational Program under a 70 percent and 30 percent split of the funds, respectively. This Initiative will promote problem solving partnerships between commodity groups that depend on bees and other pollinators to pollinate their crops, pollination service providers, honey-producers, and public and private sector researchers. The expectation is that new discoveries will promote pollinator health, mitigate pollinator and economic losses, and reduce harm to the environment. This initiative will enable both pollinator and crop production industries to minimize economic losses and harm to the environment, and ensure healthy pollinator populations, robust cropping systems, and healthy agroecosystems.

The goal of the **Antimicrobial Resistance Initiative** is to develop, refine, and disseminate science-based knowledge about animal health management and production practices that can eliminate the threat and risk of antimicrobial resistance, as articulated in the President's executive order on combating antibiotic resistant bacteria. Of the additional funding requested, \$33.5 million will be used to establish this initiative allocating \$31.9 million to the Food Safety Challenge Area and \$1.6 million to the Foundational Program. Several recent studies undertaken by the National Research Council and others have shown that antimicrobial resistance is a global public health issue that is impacted by both human and non-human antimicrobial usage. The increased focus by NIFA as part of this initiative on antimicrobial resistance will promote the development of sustainable and integrated food safety systems and result in the reduction of public health risks along the entire food-chain, from primary producer to the consumer. Biological concerns to be addressed include the need to understand biomolecular pathways and interactions from the individual mammalian host to the animal-human population scales. Mathematically, the scales of gene translocation and transmission event rates and complex, dynamic, multi-scalar, quantitative epidemiologic risk modeling will also be addressed. Antimicrobial resistance is a multi-faceted problem that demands a multi-pronged approach to significantly mitigate this complex problem. The desired outcome would include reduction and mitigation of antimicrobial resistance, as well as the reduction of overall use of antimicrobials along the food chain to reduce public health risks associated with antimicrobial overuse, while ensuring the availability of tools necessary for food production.

The **Feedstocks for Biobased Products Initiative** is designed to reduce the national dependence on foreign oil through the production of sustainable bioenergy and advance a sustainable bioeconomy through agricultural systems that provide the high quality feedstocks for biobased products. From within the \$33.476 million funding requested for AFRI, \$29 million will be allocated for new awards under the

Bioenergy Challenge Area to achieve the goals of the Feedstocks for Biobased Products Initiative for research or integrated activities focused on the development and sustainable production of regionally-appropriate biomass feedstocks for the production of non-food biobased products, chemical intermediates, or alternative jet fuel. In addition, funds in the challenge area will be provided for analysis of related federal and state economic, environmental, and other policies and evaluate their impact on the feedstock supply chain. The Initiative will also include focused educational and extension activities that provide the emerging bioeconomy with a new workforce that is skilled and experienced in a multidisciplinary and problem-solving framework, knowledgeable of the bioeconomy value chain, and trained in a wide range of technical, educational, socio-economic, and scientific competencies to meet this demand. This initiative contributes knowledge and practice for a healthy environment and contributes to a healthy biobased economy following the President's National Bioeconomy Blueprint.

Impacts Climate Variability and Change: As part of the implementation of the President's Climate Action Plan, NIFA will support scientific research, extension, and educational projects to enhance food security, economic viability, ecosystem goods and services and create resilient and sustained agroecosystems under climate disruptions. These projects will optimize on-farm adaptive capacities and carbon sequestration to ensure public, plant, animal, environmental, and economic health.

NIFA's Climate priority will focus on **Climate and Land Use** to understand the patterns, processes, and consequences of changes in land use, land condition, and land cover at multiple spatial and temporal scales, resulting from the interactions between climate variability, human activities, and the landscape mosaic comprising natural and production systems. Among other issues, this program will focus on the role of climate on fire disturbance (environmental health); changes in management activities, such as intensifying biofuel development and irrigated agriculture (plant and animal health); food and national security implications (human health); the vulnerability of rural communities to climate change (community health); and the role of adaptation in the country's rural development process (economic health) based on an understanding of where and how land use will affect rural households and whole communities (ecosystems health).

NIFA's **Water for Agriculture** program will focus on developing solutions for water management that could potentially impact health, food, climate, energy, and the environment. This program will address critical water resources issues such as drought, excess soil moisture, flooding, availability, and quality and quantity in an agricultural context. Ongoing drought conditions in the western and southwestern U.S., as well as drought and excess moisture conditions in the southern and eastern U.S. make continued funding of this area critical. Significant variations from the historical rate of water supply, demand, and quality are projected to have major impacts on rural, urban, and peri-urban agricultural, horticultural, forest, and rangeland production systems. Funding will be used to develop technologies and tools for a broad group of stakeholders to sustain and improve water availability to achieve healthy environments and ecosystems, plants and animals, humans and communities, and economies. NIFA's systems approach links social, economic, and behavioral sciences with biophysical sciences and engineering to address water issues. The overall goal of this program is to increase the array of technological and strategic solutions and enhance our understanding and awareness of factors affecting choices, such as costs, benefits, and trade-offs. A better understanding of the current and new technical possibilities with an assessment of associated the economic and social implications will support decision-making with the appropriate and critical complement of information.

Improving Nutrition and Health: NIFA, in partnership with USDA agencies, will promote nutrition education and obesity prevention strategies and interventions that measurably improve health outcomes among low-income groups.

Obesity is the number one health problem in America. According to the National Health and Nutrition Examination Survey administered by the U.S. Center for Disease Control and Prevention, prevalence rates of overweight and obese children and adolescents has tripled in the past 30 years. Low-income children and adolescents are more likely to be obese than their higher-income counterparts, but the relationship is not consistent across race and ethnic groups. This program will investigate the relationship between food

consumption behaviors and various health outcomes, including those related to obesity and the development of chronic diseases. The program will support development of nutrition education and obesity prevention strategies and interventions that produce measurable improvements in health, obesity, nutrition (food behavior), and physical activity-related outcomes of interest to USDA. The program will focus on populations of greatest risk, including those eligible for USDA nutrition education and food assistance programs, the Supplemental Nutrition Assistance Program, and child nutrition programs.

Foundational Program

Fundamental research in the six Farm Bill priority areas is supported through the AFRI Foundational Program. Discoveries made through research supported by the Foundational Program, in turn, provide the base of knowledge required for subsequent future research, extension and education programs at NIFA (especially those in the AFRI Challenge Areas) that are applied and more focused on solving problems in the food and agricultural sciences. Thus, the Foundational Program is not merely complementary to the Challenge Area programs and Education and Literacy Initiative but, in fact, is essential to their success. Increased funding for the Foundational Program was strongly recommended by the recent review report from the National Research Council (<http://www.nap.edu/catalog/18652/spurring-innovation-in-food-and-agriculture-a-review-of-the>). Funding for the Foundational Program will be increased, partly through allocation of additional funds to AFRI and partly through reallocation of base funds, consistent with both the recommendation of the National Research Council review report and NIFA's prior commitment to increase funding for Foundational research.

The Exploratory Research Grants program will provide support for research projects that develop proof of concept for untested, innovative ideas, especially high risk-high reward work that will lead to significant improvements in U.S. agriculture. The CARE Program supports high-quality research and extension projects that address critical and emerging constraints related to plant and animal production and protection. CARE focuses on short-term issues critical to agricultural production and emphasizes achieving results that can be applied by producers.

Within foundational, challenge and/or interagency programs, the following may be program area priorities:

The Plant and Animal Breeding Initiative will help improve plant varieties and animal breeds that could result in better human health, help producers adapt to climate variability, and increase producer profitability. This Initiative will transform plant and animal breeding methods by developing innovative breeding tools and strategies that emphasize local adaptation. This will help conserve genetic diversity among agricultural animals and plants, as genetic diversity is rapidly decreasing due to current breeding practices that do not consider local adaptation. This effort will significantly improve productivity and profitability of the U.S. agriculture, and lead to long-term sustainability of healthy crops and livestock.

The Plant and Animal Phenomics Initiative will support the development and use of high-throughput genomic technologies and advanced computational informatics to ultimately produce varieties and breeds with improved resilience to climate change, drought, and extreme weather; increased protection of agricultural crops and livestock from disease and pests; and enhanced nutritional composition resulting in improved human health.

The Food Animal Microbiome Initiative will promote the adoption of science-based solutions that enhance feed efficiency of agricultural animals, reduce animal disease, increase food safety, identify alternatives to current antimicrobials and anthelmintics used in agriculture, reduce the environmental footprint of animal agriculture, and improve animal well-being. Based on previous productive and fruitful collaborations between NIFA, the National Institutes of Health (NIH), and the National Science Foundation (NSF), it is expected that NIFA Food Animal Microbiome program funds would be significantly leveraged to address the needs of food animals by building on the NIH Human Microbiome Project's repositories and tools, as well as NSF's current microbiome portfolio. Initiating a program for the Food Animal Microbiome to understand the roles of beneficial and pathogenic organisms in domestic animals is an innovative,

cutting-edge approach to maintaining healthy animals though substantially improve sustainable farm management practices.

The **Plant Microbiome Initiative**, also referred to as the phytobiome, is a novel program that focuses on the network of interaction of microbes, plants, and insects and how they compete and cooperate to affect crop health and crop yields. The program focuses scientific investigation into the entire microbial community (bacteria, viruses, fungi, oomycetes and nematodes) and their arthropods vectors that are associated with all plant parts, including root zone, leaf surface, and the plant itself. Much has been invested in understanding the interactions between specific microbial pathogens and host plants and between specific beneficial microbes (e.g. nitrogen-fixing bacteria) and host plants. A comparison of the microbial communities in healthy plants to the microbial communities associated with diseased plants may provide valuable information about what causes the disease and, ultimately, how it might be controlled. Recent advances in biotechnology, especially in microbial genomics and plant genomics, enable a higher level and more powerful analysis of the composition, function, and activity of plant-associated microorganisms. Over the long term, the Plant Microbiome Initiative will lead to practical advances, such as decreased potential for food pathogens to contaminate fresh fruits and vegetables, increased effectiveness of biological control agents, and new ways of combating antimicrobial resistance due to better understanding of how microorganisms attack other microorganisms and defend themselves against such attacks. This initiative addresses multiple human, plant, and environmental health issues at the microbial level.

Strengthening Education and Literacy: The nation has experienced unprecedented growth in jobs in the food, agricultural, natural resources, and human sciences sectors of the economy; and there has been a concurrent shortfall in the number of potential employees. To address this latter situation, NIFA proposes to invest resources within AFRI to enhance education and training by supporting efforts in secondary schools through undergraduate and post-graduate programs, particularly those serving under-represented populations.

The President's 2015 Budget challenged federal agencies to focus on reducing fragmentation of STEM education, while funding their most effective programs to increase the number of undergraduate degrees awarded by one million in the next decade. To support this goal, NIFA's 2016 priority is focused on building on the agency's existing successful programs, and supporting the new initiatives proposed by the White House Office of Science and Technology Policy. Of the increased funding for the Education and Literacy Initiative, 40 percent will be used to maintain support for predoctoral and postdoctoral fellowships at 2.5 percent of AFRI appropriation, as required by the 2008 Farm Bill.

The **Education and Literacy Initiative** has the following three goals:

- Develop pathways to identify and replicate best practices to engage youth in STEM fields within the food, agricultural, natural resources, and human sciences. This initiative will focus on immersive learning experiences in non-formal educational programs to help secondary school teachers identify and integrate successful lessons in their classes. Grants to develop pathways will enhance collaboration among secondary schools and with non-governmental organizations involved with agriculture in secondary education.
- Enhance capacity of institutions to produce graduates with skills needed to address the new challenges of the 21st Century in food, agricultural, natural resources, and human sciences. Priority will be placed on promoting applied technical and leadership skills (e.g., internships, practicums, experiential learning). Grant opportunities to enhance capacity will be offered to all educational institutions, including community colleges and those providing a 4-year degree in food, agricultural, natural resources, and human sciences by offering research and extension experiential learning opportunities for undergraduates. The institutions may partner with others including state agencies, private agribusinesses, and other federal agencies.
- Advance science by supporting graduate and post-graduate education to address the current skills needed in the food, agricultural, natural resources, and human sciences disciplines. Data on current enrollment and degrees granted clearly indicate a continuing lag in the production of a sufficient

number and quality of graduates. Grants to advance science are given directly to students to fund their education, research, and living expenses.

NIFA will collaborate with all federal agencies, especially NSF, Smithsonian Institution, and the Department of Education, to reduce fragmentation in STEM education as applied to agriculture.

Commodity Board research

In meeting the Commodity Board provision of the 2014 Farm Bill, NIFA will be soliciting proposals from National and State Commodity Boards on topic areas for potential inclusion in FY 2016 AFRI Requests for Applications (RFA). The proposals received will be evaluated by NIFA for adherence to the six Farm Bill priorities and for complementing existing research, education and extension priorities of AFRI. As required by the Farm Bill, NIFA will provide 100 percent matching support from AFRI funds for competitively-selected awards supported under this provision.

2. An increase of \$5,515,000 for Capacity/Formula Programs (Research)(\$330,147,000 available in 2015) as follows:

a. Sustained support for Hatch Act capacity/formula (\$243,701,000 available in 2015) as follows:

Hatch base capacity/formula funds are used to support continuing agricultural research at 1862 Land-Grant Institutions, and, State Agricultural Experiment Stations. Funds appropriated under this section are used to conduct original research, investigations, and experiments bearing directly on and contributing to the establishment and maintenance of a permanent and effective agricultural industry in the United States. It includes research on the problems of agriculture in its broadest aspects, which serve to develop and improve rural communities and to maximize contribution by agriculture to the welfare of the consumer. Much of the research supported with Hatch funds at the state level is not amenable to be supported by competitive grants and funding from private/corporate interests. For example, plant and animal breeding and genetics needs long term, sustainable support provided by Hatch funds, and cannot be sustained on competitive grants. The innovations supported by Hatch Funds help increase farm incomes, improve health, and enhance the quality of life in local communities and the nation and also enable researchers to become competitive for other sources of funding. Program activities support all the REE Action Plan Goals.

Under each of the four capacity/formula programs for 1862 and 1890 Institutions, the budget also requests a total of \$20 million in funding to support competitive grants with 100 percent matching requirements. Please see program description included under item 3.

b. Sustained support for McIntire-Stennis Cooperative Forestry capacity/formula (\$33,961,000 available in 2015) as follows:

McIntire-Stennis base capacity/formula funds are used to assist grantees in carrying out a program of state forestry research at schools and colleges and developing a trained pool of forest scientists capable of conducting needed forestry research, which include: ecological restoration; catastrophe management; valuing and trading ecological services; energy conservation, biomass energy and bio-based materials development; forest fragmentation; carbon sequestration and climate change; and ways of fostering healthy forests and a globally competitive forest resources sector. Similar to the situation with Hatch funds, much of the research supported with McIntire-Stennis funding is not amenable to support from the private sector or competitive grants. McIntire-Stennis base funds are used to support the eight legislated goals described in the Act and funds are distributed to states based on legislated formula. Program activities support REE Action Plan Goal 3.

c. An increase of \$5,515,000 for Evans-Allen capacity/formula (\$52,485,000 available in 2015) as follows:

Evans-Allen capacity/formula funds are authorized under section 1445 of the National Agricultural Research, Extension, and Teaching Policy Act of 1977 (NARETPA) and are used to support continuing agricultural research at 1890 Land-Grant Universities, including Tuskegee University and West Virginia State University. Base funds are used for: expenses of conducting agricultural research; printing, disseminating the results of such research; administrative planning and direction; and purchase and rental of land and the construction, acquisition, alteration, or repair of buildings necessary for conducting agricultural research. Because of Evans-Allen funding, for example, researchers at Langston University are developing improved peanut genotypes that are higher yielding and more insect and disease resistant. Similarly, the 1890 and 1862 Land-Grant Universities conduct joint research to enhance profits of small farmers and promote economically viable land-use. These research efforts have led to savings of over \$22 million in inputs through the adoption of technology developed through such collaborations.

Increased funding will accommodate Central State University (CSU) as the 19th 1890 land-grant institution and will enable NIFA to reach an audience that is currently underrepresented in its programs. This will allow CSU to build their research, teaching and Extension capacity to support USDA's strategic goals for food, agriculture, natural resource and human sciences without compromising the ability of the existing 1890 Land Grants to continue their effective programming in the other states. The additional funding will result in an increased number of African American students recruited, graduated and employed in science, technology, engineering, and mathematics (STEM) disciplines related to USDA's mission; and address epidemics within minority communities such as adult and childhood obesity and diabetes.

Under each of the four capacity/formula programs for 1862 and 1890 Institutions, the budget also requests a total of \$20 million in funding to support competitive grants with 100 percent matching requirements. Please see program description included under item 3. Program activities support all REE Action Plan Goals.

3. Increase of \$20,000,000 for the Competitive Capacity Awards Program (\$0 available in 2015) as follows:

Capacity funding provides a critical base of support for the national system of Land-Grant Universities, which serve to address problems and challenges faced by our nation's complex food and agricultural sector. Such funding supports efficient, systematic, inclusive, and sustainable collaborations due to its flexibility and continuity. Currently, four major Capacity grant programs provide support for research (Hatch and Evans-Allen) and Extension (Smith-Lever 3(b)&(c) and 1890 Extension) to the 1862 and 1890 Land-Grant Universities, based on a congressionally established formula, after a NIFA merit review and approval of a Plan of Work and annual evaluation of reports as required by the Agricultural Research, Extension, and Education Reform Act of 1998 (AREERA). These funds are invested and matched by the States and local communities to address local, regional, and national problems in food, agriculture, natural resources, nutrition, human sciences, and animal health issues. The nature of work funded by these grants is prioritized based on local and regional needs by the Directors of the Agricultural Experiment Stations at these Land-Grant Universities. Funding for these programs is a top priority for NIFA and its stakeholders.

A total of \$20 million in new Capacity program funding, to be available until expended, in the 2016 budget request will be provided competitively to enhance workforce development needs; advance organizational learning through networks of people, communities, and institutions that generate, share, and maintain knowledge; and improve tactical science research capacity for addressing critical food and agricultural challenges at regional and national scales. This new competitive program funds will be available to the eligible recipients of the Hatch Act, Evans-Allen funding, Smith-Lever 3(b)&(c) Extension, and 1890 Extension services. Requests for proposals from 1862 Universities (\$16.5 million) and 1890 Universities (\$3.5 million) will be offered as competitive Multistate Grants for combined focus on research and extension as well as on education and training to prepare the workforce for strategic areas. The new program will draw the best proposals from the knowledge base of land grant institutions by using a competitive awards systems. Outcomes of these grants must result in regional benefits through the cooperation of two or more States and collaboration at two or more Land-Grant Universities eligible to receive these grants. Each grant will require 100 percent

matching through non-Federal sources. The 2016 budget proposal will include accompanying appropriations language to authorize competitive Capacity funding.

The proposed competitive program for Land-Grant Universities will focus on multi-state coordination as well as common infrastructure and training needs that will build the capacity of these institutions to address long-term research, extension, and workforce objectives. In addition, this program will allow for coordination and cooperation within and across the 1862 and 1890 Land-Grant Universities, while ensuring their distinct, non-overlapping objectives. Priorities for the program will be developed with wide stakeholder input on broad topics of national importance. As a part of the Presidential initiative on pollinator health, \$1.5 million of available funds in 2016 will be dedicated to infrastructure needs related to pollinator health, consistent with the USDA action plan on pollinator health. The focus on knowledge, workforce, and physical infrastructure needs for addressing challenges of national priority will complement the activities supported by NIFA through other programs such as AFRI, SCRI, OREI, and regular Capacity funding. The existing programs invest in research, education, and extension activities that will use the infrastructure and coordination funded through the new program.

This new competitive program will complement existing Capacity programs and competitive programs in addressing national and regional problems in food, agriculture, natural resources, nutrition, human sciences, and animal health through investments in areas such as plant and animal breeding, improved management of crop and livestock production, water, improved nutrition, particularly in underrepresented populations, and food safety. These grants will be included in the NIFA Portfolio Planning and Assessment program evaluation process. Funding will be shared as follows:

<u>Competitive capacity awards program under Capacity Programs</u>	
Hatch Act (1862 land grants)	\$12,500,000
Smith-Lever 3(b&c) (1862 land grants)	\$4,000,000
Evans Allen (1890 Research)	\$2,500,000
1890 Extension	\$1,000,000

Program activities support REE Action Plan Goals 1, 3, and 6.

4. Sustained support for Special Grants (\$13,318,000 available in 2015) as follows:

a. Sustained support for Minor Crop Pest Management, IR-4 (\$11,913,000 available in 2015) as follows:

Base funding will support and enhance the capacity of the IR-4 program to assist growers in obtaining registrations of pesticides for use on specialty food crops (fruits, vegetables, nuts, herbs/spices), ornamental horticulture crops and minor uses on major crops, particularly in light of continued loss of effective pesticides and methods of pest control. The program will invest in efforts to register pesticides that are lower risk but effective and economical and to demonstrate this efficacy to potential users. Among the areas for program growth are biopesticides and organics, public health, and global initiatives to harmonize Maximum Residue Levels. The impact of not funding this program would be a decline and/or loss of effective pest management materials on specialty crops. This program provides an important component in integrated pest management strategies to control economically important pests. Program activities support REE Action Plan Goal 1.

b. Sustained support for Agroclimatology (formerly Global Change, UV-B Monitoring) (\$1,405,000 available in 2015) as follows:

The climatological network includes 38 climatological sites: 35 in the U.S., two in Canada, and one in New Zealand. Base funding for the program supports continuous measurement of Ultraviolet B (UV-B) radiation at all sites, analysis on the damaging effects to agriculture, and providing information on the geographical distribution and temporal trends of UV-B radiation in the US. This is a major contribution of USDA to the U.S. Global Change Research Program and provides the only source of UV-B data directly tied to agricultural production systems. Data is used to support climate forecasting models and assessing

the impact of UV-B radiation on ecosystems, human health, and agricultural production. Program activities support REE Action Plan Goal 2.

5. Sustained support for Aquaculture Centers (\$4,000,000 available in 2015) as follows:

Base funding will support aquaculture research, development, demonstration, and extension education to enhance viable and profitable U.S. aquaculture production to benefit consumers, producers, service industries, and the American economy. Program activities support REE Action Plan Goal 1.

6. Sustained support for Sustainable Agriculture Research and Education (SARE) Program (\$22,667,000 available in 2015) as follows:

Base funding will be used to increase knowledge of and help farmers and ranchers to adopt practices that are profitable, environmentally sound, and good to communities. Grants awarded by the four regional administrative councils will support projects that address crop and livestock production and marketing, stewardship of soil and other natural resources, economics and quality of life. Funding will support development of technical guides and handbooks and education and training for Cooperative Extension System agents, and other agricultural professionals in the university system, the private sector, or other government agencies, involved in the education and transfer of technical information concerning sustainable agriculture.

The SARE program has a 25-year track record of success and enthusiastic stakeholder support from farmers and ranchers, from within the agricultural science community, and among Federal agencies that benefit from the research and education activities that the program supports. The program has far exceeded its targeted performance levels and is actively engaged in a process to significantly improve future program evaluation efforts. Program activities support REE Action Plan Goal 1.

7. An increase of \$113,000 for 1994 Research Grants (\$1,801,000 available in 2015) as follows:

This program assists 1994 Land-Grant Institutions (Tribal Colleges) in building institutional research capacity through competitive funding of applied projects that address student educational needs and solve community, reservation or regional problems. Collaboration with 1862 or 1890 Land Grant Institutions is a requirement. Eligible institutions may propose projects in any discipline of the food and agricultural sciences. The 2014 Farm Bill added the College of the Muscogee Nation and Keweenaw Bay Ojibwa Community College as eligible recipients. The base funding will be leveraged with the technical and research expertise at 1862 and 1890 Land-Grant Universities to enhance economically viable land use, improve food security and promote youth engagement in communities with high rates of poverty.

Increased funding will assist the two new land-grant colleges to develop new partnerships, build research and extension capacity, and to serve a larger American Indian student population. Since the establishment of the 1994 land-grant community 20 years ago, eight additional Institutions have been added and student enrollment has grown by about 30 percent. The 1994 land-grants are essential for healthy and sustainable individuals, Indian communities and Tribal Reservations. Program activities support all REE Action Plan Goals.

8. An increase of \$80,000,000 for public-private partnerships for Innovation Institutes (\$0 available in 2015) as follows:

NIFA proposes to invest \$80 million divided equally between two public-private institutes, one addressing innovations in bio-manufacturing and the second addressing innovations in products and processes using nanocellulosics. As a NIFA competitive program under agreement authorities of 7 U.S.C. 450a, these institutes will be selected through an open peer-reviewed, competitive process based on the scientific merit and potential impacts. They will focus on the bioeconomy, which has tremendous potential for promoting economic growth by increasing the productivity and scope of the agricultural and forestry sector, by growing new jobs and industries, particularly in rural America, and by ensuring our nation's global preeminence in the bioeconomy.

The AFRI Bioenergy Coordinated Agricultural Projects Program and BRDI have supported successful public-private R&D partnerships that have demonstrated potential to grow and create businesses, jobs, and economic opportunities through innovations leading to sustainable low-cost biomass feedstocks, competitive transportation biofuels and biobased chemicals, and products. These investments are a good start, but are specific and finite projects. Additional robust approaches are needed for the U.S. biomanufacturing and nanotechnology industries to successfully compete globally. The proposed Innovation Institutes will be established self-perpetuating R&D entities with a broad scope supporting multiple projects. Two examples of US public private partnerships may be drawn from the biofuels sector, where the DOE Joint Bioenergy Institute (JBEI) in California has garnered significant private industry support while growing academic partnerships that have created new companies, jobs, and revenues. The Berkeley Open Foundry is an extension of this effort targeting a broader range of biobased manufacturing technologies and outcomes. Similarly, the FAA ASCENT Center of Excellence has created a strong academic, industry, government partnership focusing on R&D leading to alternative jet fuel.

Public-private partnership will be a key feature of the proposed Institutes, which will help strengthen knowledge and address gaps in current research and commercialization efforts. Public-private partnerships will include consortia of academic, government, and non-government research institutions and industry partners, and there will be a required match of support from non-Federal sources. The Institutes will also be required to prepare a business plan for sustaining the institute beyond the federal funding period of four years. Outcomes and impacts of the Institutes will be assessed using comprehensive criteria, such as quantitative information about newly developed products and processes, publications, disclosures, patents, technology transfer licenses, startups, economic impact, and workforce development. Success of the Institutes will be measured based on specific quantitative yearly milestones, which will be part of the cooperative agreements used to support the institutes.

This request is consistent with many reports and national initiatives to strengthen U.S. advanced manufacturing, spur innovation, and create new industrial growth in the agricultural sector:

- The 2012 President's Council of Advisors on Science and Technology Report on 'Agricultural Preparedness and the Agriculture Research Enterprise' recommended creation of large multidisciplinary innovation institutes focused on emerging challenges to agriculture;
- The President's 2012 National Bioeconomy Blueprint stated that "economic activity that is fueled by research and innovation in the biological sciences, referred to as the "bioeconomy," is a large and rapidly growing segment of the world economy that provides substantial public benefit";
- Advanced manufacturing has been a priority across the federal government through a Presidential initiative to revitalize American manufacturing industry. The National Network for Manufacturing Innovation coordinates innovation institutes supported by various agencies. The currently proposed Institutes will be designed to become part of this network.

The proposed institutes are underpinned by supporting breakthroughs in fundamental science (e.g., genomics, microbiology, nanotechnology, information technology, synthetic biology, and engineering) and provide opportunities to apply science, technology, and advanced practices in the production, marketing, and distribution of bioproducts. The proposed institutes will carry out transformative and translational research in partnership with the private sector. The expected outcomes from these institutes include continued US leadership in the innovation of agricultural biomanufacturing and nanocellulosics for industrial adaptation and commercial applications. The proposed public-private institutes will accelerate the creation, translation, technology transfer, and application of scientific knowledge. The major goals of the proposed institutes include:

- Acceleration of research and development to overcome technical hurdles in product development, performance, and manufacturing, including characterization and development of standards;
- Facilitating coordination between market needs and research activities to create a high-impact R&D strategy;
- Research and synthesis of relevant social and economic issues to aid policy development for commercialization;
- Promotion of entrepreneurship and workforce development to satisfy the increasing demands in advanced research, industrial innovation, and manufacturing.

Biomanufacturing Institute (BI)

A critical factor in leveraging biological systems to drive an innovation-based bioeconomy is the strength of the scientific enterprise investigating those systems, including basic and applied research. A robust Research and Development enterprise backed by government, foundation, and industry investments, is necessary to produce the new knowledge, ideas, and foundational technologies required to develop systems for the production of products and services that support businesses and industries and help create jobs. Some examples of products from the biomanufacturing industry include fuels, plastics, fibers, fillers, insulation, adhesives, coatings, biologics, and other value-added agricultural products. Delivering reliable, sustainable, and affordable cellulosic biomass and other non-food agriculturally-based feedstock (lignin, starch, oils, proteins, etc.) to industry is the first step in creating an innovation ecosystem for bioeconomy. The major goals of the BI are to:

- Establish processes and chemical platforms leading to high-value intermediate and end-use products;
- Improve the efficiencies and economics of biomass feedstock logistics systems;
- Support commercialization of products developed from basic and applied research;
- Build domestic capability and the workforce for ongoing bio-manufacturing and bio-products development.

The BI will also create opportunities for multi-sectoral partnerships to develop scientific platforms in bioprocessing, biomaterials, and bioproducts manufacturing, including chemicals and chemical feedstocks, materials, and energy. NIFA will coordinate investments in this institute through interactions with other agencies interested in the bioeconomy, including USDA's US Forest Service, ARS, ERS, and other agencies such as NSF and DOE.

Nanocellulosics Institute (NI)

NIFA proposes to create an institute on nanocellulosics to energize the broad national science and technology enterprise to effectively realize the potential of this nanomaterial. It is widely recognized that nanocellulose can find commercial applications in a wide array of industrial sectors, including electronics, construction, packaging, food, energy, health care, automotive, and defense. Cellulose nanomaterials can be produced from a wide array of plants including agricultural crops, trees, and microorganisms. The U.S. has abundant and underutilized cellulose resources, and can turn them into a rich renewable supply of industrial materials, thereby capturing their enormous economic value and benefitting society and rural America. The purpose of the NI is to ensure that the U.S. is the leading global source of commercial cellulosic nanomaterials research, innovation, production, and commercialization. The NI will be a part of the National Network for Manufacturing Innovation, and will also support the President's National Nanotechnology Initiative (NNI). NIFA will consult with other Federal agencies in the NNI working group on, including NSF, USDA's Forest Service, DOE, NIST, and others to seek optimal leveraging and complementary investments. The major objective of the proposed institute are to:

- Fill the critically needed knowledge gap between the promising discoveries of phenomena, processes, and properties of cellulose at nanometer scale to industrial scale production;
- Develop applications for a wide use of nanocellulosic materials to realize their commercial and economic potential;
- Couple the foundational research on nanocellulose effectively to market needs and commercialization potential.

Program activities support all REE Action Plan Goals.

9. An increase of \$2,500,000 for Food and Agriculture Resiliency Program for Military Veterans (FARM-Vets) (\$0 available in 2015) as follows:

Funding will be used to promote competition for basic and applied research that explores career opportunities and pathways, therapeutic interventions, resource conservation, and related studies for the veteran population in the food and agriculture sector. Understanding why and how best to engage veterans in the agricultural sector is congruent with the critical need to identify a new generation of farmers, livestock producers, and entrepreneurs as an aging workforce transitions to retirement, especially in rural areas where shortages are acute. Similarly, there is a limited body of research that points to the therapeutic value of working the land in terms of

psychological and behavioral health function and benefit. With increasing numbers of veterans presenting traumatic brain injury and post-traumatic stress as a result of the Iraq and Afghanistan wars, determining and encouraging veterans' motivations for engaging in forestry, hunting, fishing, and other nature-based recreational, wildlife management, and resource conservation activities, could lead to discoveries at the individual, family, and community levels. Further, helping local Extension educators, veteran and military family support personnel, and military and community policy makers understand the impacts of agricultural- and nature-based veteran reintegration efforts would ensure an evidence-based foundation on which program and policy can be built. As a result, NIFA expects FARM-Vets basic and applied research projects to inform the establishment and scalability of educational programming that helps veterans develop farming and ranching skills, business plans, agriculture systems management, knowledge and access to credit, and land use issues. Program activities support REE Action Plan Goal 7.

10. An increase of \$1,370,000 for Federal Administration (\$28,885,000 available in 2015 under the Extension Activities Account and Research and Education Activities Account) as follows:

a. A decrease of \$78,000 for Federal Administration-Other Necessary Expenses (\$20,503,000 available in 2015) as follows:

i. An increase of \$554,000 for Other Federal Administration (\$14,192,000 available in 2015) as follows:

The pay cost increase is \$554,000 which includes \$110,000 for annualization of the fiscal year 2015 pay raise and \$444,000 for the anticipated fiscal year 2016 pay raise. NIFA's programs are managed at the national level by approximately 361 full-time employees at the end of FY 2014 and with a number of temporary and intermittent employees. Grants management includes developing program regulations, establishing broad program goals, reviewing proposals, preparing grant documents, post-award review of progress, and similar activities necessary to achieve program goals. Between 0 and 5 percent of funds provided for programs may be used to support administration of the programs as established by law.

ii. A movement and reduction of \$351,000 for GSA Rent and DHS Security Payments (\$6,311,000 available in 2015) as follows:

USDA continues in FY 2016 the decentralization of GSA Rental Payments and DHS payments. The amount is the equivalent share of the current GSA Rent and DHS central appropriations based upon current space occupancy across the continental United States.

The appropriations request for 2016 is rolled into a consolidated funding line for Federal Administration costs.

iii. A decrease of \$281,000 for operating efficiencies (\$0 available in 2015) as follows:

As part of the Governmentwide efforts to promote efficient spending of Federal funds, NIFA will continue to monitor spending on travel, printing, supplies, and equipment and limit these costs when possible. NIFA will reduce agency travel costs by limiting individual staff travel and reducing peer panel costs. One example of reducing costs for peer panel travel includes replacing traditional panels with virtual panels. The printing of materials used for peer panels and other meetings also will be reduced. NIFA supply purchases, print publications, and orders of printed material will be monitored.

b. A decrease of \$552,000 for Agriculture in the Classroom (\$552,000 available in 2015) as follows:

This program is part of a government-wide initiative to consolidate STEM programs to reduce the number of programs in keeping with concerns that have been raised about the large number of programs for similar purposes. Funding for STEM related programs will be requested as part of other agency's budgets.

c. An increase of \$2,000,000 for Grants Management Systems (\$7,830,000 available in 2015) as follows:

This is the third year of a multi-year request to modernize NIFA's grants management systems. CREEMS, the current grants management system was developed nearly 14 years ago. Over the years, NIFA has made updates and revisions to CREEMS, but has not made comprehensive changes to the system, and as a result the technology in use is antiquated. Further complexity has increased and made the system harder to maintain. Interfaces, such as Grants.gov, ASAP (Automated Standard Application for Payment), and FMMI (Financial Management Modernization Initiative), have been added. Internal systems (e.g., CRIS, REEport, REEIS, LMD, POW) developed outside of CREEMS supplement and complement the use of CREEMS data to provide various reporting and processing functions in NIFA. Electronic management of other business practices have been initiated that stand alone (e.g. RFA database, Outcomes database).

The resulting disjointed technology systems have led to continued reliance on paper and human intervention to move data between systems. Meanwhile, NIFA experiences continual environmental changes in programs, funding, and budget. For example, continuation awards have increased over the years, and the size and number of awards have changed.

NIFA also needs a coordinated approach to ensure that the Agency can document in a timely, consistent, and integrated manner the extent of its funding. To do so ready access to content and data, modern systems for processing grants, an agile classification system, and a way to present information through one portal are needed.

NIFA's business of developing requests for applications (RFAs) and formula grant opportunities (FGO) processing and managing grants has adapted to meet those changes, but NIFA's technology systems have not been able to keep pace with those adaptations.

NIFA seeks a technology solution that is paperless and that links the functionality of all business processes associated with NIFA's mission as a federal funding agency for research, education, and extension. This solution allows NIFA staff, applicants, and grantees to track grant proposals and awards throughout the grant life cycle. Also, this solution presents NIFA data, both business management data (how the business operates) and program data (the outcomes and outputs of funded projects), in a transparent and user-friendly method.

NIFA is leveraging Departmental and Federal solutions to meet existing needs. A re-designed web site is being developed in cooperation with the Office of the Chief Information Officer to meet the one Portal concept. NIFA is also leveraging Departmental services for grants processing and cloud hosting of all NIFA managed business applications to support the transition to future grants management systems.

In 2014 NIFA completed a detailed alternatives analysis and determined that it should leverage the capabilities of USDA's Grantor grant management system, part of the USDA Financial Management Modernization Initiative (FMMI). Through FMMI, NIFA will modernize its grant processing systems, improve transparency and reporting, with a system that is completely paperless. In 2015, NIFA will be initiating a comprehensive review of business requirements with Grantor to begin mapping the work that must be completed in Grantor to ensure the system can meet existing and future business needs.

The goal of this effort is to enhance automation thereby reducing errors, downtime, and the cost of doing business, and allow more time to invest in grant-making that will find solutions to agricultural problems of high national priority. The current systems and processes used to announce, review, process and award grants are challenging as they rely on antiquated legacy systems that do not fully support the entire grant administration life cycle. As a result workload backs up in the last quarter of the fiscal year as NIFA attempts to process its grants prior to October 1. NIFA aims to substantially streamline year-end grant processing, resulting in several hundred thousand dollars a year in savings. This effort is closely linked with NIFA's signature process improvement initiative to flatten the award curve, and thus streamline the workload of processing grants. Our process improvement efforts drive the need for automation which will

improve workflow, reduce error rates, and improve grantee customer satisfaction. NIFA expects to be able to provide federal assistance funding into the hands of grantees 10 percent faster as a result by 2016.

Federal administration activities support all REE Action Plan Goals.

11. A decrease of \$17,325,000 to eliminate funding for research programs (\$17,325,000 available in 2015) as follows:

	FY 2015 (\$000)	Increase or Decrease (\$000)	FY 2016 (\$000)
Animal Health and Disease, Section 1433	\$4,000	-\$4,000	0
Aquaculture Research Special Grant	1,350	-1,350	0
Potato Research Special Grant	1,350	-1,350	0
Alfalfa Forage and Range Program	1,350	-1,350	0
Supplemental and Alternative Crops	825	-825	0
Farm Business Management and Benchmarking Program	1,450	-1,450	0
Sun Grants	2,500	-2,500	0
Capacity Building at Non-Land Grant Colleges	<u>4,500</u>	<u>-4,500</u>	<u>0</u>
Total	17,325	-17,325	0

A decrease is proposed to direct funding to higher priority activities, and is consistent with the Administration's policy to redirect available resources, as appropriate, from lower-priority areas to other science and technology activities. These programs can be supported by other funding sources, including other NIFA programs.

The broad research goals of these relatively small programs can be more effectively addressed through higher priority programs in this request. This would allow for greater focus on national priorities, and efficiency in program management and implementation.

12. A net decrease of \$8,811,000 for Higher Education programs (\$47,088,000 available in 2015) as follows:

- a. A decrease of \$9,900,000 for certain higher education programs (\$9,900,000 available in 2015) as follows:

	FY 2015 (\$000)	Increase or Decrease (\$000)	FY 2016 (\$000)
Institute Challenge, Multicultural Scholars, and Graduate Fellowship Grants	\$9,000	-\$9,000	0
Secondary/2-year Post-Secondary Education Program	<u>900</u>	<u>-900</u>	<u>0</u>
Total	9,900	-9,900	0

These programs are part of a government-wide initiative to consolidate STEM programs to reduce the number of programs in keeping with concerns that have been raised about the large number of programs for similar purposes. Funding for STEM related programs will be requested as part of other agency's budgets.

- b. An increase of \$1,074,000 for 1890 Institution Capacity Building Grants (\$19,336,000 available in 2015) as follows:

Base funding is used to strengthen teaching, research and extension programs in the food and agricultural sciences by building the institutional capacities of the eligible 1890 Land-Grant Institutions. The 1890 Institution Capacity Building Grants (CBG) support competitive funding of projects that strengthen teaching programs in the food and agricultural sciences in the need areas of curriculum design and materials development, faculty development, and others. CBG supports projects that strengthen research and extension programs in need areas of studies and experimentation, extension program development support systems, and others. CBG also supports integrated project grants to increase and strengthen food

and agriculture sciences at the 1890s through integration of education, research and extension activities. In 2012, as a result of CBG recruitment and retention efforts, 56 underrepresented students enrolled in food and agricultural sciences and 129 students graduated. The projects ending in 2013 had more than 86 partnerships between the 1890 institutions and other universities, federal agencies, business, and organizations, which benefitted more than 2,000 students.

Increased funding will accommodate Central State University (CSU) as the 19th 1890 land-grant institution and will enable NIFA to reach an audience that is currently underrepresented in its programs. This will allow CSU to build their research, teaching and Extension capacity to support USDA's strategic goals for food, agriculture, natural resource and human sciences without compromising the ability of the existing 1890 Land Grants to continue their effective programming in the other states. The additional funding will result in an increased number of African American students recruited, graduated and employed in science, technology, engineering, and mathematics (STEM) disciplines related to USDA's mission; and address epidemics within minority communities such as adult and childhood obesity and diabetes. Program activities support REE Action Plan Goal 6.

- c. Sustained support for Hispanic Serving Institutions Education Grants Program (\$9,219,000 available in 2015) as follows:

Base funding for this program promotes and strengthens the ability of Hispanic-Serving Institutions, through competitive funding of food and agriculture science curriculum design and materials development, faculty development, and others, to attract outstanding students and produce graduates capable of enhancing the Nation's food and agricultural scientific and professional work force. Approximately 92 college and Universities have participated in this \$9 million program also recruits that promising Hispanic students for food and agriculture science careers, many of which are at USDA. In the 2011-2012 program year, 234 Hispanic students were placed on internships, including 134 at USDA agencies. Currently, the funding success rate is less than 20 percent. This program has the potential address the underrepresentation of Hispanic Students in STEM jobs (less than 2 percent of STEM jobs in the nation) and in the food, agricultural, natural resource, and human sciences. The recently introduced pilot Consortium Grants have been successful and will be expanded to a larger number of institutions. Program activities support REE Action Plan Goal 6.

- d. An increase of \$215,000 for Tribal Colleges Education Equity Grants Program (Payments to the 1994 Institutions) (\$3,439,000 available in 2015) as follows:

Base funding for this program provides competitive funding to enhance educational opportunities for Native Americans in the food and agricultural sciences and strengthens institutional capacity to deliver relevant formal education opportunities. To the extent practicable, priority is given to work that supports NIFA's critical challenge areas: develop sustainable energy, increase global food security, adapt/mitigate agriculture and natural resources to global climate change, reduce childhood and adolescent obesity, and improve food safety. In 2012, approximately 3,895 American Indian Students benefitted from new curriculum, lab facilities and other classroom improvements supported through this program. In addition, 88 Tribal College Faculty were able to continue their education so they could offer their students more science and mathematics programming. By building the capacity of Tribal College faculty and recruiting and training students for careers in Science, Technology, Engineering, and Mathematics, this program enables the nation to achieve greater diversity in its workforce and increase the competitiveness of U.S. Agriculture. The 2014 Farm Bill increased the number of eligible institutions by two.

Increased funding will assist the two new land-grant colleges to develop new partnerships, build research and extension capacity, and to serve a larger American Indian student population. Since the establishment of the 1994 land-grant community 20 years ago, eight additional Institutions have been added and student enrollment has grown by about 30 percent. Two new institutions (College of the Muscogee Nation and Keweenaw Bay Ojibwa Community College) were added with the 2014 Farm Bill. The 1994 land-grants are essential for healthy and sustainable individuals, Indian communities and Tribal Reservations. Program activities support REE Action Plan Goal 6.

- e. Sustained support for Alaska Native-serving and Native Hawaiian-serving Institutions (\$3,194,000 available in 2015) as follows:

Base funding under this program promotes and strengthens the ability of Alaska Native-Serving Institutions and Native Hawaiian-Serving Institutions to carry out education, applied research, and related community development programs through competitive funding of projects within the broadly defined arena of food and agricultural sciences-related disciplines, but with priority given to those projects that enhance educational equity for underrepresented students, strengthen institutional educational capacities, prepare students for careers related to the food, agricultural, and natural resources industries, and human sciences systems of the United States, and maximize the development and use of resources to improve food and agricultural sciences teaching programs. This successful program awards equal amounts to each of the states of Alaska and Hawaii. In 2011-2012 academic year, Student Ambassadors and staff of University of Hawaii at Manoa's College of Tropical Agriculture and Human Resources (CTAHR) Academic and Student Affairs Office made more than 20 presentations on CTAHR's academic programs at various schools, college classes and organizations, reaching roughly 2300 students. In the last five years, more than 15,000 students have been reached through recruitment/outreach efforts. This, in part, has led to a 44 percent increase in undergraduate enrollment in CTAHR over that same period increasing the number of students pursuing agriculture, food, and human sciences degrees. Similarly, enrollment at University of Alaska-Sitka, in classes that were enhanced by NIFA grants, has increased from 52 in academic year 2006/07 to 180 in academic year 2012/13. Program activities support REE Action Plan Goal 6.

- f. A decrease of \$200,000 for Grants for Insular Areas (\$2,000,000 available in 2015) as follows:

Base funding for this program promotes and strengthens the ability of Insular Area Institutions to carry out education, applied research, and related community development programs through competitive funding of projects within a broadly defined arena of food and agricultural sciences. The program promotes and strengthens the ability of Insular Area Institutions to acquire the equipment, instrumentation, networking capability, hardware and software, digital network technology, and infrastructure necessary to teach students and teachers about technology in the classroom. By strengthening institutional educational capacities in instruction and curriculum, and enhancing the quality of teaching and learning, this program assists Insular Area Institutions to meet their unique needs. Program activities support REE Action Plan Goal 6.

13. An increase of \$10,000,000 for the Hispanic-Serving Agricultural Colleges and Universities Endowment Fund (\$0 available in 2015) as follows:

Section 7129 of the Food, Conservation, and Energy Act 2008, provides for the establishment of an endowment fund for Hispanic-Serving Agricultural Colleges and Universities (HSACU). The Hispanic/Latino community is the fastest growing sector of the American population.

This investment in the Hispanic-Serving Agricultural Colleges and Universities is needed to ensure the institutions can effectively compete for NIFA competitive grants. This endowment fund will assist in the development of a skilled and marketable student population for employment in the food and agriculture sector from the HSACU. Currently, the Hispanic-Serving Institutions serve 56 percent of all Hispanic students but only receive 66 cents for every dollar going to all other colleges and universities annually, per student, from all Federal funding sources. Furthermore, as Hispanics have historically been under-represented in such professions as science, technology, engineering and mathematics (STEM), the nation could face serious shortages in many critical professions, including agricultural sciences. Increasing investment in HSACUs will help close this educational attainment gap. The proposed \$10 million will remain at Treasury and be invested in Treasury securities, with the cumulative interest used to support implementation of the program. Program activities support REE Action Plan Goal 6.

14. Sustained support Veterinary Medical Services Act (\$5,000,000 available in 2015) as follows:

Base funding will help to defray qualifying educational loans of veterinarians in geographical areas that have a shortage of veterinarians; or who are in an area of veterinary practice that the Secretary determines has a shortage of veterinarians, such as food animal medicine, public health, epidemiology, and food safety. Program activities support REE Action Plan Goals 1 and 6.

15. An increase of \$4,430,000 for Capacity/Formula Programs (Extension)(\$343,920,000 available in 2015) as follows:

a. Sustained support for Smith-Lever 3(b) and (c) capacity/formula (\$300,000,000 available in 2015) as follows:

Smith-Lever 3(b)&(c) base capacity/formula funds are used by institutions eligible to receive funds under the Morrill Act of July 2, 1862, for the development of practical applications of research knowledge and practical demonstrations of existing or improved practices or technologies in agriculture; implementation of solar energy with respect to agriculture, home economics, and rural energy; and dissemination of information to communities through demonstrations and publications. The translation of knowledge and delivery of the innovations as solutions to problems facing producers and others is the hallmark of the Cooperative Extension System of the U.S., which is supported with funds through Smith-Lever 3(b)&(c), along with funding from state and local (county) sources. Program activities support all REE Action Plan Goals.

Continued enhanced support of Smith-Lever 3(b)&(c) is critical to ensure that the Extension system is viable and supports the global preeminence of America's food and agricultural enterprise. For example, Smith-Lever 3 (b) and (c) funding is supporting work on Colony Collapse Disorder, which is a serious problem threatening the health of honey bees and commercial beekeeping and pollination operations. Smith-Lever funds are supporting a project that is highlighting a previously unknown route of exposure for honey bees to neonicotinoid insecticides used in seed treatments – the talc exhaust produced by planters. Scientists are analyzing effects of land use, weather and apiary locations to measure the area potentially affected by talc exhaust. They hope to provide stakeholders across four Midwestern states with this information via the Driftwatch.org platform, a site familiar to both crop producers and beekeepers.

Under each of the four capacity/formula programs for 1862 and 1890 Institutions, the budget also requests a total of \$20 million in funding to support competitive grants with 100 percent matching requirements. Please see program description included under item 3.

b. An increase of \$4,430,000 for 1890 Institutions capacity/formula (\$43,920,000 available in 2015) as follows:

These capacity/formula funds are authorized under section 1444 of the National Agricultural Research, Extension, and Teaching Policy Act of 1977 and are used to support continuing agricultural and forestry extension activities at 1890 Land-Grant Universities. Base funds provide support to one or more of the following Extension base program areas: Agriculture; Community Resources and Economic Development; Family Development and Resource Management; 4-H and Youth Development; Leadership and Volunteer Development; Natural Resources and Environmental Management; and Nutrition, Diet and Health.

Increased funding will accommodate Central State University (CSU) as the 19th 1890 land-grant institution and will enable NIFA to reach an audience that is currently underrepresented in its programs. This will allow CSU to build their research, teaching and Extension capacity to support USDA's strategic goals for food, agriculture, natural resource and human sciences without compromising the ability of the existing 1890 Land Grants to continue their effective programming in the other states. The additional funding will result in an increased number of African American students recruited, graduated and employed in science, technology, engineering, and mathematics (STEM) disciplines related to USDA's mission; and address epidemics within minority communities such as adult and childhood obesity and diabetes.

Under each of the four capacity/formula programs for 1862 and 1890 Institutions, the budget also requests a total of \$20 million in funding to support competitive grants with 100 percent matching requirements. Please see program description included under item 3. Program activities support REE Action Plan Goals 6 and 7.

16. An increase of \$200,000 for Smith-Lever 3(d) (\$85,528,000 available in 2015) as follows:

a. Sustained support for Expanded Food and Nutrition Education Program (\$67,934,000 available in 2015) as follows:

The Expanded Food and Nutrition Education Program (EFNEP) has deep roots into local communities and works with a variety of program partners and collaborators in order to reach and teach program participants and coordinate services. Some of these program partners are: food assistance agencies, food banks, worksite and wellness programs, schools, local housing authorities, and faith based organizations. These partnerships often result in increased program resources, especially program teaching space, food supplies for teaching, and program participants. EFNEP also collaborates with federal and state agencies to increase the reach of the program and to achieve shared missions. Base funding for EFNEP is focused on reaching the poorest of the poor and working through families to address some of the most pervasive societal challenges – hunger, malnutrition, poverty, and more recently obesity. As a mission outcome, EFNEP provides practical, hands-on nutrition education to improve health. Each year, more than a half million low-income families and youth are taught by EFNEP peer educators. More than 80 percent of EFNEP families report living at or below 100 percent of poverty, and nearly 70 percent indicate being of minority status. This is important as poor health outcomes have disproportionately affected minority and low-income populations. Program activities support REE Action Plan Goal 4.

b. Sustained support for AgrAbility/Farm Safety (formerly Farm Safety and Youth Farm Safety Education and Certification) (\$4,610,000 available in 2015) as follows:

Base funding will be used for competitively awarded projects to Extension working with non-profit disability organizations in conducting AgrAbility projects. The projects are designed to assist farmers and ranchers with disabilities to stay in agricultural production. Also the program provides competitively awarded funding to states to conduct training and certification needs of youth working in agriculture. Program activities support REE Action Plan Goal 6 and 7.

c. An increase of \$200,000 for New Technologies for Agricultural Extension (\$1,550,000 available in 2015) as follows:

The New Technologies for Agricultural Extension Program functions to increase the capacity of each State to contribute expertise and content to the development of eXtension, a national web-based information and education delivery system. This initiative is intended to support the Cooperative Extension System and staff to better serve its customers and the general public. By creating web-based access to high quality, non-duplicative, research-based information and education opportunities, the Cooperative Extension System can better serve the needs of their users and reach new audiences. Base funding will be utilized to support Internet-based tools to create learning networks and utilize social media that provides fast and convenient access to objective, peer-reviewed, and researched-based information, education, and guidance on subjects that include food safety, disaster assistance, natural resources and environment, climate change, youth development, farm, family, nutrition and health, commodities and other agricultural related topics. Increased funding will be used to deliver the education component of USDA agencies and develop partnerships with other federal agencies and the private sector. Program activities support all REE Action Plan Goals.

d. Sustained support for Children, Youth, and Families at Risk (\$8,395,000 available in 2015) as follows:

The program is designed to marshal resources of the Land-Grant Universities and Cooperative Extension System to develop and deliver community based programs for at risk children and their families. Base funding supports programs that work in the family and community centers to meet critical needs such as access to educational resources and technological skills. CYFAR also supports building resiliency and protective factors in youth, family, and communities. Projects focus on early childhood, school age youth, teen, and family outcomes with emphasis on science and reading literacy, and building youth and family program and community capacity. Program activities support REE Action Plan Goal 6 and 7.

e. Sustained support for Federally-Recognized Tribes Extension Program (\$3,039,000 available in 2015) as follows:

Base funding for this program supports Extension Agents who establish Extension education programs on the Indian Reservations and Tribal jurisdictions of Federally-Recognized Tribes. To the extent practicable, priorities should reflect NIFA's national critical needs areas to: develop sustainable energy, increase global food security, adapt /mitigate agriculture and natural resources to global climate change, reduce childhood and adolescent obesity, and improved food safety. By focusing on increasing food security, reducing childhood and adolescent obesity and improving food safety, this program helps to improve the quality of life and the life expectancy in Tribal communities. Program activities support REE Action Plan Goal 6 and 7.

17. Increased funding of \$278,000 for Extension Services at 1994 Institutions (\$4,446,000 available in 2015) as follows:

This program provides base funding to increase Extension program capacity at 1994 Land-Grant Institutions to address special needs, take advantage of important opportunities, and/or demonstrate long-term sustained benefits of Extension projects. Awards support one or more of the following Extension base program areas: Agriculture; Community Resources and Economic Development; Family Development and Resource Management; 4-H and Youth Development; Leadership and Volunteer Development; Natural Resources and Environmental Management; and Nutrition, Diet and Health. In 2013, through the program approximately 15,500 American Indian agricultural producers received Extension support to develop vibrant, job-creating agri-businesses. Another approximately 35,000 youth and some sort of Extension outreach experience Extension programs on Indian Reservations.

Increased funding will assist the two new land-grant colleges to develop new partnerships, build research and extension capacity, and to serve a larger American Indian student population. Since the establishment of the 1994 land-grant community 20 years ago, eight additional Institutions have been added and student enrollment has grown by about 30 percent. Two new institutions (College of the Muscogee Nation and Keweenaw Bay Ojibwa Community College) were added with the 2014 Farm Bill. The 1994 land-grants are essential for healthy and sustainable individuals, Indian communities and Tribal Reservations. Program activities support REE Action Plan Goal 6 and 7.

18. Sustained support for Renewable Resources Extension Act (\$4,060,000 available in 2015) as follows:

The Renewable Resources Extension Act of 1978 (P.L. 95-306, 92 Stat. 349, 16 U.S.C. 1671 et seq.) provides for an expanded and comprehensive extension program for forest and rangeland renewable resources. The majority of the appropriated funds are distributed to eligible institutions based on a formula that considers the geographic extent, ecosystem productivity, economic contribution, and population for each state. Base funding for these grants are used to assist all states in carrying out a program of extension activities designed to (1) use educational programs to disseminate the results of research on renewable resources; (2) conduct educational programs that transfer the best available technology to those involved in the management and protection of forests and rangelands and the processing and use of their associated renewable resources; (3) develop and implement educational programs that give special attention to the educational needs of small, private non-industrial forest landowners; (4) develop and implement educational programs in range and fish and wildlife

management; (5) assist in providing continuing education programs for professionally trained individuals in fish and wildlife, forest, range, and watershed management and related fields; (6) help forest and range landowners in securing technical and financial assistance to bring appropriate expertise to bear on their problems; and (7) help identify areas of needed research regarding renewable resources. Program activities support REE Action Plan Goal 3.

19. An increase of \$1,973,000 for 1890 Facilities (\$19,730,000 available in 2015) as follows:

This program funds the acquisition and improvement of agricultural and food sciences facilities and equipment, including libraries, so that eligible 1890 land-grant institutions may participate fully in the development of human capital in the food and agricultural sciences. Annually, each institution receives one award.

Increased funding will accommodate Central State University (CSU) as the 19th 1890 land-grant institution and will enable NIFA to reach an audience that is currently underrepresented in its programs. This will allow CSU to build their research, teaching and Extension capacity to support USDA's strategic goals for food, agriculture, natural resource and human sciences without compromising the ability of the existing 1890 Land Grants to continue their effective programming in the other states. The additional funding will result in an increased number of African American students recruited, graduated and employed in STEM disciplines related to USDA's mission; and address epidemics within minority communities such as adult and childhood obesity and diabetes. Program activities support REE Action Plan Goal 6.

20. An increase of \$1,000,000 for Grants for Youth Serving Organizations (\$0 available in 2015) as follows:

Rural Youth Development program, established in 2002 by the Congress, enables Youth-Serving organizations namely 4-H, Future Farmers of America (FFA), Boy Scouts of America, and Girl Scouts of the USA in expanding and strengthening their work in rural America. These organizations increase leadership, citizenship, and life skills in young people and the adults who work with them. They also significantly impact citizens--and the communities in which they live--through the action projects that are implemented.

The program funds will be used to competitively award grants that meet the goals to support pilot-demonstration projects by youth with youth-serving organizations in rural communities. This program is deemed a priority at the local and/or state levels for social capital and community development efforts. It fulfills a niche whereby youth are seen as viable agents of change in rural communities. Youth's engagement leads to economic and community development and will possibly stem the tide of out-migration by youth in rural communities. Program activities support REE Action Plan Goal 7.

21. A decrease of \$400,000 for Women and Minorities in Science, Technology, Engineering and Mathematics (STEM) Fields (\$400,000 available in 2015) as follows:

This program is part of a government-wide initiative to consolidate STEM programs to reduce the number of programs in keeping with concerns that have been raised about the large number of programs for similar purposes. Funding for STEM related programs will be requested as part of other agency's budgets.

22. An increase of \$2,500,000 for Food Safety Outreach Program (\$2,500,000 available in 2015) as follows:

The focus of the Food Safety Outreach Program is to help owners and operators of small to mid-sized farms, producers, and processors learn about and implement food safety guidelines, particularly those resulting from the Food Safety Modernization Act (FSMA). This outreach program was initiated in 2014 with \$2.5 million in funding from the Food and Drug Administration (FDA) focused on education and outreach with a goal of including a more robust technical assistance component in future years, and NIFA received \$2.5 million in appropriations in 2015. In 2016, NIFA will be the sole agency supporting the educational needs required as part of FSMA regulations, for which the agency is requesting \$5 Million. This funding increase is to begin expanding the program to build a network of partners and collaborators capable of providing technical assistance to farmers, producers, and processors seeking to implement the FSMA guidelines in their respective environments. The program also will emphasize outreach to farmers of all types, encompassing those working

in a variety of agricultural production systems from conventional to organic farmers, among others. It will focus on sustainability, conservation, and environmental practices. Grants will be awarded on a competitive basis and will continue to improve the understanding and adoption of established food safety standards, guidance, and protocols. The assistance provided by these grant programs will be coordinated with, and delivered in cooperation with, other nongovernmental or community-based organizations serving small and mid-sized farmers, producers, and processors, and with other federal food safety agencies. This program is critically needed because of the continued pressures on small producers and processors as a result of the FSMA regulations. It is also in line with the administration's vision of ensuring the safety and security of our nation's food systems. It will further improve the availability of fresh fruits and vegetables for consumers, particularly those living in communities where fresh produce is not readily available. Program activities support REE Action Plan Goals 5 and 6.

23. A decrease of \$2,750,000 to eliminate funding for certain extension programs (\$2,750,000 available in 2015) as follows:

	FY 2015 (\$000)	Increase or Decrease (\$000)	FY 2016 (\$000)
Rural Health and Safety	\$1,500	-\$1,500	0
Food Animal Residue Avoidance Database	1,250	-1,250	0
Total	\$2,750	-\$2,750	0

A decrease is proposed to direct funding to higher priority activities, and is consistent with the Administration's policy to redirect available resources, as appropriate, from lower-priority areas to other science and technology activities. These programs can be supported by other funding sources, including other NIFA programs.

The broad research goals of these relatively small programs can be more effectively addressed through higher priority programs in this request. This would allow for greater focus on national priorities, and efficiency in program management and implementation.

24. A decrease of \$2,000,000 to eliminate Methyl Bromide Transition Program (\$2,000,000 available in 2015) as follows:

A decrease is proposed so funding can be directed to support higher priority activities, and is consistent with the Administration's policy to redirect available resources, as appropriate, and consistent with the agency mission, from lower-priority areas to other science and technology activities. Alternatives to methyl bromide research may be addressed through the Minor Crop Pest Management, IR-4 program and a comprehensive integrated pest management strategy funded under the Crop Protection/Pest Management program. In addition to these funding options through NIFA grants, the Agricultural Research Service conducts in-house research to find solutions to pest control.

25. Sustained support for Organic Transition Program (\$4,000,000 available in 2015) as follows:

Base funding supports the development and implementation of biologically based management practices that mitigate the ecological, agronomic and economic risks associated with a transition from conventional to organic agricultural production systems. Program activities support REE Action Plan Goal 1.

26. Sustained support for Crop Protection/Pest Management (\$17,200,000 available in 2015) as follows:

Base funding for the Crop Protection/Pest Management (CP/PM) Program will develop and help end-users implement effective, affordable, and environmentally-sound integrated pest management (IPM) strategies to reduce economic, environmental, and societal losses caused by diseases, insects, weeds, and other pests that affect crops and livestock, and pests that affect human well-being and community vitality. The program will identify new science-based IPM strategies knowledge and optimize their use so that cultural methods, biological control, host plant resistance, and chemical control can be used affordably, effectively, and safely. A variety of tactics will be employed in an integrated strategy, including early detection, identification, monitoring, and

implementation of biologically-based and area-wide approaches to manage key native and invasive species and postharvest pests that cost Americans hundreds of millions of dollars annually in control costs and lost productivity. The CP/PM Program will provide support for projects that respond to pest management challenges with coordinated state-based, region-wide and national research, education and extension programs, and will serve as a catalyst for promoting further development and use of IPM approaches.

The CP/PM Program and the Minor Crop Pest Management Program (Interregional Research Project #4/IR-4) develop new and improved practices to reduce producer costs and create opportunities for enhanced trade. Advances associated with new product registrations through the IR-4 program have contributed more than \$7.2 billion to the U.S. economy. IR-4 develops data to harmonize the Good Laboratory Practices (GLP) review process to satisfy U.S. pesticide residue standards and allow more diverse data in product registration which can help to extend patents for registrants. The data generated also helps to supply acceptable products to satisfy the domestic specialty crop production market and export market as well, through establishing maximum residue limits (MRLs) that meet international standards. Program activities support REE Action Plan Goal 1.

27. Sustained support for Regional Rural Development Centers (\$1,000,000 available in 2015) as follows:

Base funding will provide support to four regional centers in Pennsylvania, Mississippi, Utah, and Michigan. Programs are designed to improve the social and economic well-being of rural communities in their respective regions. The RRDCs play a unique role in USDA's service to rural America. They link the research and educational outreach capacity of the nation's public universities with communities, local decision-makers, entrepreneurs, families, and farmers and ranchers to help address a wide range of development issues. They collaborate on national issues that span regions—like e-commerce, the changing interface between rural, suburban, and urban places, and workforce quality and jobs creation. Each tailors programs to address particular needs in its region. Priorities include strengthening regional economic development, balancing the use of our nation's natural resources, building disaster-resilient communities, increasing rural broadband adoption and education, assessing and educating on community behavioral health planning, and supporting local and regional food systems. These funds are distributed according to the extent of the problem that requires attention in each state. Program activities support REE Action Plan Goal 7.

28. Sustained support for Food and Agriculture Defense Initiative (\$6,700,000 available in 2015) as follows:

Base funding will support the National Plant Diagnostic Network and National Animal Health Laboratory Network to identify and respond to high risk biological pathogens in the food and agricultural system. The networks will be used to increase the ability to protect the Nation from plant and animal disease threats through surveillance, early detection, mitigation, and recovery functions.

Extension Disaster Education Network (EDEN) is a national effort led by state Cooperative Extension Service (CES) to provide disaster education resources for CES educators to assist farmers and other public sectors in the event of disasters, including agricultural disasters. USDA agencies provide well-coordinated emergency and disaster response to communities, individuals and property during and after events such as floods, tornados, hurricanes, and other disasters. USDA authorities cover response and relief across the full rural landscape of wild lands, Tribal lands, communities, open space, farms and ranches.

Through the Cooperative Extension System and EDEN, funded in part through Smith Lever (b) & (c) and the Food and Agriculture Defense Initiative, NIFA provides a linkage to local educators and local media outlets across the country to decrease the impact of disasters through education. Cooperative Extension transforms important federal disaster information into locally appropriate messages and couples it with existing science based information. This results in more appropriate private and local response and recovery by the citizenry, communities, and local governments. Program activities support REE Action Plan Goal 1.

SMALL BUSINESS INNOVATION RESEARCH PROGRAM

The Small Business Innovation Development Act (SBIR), Public Law 97-219, July 22, 1982, as amended by Public Law 99-443, October 6, 1986, was designed to strengthen the role of small, innovative firms in Federally funded research and development. Under this program, small firms receive at least a fixed minimum percentage of research and development awards made by Federal agencies with sizable research and development budgets. The Small Business Research and Development Enhancement Act of 1992 (Public Law 102-564, October 28, 1991) as amended mandates that for 2.8 percent FY 2014, 2.9 percent for FY 2015, and 3.0 percent for FY 2016 for extramural research and development funds within the Department are set-aside and used to fund the SBIR program.

<u>Agency</u>	<u>FY 2014</u> <u>Actual</u>	<u>FY 2015</u> <u>Estimate</u>	<u>FY 2016</u> <u>Estimate</u>
Agricultural Research Service.....	\$1,246,202	\$1,578,562	\$1,803,953
Animal and Plant Health Inspection Service.....	30,558	33,371	34,521
National Institute of Food and Agriculture.....	19,405,303	20,014,240	24,476,377
Economic Research Service.....	148,232	153,526	158,820
Foreign Agricultural Service.....	15,769	-	-
Forest Service.....	751,078	955,894	988,856
National Agricultural Statistics Service.....	16,594	43,528	45,000
Total.....	\$21,613,736	\$22,782,121	\$29,507,527

The staff functions of USDA’s SBIR program (solicitation, review and evaluation of proposals) have been centralized in NIFA in order to serve the SBIR community most effectively and efficiently. Ten research topic areas have been established:

1. Forests and Related Resources. Research proposals are solicited to develop environmentally sound techniques to increase productivity of forest land and to increase the utilization of materials and resources from forest lands.
2. Plant Production and Protection – Biology. Research proposals are solicited that employ either biological or engineering approaches to examine means of enhancing crop production by reducing the impact of destructive agents, developing effective crop systems that are economically and environmentally sound, enhancing the impact of new methods of plant manipulation, and developing new crop plants and new uses for existing crops.
3. Animal Production and Protection. Research proposals are solicited to find ways to enable producers of food animals to increase production efficiency and to assure a reliable and safe supply of animal protein and other animal products while conserving resources and reducing production costs.
4. Air, Water and Soils. Research proposals are solicited to develop technologies for conserving air, water and soil resources while sustaining agricultural productivity.
5. Food Science and Nutrition. Research proposals are solicited to develop new knowledge and a better understanding of the characteristics of foods and their nutritional impact; to apply new knowledge to improve our foods and diets; and to apply new knowledge to the production of useful new food products, processes, materials, and systems, including the application of nutritional information to consumer foods and food service systems.

6. Rural and Community Development. Research proposals are solicited to develop knowledge and technology that will promote, foster, or improve the well-being of rural Americans.
7. Aquaculture. Research proposals are solicited to develop new technologies to promote the aquaculture production of animal and plant species in both freshwater and marine environments.
8. Biofuels and Biobased Products. Research proposals are solicited to develop new or improved technologies that will lead to increased production of industrial products from agricultural materials.
9. Small and Mid-Size Farms. Research proposals are solicited that will promote and improve the sustainability and profitability of small and mid-sized farms and ranches.
10. Plant Production and Protection – Engineering. The objective of this topic area is to enhance crop production by creating and commercializing technologies that enhance system efficiency and profitability and that protect crops from pests and pathogens in economically and environmentally sound ways. Projects that promote energy conservation or efficiency are strongly encouraged.

TABLE 1 - FISCAL YEAR 2014

DISTRIBUTION OF FEDERAL PAYMENTS FOR RESEARCH AT STATE AGRICULTURAL EXPERIMENT STATIONS & OTHER STATE INSTITUTIONS

STATE	<u>HATCH ACT AS AMENDED</u>			COOP	1890 UNIV	ANIMAL	SPECIAL	COMPETITIVE	HIGHER	FED ADMIN	TOTAL
	<u>HATCH</u>	<u>REGIONAL</u>	<u>TOTAL</u>	<u>FORESTRY</u>	<u>& TUSK</u>	<u>HEALTH &</u>	<u>AND OTHER</u>	<u>RESEARCH</u>	<u>EDUCATION</u>	<u>DIRECT</u>	<u>FEDERAL</u>
	<u>FORMULA</u>	<u>RESEARCH</u>		<u>RSH (MS)</u>	<u>UNIV (EA)</u>	<u>DIS RSCH</u>	<u>GRANTS</u>	<u>GRANTS</u>	<u>GRANTS</u>	<u>APPROP</u>	<u>FUNDS</u>
ALABAMA	3,924,771	1,200,882	5,125,653	1,075,399	5,348,682	61,266	468,085	2,330,188	4,117,942	-	18,527,215
ALASKA	1,079,587	195,676	1,275,263	580,759	-	-	-	-	1,636,227	-	3,492,249
AMER SAMOA	989,410	29,705	1,019,115	44,900	-	-	-	-	287,143	-	1,351,158
ARIZONA	1,523,024	1,034,626	2,557,650	374,659	-	40,031	200,000	995,148	1,054,218	-	5,221,706
ARKANSAS	3,340,006	995,492	4,335,498	972,348	2,314,040	75,436	-	1,562,971	1,525,654	-	10,785,947
CALIFORNIA	4,708,075	2,291,354	6,999,429	869,299	-	177,209	3,479,598	23,383,532	1,416,258	-	36,325,325
COLORADO	2,146,742	1,420,397	3,567,139	415,879	-	215,179	1,311,034	6,552,028	220,500	-	12,281,759
CONNECTICUT	1,603,136	673,622	2,276,758	395,270	-	21,410	313,739	1,067,687	238,500	-	4,313,364
DELAWARE	1,145,155	503,899	1,649,054	189,170	1,244,128	18,372	-	3,501,168	365,617	-	6,967,509
DISTRICT OF COLUMBIA	763,365	145,479	908,844	-	-	-	-	-	-	-	908,844
FLORIDA	3,026,030	992,924	4,018,954	848,689	2,144,897	71,025	2,253,172	7,709,076	2,505,780	-	19,551,593
GEORGIA	4,459,628	1,685,660	6,145,288	1,137,229	3,071,170	113,936	5,023,709	5,215,767	936,506	-	21,643,605
GUAM	1,028,395	167,546	1,195,941	86,120	-	-	-	68,644	287,143	-	1,637,848
HAWAII	1,128,911	524,650	1,653,561	251,000	-	2,363	746,496	6,775,198	3,142,731	-	12,571,349
IDAHO	1,947,915	815,716	2,763,631	642,589	-	47,561	-	5,643,815	-	-	9,097,596
ILLINOIS	5,501,286	1,439,333	6,940,619	539,540	-	45,566	156,230	7,606,745	-	-	15,288,700
INDIANA	5,271,387	1,170,927	6,442,314	621,979	-	66,741	-	3,309,429	-	-	10,440,463
IOWA	5,462,577	2,274,467	7,737,044	477,709	-	188,888	1,755,198	18,692,606	271,506	-	29,122,951
KANSAS	3,341,795	1,076,519	4,418,314	354,049	-	107,852	210,000	4,024,812	214,936	-	9,329,963
KENTUCKY	5,227,888	1,377,476	6,605,364	725,029	3,666,643	47,926	-	3,088,064	1,632,209	-	15,765,235
LOUISIANA	3,012,776	939,654	3,952,430	992,959	2,036,670	53,553	-	4,039,011	629,672	-	11,704,295
MAINE	1,715,378	702,087	2,417,465	889,908	-	9,664	282,330	623,813	-	-	4,223,180
MARYLAND	2,240,462	883,401	3,123,863	436,489	1,553,552	15,541	1,742,039	3,584,106	1,775,084	-	12,230,674
MASSACHUSETTS	1,874,384	862,321	2,736,705	457,099	-	62,035	310,000	4,253,206	49,992	-	7,869,037
MICHIGAN	5,292,474	1,257,924	6,550,398	951,739	-	108,856	2,384,156	11,633,848	726,326	-	22,355,323
MICRONESIA	1,067,137	-	1,067,137	-	-	-	-	-	287,143	-	1,354,280
MINNESOTA	5,177,901	1,228,702	6,406,603	807,469	-	124,713	5,558,709	3,645,420	784,904	-	17,327,818
MISSISSIPPI	3,810,913	1,148,644	4,959,557	1,054,789	2,528,547	60,587	1,056,496	149,995	766,123	-	10,576,094
MISSOURI	5,138,132	1,097,660	6,235,792	704,419	3,684,701	118,064	448,587	2,717,002	865,858	-	14,774,423
MONTANA	1,882,525	913,551	2,796,076	683,809	-	45,132	400,000	2,505,957	752,276	-	7,183,250
NEBRASKA	3,085,593	1,245,608	4,331,201	333,440	-	114,206	424,000	9,460,233	214,936	-	14,878,016
NEVADA	1,074,615	500,193	1,574,808	127,340	-	8,113	-	3,326,401	-	-	5,036,662
NEW HAMPSHIRE	1,382,535	504,950	1,887,485	498,319	-	5,534	-	1,156,720	-	-	3,548,058
NEW JERSEY	1,869,190	1,523,221	3,392,411	374,659	-	13,246	2,912,570	999,722	-	-	7,692,608
NEW MEXICO	1,553,168	550,332	2,103,500	271,609	-	32,366	65,000	169,882	2,031,738	-	4,674,095
NEW YORK	4,901,421	2,197,108	7,098,529	1,013,568	-	94,211	969,815	13,635,641	1,268,847	-	24,080,611

TABLE 1 - FISCAL YEAR 2014

DISTRIBUTION OF FEDERAL PAYMENTS FOR RESEARCH AT STATE AGRICULTURAL EXPERIMENT STATIONS & OTHER STATE INSTITUTIONS

STATE	<u>HATCH ACT AS AMENDED</u>			COOP	1890 UNIV	ANIMAL	SPECIAL	COMPETITIVE	HIGHER	FED ADMIN	TOTAL
	<u>HATCH</u>	<u>REGIONAL</u>	<u>TOTAL</u>	<u>FORESTRY</u>	<u>& TUSK</u>	<u>HEALTH &</u>	<u>AND OTHER</u>	<u>RESEARCH</u>	<u>EDUCATION</u>	<u>DIRECT</u>	<u>FEDERAL</u>
	<u>FORMULA</u>	<u>RESEARCH</u>		<u>RSH (MS)</u>	<u>UNIV (EA)</u>	<u>DIS RSCH</u>	<u>GRANTS</u>	<u>GRANTS</u>	<u>GRANTS</u>	<u>APPROP</u>	<u>FUNDS</u>
NORTH CAROLINA	6,433,820	1,643,843	8,077,663	1,096,008	4,220,752	234,347	-	11,228,070	504,000	-	25,360,840
NORTH DAKOTA	2,186,683	827,118	3,013,801	209,779	-	26,022	410,000	1,047,479	429,872	-	5,136,953
NORTHERN MARIANAS	980,714	-	980,714	-	-	-	-	-	-	-	980,714
OHIO	6,371,559	1,331,562	7,703,121	601,369	-	68,253	-	3,809,163	537,815	-	12,719,721
OKLAHOMA	3,319,220	816,815	4,136,035	580,759	2,405,251	69,119	209,451	4,521,805	1,565,759	-	13,488,179
OREGON	2,539,105	1,293,893	3,832,998	1,096,008	-	77,515	-	1,719,240	238,500	-	6,964,261
PENNSYLVANIA	6,028,780	1,701,123	7,729,903	745,639	-	101,587	-	9,009,919	375,000	-	17,962,048
PUERTO RICO	3,514,715	1,011,445	4,526,160	86,120	-	7,574	-	-	1,377,143	-	5,996,997
RHODE ISLAND	1,037,005	522,872	1,559,877	147,949	-	41,274	-	52,000	-	-	1,801,100
SOUTH CAROLINA	3,352,646	938,063	4,290,709	828,078	2,274,596	22,063	-	1,098,704	616,122	-	9,130,272
SOUTH DAKOTA	2,348,484	834,163	3,182,647	230,389	-	53,795	2,331,120	2,049,065	1,140,923	-	8,987,939
TENNESSEE	4,956,956	1,163,002	6,119,958	807,469	3,384,226	65,041	156,287	10,492,432	862,257	-	21,887,670
TEXAS	7,125,137	1,654,368	8,779,505	931,129	5,116,915	257,915	-	6,749,304	6,013,574	-	27,848,342
UTAH	1,352,388	1,007,901	2,360,289	168,560	-	12,016	5,089,189	1,919,701	-	-	9,549,755
VERMONT	1,434,063	442,757	1,876,820	518,929	-	13,309	5,023,709	2,149,020	-	-	9,581,787
VIRGIN ISLANDS	1,003,936	162,725	1,166,661	44,900	-	-	-	-	287,143	-	1,498,704
VIRGINIA	4,215,960	1,064,091	5,280,051	910,519	2,869,724	49,611	156,140	6,510,269	1,205,056	-	16,981,370
WASHINGTON	2,770,746	1,611,130	4,381,876	1,034,178	-	147,266	1,431,393	22,615,556	107,468	-	29,717,737
WEST VIRGINIA	2,585,163	735,815	3,320,978	663,199	1,529,203	13,366	-	798,936	549,813	-	6,875,495
WISCONSIN	5,237,078	1,319,521	6,556,599	786,859	-	64,293	312,164	8,164,088	478,436	-	16,362,439
WYOMING	1,297,924	728,883	2,026,807	292,219	-	222,412	-	1,495,742	-	-	4,037,180
OTHER	-	-	-	-	-	-	12,703	2,606,305	154,219	-	2,773,227
SBIR	4,995,599	1,629,917	6,625,516	922,380	1,425,493	107,520	1,237,160	8,505,074	173,251	-	18,996,394
FEDERAL ADMIN	5,377,318	1,698,101	7,075,419	1,018,830	1,574,550	160,000	2,247,680	12,656,360	2,216,960	14,133,000	41,082,799
SUBTOTAL	183,162,686	59,710,814	242,873,500	33,920,500	52,393,740	3,980,880	51,087,959	282,626,067	48,839,080	14,133,000	729,854,726
UNOBLIG BAL	-	-	-	-	-	-	5,063,981	240,618,501	17,174,141	-	262,856,623
SUBTOTAL	183,162,686	59,710,814	242,873,500	33,920,500	52,393,740	3,980,880	56,151,940	523,244,568	66,013,221	14,133,000	1,033,794,148
TRIBAL ENDOWMENT	-	-	-	-	-	-	-	-	11,880,000	-	11,880,000
BIOTECH RISK ASSESSMENT	628,900	198,600	827,500	40,500	91,260	19,120	41,740	863,000	18,240	-	1,901,360
TOTAL	183,791,586	59,909,414	243,701,000	33,961,000	52,485,000	4,000,000	56,193,680	524,107,568	77,911,461	14,133,000	1,047,575,508

Data may include 2014 obligations posted in 2015 and prior year funds obligated during 2014.

Table 1 for FY 2014
Distribution of Federal Payments for Extension Activities

NATIONAL INSTITUTE OF FOOD AND AGRICULTURE

STATE	SMITH-LEVER	FARM SAFETY	YOUTH FARM SAFETY	1890's UNIV & TUSK UNIV	FEDERALLY-RECOGNIZED TRIBES	EFNEP	YOUTH AT RISK	NEW TECHNOL O-GIES AT AG EXT	1890 FACILITIES	RENEWABLE RESOURCES	INDIAN TRIBAL 1994 COLLEGES	OTHER	TOTAL FEDERAL FUNDS
	FORMULA	SAFETY	SAFETY	UNIV	TRIBES								
ALABAMA	\$7,242,266	-	-	\$4,330,224	-	\$2,210,307	\$383,750	-	\$1,906,004	\$121,889	-	\$-	\$16,194,440
ALASKA	1,221,562	-	-	-	\$159,800	263,078	93,750	-	-	81,683	\$100,000	-	1,919,873
AMERICAN SAMOA	1,058,661	-	-	-	-	103,110	-	-	-	-	-	-	1,161,771
ARIZONA	2,181,612	-	-	-	541,800	715,966	290,000	-	-	71,412	200,000	-	4,000,790
ARKANSAS	6,081,103	-	-	1,906,550	-	1,416,463	-	-	904,550	96,650	-	1,230,265	11,635,581
CALIFORNIA	7,955,177	\$180,000	-	-	83,400	3,612,006	145,000	-	-	97,823	-	396,000	12,469,406
COLORADO	3,368,654	180,000	-	-	-	663,703	145,000	-	-	61,141	-	-	4,418,498
CONNECTICUT	2,214,078	-	-	-	-	539,358	290,000	-	-	46,467	-	-	3,089,903
DELAWARE	1,339,829	-	-	1,179,123	-	412,725	83,000	-	701,784	59,967	-	830,873	4,607,301
DISTRICT OF COLUMBIA	1,180,960	-	-	-	-	110,505	-	-	-	13,500	-	-	1,304,965
FLORIDA	4,837,230	-	-	1,869,745	73,400	2,426,624	145,000	-	917,884	98,118	-	331,045	10,699,046
GEORGIA	8,091,340	180,000	-	2,586,213	-	2,379,153	93,750	-	1,003,461	109,856	-	-	14,443,773
GUAM	1,118,297	-	-	-	-	103,831	-	-	-	13,500	-	-	1,235,628
HAWAII	1,382,356	-	-	-	-	347,341	-	-	-	46,467	-	149,843	1,926,007
IDAHO	2,932,011	-	-	-	248,239	388,061	145,000	-	-	53,805	-	192,000	3,959,116
ILLINOIS	9,830,364	-	-	-	-	2,188,092	-	-	-	55,271	-	-	12,073,727
INDIANA	9,199,724	674,532	-	-	-	1,284,801	93,750	-	-	52,338	-	139,088	11,444,233
IOWA	9,734,325	-	-	-	-	958,887	93,750	-	-	46,467	-	114,682	10,948,111
KANSAS	5,820,922	180,000	-	-	-	763,934	745,000	-	-	46,467	285,000	396,000	8,237,323
KENTUCKY	9,646,358	180,000	-	3,228,344	-	1,811,636	332,500	-	1,085,687	81,977	-	-	16,366,502
LOUISIANA	5,357,204	-	-	1,693,156	-	1,995,170	93,750	-	839,122	93,716	-	-	10,072,118
MAINE	2,407,015	174,027	-	-	-	499,043	93,750	-	-	65,542	-	150,000	3,389,377
MARYLAND	3,448,349	-	-	1,356,558	-	1,027,481	-	-	806,696	59,967	-	-	6,699,051
MASSACHUSETTS	2,727,963	-	-	-	-	1,038,488	-	-	-	46,467	-	-	3,812,918
MICHIGAN	9,310,904	180,000	-	-	88,400	1,869,294	145,000	-	-	78,748	285,000	142,316	12,099,662
MICRONESIA	1,184,193	-	-	-	-	106,401	-	-	-	-	-	-	1,290,594
MINNESOTA	9,321,562	-	-	-	80,900	1,060,098	1,458,925	-	-	59,673	560,000	369,276	12,910,434
MISSISSIPPI	7,140,333	-	-	2,016,121	74,400	1,838,502	93,750	-	885,965	105,454	-	149,999	12,304,524
MISSOURI	9,259,266	180,000	-	-	-	1,721,731	-	-	-	83,444	-	768,000	12,012,441
MONTANA	2,814,213	-	-	-	399,000	382,103	93,750	-	-	62,608	869,550	-	4,621,224
NEBRASKA	5,219,614	180,000	-	-	-	610,634	93,750	1,488,000	-	46,467	100,000	1,084,750	8,823,215
NEVADA	1,300,045	-	-	-	117,400	293,525	290,000	-	-	47,935	-	-	2,048,905
NEW HAMPSHIRE	1,790,916	-	-	-	-	324,919	-	-	-	46,467	-	-	2,162,302
NEW JERSEY	2,804,687	-	-	-	-	1,140,223	251,125	-	-	46,467	-	-	4,242,502
NEW MEXICO	2,247,648	-	-	-	154,800	596,281	-	-	-	67,010	430,660	-	3,496,399
NEW YORK	8,452,774	-	-	-	-	3,408,524	238,750	-	-	90,487	-	-	12,190,535
NORTH CAROLINA	11,985,868	180,000	-	3,661,204	84,400	2,714,413	435,000	-	1,120,444	206,922	-	204,000	20,592,251
NORTH DAKOTA	3,604,140	-	-	-	86,400	420,294	-	-	-	46,467	570,000	-	4,727,301
NORTHERN MARIANAS	1,043,433	-	-	-	-	102,751	-	-	-	-	-	-	1,146,184
OHIO	11,224,260	180,000	-	-	-	2,251,313	145,000	-	1,299,263	64,075	-	74,753	15,238,664
OKLAHOMA	5,859,488	-	-	2,040,087	73,400	1,230,067	-	-	991,778	70,239	-	-	10,265,059
OREGON	4,032,738	-	-	-	80,900	600,465	93,750	-	-	89,020	-	-	4,896,873
PENNSYLVANIA	10,608,285	180,000	334,265	3,314,669	-	2,693,840	93,750	-	1,185,493	86,085	-	-	18,496,387
PUERTO RICO	6,449,786	-	-	-	-	1,434,409	-	-	-	13,500	-	-	7,897,695
RHODE ISLAND	1,133,585	-	-	-	-	385,924	145,000	-	-	46,467	-	-	1,710,976
SOUTH CAROLINA	5,841,575	-	-	1,851,203	-	1,876,666	290,000	-	873,547	86,379	-	149,900	10,969,270
SOUTH DAKOTA	3,701,774	-	-	-	243,200	463,120	-	-	-	46,467	300,000	150,000	4,904,561
TENNESSEE	9,144,745	180,000	-	2,904,030	-	2,139,896	145,000	-	1,089,543	87,846	-	102,635	15,793,695
TEXAS	13,475,042	180,000	-	4,399,907	-	4,575,759	93,750	-	1,510,916	112,791	-	106,505	24,454,670
UTAH	1,879,138	180,000	-	-	-	410,541	93,750	-	-	49,402	-	-	2,612,831
VERMONT	1,911,985	180,000	-	-	-	319,441	-	-	-	46,467	-	-	2,457,893
VIRGIN ISLANDS	1,085,089	-	-	-	-	103,485	-	-	-	13,500	-	-	1,202,074
VIRGINIA	7,420,141	179,626	-	2,437,898	-	1,850,247	145,000	-	992,583	101,052	-	-	13,126,547
WASHINGTON	4,488,832	-	-	-	166,800	794,970	-	-	-	77,281	278,000	1,084,751	6,890,634
WEST VIRGINIA	4,272,354	180,000	-	1,388,168	-	1,128,668	344,875	-	826,080	71,706	-	119,469	8,331,320
WISCONSIN	9,153,604	180,000	-	-	72,400	1,033,203	93,750	-	-	75,814	285,000	-	10,893,771
WYOMING	1,703,603	-	-	-	88,400	275,850	-	-	-	250,870	-	-	2,318,723
PEER PANEL/CSAA	900	3,150	-	-	-	-	8,775	-	-	-	4,950	2,250	20,025
SUBTOTAL	291,243,880	4,091,335	334,265	42,163,200	2,917,440	67,417,320	8,059,200	1,488,000	18,940,800	3,897,600	4,268,160	8,438,400	453,259,600
FEDERAL ADMINISTRATION	8,257,500	170,472	13,928	1,756,800	121,560	516,680	335,800	62,000	789,200	162,400	177,840	8,567,000	20,931,180
OBLIGATIONS	299,501,380	4,261,807	348,193	43,920,000	3,039,000	67,934,000	8,395,000	1,550,000	19,730,000	4,060,000	4,446,000	17,005,400	474,190,780
BALANCE	498,620	-	-	-	-	-	-	-	-	-	-	55,141,600	55,640,220
TOTAL	300,000,000	4,261,807	348,193	43,920,000	3,039,000	67,934,000	8,395,000	1,550,000	19,730,000	4,060,000	4,446,000	72,147,000	529,831,000

Data may include 2014 obligations posted in 2015

OTHER

<u>STATE</u>	FOOD ANIMAL					
	RURAL HEALTH & SAFETY	FEDERAL ADMINISTRATION	RESIDUE AVOIDANCE DATABASE	WOMEN AND MINORITIES IN STEM FIELDS	MANDATORY PROGRAMS	OTHER
ALABAMA	-	-	-	-	-	\$ -
ALASKA	-	-	-	-	-	-
ARKANSAS	\$145,515	-	-	-	1,084,750	1,230,265
CALIFORNIA	-	-	\$396,000	-	-	396,000
COLORADO	-	-	-	-	-	-
DELAWARE	-	-	-	-	830,873	830,873
FLORIDA	-	-	204,000	\$127,045	-	331,045
HAWAII	149,843	-	-	-	-	149,843
IDAHO	-	-	-	-	192,000	192,000
ILLINOIS	-	-	-	-	-	-
INDIANA	139,088	-	-	-	-	139,088
IOWA	114,682	-	-	-	-	114,682
KANSAS	-	-	396,000	-	-	396,000
MAINE	150,000	-	-	-	-	150,000
MARYLAND	-	-	-	-	-	-
MASSACHUSETTS	-	-	-	-	-	-
MICHIGAN	142,316	-	-	-	-	142,316
MICRONESIA	-	-	-	-	-	-
MINNESOTA	-	-	-	-	369,276	369,276
MISSISSIPPI	149,999	-	-	-	-	149,999
MISSOURI	-	-	-	-	768,000	768,000
MONTANA	-	-	-	-	-	-
NEBRASKA	-	-	-	-	1,084,750	1,084,750
NEW YORK	-	-	-	-	-	-
NORTH CAROLINA	-	-	204,000	-	-	204,000
NORTH DAKOTA	-	-	-	-	-	-
OHIO	74,753	-	-	-	-	74,753
OKLAHOMA	-	-	-	-	-	-
OREGON	-	-	-	-	-	-
PENNSYLVANIA	-	-	-	-	-	-
SOUTH DAKOTA	149,900	-	-	150,000	-	299,900
TENNESSEE	102,635	-	-	-	-	102,635
TEXAS	-	-	-	106,505	-	106,505
WASHINGTON	-	-	-	-	1,084,751	1,084,751
WEST VIRGINIA	119,469	-	-	-	-	119,469
WISCONSIN	-	-	-	-	-	-
WYOMING	-	-	-	-	-	-
PEER PANEL/CSAA	1,800	-	-	450	-	2,250
SUBTOTAL	1,440,000	-	1,200,000	384,000	5,414,400	8,438,400
FEDERAL ADMINISTRATION	60,000	8,357,000	50,000	16,000	84,000	8,567,000
SUBTOTAL OBLIGATIONS	1,500,000	8,357,000	1,250,000	400,000	5,498,400	17,005,400
UNOBLIGATED BALANCE	-	-	-	-	55,141,600	55,141,600
TOTAL	1,500,000	8,357,000	1,250,000	400,000	60,640,000	72,147,000

Data may include 2014 obligations posted in 2015.

NATIONAL INSTITUTE OF FOOD AND AGRICULTURE
TABLE 1 - FISCAL YEAR 2014

DISTRIBUTION OF FEDERAL PAYMENTS FOR INTEGRATED ACTIVITIES

<u>STATE</u>	HOMELAND SECURITY	METHYL BROMIDE	ORGANIC TRANSITION RISK ASSESSMENT	CROP PROTECTION/P EST MANAGEMENT	RURAL DEVELOPMENT CENTERS	WATER QUALITY	SPECIALTY CROP RESEARCH INITIATIVE	ORGANIC AGRICULTURAL RESEARCH AND EXTENSION INITIATIVE	TOTAL FEDERAL FUNDS
ALABAMA	-	-	-	\$344,319	-	-	-	-	\$344,319
ALASKA	-	-	-	170,000	-	-	-	-	170,000
AMERICAN SAMOA	-	-	-	-	-	-	-	-	-
ARIZONA	\$202,000	-	-	660,998	-	-	-	-	862,998
ARKANSAS	-	\$475,638	-	106,000	-	-	-	-	581,638
CALIFORNIA	737,223	443,727	-	1,534,997	-	-	\$8,120,611	\$100,000	10,936,558
COLORADO	202,000	-	-	92,000	-	\$659,954	-	-	953,954
CONNECTICUT	-	-	-	165,000	-	750,000	-	-	915,000
DELAWARE	-	-	-	83,700	-	-	-	-	83,700
DISTRICT OF COLUMBIA	-	-	-	-	-	-	-	-	-
FLORIDA	737,223	473,783	-	288,836	-	659,676	1,363,057	-	3,522,575
GEORGIA	202,000	-	500,000	383,411	-	-	4,148,828	49,933	5,284,172
GUAM	-	-	-	32,500	-	-	-	-	32,500
HAWAII	-	-	-	-	-	-	-	-	-
IDAHO	-	-	-	274,300	-	-	-	-	274,300
ILLINOIS	-	-	-	1,134,600	-	-	-	2,718,583	3,853,183
INDIANA	556,637	-	-	190,000	-	659,839	-	1,987,150	3,393,626
IOWA	202,000	-	-	287,000	-	660,000	-	1,276,536	2,425,536
KANSAS	590,223	-	-	519,984	-	-	-	-	1,110,207
KENTUCKY	55,000	-	-	65,000	-	-	-	-	120,000
LOUISIANA	202,000	-	-	371,585	-	-	-	-	573,585
MAINE	-	-	-	119,000	-	-	-	21,686	140,686
MARYLAND	-	-	499,995	360,000	-	-	4,599,601	-	5,459,596
MASSACHUSETTS	-	-	-	194,000	-	-	-	-	194,000
MICHIGAN	610,223	-	-	381,847	237,284	-	7,729,878	-	8,959,232
MICRONESIA	-	-	-	-	-	-	-	-	-
MINNESOTA	55,000	-	-	194,500	-	-	-	-	249,500
MISSISSIPPI	55,000	-	-	88,800	237,285	-	-	-	381,085
MISSOURI	-	-	-	129,000	-	-	-	922,889	1,051,889
MONTANA	-	-	-	140,000	-	-	-	749,963	889,963
NEBRASKA	-	-	-	238,700	-	-	-	-	238,700

TABLE 1 - FISCAL YEAR 2014

DISTRIBUTION OF FEDERAL PAYMENTS FOR INTEGRATED ACTIVITIES

<u>STATE</u>	<u>HOMELAND SECURITY</u>	<u>METHYL BROMIDE</u>	<u>ORGANIC TRANSITION RISK ASSESSMENT</u>	<u>CROP PROTECTION/P EST MANAGEMENT</u>	<u>RURAL DEVELOPMENT CENTERS</u>	<u>WATER QUALITY</u>	<u>SPECIALTY CROP RESEARCH INITIATIVE</u>	<u>ORGANIC AGRICULTURAL RESEARCH AND EXTENSION INITIATIVE</u>	<u>TOTAL FEDERAL FUNDS</u>
NEVADA	-	-	-	128,300	-	-	-	-	128,300
NEW HAMPSHIRE	-	-	-	160,000	-	-	-	-	160,000
NEW JERSEY	55,000	-	-	70,250	-	-	-	-	125,250
NEW MEXICO	55,000	-	499,191	-	-	-	-	-	554,191
NEW YORK	813,271	-	499,932	1,529,329	-	-	4,230,167	2,046,670	9,119,369
NORTH CAROLINA	202,000	-	-	1,340,000	-	-	2,957,918	1,415,833	5,915,751
NORTH DAKOTA	-	-	-	62,500	-	-	-	-	62,500
NORTHERN MARIANAS	-	-	-	-	-	-	-	-	-
OHIO	55,000	-	-	289,000	-	-	-	1,996,381	2,340,381
OKLAHOMA	-	-	-	114,000	-	-	-	-	114,000
OREGON	55,000	-	496,557	430,845	-	-	3,027,880	2,047,867	6,058,149
PENNSYLVANIA	55,000	498,956	-	444,983	237,284	-	2,705,308	1,999,760	5,941,291
PUERTO RICO	-	-	-	-	-	-	-	-	-
RHODE ISLAND	-	-	-	161,000	-	-	-	-	161,000
SOUTH CAROLINA	-	-	-	168,000	-	-	1,783,670	-	1,951,670
SOUTH DAKOTA	-	-	-	97,700	-	227,135	-	-	324,835
TENNESSEE	55,000	-	-	84,000	-	659,926	1,912,178	-	2,711,104
TEXAS	202,000	-	499,482	937,345	-	-	3,315,464	-	4,954,291
UTAH	-	-	-	105,000	237,285	-	-	1,555,053	1,897,338
VERMONT	-	-	-	692,600	-	-	-	-	692,600
VIRGIN ISLANDS	-	-	-	-	-	-	-	-	-
VIRGINIA	-	-	-	271,600	-	-	49,498	-	321,098
WASHINGTON	202,000	-	798,697	155,000	-	-	5,910,755	42,951	7,109,403
WEST VIRGINIA	-	-	-	84,500	-	-	-	-	84,500
WISCONSIN	202,000	-	-	267,600	-	-	-	49,846	519,446
WYOMING	55,000	-	-	66,850	-	-	-	-	121,850
BIOTECH	-	1,820	-	1,200	-	-	157,987	3,320	164,327
SBIR	-	17,885	35,840	153,601	8,942	40,320	739,200	179,200	1,174,988
PEER PANEL	-	4,351	10,306	92,000	-	3,150	48,000	36,379	194,186
FED ADMIN	267,200	79,840	160,000	685,720	39,920	180,000	2,200,000	800,000	4,412,680
SUBTOTAL	6,680,000	1,996,000	4,000,000	17,143,000	998,000	4,500,000	55,000,000	20,000,000	110,317,000
UNOBLIGATED BALANCE	-	-	-	-	-	-	25,000,000*	-	-
TOTAL	6,680,000	1,996,000	4,000,000	17,143,000	998,000	4,500,000	55,000,000	20,000,000	110,317,000

*Emergency Citrus Research and Extension Program

**TABLE 2 - FISCAL YEAR 2015
NATIONAL INSTITUTE OF FOOD AND AGRICULTURE - DISTRIBUTION OF FEDERAL PAYMENTS**

<u>STATE</u>	<u>HATCH ACT</u>	<u>COOP FORESTRY RSH (MS)</u>	<u>1890 UNIV & TUSK UNIV (EA)</u>	<u>ANIMAL HEALTH & DIS RSCH</u>	<u>SPECIAL AND OTHER GRANTS</u>	<u>COMPETITIVE RESEARCH GRANTS</u>	<u>HIGHER EDUCATION GRANTS</u>	<u>FED ADMIN DIRECT APPROP</u>	<u>TOTAL FEDERAL FUNDS</u>
FEDERAL ADMIN	\$7,075,419	\$1,018,830	\$1,574,550	\$160,000	\$2,204,440	\$16,250,000	\$2,449,107	\$20,528,000	\$51,260,346
UNOBLIGATED BALANCE	236,625,581	32,942,170	50,910,450	3,840,000	52,906,560	308,750,000	54,717,893	-	740,692,654
TOTAL	243,701,000	33,961,000	52,485,000	4,000,000	55,111,000	325,000,000	57,167,000	20,528,000	791,953,000

TABLE 2 - FISCAL YEAR 2015
NATIONAL INSTITUTE OF FOOD AND AGRICULTURE - DISTRIBUTION OF FEDERAL PAYMENTS

<u>STATE</u>	FARM SAFETY YOUTH					YOUTH AT RISK	New Technologies at Ag Ext	1890 FACILITIES	RENEWABLE RESOURCES
	SMITH-LEVER FORMULA	FARM SAFETY EDUCATION AND CERTIFICATION	1890's UNIV & TUSKEGEE UNIV	FEDERALLY-RECOGNIZED TRIBES	EFNEP				
FEDERAL ADMINISTRATION	8,258	184	1,757	122	517	336	62	789	162
UNOBLIGATED BALANCE	291,743	4,426	42,163	2,917	67,417	8,059	1,488	18,941	3,898
TOTAL	300,000	4,610	43,920	3,039	67,934	8,395	1,550	19,730	4,060

	<u>RURAL HEALTH & SAFETY</u>	<u>FOOD SAFETY OUTREACH</u>	<u>FEDERAL ADM- SPECIAL PROJECTS</u>	<u>Extension Services at 1994 Institutions</u>	<u>Food Animal Residue Avoidance</u>	<u>Women and Minorities in STEM Fields</u>	<u>Mandatory Programs a/</u>	<u>TOTAL FEDERAL FUNDS</u>
FEDERAL ADMINISTRATION	60	100	8,357	178	50	16	927	21,875
UNOBLIGATED BALANCE	1,440	2,400	-	4,268	1,200	384	22,248	472,992
TOTAL	1,500	2,500	8,357	4,446	1,250	400	23,175	494,867

a/ Mandatory Programs includes: Beginning Farmer and Ranchers Development, Risk Management

TABLE 2 - FISCAL YEAR 2015
NATIONAL INSTITUTE OF FOOD AND AGRICULTURE - DISTRIBUTION OF FEDERAL PAYMENTS

STATE	Methyl	Organic	Crop Protection/Pest Management Programs	Rural	Homeland Security	Organic	Specialty Crops Research Initiative	TOTAL FEDERAL FUNDS
	Bromide	Transition Risk Assessment		Development Centers		Research and Extension Initiative		
SBIR	18,003	36,006	154,828	9,002	-	166,890	1,001,338	1,386,067
BIOTECH RISK	1,820	-	1,200	-	-	3,320	229,800	236,140
FEDERAL ADMIN OBLIGATED	80,000	160,000	688,000	40,000	268,000	741,600	2,966,400	4,944,000
UNOBLIGATED	1,900,177	3,803,994	16,355,972	950,998	6,432,000	17,628,190	69,962,462	117,033,793
TOTAL	2,000,000	4,000,000	17,200,000	1,000,000	6,700,000	18,540,000	74,160,000	123,600,000

TABLE 3 - FISCAL YEAR 2016
NATIONAL INSTITUTE OF FOOD AND AGRICULTURE - DISTRIBUTION OF FEDERAL PAYMENTS

<u>STATE</u>	<u>HATCH ACT</u>	<u>COOP FORESTRY RSH (MS)</u>	<u>1890 UNIV & TUSK UNIV (EA)</u>	<u>SPECIAL AND OTHER GRANTS</u>	<u>COMPETITIVE RESEARCH GRANTS</u>	<u>HIGHER EDUCATION GRANTS</u>	<u>FED ADMIN DIRECT APPROP</u>	<u>SUB-TOTAL FEDERAL FUNDS</u>
FEDERAL ADMIN	\$7,075,419	\$1,018,830	\$1,740,000	\$4,975,960	\$18,000,000	\$2,069,120	\$30,255,000	\$65,134,329
UNOBLIGATED BALANCE	249,125,581	32,942,170	58,760,000	119,423,040	432,000,000	45,812,880	-	938,063,671
TOTAL	\$256,201,000	\$33,961,000	\$60,500,000	\$124,399,000	\$450,000,000	\$47,882,000	\$30,255,000	\$1,003,198,000

**TABLE 3- FISCAL YEAR 2016
NATIONAL INSTITUTE OF FOOD AND AGRICULTURE - DISTRIBUTION OF FEDERAL PAYMENTS**

<u>STATE</u>	FARM SAFETY YOUTH FARM SAFETY					YOUTH AT RISK	New Technologies at Ag Ext	1890 FACILITIES
	SMITH-LEVER FORMULA	1890's UNIV & TUSKEGEE UNIV	EDUCATION AND CERTIFICATION	FEDERALLY- RECOGNIZED TRIBES	EFNEP			
FEDERAL ADMINISTRATION	8,258	1,934	184	122	517	336	70	868
UNOBLIGATED BALANCE	295,743	47,416	4,426	2,917	67,417	8,059	1,680	20,835
TOTAL	304,000	49,350	4,610	3,039	67,934	8,395	1,750	21,703

	RENEWABLE	GRANTS TO YOUTH	FOOD SAFETY	Extension Services at 1994	Mandatory	SUB-TOTAL
	RESOURCES	ORGANIZATIONS	OUTREACH	Institutions	Programs a/	FEDERAL FUNDS
FEDERAL ADMINISTRATION	162	40	200	189	3,000	15,880
UNOBLIGATED BALANCE	3,898	960	4,800	4,535	42,000	504,685
TOTAL	4,060	1,000	5,000	4,724	45,000	520,565

a/ Mandatory Programs includes: Beginning Farmer and Ranchers Development, Food Insecurity Nutrition Incentive Program, and Risk Management

**TABLE 3 - FISCAL YEAR 2016
NATIONAL INSTITUTE OF FOOD AND AGRICULTURE - DISTRIBUTION OF FEDERAL PAYMENTS**

<u>STATE</u>	<u>Organic Transition Risk Assessment</u>	<u>Crop Protection/Pest Management Programs</u>	<u>Rural Development Centers</u>	<u>Homeland Security</u>	<u>Organic Agricultural Research and Extension Initiative</u>	<u>Specialty Crops Research Initiative</u>	<u>SUB-TOTAL FEDERAL FUNDS</u>
SBIR	37,248	165,120	9,600	-	186,240	1,042,944	1,441,152
BIOTECH RISK	-	2,436	-	-	3,320	229,800	235,556
FEDERAL ADMIN OBLIGATED	160,000	688,000	40,000	268,000	800,000	3,200,000	5,156,000
UNOBLIGATED	3,802,752	16,344,444	950,400	6,432,000	19,010,440	75,527,256	122,067,292
TOTAL	4,000,000	17,200,000	1,000,000	6,700,000	20,000,000	80,000,000	128,900,000

NATIONAL INSTITUTE OF FOOD AND AGRICULTURE

Classification by Objects

(Dollars in thousands)

	2013 <u>Actual</u>	2014 <u>Actual</u>	2015 <u>Estimate</u>	2016 <u>Estimate</u>
Personnel Compensation:				
Washington D.C.				
11 - Full-time employees.....	32,450	34,171	35,626	36,648
12 - Personnel Benefits.....	10,315	9,686	9,776	10,092
13 - Benefits for former personnel.....	31	45	0	0
Total, personnel comp. and benefits.....	<u>42,796</u>	<u>43,902</u>	<u>45,402</u>	<u>46,740</u>
Other Objects:				
21.0 - Travel & Transportation of Persons.....	1,806	1,193	1,210	1,229
22.0 - Transportation of Things.....	15	4	4	4
23.1 - Rent to GSA.....	2	42	6,354	6,003
23.2 - Rent Paid to Others.....	0	1	1	1
23.3 - Comm., Util., Misc. Charges.....	1,175	1,359	1,378	1,400
24.0 - Printing and Reproduction.....	451	147	149	151
25.1 - Advisory and Assistance Services.....	290	312	316	321
25.2 - Other Services from non-Federal sources	7,180	9,279	9,409	10,559
25.3 - Purchases of Goods and Services.....	132	100	101	103
25.4 - Oper & Maintenance of Facilities.....	1,643	2,019	2,047	2,080
25.5 - Research & Development Contracts.....	8,324	9,131	9,259	9,500
25.6 - Medical Care.....	77	60	61	62
25.7 - Operation & Maint. of Equipment.....	9	10	10	10
25.8 - Subsistence & Support of Persons.....	21	45	46	46
26.0 - Supplies and Materials.....	82	197	200	203
31.0 - Equipment.....	85	313	317	322
41.0 - Grants, Subsidies & Contributions.....	1,082,052	1,242,193	1,730,894	1,576,929
Total, Other Objects.....	<u>1,103,344</u>	<u>1,266,405</u>	<u>1,761,756</u>	<u>1,608,923</u>
99.9 Total, new obligations.....	<u><u>1,146,140</u></u>	<u><u>1,310,307</u></u>	<u><u>1,807,158</u></u>	<u><u>1,655,663</u></u>
Position Data:				
Average Salary (dollars), ES positions.....	\$173,125	\$165,740	\$167,397	\$169,071
Average Salary (dollars), GS positions.....	\$91,480	\$100,846	\$101,854	\$102,873
Average Grade, GS positions.....	11.6	11.8	11.8	11.8

NATIONAL INSTITUTE OF FOOD AND AGRICULTURE

Shared Funding Projects

(Dollars in thousands)

	2013	2014	2015	2016
	<u>Actual</u>	<u>Actual</u>	<u>Estimate</u>	<u>Estimate</u>
Working Capital Fund:				
Administration:				
Beltsville Service Center.....	\$62	\$51	\$67	\$64
Mail and Reproduction Management.....	262	220	277	278
Integrated Procurement System.....	33	32	33	33
Procurement Operations a/.....	1	1	1	-
Subtotal.....	<u>358</u>	<u>304</u>	<u>378</u>	<u>375</u>
Communications:				
Creative Media & Broadcast Center.....	16	42	152	104
Finance and Management:				
NFC/USDA.....	75	102	102	101
Controller Operations.....	182	181	182	189
Financial Systems.....	423	403	411	503
Internal Control Support Services.....	163	140	139	139
Subtotal.....	<u>844</u>	<u>826</u>	<u>833</u>	<u>931</u>
Information Technology:				
NITC/USDA.....	493	569	134	139
International Technology Services.....	10	32	16	16
Telecommunications Services.....	417	441	580	676
Subtotal.....	<u>921</u>	<u>1,042</u>	<u>730</u>	<u>831</u>
Correspondence Management.....	<u>70</u>	<u>62</u>	<u>55</u>	<u>42</u>
Total, Working Capital Fund.....	2,209	2,276	2,148	2,283
Departmental Shared Cost Programs:				
1890's USDA Initiatives.....	11	11	12	12
Advisory Committee Liaison Services.....	10	1	2	2
Classified National Security Inforamtion.....	-	-	4	4
Continuity of Operations Planning.....	8	8	8	8
E-GOV Initiatives HSPD-12.....	25	26	27	27
Emergency Operations Center.....	9	9	9	9
Facility and Infrastructure Review and Assessment.....	2	2	2	2
Faith-Based Initiatives and Neighborhood Partnerships.....	1	1	2	2
Federal Biobased Products Preferred Procurement Program....	1	1	-	-
Honor Awards a/.....	0	0	0	0
Hispanic-Serving Institutions National Program.....	8	8	8	8
Human Resources Transformation (inc. Diversity Council).....	6	7	7	7
Intertribal Technical Assistance Network.....	12	12	12	12
Medical Services.....	14	15	38	39
People's Garden.....	2	2	3	3
Personnel and Document Security.....	5	6	5	5
Pre-authorizing Funding.....	13	14	15	15
Retirement Processor/Web Application.....	2	2	2	2
Sign Language Interpreter Services.....	37	21	-	-
TARGET Center.....	3	4	6	6
USDA 1994 Program.....	3	3	3	3
Virtual University.....	8	8	8	8
Visitor Information Center.....	1	1	-	-
Total, Departmental Shared Cost Programs.....	<u>183</u>	<u>161</u>	<u>173</u>	<u>174</u>

NATIONAL INSTITUTE OF FOOD AND AGRICULTURE

Shared Funding Projects

(Dollars in thousands)

	2013	2014	2015	2016
	<u>Actual</u>	<u>Actual</u>	<u>Estimate</u>	<u>Estimate</u>
E-Gov:				
Budget Formulation & Execution Line of Business a/.....	-	0	0	0
Enterprise Human Resources Integration.....	10	9	8	9
E-Rulemaking.....	4	4	3	2
E-Training.....	8	11	11	11
Financial Management Line of Business.....	1	1	1	1
Geospatial Line of Business a/.....	0	-	-	1
GovBenefits.gov.....	4	-	-	-
Grants.gov.....	3	2	2	2
Human Resources Line of Business.....	1	1	1	1
Integrated Acquisition Environment - Loans and Grants.....	5	7	8	8
Integrated Acquisition Environment.....	3	3	3	3
Recreation One-Stop.....	-	-	-	-
Total, E-Gov.....	<u>39</u>	<u>38</u>	<u>37</u>	<u>38</u>
Agency Total.....	<u>2,430</u>	<u>2,476</u>	<u>2,358</u>	<u>2,495</u>

a/ Less than \$500,000

NATIONAL INSTITUTE OF FOOD AND AGRICULTURE

Status of Programs

Current Activities:

- **Hatch Act.** The Hatch Act provides formula funds to support research at the State Agricultural Experiment Stations which improves production, marketing, distribution, and utilization of crops and livestock for the food supply, health, and welfare of the American people, while conserving resources, enhancing nutrition and sustaining rural living conditions. Students are provided training opportunities to assist in scientific research projects conducted at the stations. Hatch Act formula funds are matched by non-Federal funds and are used to support research in forest and natural resources; crop resources; animal resources; people, communities, and institutions; competition, trade adjustment, price, and income policy; and food science and human nutrition. As a result of provisions contained in the Agricultural Research, Extension, and Education Reform Act of 1998 (AREERA), at least 25 percent of available Hatch funding must be used to support multi-State research; States must expend 25 percent, or two times the level spent in fiscal year (FY) 1997 (whichever is less), on integrated research and extension activities.
- **McIntire-Stennis Cooperative Forestry Research.** The McIntire-Stennis Cooperative Forestry Research program provides formula funds to support research related to use of the Nation's forest resources. Timber production, forest land management, wood utilization, and the associated development of new products and distribution systems are some of the topics of this research. Additional areas of investigation include wildlife, recreation, water, range, and environmental quality, which are essential to the long-term productivity and profitability of the integrated system of forest resources.
- **Evans-Allen Program.** The Evans-Allen formula funds research program for the 1890 Colleges and Tuskegee University was established in the Food and Agriculture Act of 1977, as amended. Beginning in FY 1979, annual appropriations have been used to support continuing agricultural research at the 1890 Colleges and Tuskegee University. The general provisions section 753 of Public Law 107-76 makes West Virginia State University eligible to receive funds under this program. Appropriations under this authority are the primary source of support for the food and agricultural research programs at the 1890 Colleges, Tuskegee University and West Virginia State University. Section 1445(a)(2) of the National Agricultural Research, Extension, and Teaching Policy Act of 1977 (NARETPA) (7 U.S.C. 3222(a)(2)), as amended by section 7122 of the Food, Conservation, and Energy Act of 2008 (FCEA or 2008 Farm Bill), requires that funds appropriated for this program be not less than 30 percent of the Hatch Act appropriation. Evans-Allen funds require a 100 percent non-Federal match. These programs place emphasis on small-scale agriculture, human nutrition, rural development and quality of living, crop resources, and animal resources. In addition, this program supports the development of agricultural expertise by providing training opportunities for students to assist in the research projects being conducted at these institutions.
- **Animal Health and Disease Research.** The Animal Health and Disease Research formula program provides funding to accredited schools or colleges of veterinary medicine and/or State Agricultural Experiment Stations that conduct animal health and disease research. State Comprehensive Plans for animal health research, approved by NIFA, are being followed by the eligible institutions. Provisions of Section 1433 of NARETPA permit selection of studies within each State based on the highest-priority needs and the capabilities of the institutions to conduct the needed research.
- **Special Grants.** The Special Grants Program concentrates on problems of national, regional, and local interest beyond the normal emphasis in the formula programs. Program objectives are to facilitate or expand promising breakthroughs of importance to the Nation in areas of food and agricultural sciences and to facilitate or expand ongoing State-Federal food and agricultural research programs. Generally, funding is for projects that have regional and/or national impact, such as those projects addressing global change, pest control issues, aquaculture centers and research, sustainable agriculture, critical agricultural materials, potato, alfalfa forage and research, and supplemental and alternative crops.

- **Agriculture and Food Research Initiative (AFRI).** AFRI supports fundamental and applied research, extension, and education to address food and agricultural sciences (as defined under section 1404 of NARETPA). Competitive awards are made to eligible recipients to address critical issues in U.S. agriculture in the areas of food security, climate variability change, sustainable bioenergy, childhood obesity, food safety, and water resources. Addressing these critical issues will engage scientists and educators with expertise in plant health and production and plant products; animal health and production and animal products; food safety, nutrition, and health; renewable energy, natural resources, and environment; agriculture systems and technology; and agriculture economics and rural communities. Of the amount of funds made available for research, not less than 60 percent is used for fundamental research and not less than 40 percent is used for applied research. No less than 30 percent of the amount allocated for fundamental research is available for research conducted by multidisciplinary teams and no more than 2 percent to be used for equipment grants. In addition, no less than 30 percent of AFRI funding may be used to carry out integrated research, education, and extension activities such as those provided for in section 406 of AREERA (7 U.S.C. 7626).
- **Small Business Innovation Research (SBIR) Program.** The Small Business Innovation Development Act was designed to strengthen the role of small, innovative firms in Federally funded research and development. Under the SBIR program, between 2.9 to 3.2 percent of appropriations for extramural research and development is set aside for awards to eligible small firms. The SBIR Program is a three-phased effort, but only Phase I and Phase II, the feasibility and follow-on research and development phases respectively, are eligible for support with USDA funds. Firms are encouraged to secure Phase III funding for the commercialization phase from other public or private sources. The research areas supported under the SBIR program address critical issues in U.S. agriculture in the areas of global food security and hunger, climate change, sustainable bioenergy, childhood obesity, and food safety. Addressing these critical issues will engage small businesses with expertise in a number of areas including plant and animal production and protection; forests and related resource sciences; air, soil and water resources; food and nutrition sciences; rural development; biofuels and biobased products; aquaculture; and small and mid-sized farms. NIFA administers the SBIR program for USDA, including the funds set aside for SBIR from other USDA agencies.
- **Biotechnology Risk Assessment Research Grants Program (BRAG).** BRAG is a competitive program for research grants to identify and develop appropriate management practices to minimize physical and biological risks associated with genetically engineered animals, plants, and microorganisms.
- **Tribal Colleges Research Grants Program.** The Tribal Colleges Research Grants Program (authorized under the Equity in Educational Land-Grant Status Act of 1994, Public Law 103-382, as amended) is a competitive program for conducting agricultural research activities that address tribal, National, or multi-State priorities.
- **Farm Business Management and Benchmarking Program.** The Farm Business Management and Benchmarking Program provides support to improve the farm management knowledge and skills of agricultural producers, and establish and maintain a national, publicly available farm financial management database to support improved farm management. Funds are awarded on a competitive basis under the program.
- **Sun Grant Program.** The Sun Grant Program funds six sun grant centers that award subgrants to enhance national energy through the development, distribution, and implementation of biobased energy technologies. Through biobased energy and product technologies, activities are supported that promote diversification, and the environmental sustainability of, agricultural production in the U.S., and economic diversification in rural areas of the U.S. Funds are also used to enhance the efficiency of bioenergy and biomass research and development programs through improved coordination and collaboration among USDA, Department of Energy, and land-grant colleges and universities.
- **Capacity Building for Non-Land Grant Colleges of Agriculture.** The Capacity Building for Non-Land Grant Colleges of Agriculture (NLGCA) Program competitively awards grants to assist the institutions in maintaining and expanding the capacity of the NLGCA Institutions to conduct education, research, and outreach activities relating to agriculture, renewable resources, and other similar disciplines.

- Higher Education Programs. The competitive Institution Challenge, Multicultural Scholars, and Graduate Fellowship Grants Program supports challenge grants to stimulate and enable colleges and universities to provide the quality of education necessary to produce graduates capable of strengthening the Nation's food and agricultural scientific and professional workforce. Institution challenge grants match USDA funds on a dollar-for-dollar basis. The program provides funding for multicultural scholars grants to institutions for scholarships to attract and educate more students from groups currently underrepresented in the food and agricultural sciences for careers in agriscience and agribusiness. Under multicultural scholars grants, institutions must provide 25 percent in matching funds. Also supported are fellowship grants to colleges and universities to stimulate the development of food and agricultural scientific expertise in targeted areas of national need specifically to the recruitment and training of doctoral students for critical food and agricultural scientific positions. The competitive Secondary Education, Two-year Postsecondary Education, and Agriculture in the K-12 Classroom Program promotes and strengthens the ability of public secondary schools' education in agribusiness and agriscience and increases the number and/or diversity of young Americans pursuing college degrees in the food and agricultural sciences. The competitive 1890 Institution Capacity Building Grants Program is one of the Department's high-priority initiatives to advance the teaching and research capacity, and expand the competitiveness of the 1890 Land-Grant Institutions and Tuskegee University. The competitive Hispanic-Serving Institutions Education Grants Program promotes and strengthens the ability of Hispanic-Serving Institutions to carry out higher education teaching programs in the food and agricultural sciences. The Tribal Colleges Endowment Fund distributes interest earned by an endowment established for the 1994 Land-Grant Institutions (legislatively 35 Tribally controlled colleges are eligible) as authorized in the Equity in Education Land-Grant Status Act of 1994, P.L. 103-382, as amended. The Endowment Fund enhances education in agricultural sciences and related areas for Native Americans by building education capacity at these institutions. The Tribal Colleges Education Equity Grants Program is a formula program designed to enhance educational opportunities for Native Americans by strengthening instructional programs in food and agriculture. The Alaska Native Serving and Native Hawaiian-Serving Institutions Education Grants Program is designed to recruit, support and educate minority scientists and professionals, and advance the educational capacity of these Native-serving institutions. Grants for Insular Areas Program supports activities at higher education institutions located in U.S. insular areas. Grants support enhancement of resident instruction programs that focus on agriculture, natural resources, forestry, veterinary medicine, home economics, and disciplines closely allied to food and agriculture production and delivery systems. The grants also fund distance education programs that strengthen the capability of the institutions to carry out collaborative distance food and agricultural education programs using digital network technologies. The Veterinary Medicine Loan Repayment Program provides for a loan repayment program for a specified payment amount of qualifying educational loans of veterinarians for geographical areas that have a shortage of veterinarians; and areas of veterinary practice that the Secretary determines have a shortage of veterinarians, such as food animal medicine, public health, epidemiology, and food safety.
- Smith-Lever 3(b) and (c). Federal contributions for cooperative extension work are primarily derived from Section 3(b) and (c) formula funds appropriated under the Smith-Lever Act of 1914. These funds comprise about two-thirds of the total Federal funding for extension activities. Federal funds are matched by non-Federal sources, primarily States and counties, and support the major educational efforts that are central to the mission of the Cooperative Extension System and common to most extension units, such as agricultural production; nutrition, diet, and health; natural resources and environmental management; community resources and economic development; family development and resource management; 4-H and youth development; and leadership and volunteer development. As a result of provisions contained in AREERA, States must expend 25 percent, or two times the level spent in FY 1997 (whichever is less), on cooperative extension activities in which two or more States cooperate to solve problems that concern more than one State. This also applies to activities that integrate cooperative research and extension.
- Smith-Lever 3(d). Other sources of Federal funding for extension activities include the Smith-Lever section 3(d) or targeted funds, which are provided to the States to address special programs or concerns of regional and national importance and are distributed through administrative or non-statutory formulas and merit-reviewed projects. The following extension programs are funded under the Smith-Lever 3(d) funding mechanism: Expanded Food and Nutrition Education Program (EFNEP); Farm Safety and Youth Farm Safety Education and Certification; Children, Youth, and Families At Risk; Federally-Recognized Tribes Extension Program; and

New Technologies for Agricultural Extension. EFNEP funds are distributed on a formula basis and are not required to be matched. Funds under other Smith-Lever 3(d) programs are distributed on a competitive process.

- Extension 1890 Institutions. Federal funding provides the primary support for the extension programs at the 1890 Land-Grant Institutions and Tuskegee University. The general provisions section 753 of Public Law 107-76 makes West Virginia State University eligible to receive funds under this program. This program primarily addresses the needs of small-scale and minority agricultural producers and other limited-resource audiences. Section 1444 of the 1977 Farm Bill provides that funds made available to the 1890's for extension programs be distributed on the basis of a formula identical to the Smith-Lever 3 (b) & (c) formula. Section 7121 of FCEA amended section 1444(a)(2) to require that funds appropriated for this program shall be not less than 20 percent of the Smith-Lever Act appropriation. The payment of funds under this program requires a 100 percent non-Federal match. These funds are used to maintain the extension infrastructure at the 1890 institutions and the partnership with the Cooperative Extension System.
- 1890 Facilities Program. Federal funds provide the primary support for enhanced extension, research, and teaching facilities at all of the 1890 Land-Grant Institutions. Some examples of the use of funds include the renovation of office space and laboratories; much needed computer and equipment purchases; the acquisition of satellite downlinking and distance learning capabilities; and the construction of joint research and extension multi-purpose/conference centers. The 1890 Facilities Program enables the 1890 Land-Grant Institutions to improve their capacity and better address the needs of students, farmers, and rural populations with limited resources.
- Renewable Resources Extension Act (RREA). RREA provides funding for expanded natural resource education programs. Funds are distributed primarily by an administratively-derived formula to all States for educational programs and projects and a limited number of special emphasis national programs. The Cooperative Extension System provides research-based education about renewable natural resources. Extension education enables the management of renewable natural resources in a way that better serves individual land owners, local communities, and the Nation.
- Rural Health and Safety Education. The program helps rural residents avoid the numerous obstacles to maintaining their health status. The program focuses on training health care professionals in rural areas.
- Agriculture in the Classroom. The program helps advance agricultural literacy through a grassroots network of State coordinators, school teachers, agribusiness leaders, and other educators by supporting initiatives that include expanding outreach to underrepresented populations; regional demonstration projects; integration of information technology to reduce program delivery costs; and outstanding teacher recognition initiatives.
- Extension Services at 1994 Institutions. The program provides funding for Native American communities and Tribal Colleges for extension activities as set forth in the Smith Lever Act. Funding is awarded on a competitive basis.
- Food Animal Residue Avoidance Database Program. The program is a computer-based decision support system designed to provide livestock producers, extension specialists, and veterinarians with practical information on how to avoid drug, pesticide, and environmental contaminant residue problems.
- Women and Minorities in Science, Technology, Engineering, and Mathematics (STEM) Fields. The program supports projects to increase the participation of women and underrepresented minorities from rural areas in STEM fields that are relevant to USDA. Priorities identified include: promotion of a safe, sufficient, and nutritious food supply for all Americans and for people around the world; sustainable agricultural policies that foster economic viability for small and mid-sized farms and rural businesses, protect natural resources, and promote value-added agriculture; national leadership in climate change mitigation and adaptation; building a modern workplace with a modern workforce; and support for 21st century rural communities.
- Section 406 Programs. Per Section 406 of AREERA, grants are awarded on a competitive basis to support integrated, multifunctional agricultural research, extension, and education activities. Programs include: The

Water Quality Program addresses water quality problems of National importance. The Methyl Bromide Transition Program supports the discovery and implementation of practical pest management alternatives for commodities affected by the methyl bromide phase-out. The Organic Transition Program supports the development and implementation of biologically based management practices that mitigate the ecological, agronomic and economic risks associated with a transition from conventional to organic agricultural production systems. The Crop Protection/Pest Management Program, supports IPM projects that respond to pest management challenges with coordinated state-based, regional and national research, education, and extension programs.

- Regional Rural Development Centers. These programs are conducted under the authority of Section 2(c)(1)(B) of Public Law 89-106, as amended (7 U.S.C. 450i(c)) and Title V of the Rural Development Act of 1972 (Pub. L. 92-419), which enables the agency to support research, extension or education activities. The program improves the social and economic well-being of rural communities in their respective regions.
- Food and Agriculture Defense Initiative (FADI). The FADI Program is authorized Section 1484 of the Farm Security and Rural Investment Act of 2002. This program provides support for the National Plant Diagnostic Network and the National Animal Health Laboratory Network to identify and respond to high risk biological pathogens in the food and agricultural system. The network is used to increase the ability to protect the Nation from plant and animal disease threats by providing surveillance, early detection, mitigation, and recovery functions that serve to minimize the threats. The funds also are used to support the Extension Disaster Education Network.

Selected Examples of Recent Progress:

- Hatch Act. University of Georgia horticulturists developed several varieties of blueberries that are specialized as early- and late-season crops, as well as larger berries at a higher yield. As a result, blueberry production has increased from 3,500 acres to more than 20,000 acres in recent years. With annual farm gate values approaching \$254 million, the blueberry has become Georgia's number one fruit crop. In addition to improving yield, this research project included additional mechanical harvesting, reducing commercial production time to 3 years or less, and developing sound harvest management practices.
- McIntire-Stennis Cooperative Forestry Research. Human dimensions of natural resources have become a recognized component of management that is just as necessary as ecological study. University of Maine scientists have completed work on the human dimensions of forest pests. They examined the risk perceptions, social acceptability of forest management, and outreach preferences of landowners in Maine, New Hampshire, and Vermont toward Emerald Ash Borer and Asian Longhorned Beetle. This research will help managers and policy makers encourage early detection efforts and build socially acceptable community response plans.
- Evans-Allen Program. Scientists at Southern University in Louisiana are studying Ultraviolet-B Radiation (UV-B) protection strategies especially in selected southern trees. The study is helping to identify and quantify UV-B absorbing compounds and measuring leaf epidermal screening effectiveness to enhanced UV-B using a fiber-optic microprobe system. Information gathered was shared with citizens and the scientific community in collaboration with Southern University Extension. As a result, participants gained new knowledge about climate change, the impacts of UV-B on the environment, and possible adaptation strategies. The current findings show that citizens have become more aware of the dangers of UV-B and how to select trees to plant that minimize potential harmful effects.
- Special Grants. Global Change UV-B Monitoring Program. A USDA UV-B Monitoring and Research Program (UVMRP) led by Colorado State University maintains three distinct and complementary program components - (1) UV-B Monitoring Network; (2) Integrated Agricultural Impact Assessment System; and (3) UV-B Crop Effects/Response Studies. The climatological network successfully maintains a data collection rate of at least 95 percent across the entire network, and continues to repair and replace instruments as needed. Since 1992, the UVMRP operates the only remaining network of nationwide surface monitoring of UV-B irradiance. The crop effects research and climate-crop modeling components continue joint progress towards the goal of the Integrated Agricultural Impact Assessment System.

Minor Crop Pest Management, IR-4. As the Interregional Research Project Number 4 (IR-4 Project) prepared to mark its 50th anniversary in 2013, it commissioned an economic analysis of the program that was performed by researchers at the Michigan State University Center for Economic Analysis. The study concluded, “The IR-4 Project has been a pivotal resource in providing U.S. residents a plentiful and low-cost array of vegetables, fruits, berries and tree nuts since 1963 by facilitating the registration of newer, lower-toxic pest control products with the EPA for application on specialty crops. Specialty crops make up about 40 percent of the total value of U.S. crop production and include both food and ornamental crops that afford insufficient economic incentive for pesticide companies to support initial or continuing registration of commercial pesticides. The IR-4 Project leverages resources to pursue registration for such uses. Specifically, growers benefit in higher yields with higher quality output, consumers benefit by higher varieties and lower costs to food and ornamental crops, and the industry benefits through better global competitiveness of U.S. output. Including all secondary impacts, the IR-4 Project is anticipated to support research and industry sales sufficient to support 104,650 U.S. jobs and bumps annual gross domestic product by \$7.3 billion.”

Aquaculture Centers. Coldwater Disease (CWD) is one of the most significant disease problems in commercial trout aquaculture worldwide, causing mortalities of up to 50 percent in young fish. To better manage CWD at aquaculture facilities in the U.S., a multi-state research team led by Washington State University and the University of Idaho developed various diagnostic tools and patented a vaccine for CWD. An antibody that identifies the bacteria causing CWD has been commercialized through a private company. The CWD vaccine has been patented by the University of Idaho and licensed to another private company for technology transfer and commercialization. Test results have been submitted to USDA for conditional approval of the vaccine, which is the first step to commercialization. Work on probiotics has demonstrated activity against the bacterium causing CWD and reduced mortality when fed to fish in both laboratory and field trials. The antibody provides a needed tool to identify and manage CWD outbreaks. The vaccine and probiotic are widely applicable to the U.S. trout industry and public trout and salmon hatchery programs. Their use can save the trout industry more than \$10 million annually in losses and use of probiotics will significantly reduce the need for antibiotic use.

Sustainable Agriculture. Since 1988 the Sustainable Agriculture Research and Education Program (SARE) has used its regional competitive grants programs to fund a variety of projects, both large and small, to support research and education about using cover crops to improve soils and protect water while reducing irrigation, fertilizer and herbicide use. In 1993 SARE compiled research results into its first book, *Managing Cover Crops Profitably*. Second and third editions have since expanded the book and made it the “go to” source for information on cover crops with more than 30,000 hard copies distributed and a comparable number downloaded from the web. After using a small SARE 2007 farmer/rancher grant to test cover crops two Nebraska brothers were so impressed they started a cover crop seed business of their own in 2008. Today, Green Cover Seed has created a handful of good rural jobs and distributes seed across the U.S. An Ohio farmer used his 2009 grant to study the role of cover crops in nutrient cycling and weed management. Through this experience, he decided to launch Center Seeds, a new company that now employs 4 full-time and several part-time workers.

- Agriculture and Food Research Initiative. Peanuts are the 12th most valuable cash crop in the U.S. Allergies to peanuts are among the most severe of all food allergies, affecting some 2.8 million people in the U.S., including 400,000 school-aged children. North Carolina Agricultural and Technical State University (NC A&T) scientists have discovered a way to remove up to 98 percent of the allergens. Researchers found that by soaking roasted peanuts that have been shelled and skinned in a solution containing food-grade enzymes, they can virtually reduce or eliminate two key allergens. The process does not affect flavor, and treated peanuts can be eaten whole, in pieces, or as flour in various products. The University of North Carolina at Chapel Hill validated the process through human clinical trials using skin prick tests. NC A&T officials expect hypoallergenic peanut products to be available commercially soon.

Lettuce contains a gene that halts seed germination if it gets too hot. This is a concern in California and Arizona—two states that produce more than 90 percent of the lettuce grown in the U.S. Researchers at the University of California-Davis discovered a chromosome in wild Peruvian lettuce that allows for germination at higher temperatures and transferred that gene into commercial lettuce. The result is less water used to cool the

soil, a longer growing season, and a reduced need for shipping. As a result there is more water for other uses, more money for farmers, more fresh lettuce for consumers, and reduced greenhouse gas emissions.

Iowa State University is leading a wide range of researchers from 10 land-grant universities and USDA's Agricultural Research Service in a Sustainable Corn Project to mitigate and adapt the Midwest "Corn Belt" to climate change. Since the project began in 2011, researchers have created a central database to better evaluate how drainage, cover crops, tillage, fertilizers, and crop rotations affect water, carbon, and nitrogen cycles under variable weather conditions. In addition, the team is training 159 students—undergraduate through post-doctoral—to become the next generation of scientists who can help increase future food production and ensure the integrity and resilience of natural resources.

- **Small Business Innovation Research Program.** A common byproduct of the corn ethanol industry is distillers grains (DGS), which can be used as a replacement for corn and protein supplement in animal feeds. The problem with DGS is that it has a much higher phosphorus content than corn, so its use in animal feed significantly increases the phosphorus content in manure, leading to pollution of surface waters. A project in Kansas is developing procedures for removal of phosphorus from DGS by converting it to insoluble struvite (magnesium ammonium phosphate hexahydrate), which leads to a significant decrease in phosphorus in manure when the treated DGS is used in animal feeds. The struvite also can be used as fertilizer and thereby adds value to the corn ethanol industry.
- **Biotechnology Risk Assessment Research Grants Program.** Research in Connecticut is determining if forests can contain wind-blown pollen (and transgenes) by acting as a pollen trap. The project will help regulators and stakeholders predict and control ecological risks and gene flow from engineered switchgrasses. In this project, switchgrass pollen dispersal and wind patterns are being studied at two field sites. Results from the first year (2013) of field data showed that forest windbreaks can substantially reduce pollen movement. This approach could be applied to many crop species and situations where there is a need to isolate experimental field plots or support coexistence between farm systems.
- **Tribal Colleges Research Program.** Eelgrass, a native plant of Puget Sound, may harbor a naturally occurring bacteria that attacks harmful algal blooms which cost the U.S. \$82 million in shellfish poisoning, fish kills and contaminated drinking water each year according to the National Oceanic and Atmospheric Administration (NOAA). Northwest Indian College (NWIC) in Washington assembled a team of microbiologists, seagrass ecologists, and marine ecologists committed to training American Indian students in science while exploring this natural protector of the sound's eco-system. Five NWIC student interns have been supported with this project. Tribal high school students also have visited the project site. A Japanese graduate student from Hokkaido University, also participated in the project and taught NWIC students and researchers how to isolate bacteria from seawater and eelgrass samples. The project is a direct response to the NIFA-USDA goal of conservation of natural resources and addressing global warming. The data being gathered now at NWIC will help NOAA and other research teams determine if this bacteria can be a biological control for algal blooms.
- **Higher Education Programs. 1890 Institutions Capacity Building Grants Program.** The Aquaculture/Fisheries Center and the Department of Aquaculture and Fisheries, two jointly administered units of the University of Arkansas at Pine Bluff, are recognized nationally and internationally as a leader in aquaculture/fisheries teaching, research, and extension programs. The Career Awareness, Planning, and Leadership Development to Enhance Recruitment and Retention of Minority Students (CAPLEDER) project will increase recruitment and retention of minority baccalaureate students in aquaculture and fisheries through innovative programs that emphasize career awareness, and planning among aquaculture/fisheries students. The program has shown success with a summer internship program completing its third year; the first CAPLEDR student graduating in December, 2013; two other CAPLEDR students enrolling in the B.S. degree program; and a third student enrolling in the M.S. program.

Hispanic Serving Institutions Education Grants Program. The Urban Agriculture Community-based Research Experience in California will improve Orange County's food security and engage diverse students in science, technology, engineering, and mathematics fields. The program is providing opportunities for underrepresented undergraduates at California State University Fullerton to gain knowledge, skills, and hands-on experience in

food and agricultural sciences, preparing them for USDA-related occupations. As a result of this program, student knowledge of food, agricultural, and natural resource sciences increased by at least 40 percent, and surveys indicated that external stakeholders value the skills and knowledge students gained.

Tribal Colleges Education Equity Grants Program. A project at the College of Menominee Nation in Wisconsin is developing interdisciplinary curriculum materials that can be used to provide college students, resource managers, scientists, and extension agents an opportunity to learn about the ecological, cultural, economic importance of sustainable forest management and forest materials utilization through the lens and experience of Menominee. They have made significant progress in the past year by conducting the Forest Resource Summit regional meeting - a major component of the needs assessment process geared toward gathering input from diverse stakeholder groups; conducting a community engagement event; and retaining subject specialists to develop curricula to advance the ethnobotany and phenology components of the project. The project also incorporated elements of climate change into the framework of activities, including a joint effort with the U.S. Forest Service to develop a pilot training program on adapting silviculture to climate change.

Alaska Native Serving and Native Hawaiian-Serving. This program has made it possible for rural Alaskan communities to increase underrepresented groups in the sciences. This is achieved by connecting scientists with students, teachers, policymakers, representatives of science agencies, Alaska Natives, through partnerships with rural Alaskan coastal communities. For example, students (12-16 grades) pursuing educational career pathways in marine science, and incorporating an indigenous perspective, are securing an investment in the future stewardship of Alaska's vast marine food supply. The University of Alaska (UA) Kuskokwim Campus Ethnobotany Certificate Program had its first graduates in 2012/2013. UA Bristol Bay Campus faculty and students designed and built the world's tightest known energy-efficient house (0.05 air changes/hr. at 50 pascals), which was officially recognized by the World Record Academy in March 2013. Alaska rural residents are earning certificates, occupational endorsements, and degrees that lead to much needed employment opportunities and stronger communities in terms of increased self-sufficiency, self-reliance, food security and better animal health care. Graduates of these academic programs qualify for many local jobs, particularly in the natural resource management field that are currently held by imported professionals. Students enrolled in USDA training, certificates and degrees gain knowledge in science and research skills increasing the pool of talent that can be applied in local situations and improve quality of life in rural Alaska.

Grants for Insular Areas. The Federal States of Micronesia (FSM) consists of 607 islands extending 1,800 miles across the archipelago of the Caroline Islands east of the Philippines. Local students were supported to complete their certificate, associate, and continue on to bachelor level programs in food and agricultural sciences. And funding assisted in increasing from the low of 17 students in 2004 to over 200 students in the agriculture certificate to Associate of Science degree level programs since 2012 and growing. Furthermore, students are getting jobs; for example, the first local graduate from the Certificate in Agriculture Program at Pohnpei Campus was hired as an agriculture Extension agent in Chuuk state, one of four FSM states. Another local student with a bachelor's degree returned to Pohnpei to become the instructor for the Pohnpei Sate Campus Certificate in Agriculture and Food Technology program. Many other students have graduated from certificate and Associate of Science degree programs and continued on to university level degrees. At least 3 students have enrolled at the University of Guam with aspirations of continuing into masters programs.

Veterinary Medicine Loan Repayment Program (VMLRP). Through VMLRP, NIFA may repay up to \$25,000 each year of student loan debt to eligible veterinarians. In return, qualified veterinarians must agree to provide food animal medical care for three years in certain high-priority veterinary shortage situations. A recipient of one of these loans, Dr. Annie Bowes owns Aspen Veterinary Service in Kootenai County, Idaho. It is a mobile service treating large animals, as well as an Emergency Clinic with a staff of 15 and more than 10,000 repeat customers. Dr. Tim VanDerPloeg is another veterinarian using USDA's assistance to expand rural veterinary services. VanDerPloeg will open Veterinary Center of Somerset, in Kentucky, soon. Pulaski County, where the clinic will be located, is the third largest cattle county in the state of Kentucky. His clinic will now have a 2,300-square-foot large animal facility in addition to the 3,400-square-foot small animal facility. It would have taken him 20 years to be able to open this clinic without the loan repayment program.

- Smith-Lever 3(b) and (c). The University of Maine Cooperative Extension (UMCE) collaborates with Vermont and New Hampshire to offer the International Maple Syrup Institute Maple Grading School. They support producers who are tapping over 10 million trees annually. Over the last 10 years surveys show that 92 percent of respondents gave the school an overall rating of 8 to 10 on a 10-point scale (10 being most positive). Moreover, 80 percent of respondents increased their knowledge about producing syrup resulting in 75 percent estimating reduced expenses, 63 percent increasing profit, 70 percent increasing sales, and 10 percent using cost-savings to add employees.

In addition, UMCE is working with the Maine Cheese Guild to provide training, education, and problem solving for the growing value-added dairy sector. Maine is second in the nation in the number of artisan cheese producers, and UMCE is the single most valuable resource to these producers. The state's largest producer (annually produces over 500,000 pounds) came to Cooperative Extension in 2006 to learn how to make cheese from their cows' milk. Today their cheese is sold statewide and beyond.

The first 4-H common measures report using data collected from healthy living aggregated data from 13,050 youth participants in grades 4-7. Selected outcomes included: 85 percent learned how to make healthy food choices and learned the foods they should eat every day; 79.8 percent drink more water and 76.9 percent eat more fruits and vegetables; 84.2 percent reported "being active is good for me" and 83.3 percent reported "physical activity will help me stay fit"; 82.4 percent reported "being active is fun" and 73.1 percent report they "always" or "usually" do moderate physical activities like walking, helping out around the house, raking leaves, or using the stairs. Of the 3,759 participants in grades 8 – 12, the following outcomes were reported: 90.4 percent respect people from other cultures and 89.9 percent treat everyone fairly and equally when in charge of a group.

- Smith-Lever 3(d). Expanded Food and Nutrition Education Program (EFNEP). EFNEP addresses some of the most pervasive societal challenges—hunger, malnutrition, poverty, and obesity—by providing practical, hands-on nutrition education to the poor. Each year, EFNEP peer educators teach more than a half million low-income families and youth how to change their behavior toward food. More than 80 percent of EFNEP families report living at or below 100 percent of the poverty level. The most recent national review of EFNEP data showed that 95 percent of EFNEP graduates improved the quality of their diets, 90 percent improved their nutrition practices, 84 percent stretched their food dollars farther, 65 percent handled their food more safely, and 39 percent increased their physical activity by at least 30 minutes each day. Multiple cost-benefit studies in past years show that every dollar invested in EFNEP results in \$3.63 to \$10.64 in saved health care costs and \$2.48 saved in food expenditures. State success examples include: The Alabama EFNEP program reported that of the 2,632 adults participating, 99 percent showed a positive change in any one food group upon exiting the program; increasing fruits, vegetables, whole grains, protein foods, and dairy while decreasing oils, solid fats, and sugars to help guard against chronic diseases and encourage healthy food choices. Moreover, 30 percent of adult participants showed an increase in physical activity. The average savings per month per household reported in Maine was \$36 which equals a total household cost savings of \$432 per year, while improving the quality of food consumed. The total cost savings for all graduate households in Maine was \$4,960 per month, for a total annual food cost savings of \$59,520.

Farm Safety and Youth Farm Safety Education and Certification. The AgrAbility program enhances quality of life for farmers, ranchers, and other agricultural workers with disabilities by helping them overcome barriers to continuing to be active in production agriculture. The program provides funding for two project types -- *State and Regional AgrAbility Projects (SRAPs)* and the *National AgrAbility Project (NAP)*. During the 2013-2014 period, SRAPs served 1,188 farmers and ranchers with disabilities. Most of the clients were employed full time as owners/operators of the farm or ranch. The three most common primary types of agricultural operations were dairy, livestock and field/grain operations, and the leading disabilities were back injuries, joint injuries, arthritis and orthopedic injuries. During the same time period, NAP successfully enhanced its services to underserved African-American and Native American populations through heightened, strategic outreach to 1890 and 1994 land-grant institutions, as well as to farmer veterans and Hispanic migrant and seasonal farm workers. The AgrAbility webpage hosted by NAP received 1,211,000 hits from 93,641 visitors originating in over 20 different countries. Pages related to individual solutions for agricultural equipment were the most frequently

viewed pages on the website. In FY 2014, NIFA provided grants totaling \$4.1 million to support 14 new SRAPs, 6 SRAPs eligible for continuation, and the existing NAP at Purdue University.

Children, Youth, and Families at Risk (CYFAR). The CYFAR program is based on research of effective programs for at-risk youth and families and on the human ecological principle of working across the lifespan in the context of the family and community. In Florida, the CYFAR GRandS Program (Grandfamily Resilience and Sustainability) is designed to provide education and support to Grandparents Raising Grandchildren (GRG). GRandS is being implemented in six locations across Palm Beach County, Florida with over 100 GRG having participated in at least one session. GRandS is designed to strengthen interpersonal relationships in at-risk grandparent raising grandchildren (GRG) families through parent education, family interaction, and community connections. GRandS program staff work closely with their community partners in the fields of social work, legal aid, pediatric health and mental health counseling services to ensure program fidelity. Partnerships also are able to provide specific educational information and support to GRGs and their grandchildren around issues such as alcohol and drug use, sexuality and safer sex, child behavior problems, and physical and mental health issues. After completing the parenting curriculum, 74 percent better understood how to differentiate between discipline and punishment of their grandchildren, 87 percent felt more comfortable using age appropriate discipline, 78.4 percent better understood the power of choices when disciplining their grandchildren, and 78.3 percent better understood that positive discipline helps develop positive self-esteem in their grandchildren. Participants also reported that the parenting behaviors they were most likely to change were reduced use of time-out, grounding, and lecturing, and increased use of house rules.

Federally-Recognized Tribes Extension Program. The Jicarilla Federally-Recognized Tribes Extension Program is improving family welfare and the quality of life on the Jicarilla Apache Reservation in New Mexico by increasing economic opportunity, enhancing natural resource stewardship and promoting healthy lifestyles. Last year, 20 individuals from the oil and gas industry and federal offices received information on the effects of oil and gas production on livestock production. This information was used to plan oil and gas development on 700 sites within the reservation during the last calendar year. Also, close to 1,000 acres of pasture and hay land was evaluated with 20 percent being treated for control of Musk thistle and Canadian thistle as a result of a training conducted on weed management. An additional 17 producers used information from the Jicarilla Farm and Ranch Short Course to keep better tax records. The producers also used learned information to report cost-share information to USDA's Farm Service Agency and saved up to 15 percent on expenses related to purchasing livestock nutrition supplements. An estimated economic impact of \$180,000 gain for the ranchers was a result of implementing best management practices.

New Technologies for Agricultural Extension. eXtension is entering its second decade celebrating a new direction and honoring strong interaction with the public using and exploring new technologies. Social media reach through Facebook, Twitter and YouTube increased by 124 percent to 1.64 million users, and Ask an Expert questions increased by nearly 30 percent. Nearly 50 percent of users have planned changes in practice as a result of eXtension and 40 percent noted an economic concern related to their questions. eXtension webinars on topics like personal finance, agricultural production, resource management, child care, and nutrition saved the Cooperative Extension System \$1.63 million and 97 percent of those surveyed intend to use webinar content in their work. eXtension is successfully implementing a new strategic plan focused on innovation and new technologies such as big data, unmanned aerial systems (drones), and wearable technologies are being introduced, demonstrated, and implemented by Americans via eXtension's efforts.

- Extension 1890 Institutions. Small farmers need new technologies to increase farm income. In Missouri, Lincoln University Extension is teaching small farmers about building more high-tunnel greenhouses and organized computer literacy training to assist them in good farm record keeping. As a result farmers' income increased by approximately \$3,000. Besides increasing their electronic record keeping skills, the farmers gained invaluable knowledge of computers for purposes other than record keeping.
- 1890 Facilities. The Aquaculture research station developed a three phase plan to reconstruct twenty-one research ponds and the 5-acre supply reservoir on the University of Arkansas at Pine Bluff Campus farm. As a result of the pond renovation, the University was able to maintain its baitfish and alternative crop research while

simultaneously addressing the urgent needs of the catfish industry including assistance to one of its primary stakeholders, the Arkansas Game and Fish Commission.

- **Renewable Resources Extension Act.** The University of Florida Forest Steward Program helps private landowners develop a plan to increase the economic value of their forestland while maintaining its environmental integrity for future generations. The program enabled 135 private landowners, who own 39,500 acres to develop forest management plans bringing the total to 3,120 management plans on 948,000 acres since the program's inception. The program also uses electronic and social media to reach 5,390 landowners four times a year with a newsletter and the website received 500,000 visits last year.
- **Extension Services at 1994 Institutions.** In 2011 Salish Kootenai College launched a fitness program aimed at serving 150 pre-school children using traditional American Indian sports and foods to promote healthy lifestyles. The project director planned to work with five head start programs, but the demand was so great the program grew to 12 head start programs within its first year. The program also was embraced by two college daycare centers, Two Eagle River School, Early Childhood Services, Tribal Waves, Tribal Youth Employment, and Nk'wusm Language Institute. The project served 1,750 youth and their families in 2014. The project director reports that half of the youth participating have a lower body mass index (BMI) after participating in the program and have better knowledge of traditional foods. The Reservation Head Start program hired a health, wellness and fitness instructor so the program could continue after the grant ends. American Indian youth are nine times more likely to be diagnosed with diabetes than non-Hispanic whites according to the National Institute of Health, so this addresses a strong community need.
- **Section 406 Programs. Organic Transition Program.** North Dakota scientists in collaboration with Washington State University and Purdue University in Indiana will allow farmers to reduce greenhouse gases and manage nutrient cycling to enhance soil fertility which provide ecosystem services. This is being accomplished through organic reduced tillage experiments and long term organic tillage studies. The goal is to complete development of best management practices that sequester carbon and improve nitrogen use efficiency in organic systems that will reduce emissions of Carbon Dioxide and Nitrous Oxide.
- **Regional Rural Development Center.** The Northeast Regional Center for Rural Development (NRCRD) is dedicated to providing research-based information that helps create regional prosperity through entrepreneurial and cluster-based innovation, while assuring balanced uses of natural resources in livable communities in the northeastern United States. For example: The NRCRD shared the University of Maine's "Recipe to Market" program offers cross-disciplinary training to new food entrepreneurs. The program helps people develop the skills needed to start a new food business including business know-how, access to the right equipment, and a reservoir of knowledge about licensing, regulations, and food safety which are essential to the success of new food entrepreneurs.
- **Food and Agriculture Defense Initiative Program. National Plant Diagnostic Network (NPDN).** NPDN is a 50-state network of land grant university-based plant diagnostic laboratories. The network is led by diagnostic laboratory centers at Cornell University (New York), University of Florida, Kansas State University, Michigan State University, and University of California at Davis. These institutions receive direct funding from NIFA and provide support to the other land grant plant diagnostic laboratories in their region through subcontracts, training, and leadership. Because of this, plant laboratories in every State receive Federal funding and other support from the five NPDN centers. All 50 States and many U.S. territories are connected to the NPDN through digital distance diagnostics, used throughout the Nation to speed early detection of high consequence plant pathogens and solve other agricultural problems. This web-based diagnostics system allows plant diagnosticians in one location to transmit a digital image across the country to someone with special expertise. Plant disease (and insect) detection criteria have been developed for soybean rust, sudden oak death, Ralstonia stem rot, plum pox virus, pink hibiscus mealybug, potato wart, huanglongbing (citrus greening), Potato Cyst Nematode, Late Blight, Beet Curl Top, Citrus Leprosis, Citrus Blackspot, and Wheat stem rust variants, especially Ug99. In fiscal year 2013, NPDN established System for True, Accurate and Reliable (STAR-D), a lab accreditation program for NPDN diagnostic laboratories. The program implements quality assurance measures across the broad spectrum of participating NPDN laboratories. STAR-D is being implemented and in 2014, two regional labs were accredited, with another three expected for 2015.

National Animal Health Laboratory Network (NAHLN). NAHLN is a national network of non-Federal public animal diagnostic laboratories under the leadership of NIFA, Animal and Plant Health Inspection Service (APHIS), and the American Association of Veterinary Laboratory Diagnosticians. NAHLN is part of a national strategy to coordinate the Nation's Federal, State and university laboratory resources. It has 12 core laboratories that receive NIFA support located at Cornell University (New York), Louisiana State University, University of Georgia, Texas A&M, University of Wisconsin, Iowa State University, Colorado State University, Washington State University, University of California at Davis, University of Arizona, North Carolina Department of Agriculture and Consumer Services, and Florida Department of Agriculture and Consumer Services. In addition to these core laboratories, NIFA provides funding for laboratories in 10 other States: Oregon, Wyoming, Kansas, Minnesota, Mississippi, Tennessee, Kentucky, Ohio, Pennsylvania, and New Jersey. Animal disease-detection criteria have been developed for the following high-consequence diseases: Foot-and-Mouth Disease, Exotic Newcastle Disease, Classical Swine Fever (or hog cholera), High Pathogen Avian Influenza, Low Pathogen Avian Influenza, Bovine Spongiform Encephalopathy, Scrapie, Chronic Wasting Disease, Rift Valley Fever, African Swine Fever, Swine Influenza Virus, Swine Pseudorabies Virus, and Vesicular Stomatitis Virus. Also, an assay for Foot-and-Mouth Disease in milk samples has been evaluated by members of the NAHLN for deployment to the network. In FY 2014, NAHLN continued to work on additional disease detection criteria.

Extension Disaster Education Network (EDEN). EDEN's mission is to reduce the impact of disasters through science based education. EDEN's overarching goal is to improve the nation's ability to mitigate, prepare for, prevent, respond to, and recover from disasters. EDEN has an affiliation of all 50 states, U.S. territories, and Bicol University in the Philippines in its network. Nearly 300 EDEN delegates with expertise in more than 75 different disciplines represent the member institutions in every state and U.S. territory. This program is to further integrate and expand the Cooperative Extension System's educational role in defending America's food and agricultural system from disasters using the all-hazards approach adopted by the U.S. Department of Homeland Security. EDEN has facilitated Extension's involvement as a partner in homeland security education by developing and implementing coursework and conferences that will help Extension specialists and educators address emergency management processes. Moreover, EDEN provides resources for Extension educators to help communities deal with natural and human made disasters. EDEN's use of its network and communication tools helps producers and other stakeholders address biosecurity, natural, agricultural, animals, family, community, and human health hazards and threats. EDEN has a proven track record in helping communities deal with tornadoes, droughts, hurricanes, wildfires, and other threats.

NATIONAL INSTITUTE OF FOOD AND AGRICULTURE

Summary of Budget and Performance
Statement of Department Goals and Objectives

The mission of NIFA is to invest in and advance agricultural research, education, and extension to solve societal challenges. NIFA’s success depends on:

- Integrity: We value individual and organizational diversity and transparency; we honor our promises and follow through on our commitments; and we promote ethical, inclusive and unbiased behavior internally and with partners.
- Transformation: We are forward-looking, creative visionaries and problem-solvers; we encourage risk-taking that leads to new ideas and innovative solutions; and we are committed to the next generation and dissemination of new knowledge.
- Engagement: We work with partners and other stakeholders to identify and address programmatic needs; and we work with partners to implement and improve programs.
- Impact: We are passionate about promoting relevant, value-added programs and services; we are action-oriented and accountable for exemplary performance in all we do; and we are committed to driving outcomes that matter to the American people and to the world through service.

NIFA has four strategic goals and eleven strategic Objectives (Sub-goals) that contribute to the five USDA Strategic Goals and provide research, education, and extension to support the Department in meeting Agency Priority Goals.

USDA Strategic Goal 1: Assist rural communities to create prosperity so they are self-sustaining, repopulating and economically thriving.

Objective 1.1: Enhance Rural Prosperity, Including Leveraging Capital Markets to Increase Government’s Investment in Rural America

Agency Strategic Goals	Agency Objectives	Programs that Contribute	Key Outcomes
<p>Agency Goal 1: Catalyze exemplary and relevant research, education and extension programs.</p>	<p>Subgoal 1.1. Advance our Nation’s ability to achieve global food security and fight hunger.</p>	<p>Extension Research Integrated Higher Education</p>	<p><u>Key Outcome:</u> Expanded economic opportunities in Rural America and increased knowledge pertaining to economic diversification, community planning, service infrastructure, local government, youth/adult workforce planning, and civic engagement through innovative integrated research and extension projects targeted to regional business, economic and business development.</p>

Key Performance Measures and Targets:

The number of farmers and ranchers that gained an economic, environmental or quality-of-life benefit from a change in practice learned by participating in a SARE project							
	2010 Actual	2011 Actual	2012 Actual	2013 Actual	2014 Actual	2015 Target	2016 Target
Cumulative number	12,436	12,800	13,905	14,775	15,461	16,172	16,922

Number of college graduates prepared for the professional and technical workforce in the food and agricultural industry							
	2010 Actual	2011 Actual	2012 Actual	2013 Actual	2014 Actual	2015 Target	2016 Target
Number per Year	N/A	N/A	29,300	29,300	30,700	30,700	32,230

The number of individuals with prior military service who participate in research and educational initiatives that lead to increased farm-related opportunities for military Veterans							
	2010 Actual	2011 Actual	2012 Actual	2013 Actual	2014 Actual	2015 Target	2016 Target
	N/A	N/A	N/A	N/A	N/A	N/A	500

Selected Past Accomplishments toward Achievement of the Key Outcome:

State Extension leaders from the twelve North Central 1862 land grant universities developed common indicators for reporting the impacts of community development educational programs. Collectively the extension agents reached over 7,000 people, who later reported undertaking new leadership roles and opportunities. Just under 2,000 rural development community and organizational policies and plans were adopted and implemented. Over 1,000 businesses were created, over 8,000 jobs, and over 17,000 jobs were retained as a result of their work. State reported value of volunteer hours, as well as dollar efficiencies and savings, bringing the total impact to \$360 million.

Louisiana State University researchers developed new varieties of sweet potatoes that are more disease and pest-resistant. As a result, sweet potato yields have increased by more than 20 percent and a new processing plant was constructed for high-quality frozen sweet potato products—a plant that now provides over 100 jobs in rural Louisiana. Sweet potatoes are an important crop for small farmers in Louisiana and neighboring states, and small-farm sector sweet potatoes are bringing higher prices.

Annie’s Project, an education program that is dedicated to empowering women in agriculture, develops the networks and skills women need to form successful partnerships. Across America, Annie’s Project courses provide women in agriculture with answers, business skills, friendship, and confidence. The number of women owning farm businesses or becoming more involved in farm decision-making is growing nationally. For example, in New York’s Chautauqua County, 228 women, or 16 percent, are primary farm operators according to the 2007 Census of Agriculture. Women farm owners/operators are on the rise, with a 3 percent increase from 2002 to 2007 in Chautauqua County. In addition, the Cornell Cooperative Extension facilitates Annie’s Project in New York and offers a 6-week program in risk management, farm business planning, marketing, and more.

Row crop producers are constantly challenged with in-season issues and having to manage their profit margins from year-to-year. The agronomic crops team at Auburn University focused on these challenges to help farmers remain profitable but also sustainable. Workshops, field days and training sessions were conducted throughout the year to help farmers obtain timely information. Proper identification, product selection, and timely treatment of stinkbug in cotton, peanut and soybean crops, for example, increased gross cotton receipts by eighteen million dollars. Additionally, recommendations for treating 25,000 acres of cotton resulted in improving gross income by \$500 per acre, totaling \$12,500,000.

A team from the University of Arkansas developed online educational modules and in-person training and mentoring to underserved groups. Project educators taught poultry, livestock, and agroforestry production to military veterans, Spanish-speaking individuals, women in agriculture, African-Americans, and economically and educationally disadvantaged groups. The team of university, non-profit, and USDA scientists trained approximately 300 veterans in the region, plus 650 veterans nationally through the Farmer Veteran Coalition. A total of 26,823 people used the online training—16,059 in English and 10,764 in Spanish. Evaluations showed that participants are using all modules, the most popular being poultry production and business development.

Selected Accomplishments Expected at the FY 2016 Proposed Resource Level:

New investment in public-private partnerships for Innovation Institutes as recommended by a President's Council of Advisors and Technology (PCAST) report will create a network of public-private agricultural "innovation institutes," to leverage the strengths of government scientists and commercial interests. These will be multi-disciplinary innovation institutes focused on emerging challenges to agriculture, to be supported by public-private partnerships. The research focus of each innovation institute will be on problems in the public domain, but where private sector participation can be important in advancing the research goals and also deploying the research outcomes.

A continued investment in the Sustainable Agriculture Research and Education (SARE) grant program will assist in the creation or enhancement of State sustainable agriculture research, extension, and education programs; and will leverage State and/or private money, and build the long-term capacity to guide the evolution of American agriculture to a more highly productive sustainable system. SARE helps farmers and ranchers adopt practices that are profitable, environmentally sound, and good for communities. Much of SARE research has been focused on locally grown products.

Funding will support activities that:

- Integrate sustainable agriculture in all State research, extension, and education projects;
- Support new research at sustainable agriculture centers at the nation's land grant and other colleges and universities;
- Build stronger State-wide farmer-to-farmer networks and outreach and technical assistance strategies;
- Incorporate sustainable agriculture studies and curriculum in undergraduate and graduate degree programs.

The NIFA-sponsored Cooperative Extension programs at the Land-Grant Universities will provide key leadership and educational offerings and trainings developed and administered through programs to provide local businesses, farmers, governments, community institutions and local residents with access to trusted sources of information. This will include education and technical assistance that will guide them in their broadband and e-commerce adoption decisions. Extension will also support the sustainability and profitability of plant and animal production systems by:

- Preparing youth, families and individuals for success in the global workforce and all aspects of life.
- Creating pathways to energy independence.
- Ensuring an abundant and safe food supply for all.
- Assisting in effective decision-making regarding environmental stewardship.
- Assisting communities in becoming sustainable and resilient to the uncertainties of economics, weather, health, and security.
- Helping families, youth and individuals to become physically, mentally, and emotionally healthy.

Objective 1.2: Increase Agricultural Opportunities by Ensuring a Robust Safety Net, Creating New Markets, and Supporting a Competitive Agricultural System

Agency Strategic Goals	Agency Objectives	Programs that Contribute	Key Outcomes
<p>Agency Goal 1: Catalyze exemplary and relevant research, education and extension programs.</p>	<p>(Continued) Subgoal 1.1. Advance our ability to achieve global food security and fight hunger.</p>	<p>Extension Research Integrated Higher Education</p>	<p><u>Key Outcome:</u> Increased efficiency of the agricultural production system by: (1) expanding information to model feed utilization for animal species, (2) releasing new or improved varieties or germplasm with enhanced pest or disease resistance, (3) further understanding the biological role of gene sequences in plants, animals, microbes and insects.</p>

Key Performance Measures and Targets:

The number of new drought and disease resistant varieties of wheat and barley to reach commercialization.							
	2010 Actual	2011 Actual	2012 Actual	2013 Actual	2014 Actual	2015 Target	2016 Target
Number Per Year	N/A	N/A	3	4	4	5	5

Selected Past Accomplishments toward Achievement of the Key Outcome:

Impaired reproductive performance in livestock is an increasing problem and a major cause of reduced profitability for dairy and meat producers. A multistate project in the Northeastern Region has coordinated a multi-disciplinary team of scientists to tackle this issue, and as a result, several new discoveries and strategies have been identified, which have led to the improved reproductive performance of cattle and sheep. For example, novel strategies have been identified to control and possibly enhance ovarian function in cattle based on new knowledge about ovarian follicles. Molecular discoveries have advanced Assisted Reproductive Technologies, improving conception rates among artificially inseminated animals. Additionally, new modes were discovered to detect infertility/subfertility in sires, helping farmers make more productive breeding choices, along with the adoption of advanced out-of-season breeding methods in sheep, resulting in greater profitability.

Animal science researchers at the University of Missouri are working to improve feed efficiency in beef cattle. Investigators have located the chromosomal regions responsible for growth performance that help cattle get the most out of what they eat. Armed with this knowledge, cattle producers will be able to build their herds by selecting and breeding stock that best possess this trait. These “feed conversion” genes are located on different chromosomes in different breeds, so herd improvement selection criteria will vary by breed. By increasing the nutritional efficiency of their herds, cattle producers will see higher profits by reducing the amount of feed it takes to raise cattle. This will also reduce the environmental footprint of beef production by reducing amount of manure and greenhouse gases.

Researchers developed online educational modules and in-person training and mentoring to underserved groups. Project educators teach poultry, livestock, and agroforestry production to military veterans, Spanish-speaking individuals, women in agriculture, African-Americans, and economically and educationally disadvantaged groups. The team of university, non-profit, and USDA scientists trained approximately 300 veterans in the region, plus 650 veterans nationally through the Farmer Veteran Coalition. A total of 26,823 people used the online training – 16,059 in English and 10,764 in Spanish. Evaluations showed that participants are using all modules, the most popular being poultry production and business development.

In addition to maximizing profits, dairy producers must meet the public's demands for animal well-being, environmental stewardship, and product quality. A multistate project in the North Central Region fostered collaboration among dairy science researchers in order to design better feeding programs for dairy cows which support improved cow health and higher dairy quality. The project supported outreach events for more than 30,000 dairy farmers, introducing them to new feeding tools and strategies, such as using DDGS (distiller's grains) as feed, which has contributed to increasing milk production, reducing environmental impact, energy consumption and waste - all leading to about \$840 million in savings per year for the U.S. dairy industry. The project also helped introduce farmers to easy-to-use databases and spreadsheets, allowing for development of realistic budgets, which contributes to improved long-term stability for their farms. Additionally, dairy farmers are also now more aware of research that has shown how to increase cattle longevity by improving housing facilities with compost bedding, cross-ventilated barns, and advanced strategies and technology for earlier detection of changes in cow health.

Selected Accomplishments Expected at the FY 2016 Proposed Resource Level:

For each goal and objective, funds provided through the Agriculture and Food Research Initiative (AFRI) will fund agriculturally-relevant discovery and applied research and provide the foundation upon which current and future solutions are built and will sustain the disciplines needed to ensure agricultural science remains vibrant and useful over time. This funding is expected to bring a wide array of agriculturally related disciplines back to international leadership by supporting the high risk, but potentially high reward, research of individual investigators and small teams. NIFA's priority for FY 2016 is to promote a holistic approach to ensure that public, plant, animal, environmental, and economic health of our nation are protected in the context of the burgeoning population pressures, need to ensure food security while adapting to variable climate, protecting our nation's natural resources, and ensuring public health and well-being.

The AFRI program will fund grants in research, education, and extension that will:

- Lead to regional and national food security solutions through the development and deployment of innovative crop, animal, or integrated crop-livestock production systems.
- Focus on the President's Government-wide pollinator initiative, and in response to a number of studies and calls for action, NIFA's **Pollinator Health Initiative** will support projects to address biological, environmental, and management factors contributing to the wide-scale decline of honey bees and other pollinators.
- Address system innovation to provide solutions to problems threatening the sustainability of agricultural production in the U.S.
- Focus on breeding, genetics, genomics, or phenomics of crop cultivars and/or livestock that meet the program goals.
- Focus on training the next generation of plant and livestock breeders.
- Increase the resilience or sustainability of the nation's agricultural production and food systems in light of projected future changes.

Research, education and extension focused on food accessibility will address the emerging demand for resilient and secure food systems, resulting in a decrease in the number of food insecure individuals, families, and communities. It is expected that work funded through this program will have relevance for both domestic and international populations. Adequate food availability implies that the population has a reliable source of food from domestic or international production. Domestic and international food security is achieved when food availability and food accessibility goals are met successfully. The long-term outcomes for this program are to increase global food availability through increased sustainable food production and to decrease the number of food insecure individuals, families, and communities by addressing key constraints to food accessibility and implementing solutions that enhance sustainable food systems. To achieve these outcomes, this program will support single-function Extension

Projects, multi-function Integrated Research, Education, and/or Extension Projects, and Food and Agricultural Science Enhancement (FASE) Grants that address one of the Program Area Priorities.

Objective 1.3: Contribute to the Expansion of the Bioeconomy by Supporting Development, Production, and Consumption of Renewable Energy and Biobased Products

Agency Strategic Goals	Agency Objectives	Programs that Contribute	Key Outcomes
Agency Goal 1: Catalyze exemplary and relevant research, education and extension programs.	Subgoal 1.4. Enable U.S. energy independence through the development of sustainable bioenergy feedstocks and value-added bio-based industrial products.	Extension Research Integrated Higher Education	<u>Key Outcome:</u> Expanded science-based knowledge and technologies to generate high-quality products and processes by: (1) increasing knowledge of bioenergy and biomass conversion, (2) creating new commercially viable and marketable alternative crops, and alternative markets for non-food products from existing crops.

Key Performance Measures and Targets:

Number of new bio-based products successfully patented.							
	2010 Actual	2011 Actual	2012 Actual	2013 Actual	2014 Actual	2015 Target	2016 Target
Number per Year	N/A	N/A	6	5	5	6	6

Selected Past Accomplishments toward Achievement of the Key Outcome:

Teachers were given bioenergy and bioproducts educational training, tools, and in-classroom. In the first two years of the program, more than 1,270 kits, videos and engagement activities have been distributed to classrooms through 134 program participants. The program has trained 10 interns, 19 Certified Master Teacher Trainers and 112 Master Teachers in Bioenergy and Bioproducts Education. The program has provided 10,280 hours of professional development experience to 134 educators in the first two years of operation. The multiplier effect into classrooms is currently being assessed.

Researchers at Southern University and A&M College conducted a study on plant-based mulch products for biophysical management of oak trees in urban areas of Louisiana. As part of this project, the researchers leveraged capacity funds to obtain an externally funded grant to develop biofuels from sustainable, alternative non-food feedstocks in Louisiana. Overall, their goals were to quantify urban forest wood waste biomass, to process energy cane and various type of urban forest waste biomass with solvents and catalysts into high-quality bio-oil via exposure to electromagnetic fields, and to conduct economic analysis and impact assessment. The researchers from Southern University collaborated with scientists from the Louisiana State University AgCenter on these goals. They developed five innovative laboratory and field techniques to process agricultural and urban vegetative waste to biofuel through the utilization of E-Fuel ethanol production technology. Extension agents in Louisiana helped

disseminate this information, reaching almost two thousand practitioners and land owners who will benefit from knowledge of these techniques. In fact, of all the stakeholders reached, 92 percent reported increasing their knowledge and about 35 percent actually adopted best management practices for production, harvesting and storage systems for biomass products.

Warm-season forages, such as switchgrass, have been proposed for biomass production due to their potential to serve as both a forage crop and biomass feedstock. Researchers from University of Kentucky conducted tests on switchgrass with 20 farmers in cooperation with the East Kentucky Power Cooperative and Investigators. They successfully demonstrated the utility of switchgrass as a dual-use crop on lands that are not optimal for traditional crop production or grazing. Researchers found that switchgrass seeds soaked in water for 6 days prior to planting had substantially greater germination and establishment rates than non-treated seeds. This is significant because it is easy for farmers to implement with little or no capital investment, overcoming one of the primary production barriers to switchgrass adoption. A decision support tool for farmers weighing the economic costs and benefits of establishing switchgrass was also developed in conjunction with the pilot project. Of the farmers who took part in the pilot testing, 50 percent have maintained their switchgrass stands for continued use as hay or for grazing and are poised to take advantage of biomass energy opportunities in future markets.

Researchers developed an integrated process for producing polyitaconic acid (PIA) through the fermentation of a biomass-based sugar feedstock. While the various processes to perform this transformation existed separately or as a limited methodology, integrating these processes had never before been done with PIA. The research team developed a stream-integrated approach to the cost effective production of a specialty water soluble polymer polyitaconic acid. Specifically, work focused on producing "minimally treated carbohydrate" from wood biomass for microbial conversion to itaconic acid. In addition, prototype samples of bio-latex and bio-adhesive have been made and partnerships for commercial development are being pursued. The research produced two patent applications, one patent, and several presentations.

Morrisville State College (New York) discovered a way to convert horse manure and bedding into briquettes and then use those briquettes as fuel to heat two of the school's residence halls. Producing these briquettes is only a portion of the grant, which funds the study of renewable energy sources, including solar and wind systems. The availability of horse manure and bedding material at Morrisville creates a "green" solution to the rising cost of fuel production, saves money the school used to spend in disposal costs, and gives students a living laboratory to accompany classes in renewable energy and sustainability.

Selected Accomplishments Expected at the FY 2016 Proposed Resource Level:

Funding will focus on the societal challenge to secure America's energy future with high relevance to the development of sustainable regional feedstock systems for the production of bioenergy and bio-based products. The program is designed to achieve the long-term outcome of reducing U.S. dependence on fossil fuels and meet the Energy Independence and Security Act. This will be accomplished through the production of sustainable bioenergy regional systems that materially deliver liquid transportation biofuels. In addition, NIFA will collaborate with the Department of Energy, Office of Science to explore feedstock genomics.

For the Feedstocks for Biobased Products Initiative, the AFRI Sustainable Energy program will fund grants for research or integrated activities focused on the development and sustainable production of regionally-appropriate biomass feedstocks for the production of non-food biobased products, chemical intermediates, or alternative jet fuel. In addition, funds will provide analysis of related federal and state economic, environmental, and other policies and evaluate their impact on the feedstock supply chain. The Initiative will also include focused educational and extension activities that provide the emerging bioeconomy with a new workforce that is skilled and experienced in a multidisciplinary and problem-solving framework, knowledgeable of the bioeconomy value chain, and trained in a wide range of technical, educational, socio-economic, and scientific competencies to meet this demand. These and other grants will support and help meet the Energy Independence and Security Act (EISA) of 2007 goal of 36 billion gallons/year of biofuels by 2022 and reduce the National dependence on foreign oil. In order to achieve this outcome, programs will support single-function Research and Education Projects, multi-function Integrated Research, Education, and/or Extension Projects, and Food and Agricultural Science Enhancement (FASE) Grants that address one of the Program Area Priorities.

NIFA will also invest in two public-private Innovation Institutes. The **Biomanufacturing Institute** will drive an innovation-based bioeconomy through the strength of the scientific enterprise investigating and leveraging the biological systems. It will produce the new knowledge, ideas, and foundational technologies required to develop systems for the production of products and services that support businesses and industries and help create jobs. The major goals of the Biomanufacturing Institute are to:

- Establish processes and chemical platforms leading to high-value intermediate and end-use products;
- Improve the efficiencies and economics of biomass feedstock logistics systems;
- Support commercialization of products developed from basic and applied research; and
- Build domestic capability and the workforce for ongoing bio-manufacturing and bio-products development.

The **Nanocellulosics Institute** will energize the broad national science and technology enterprise to effectively realize the potential of this nanomaterial. The purpose of the Nanocellulosics Institute is to ensure that the U.S. is the leading global source of commercial cellulosic nanomaterials research, innovation, production, and commercialization. The major objective of the proposed institute are to:

- Fill the critically needed knowledge gap between the promising discoveries of phenomena, processes, and properties of cellulose at nanometer scale to industrial scale production;
- Develop applications for a wide use of nanocellulosic materials to realize their commercial and economic potential;
- Couple the foundational research on nanocellulose effectively to market needs and commercialization potential.

USDA Strategic Goal 2: Ensure our national forests and private working lands are conserved, restored, and made more resilient to climate change, while enhancing our water resources.

Objective 2.1: Improve the Health of the Nation’s Forests, Grasslands, and Working Lands by Managing our Natural Resources

Objective 2.2: Lead Efforts to Mitigate and Adapt to Climate Change, Drought, and Extreme Weather in Agriculture and Forestry

Objective 2.3: Contribute to Clean and Abundant Water by Protecting and Enhancing Water Resources on National Forests and Working Lands

Agency Strategic Goals	Agency Objectives	Programs that Contribute	Key Outcomes
Agency Goal 1: Catalyze exemplary and relevant research, education and extension programs.	Subgoal 1.2. Advance the development and delivery of science for agricultural, forest, and range systems which are adapted to climate variability and change and can mitigate climate impacts. Subgoal 1.3. Optimize the production of goods and services from working lands while protecting the nation's natural resource base and environment.	Research Higher Education Extension Integrated	<u>Key Outcome:</u> Expanded and disseminated science-based knowledge and information for management of the nation's natural resources and environment, including soil, air and water, in agricultural, forest, and range working lands and ecosystems.

Key Performance Measures and Targets:

Metric Tons of CO2 equivalents sequestered per hectare per year by U.S. cropping agriculture							
	2010 Actual	2011 Actual	2012 Actual	2013 Actual	2014 Actual	2015 Target	2016 Target
Number Per Year	N/A	N/A	0.2	0.2	0.3	0.4	0.4

Percentage of farmers using best management practices on major cropping systems to conserve, protect and/or manage their water resources							
	2010 Actual	2011 Actual	2012 Actual	2013 Actual	2014 Actual	2015 Target	2016 Target
Percentage	N/A	N/A	13	14	14	16	16

Selected Past Accomplishments toward Achievement of the Key Outcome:

Researchers at Ohio State University are evaluating management strategies in pork production for reducing energy demands without reducing product output. The research team reduced nocturnal temperature at four research stations, demonstrating that decreasing temperatures each day beginning four days after arrival in the nursery can save fossil fuel costs without an adverse impact on pig performance. Implementation of these findings can lead to a 29 percent reduction in use of heating fuel and electricity, saving \$1.71 per pig. Assuming 20 million pigs are managed in this manner, annual projected savings of approximately \$34,000,000 and a reduction of 140,720,000 kg carbon dioxide could be realized. Such economic and environmental savings are key to sustainable food animal systems.

Extension Forestry Program Leaders across the U.S. developed common indicators for reporting the impacts of natural resources extension educational programs. Extension leaders reported that over 6.7M acres of private land and 3.3M acres of public land received management to prevent or control exotic invasive species on private land. Well over 1.2 M acres were protected from conversion to ensure retention of current forest and rangeland uses. Over 1.2 M acres of forests and rangeland managed to adapt to or mitigate effects of climate-related disturbances. Over 3,000 forest, range, fish, and wildlife income-generating businesses were created or expanded. Over 400 new forest, range, fish, and wildlife resources jobs were created. An estimated \$144,073,030 were earned or saved by forest, range, fish, and wildlife income-generating businesses. Just fewer than 800 new jobs were created as a result of bioenergy enterprises. Over 23M acres of forest management was improved. Management over 7.3M acres of rangeland and over 9.8M acres/and or stream miles of wildlife and/or fish habitat was improved.

Southeastern U.S. soils have low soil organic matter content, but increasing soil organic matter content using animal waste compost amendments is a way to increase soil carbon sequestration and improve soil quality. The effects of poultry waste compost applications to soil on soil quality and carbon sequestration were evaluated by North Carolina A&T scientists in 3-year field experiments located at the North Carolina piedmont and coastal plains topographical regions. At both locations, applying compost at a 10 ton/acre/year rate increased soil carbon content, soil water retention, and nutrient retention, and also reduced soil erodibility. Statewide, extension agents worked with 1,350 producers to implement waste management plans which took this recent research into consideration. The result was that more than 1.5 million tons of livestock and organic waste was used as fertilizer. At a value of \$10 per ton, this represents \$15 million in fertilizer value savings.

Increased understanding of soil fertility and salinity helps farmers to efficiently use commercial fertilizers and manure resources to improve crop production, maximize profits and minimize nutrient pollution. However, few farmers test soils for nutrient needs, and most use a mix of nutrients designed for the average field, without taking specific soil fertility or salinity into consideration. Extension agents from Utah State University led efforts to encourage soil testing and helped farmers interpret the research based recommendations. Fifty-seven fields totaling 2,762 acres were tested, and farmers who participated in the testing saved \$36.49 per acre on average by soil testing and not purchasing unneeded nutrients for a total savings of \$100,793. There are significant environmental benefits to this as well; by not applying an average of 71 pounds of unneeded nutrients per acre, 99 tons of unneeded and possibly detrimental nutrients and fertilizers were kept out of the environment.

Periodically assessing the general ecological health of rangelands is key to supporting their long-term sustainability. However, identifying a method that accurately measures rangeland health across a broad spectrum of climate, geology, soil types, and ownership patterns is complicated. Participating scientists in the Western region developed new science-based approaches and models for assessing, monitoring, and managing rangelands in all types of ecosystems and states of health. This has led to the dissemination of more accurate and detailed information on the status and sustainability of natural resources that rural communities rely on for economic progress. For example, increased implementation of rotational grazing practices in North Dakota has generated about \$1 million per year for North Dakota producers.

U.S. forests are the largest sink for domestic carbon emissions, sequestering 16 per cent of the carbon emitted annually in the U.S. With more than half of the nation's forests owned by 11 private landowners, most of whom are family forest owners, it is essential that these owners expand their knowledge of forest management and adopt practices to increase resiliency to the changing climate. In order for these forests to continue to provide sequestration services, they must be both profitable to the owners and resilient to increased disturbances brought on by a changing climate. Last year, more than 32,000 private landowners who participated in extension programs adopted at least one new management practice: 233,375 landowners participated in forest management plan training; 51,710 forest management plans were prepared with the assistance of extension educators; and overall, 23.2 million acres of forestland were impacted as a result of owners and managers participating in forestry extension programs.

A company funded by a Small Business Innovative Research grant has developed a method for compact efficient and economic soil steam disinfestation. Soil disinfestation with fumigants such as methyl bromide is essential to achieving high productivity in certain crops such as strawberries. However, methyl bromide acts to destroy ozone in the stratosphere and is being phased out. This project is developing a compact, lightweight catalytic combustion-

steam generator that can be pulled by a tractor and provide very effective soil steaming disinfestation. In preliminary tests this soil steaming disinfestation system was as effective as methyl bromide and costs were similar. The system is undergoing extensive tests in strawberry fields.

University of Nebraska researchers have demonstrated that reduced tillage or no-till farming can save on irrigation. The researchers determined that farm plots with cover crops or crop residue saved on irrigation water by as much as 60 to 110 millimeters per year, which saved farmers thousands of dollars per year on a 130-acre field. In these days of prolonged drought and severe wildfires across much of the U.S., the practice of cover cropping and reduced-till agriculture can save farmers money in reduced pumping costs and leaves more water available for other uses.

Water conservation and protection of water quality from fertilizers and pesticides is an important issue throughout Florida. Extension programs designed by University of Florida and Florida A&M University were delivered to home owners, farmers, and green industry employees to promote best management practices (BMP) that conserve and protect water resources. Educational workshops and demonstrations, water conservation technologies, and web-based information and social media platforms were used to educate stakeholders about water conservation and water quality protection BMPs and practices. For example, demonstration sites in nurseries were used to illustrate how smarter irrigation technologies save 55-90 percent of water applied compared to traditional irrigation practices. A 50 percent reduction in water use among nurseries statewide is estimated to save roughly 185 million gallons per day. Additionally, in one county, a soil water based technology installed in Home Owner Associations (HOAs) and Single Family Residences saved over 66 million gallons of water annually, which eliminated the expense of acquiring this water through other means.

In many rural areas drinking water wells are contaminated with excessive levels of nitrate and nitrite that are coming from agricultural operations. A Small Business Innovative Research project is developing a new water treatment system that involves an innovative water evaporation procedure. This process can achieve reductions of more than 95 percent in the levels of nitrate and nitrite to substantially below EPA drinking water standards. This project shows promise of producing a system with a capacity of 1500 gallons per day.

Excess phosphorus is the primary cause for eutrophication of fresh waters. Wastewater treatment plants release excessive amounts of phosphorus to the environment and thus exacerbate the eutrophication problem. A small business project is developing procedures to extract phosphorus at wastewater treatment plants during anaerobic digestion in the organic acid digest and produce brushite, a calcium phosphate compound. Brushite is an excellent phosphorus fertilizer that can add value to the wastewater treatment process.

Selected Accomplishments Expected at the FY 2016 Proposed Resource Level:

NIFA's **Water for Agriculture** program will focus on developing solutions for water management that could potentially impact health, food, climate, energy, and the environment. This program will address critical water resources issues such as drought, excess soil moisture, flooding, availability, and quality and quantity in an agricultural context. Funding will be used to develop technologies and tools for a broad group of stakeholders to sustain and improve water availability to achieve healthy environments and ecosystems, plants and animals, humans and communities, and economies.

NIFA's Climate priority will focus on **Climate and Land Use** to understand the patterns, processes, and consequences of changes in land use, land condition, and land cover at multiple spatial and temporal scales, resulting from the interactions between climate variability, human activities, and the landscape mosaic comprising natural and production systems. Among other issues, this program will focus on the role of climate on fire disturbance (environmental health); changes in management activities, such as intensifying biofuel development and irrigated agriculture (plant and animal health); food and national security implications (human health); the vulnerability of rural communities to climate change (community health); and the role of adaptation in the country's rural development process (economic health) based on an understanding of where and how land use will affect rural households and whole communities (ecosystems health). Project types supported by AFRI include multi-function Integrated Research, Education, and/or Extension Projects and Food and Agricultural Science Enhancement (FASE) Grants.

Goals include:

- Increase knowledge of microbial communities that both impact and are impacted by climate extremes and GHGs in land management systems related to animal production systems.
- An increased understanding of agriculturally associated microbial communities can improve food security through adaption of systems to climate-related abiotic and biotic stresses and through climate change mitigation, thus decreasing the vulnerability of the nation’s food supply by providing science-based information to support decisions by producers and natural resource managers.
- Better understand the strategic consequences of potential or projected agriculture, range and forestry-related shifts in land use with respect to climate mitigation and resilience of production systems.
- A new understanding of major vulnerabilities in the nation’s food production system with anticipated climate variability and changes, and options for increasing food security by adapting national and regional land use decisions and strategies for food production and natural resource management.

USDA Strategic Goal 3: Help America Promote Agricultural Production and Biotechnology Exports as America Works to Increase Food Security

Objective 3.1: Ensure U.S. Agricultural Resources Contribute to Enhanced Global Food Security

Objective 3.2: Enhance America’s Ability to Develop and Trade Agricultural Products Derived from New and Emerging Technologies

Agency Strategic Goals	Agency Objectives	Programs that Contribute	Key Outcomes
<p>Agency Goal 1: Catalyze exemplary and relevant research, education and extension programs.</p>	<p>(Continued) Subgoal 1.1. Advance our ability to achieve global food security and fight hunger.</p>	<p>Research Higher Education Extension Integrated</p>	<p><u>Key Outcome:</u> Expanded international economic development and trade capacity building through: (1) partnerships between U.S. and counterpart faculty in developing or transitioning countries to strengthen science applications and (2) technical assistance provided to these countries to support market and agricultural sector development.</p>

Selected Past Accomplishments toward Achievement of the Key Outcome:

There is mounting concern that changes in our climate may hamper agricultural productivity in the US and around the world. Abiotic stresses are the most important factors limiting crop productivity in contemporary environments. Climate modeling studies suggest that drought and high temperatures will become more common in the future and will represent a tremendous environmental hurdle to global food production. A team of researchers at Purdue University are focusing their efforts on developing agronomic crops with enhanced stress tolerance. Specifically, germplasm and trait development efforts in maize and sorghum are focused on use of natural and induced genetic variation for abiotic stress to improve stress tolerance. This is an international and trans-disciplinary collaboration that couples efforts to genetically dissect and deploy genes for high-temperature and drought stress tolerance. With the development of crop modeling and climate assessment tools to study impacts of scaling-up new, stress-tolerant cultivars, and this research will contribute to adaptation of agriculture to warmer and drier environments around the globe.

Given that bees pollinate fruits, vegetables and nuts, and pollination is required for about one-third of all food production globally, recent concern and focus on declining bee populations have highlighted the importance of saving this essential agricultural resource. Beekeepers, food scientists and entomologists are worried throughout North America, Europe and other continents as bees keep dying. About one-third of bee colonies each year have been dying for the past six years across North America, Europe, and other continents. A researcher at University of Minnesota, who is a world leader in bee research, developed the Minnesota Hygienic Bee which has resistance to disease. The research also helped identify several culprits to bee decline, one of which is the neonicotinoid insecticides used by both crop growers and urban gardeners. Working in collaboration with this research, University of Minnesota Extension has developed a Bee Squad for urban residents, and Bee Tech Transfer Teams for commercial beekeepers, to teach strategies to support the health of bees and bee colonies, and to raise awareness of the threat to bees. Nurseries and garden centers are beginning to offer substitutes to neonicotinoid insecticides based on public concern and demand.

As the Arctic warms, greenhouse gases, such as methane and carbon dioxide, are released from thawing permafrost faster and at significantly higher levels than previous estimates. Northern soils hold around 1,700 billion gigatons of organic carbon, around four times more than all the carbon ever emitted by modern human activity and twice as much as is now in the atmosphere, according to the latest estimate. Researchers from University of Alaska are collaborating internationally to address missing information from current prediction models to create a large-scale predictive model for thawing permafrost. By integrating data from previous models with expert predictions, researchers will have a frame of reference for scientists studying all aspects of climate change globally.

The Aquaculture/Fisheries Center of Excellence at the University of Arkansas at Pine Bluff (UAPB) collaborated with the International Food Policy Research Institute (IFPRI), World Bank, and Food and Agriculture Organization of the United Nation on a global project: "Fish to 2030: the Supply and Demand for Food Fish to 2030." The comprehensive assessment of the world's fish supply and demand covers production potential, projected demand for fisheries products, and key economic, technological and environmental factors. The study focuses on projecting global supply and demand for fish and fish meal and oil using IFPRI's global food policy model known as IMPACT Model. Research with the model so far shows that 62 percent of food fish will be produced by aquaculture by 2030. Beyond 2030, aquaculture likely will dominate the global fish supply. Results also reveal that demand for fish and food fish consumption will increase sustainability in Asian countries, particularly in China, south Asian and southeast Asian regions. However, net export of fish from China might decrease due to increased local consumption, providing an opportunity for the aquaculture sector in the North American to grow in its exports. The UAPB team shared these findings with various sections of the U.S. aquaculture and seafood industries. The industry representatives have reported that this research effort and the results are highly useful in designing and/or redesigning their business plans so they remain sustainable and competitive in the global marketplace.

The University of California-Davis is leading a consortium of American universities (Purdue, Washington State, and University of Maryland) that is helping to strengthen the extension education system in Afghanistan. The Afghanistan Agricultural Extension Project (AAEP) initiated provincial model teaching farms, farmer field schools and on-farm demonstrations—now maintained and supervised by Afghan extension educators—to cover such topics as women in agriculture, greenhouse production, conservation agriculture, and improved grain storage methods to reduce postharvest loss. AAEP has trained nearly 8,000 extension educators, agricultural faculty, students and farmers and established more than 600 farmer field schools in 19 Afghan provinces since 2012.

Selected Accomplishments Expected at the FY 2016 Proposed Resource Level:

Grants to higher education institutions will train students at the baccalaureate, masters and doctorate level to expand human capital development in emerging areas (i.e. biotechnology, food systems, economics and marketing, etc.). As a result, workforce ready graduates with core competencies in sustainable sciences will be able to respond to the national needs in the Economics and Trade arena through the AFRI Program.

USDA Strategic Goal 4: Ensure that all of America’s children have access to safe, nutritious, and balanced meals

Objective 4.1: Improve Access to Nutritious Food

Objective 4.2: Promote Healthy Diet and Physical Activity Behaviors

Agency Strategic Goals	Agency Objectives	Programs that Contribute	Key Outcomes
Agency Goal 1: Catalyze exemplary and relevant research, education and extension programs.	Subgoal 1.5. Combat childhood obesity by ensuring the availability of affordable, nutritious food and providing individuals and families science-based nutritional guidance.	Research Higher Education Extension Integrated	<u>Key Outcome:</u> New knowledge that clarifies dietary health relationships in order to support better dietary recommendations and improved food products.

Key Performance Measures and Targets:

Dietary improvements by EFNEP participants (percent of EFNEP participants making dietary improvements)							
	2010 Actual	2011 Actual	2012 Actual	2013 Actual	2014 Actual	2015 Target	2016 Target
Percent of Participants Per Year	94%	94%	95%	95%	95%	95%	95%
Number of Adult Program Participants in EFNEP							
	137,814	134,446	130,485	121,025	130,485	133,000	133,000
Number of Youth Program Participants in EFNEP							
	463,530	506,156	479,398	418,961	479,398	491,400	491,400

Selected Past Accomplishments toward Achievement of the Key Outcome:

The Expanded Food and Nutrition Education Program (EFNEP) addresses some of the most pervasive societal challenges—hunger, malnutrition, poverty, and obesity—by providing practical, hands-on nutrition education to the poor. Each year, EFNEP peer educators teach more than a half million low-income families and youth how to change their behavior toward food. More than 80 percent of EFNEP families report living at or below 100 percent of the poverty level. The most recent national review of EFNEP data showed that 95 percent of EFNEP graduates improved the quality of their diets, 90 percent improved their nutrition practices, 84 percent stretched their food dollars farther, 65 percent handled their food more safely, and 39 percent increased their physical activity by at least 30 minutes each day. Multiple cost-benefit studies in past years show that every dollar invested in EFNEP results in \$3.63 to \$10.64 in saved health care costs and \$2.48 saved in food expenditures.

University of Kentucky researchers took on the task of sniffing out and removing the source of the unpleasant odors produced during soy protein manufacturing. They knew that if they found a way to remove the sulfur containing odorants they could improve the flavor of soy-based products and promote consumer demand. The team discovered that the addition of an approved food additive called potassium iodate during the manufacturing process stopped a chemical reaction within the soybeans and practically eliminated the foul odor. The technology of this process, which has been patented and is undergoing trials in a large U.S. soy processing plant, is an example of how basic research funded by a NIFA competitive grants program has been transferred to private industry.

Mississippi State University released its most recent conventional rice variety, Rex. The Certified class of Rex seed was produced in 2012, thus allowing a major expansion of seed available to be planted in 2013. In just one year, Rex increased to being used in 15 percent of the acreage planted in Mississippi. This was the second most popular cultivar used in planting and the largest conventional pure line planted. Previously, another rice variety, Cocodrie, held the largest share of conventional pure line acreage, but over the last three years, Rex has averaged 7 bushels per acre greater than Cocodrie. This means significant economic benefits to rice growers; at the current value of rice, growers realized \$50 per acre more by planting Rex compared to Cocodrie, making them more competitive and sustainable and producing higher yields.

The Community Food Projects Competitive Grant Program provides funds to low-income community, non-profit organizations that develop projects to combat food insecurity, the state of having limited access to adequate food. These projects help communities provide for their own food needs and create new marketing opportunities that help both agricultural producers and low-income consumers. One such project, "Camden Grows," produces and distributes fresh produce to the residents of Camden, New Jersey—documented as the poorest city of its size in America. Camden Grows helps community gardeners who grow surpluses to sell their produce in the city. Gardeners in Camden produced more than \$2.3 million in produce on more than 27 acres in the city, offering fresh food to at least 15 percent of the city's 76,000 residents. Participants are growing 30 fruit trees and almost 500 square feet of berry bushes, with more to be planted this year.

Researchers developed an organic baking-cooking fat that delivers healthy fats while raising energy expenditure (EE) to assist with healthy, sustainable weight management. The organic baking-cooking fat was derived from the table spread formula of Rich & Creamy Melt® Organic (Melt Organic), an organic buttery spread for butter lovers seeking a healthier alternative (already in distribution in North America). The organic baking-cooking fat will be delivered in new formats (e.g., sticks, pourable pouches) and will be the first product line of its kind launched in the existing butter and margarine category to compete directly with non-spread forms of butter and shortening. This project has been awarded a Phase II proposal to conduct further research and development and to prepare for product commercialization.

Demand for local organic food has inspired new interest in growing bread-quality wheat in New England, but the region's farmers lack local knowledge and research information regarding production for the organic bread market. Researchers from the University of Maine worked with peers in New Hampshire and Vermont to build farmers' capacity to produce high-quality organic bread wheat. They conducted extensive screening of spring and winter wheat cultivars and component studies of fertility and weed management practices for organic production in northern New England. This work has helped to create local, organic food grain economies for New England. Upon disseminating the research information, 83 percent of commercial grain farmers reached reported they had adopted at least one, and on average three, new management practices. These included selecting adapted varieties based on the variety trial reports, increasing seeding rates and spatial density to better suppress weeds, topdressing nitrogen on winter grains to improve grain quality and changing a marketing practice.

Researchers at the University of Tennessee are developing new cereal varieties that increase grain yield. One new wheat variety, Charlie, was found to produce 6 bushels/acre more than the average of 44 other varieties tested in the Tennessee State Wheat Variety trial in 2012 and 2013. If this variety replaces an average variety on just one-fourth of the wheat acres in Tennessee it will add 800,000 bushels of production and 4.8 million dollars of income for Tennessee's farmers.

The North Carolina AgrAbility Partnership Project (NCAP) is educating professionals and students in health care programs at North Carolina A&T and other allied health programs statewide on rural and agricultural health care

needs. The purpose of training healthcare professionals is to familiarize them with the nature of agriculture employment and potential solutions for farmers and farm workers with disabilities. As a result, some 257 health profession students and more than 360 health care or rehabilitative professionals and 50 Cooperative Extension agents have attended formal curriculum trainings. NCAP continues efforts in each of these areas with emphasis on strengthening peer support networks, expanding education and training opportunities, establishing formal partnerships with other community organizations with emphasis on engaging veterans entering/engaged in agriculture, and developing short videos of case studies in adaptive farming to be used for training, education, and marketing.

The number of Idahoans living below poverty increased 40 percent over the past five years, and nutrition education is especially critical for this audience. There is evidence that consumption of certain food types can delay or prevent diet related conditions. Eat Smart Idaho provides nutrition education for low-income Idahoans, with University of Idaho (UI) extension educators teaching at emergency food sites, food stamp offices, adult rehabilitation centers, public housing sites, and schools with high numbers of free and reduced lunch participants. A Recent study of Eat Smart Idaho graduates concluded that Idaho will save \$14.55 in future health care costs for every \$1 invested in healthy living education through Eat Smart Idaho. The net savings in health care costs attributable to those Eat Smart Idaho graduates over the next five years is projected to be nearly \$1.7 million.

A team of researchers at University of Wisconsin (UW), through a multi-disciplinary approach involving food scientists, sensory scientists, nutritionists, speech pathologists and clinical doctors, have developed an improved understanding of what attributes of fluids are important for developing a series of thickened fluids for dysphagia patients, or individuals with swallowing disorders (over 18 million adults and millions more children) . This has led to a patent application detailing the required flow properties of these thickened fluids. This provisional patent application has been licensed by a company to produce these scientifically-designed fluids. Once this company has successfully completed final development plans, new scientifically-based products that provide improved options for dysphagia sufferers will be available on the market. Results from this work are now used as a lab module in a senior-level Food Functionality course at UW-Madison, and the lab describes aspects of dysphagia and through the context of thickened fluid rheology, ties back to the hydrocolloid section of the course.

The University of California is studying how human diet composition can influence use of probiotics to improve intestinal health. It was found that Lactobacillus (a probiotic) persistence its anti-inflammatory potential are significantly altered upon consuming a high-fat as opposed to a low-fat diet. Compared to physiological conditions resulting from consumption of a low-fat, high-fiber diet, consumption of a diet high in fat and refined sugars results in detrimental changes to the inflammatory status. However, this change also provides a greater opportunity for dietary L. plantarum to protect against intestinal inflammation. This knowledge is a substantive contribution to the nutrition and health fields because it shows that the human diet can have profound impacts on the efficacy of bioactive components of food. The results here will be useful in improving the design of probiotic food delivery matrices and dietary recommendations intended to promote health.

Selected Accomplishments Expected at the FY 2016 Proposed Resource Level:

AFRI projects are expected to address the stated Program Area Priority, which collectively contributes to the achievement of the following goals:

- Investigate the relationship between food consumption behaviors and various health outcomes, including those related to obesity and the development of chronic diseases.
- Support development of nutrition education and obesity prevention strategies and interventions that produce measurable improvements in health, obesity, nutrition (food behavior), and physical activity-related outcomes of interest to USDA.
- Focus on populations of greatest risk, including those eligible for USDA nutrition education and food assistance programs, the Supplemental Nutrition Assistance Program, and child nutrition programs.
- Generation of new knowledge about behavioral, social, cultural, and environmental factors that influence excessive weight gain by children and adolescents.
- Development of effective behavioral, social, and environmental interventions to increase dietary intakes of fruits and vegetables; increase the variety of vegetables in the diet and decrease dietary intakes of foods high in solid fats and added sugars; increase the number of children who meet guidelines for television viewing and computer use; increase physical activity in children; and ultimately to decrease the proportion

of children and adolescents who are overweight or obese. The development of new, more effective evaluation tools may be necessary.

- Expansion of interventions proven effective and assessment of their impact.
- An increase in the number of parents, caretakers, educators, practitioners, and researchers who receive the training and effectively model behaviors necessary to address the complex problem of childhood obesity prevention.

With funding in EFNEP, all 1862 and 1890 institutions will be able to maintain and sustain the program outreach in addition to support and training from the Federal partner. Funding will be used to assist low-income families and youth to acquire the knowledge, skills, and attitudes, necessary to assist with positive behavior change for nutritionally sound diets, to contribute to their personal development, and to improve the family’s overall dietary quality and well-being. Peer educators, members of the communities they support, will use a research-based, interactive approach to reach over a half million new limited-resource audience families and youth each year.

Objective 4.3: Protect Public Health by Ensuring Food is Safe

Objective 4.4: Protect Agricultural Health by Minimizing Major Diseases and Pests to Ensure Access to Safe, Plentiful, and Nutritious Food

Agency Strategic Goals	Agency Objectives	Programs that Contribute	Key Outcomes
<p>Agency Goal 1: Catalyze exemplary and relevant research, education and extension programs.</p>	<p>Subgoal 1.6. Reduce the incidence of food-borne illness and provide a safer food supply.</p>	<p>Research Higher Education Extension Integrated</p>	<p><u>Key Outcome:</u> Reduced incidence or prevalence of food borne illnesses and contaminants through increased knowledge and/or the development of mitigation, intervention, or prevention strategies via research or integrated research, education, and extension projects in the following food safety areas: pre-harvest food production and transportation, post-harvest processing and distribution, retail preparation and distribution, and consumer preparation, consumption, and behavior.</p>

Key Performance Measures and Targets:

The cumulative number of specific plant diseases labs are prepared to detect							
	2010 Actual	2011 Actual	2012 Actual	2013 Actual	2014 Actual	2015 Target	2016 Target
Cumulative number	10	11	11	12	12	13	13

The cumulative number of specific animal diseases labs are prepared to detect							
	2010 Actual	2011 Actual	2012 Actual	2013 Actual	2014 Actual	2015 Target	2016 Target
Cumulative number	10	10	11	11	12	13	13

Selected Past Accomplishments toward Achievement of the Key Outcome:

The National Plant Diagnostic Network (NPDN) developed links to laboratories in every State. NIFA funding has enabled the NPDN to increase the cumulative number of specific plant diseases labs within the network are prepared to detect from three in 2004 to twelve in 2014.

NIFA helped fund and provided leadership to establish the National Animal Health Laboratory Network (NAHLN) NIFA funding has helped enable the NAHLN to increase the cumulative number of specific animal diseases labs within the network are prepared to detect from six in 2004 to twelve in 2014.

In fiscal year 2013, NPDN established System for True, Accurate and Reliable (STAR-D), a lab accreditation program for NPDN diagnostic laboratories. The program implements quality assurance measures across the broad spectrum of participating NPDN laboratories. STAR-D is being implemented and in 2014, two regional labs were accredited, with another three expected for 2015.

A team of scientists and engineers led by Washington State University developed an innovative, pilot-scale microwave assisted pasteurization system (MAPS) to rapidly and evenly heat packaged food products. The team included University of Tennessee, North Carolina State University, the U.S. Army Soldier Systems Center, and USDA's Agricultural Research Service Eastern Regional Research Center. The prototype is a 915 MHz microwave that processes foods that are both safe and of high quality. This technology allows for shorter conventional thermal processing times which results in higher food quality at lower energy output and cost. WSU anticipates licensing this technology to a start-up company, Food Chain Safety, for commercialization in the very near future.

Failure to adequately preserve foods in the home can result in foodborne illness, including foodborne botulism, which is a severe form of food poisoning. Most of these cases are associated with improperly processed home-canned food. Just one case of botulism can cost \$1,343,592 related to medical services, deaths, lost work, and disability. To help ensure safe home food preservation methods Virginia Cooperative Extension agents provided food preservation trainings and support in over 54 counties. Education offered included general canning classes, how to select the best preservation methods for each food, and how to inspect a dial gauge for accuracy. If a gauge was determined to be inaccurate after inspection, the Extension Educators recommended replacement of the gauge and re-testing of the new gauge to ensure accuracy. Of those tested, 91 were inaccurate and recommended for

replacement. It is assumed that if one case of botulism per inaccurate gauge can be prevented through replacement of the gauge, the potential annual savings to the state of Virginia can be \$122 million.

University of Tennessee educators developed a food safety education curriculum for middle school students entitled “Hands On: Real World Lessons for Middle School Classrooms.” Hands On is a free, interactive, research-based program that integrates science, social studies, math, language arts, and vocabulary that teaches students key food safety concepts and practices. Foodborne illnesses cause an average of 5,000 deaths per year and costing up to \$37 billion per year in health care costs. Since adolescents frequently prepare after-school snacks, and even meals, it is important for them to receive this training. As of March 2013, Hands On has reached more than 34,000 students at 148 middle schools in 11 states.

U.S. farmers produce 75 percent of the world’s pecan crop, but pecan orchards across the nation face serious pest problems that threaten crop yield, especially as pest populations develop resistance to certain pesticides and as environmental conditions change and new pests emerge. A Hatch funded multistate project in the Southern Region coordinated experiments on over 300 acres of test fields across the U.S., which has resulted in the design of new and improved pest monitoring and control tactics. This advanced pest control technology is disseminated through a website, now utilized by hundreds of pecan farmers who estimate the value of this information at easily \$3 million per year. In Texas alone, about 50 percent of pecan farmers have readily adopted the resultant technology, and pesticide usage is about 192,000 kilograms per year less than in 1980, reducing environmental impact along with a cost savings of \$4.4 million per year.

A team of Iowa State University scientists researched alternative housing systems for laying hens in Iowa and California. The research focused on determining which systems assured both animal well-being and a sustainable egg production. This work resulted in a new tool that automatically tracks individual laying hens in a group setting and records the hen's behaviors such as perching, nesting, feeding, drinking and movement was developed. The scientist also used emission data for aviary housing systems to improve the design and operation of building ventilation, supplemental heating, electricity consumption and ultimately production efficiency and overall poultry well-being. Industry is currently using these findings to improve standard operating procedures for their routine housing inspections. The findings of this research have helped industry to identify and address potential housing problems early on.

Extension agents at Clemson University and South Carolina State University conducted Official Variety Trials of all major crops in multiple locations across South Carolina. The information generated from these trials was then used by growers to select the varieties that perform best in their region of the state, positively affecting 800,000 agronomic crops and 100,000 horticultural crops. Horticultural crop estimates include 35,000 acres of vegetable crops, 25,000 acres of fruit crops, and 40,000 acres of sod. A significant economic impact was achieved as a result of disseminating this information. For example, improved strawberry production practices added \$10,725,000 to the state’s economy and labor costs associated with peach thinning were reduced by 44 percent per acre. Additionally, peanut production was valued at \$7.5 million for growers and the South Carolina economy, and with improved, proper variety selection, if yields are increased by 5 percent, this would result in an additional \$26,777,400 in revenue for South Carolina producers.

Beak trimming of chicks is a procedure to reduce or prevent damaging feather pecking, inter-bird pecking, and cannibalism among poultry. However, beak trimming itself could be a source of both acute and chronic pain that could negatively impact bird well-being. A USDA-ARS team funded by NIFA-AFRI compared an alternative procedure (infrared beak trimming) with what was previously the most common method (hot blade beak trimming). The team showed that infrared de-beaking is a recommended alternative management practice that significantly reduces pain/discomfort in chicks compared to hot blade trimming. The findings were shared with industry which is now implementing this alternative management procedure and improving the overall well-being of poultry.

Selected Accomplishments Expected at the FY 2016 Proposed Resource Level:

In addition to continuing risk reductions and increased efficiencies of traditional NIFA Integrated Pest Management Programs, the National Plant Diagnostic Network expects to make significant progress, which builds on past accomplishments and includes:

- Increasing the ability of laboratories in all 50 States to rapidly and accurately diagnose plant pathogens of regional and national interest through improved diagnostic equipment, training, and methods;
- Improving the biocontainment, biosafety, and biosecurity of regional diagnostic centers and other partner laboratories; and
- Increasing the utilization of non-public National Agricultural Pest Information Systems data for the early detection of bio-terrorism related, accidental, or natural outbreaks that have the potential to threaten the nation's plant resources, trade position, or consumer confidence.

NIFA will sponsor AFRI food safety projects specifically targeting emerging issues in food safety, particularly in the **Antimicrobial Resistance Initiative** which will develop, refine, and disseminate science-based knowledge about animal health management and production practices that can eliminate the threat and risk of antimicrobial resistance, as articulated in the President's executive order on combating antibiotic resistant bacteria. The increased focus by NIFA as part of this initiative on antimicrobial resistance will promote the development of sustainable and integrated food safety systems and result in the reduction of public health risks along the entire food-chain, from primary producer to the consumer. Biological concerns to be addressed include the need to understand biomolecular pathways and interactions from the individual mammalian host to the animal-human population scales. Goals include:

- Develop novel systems approaches to investigate the ecology of microbial resistance gene reservoirs in the environment (i.e., soil, water, air, storage environments), in animals, in food products, or in farm-raised aquaculture products.
- Identify critical control points for mitigating antimicrobial resistance in the pre- and post-harvest food production environment.
- Develop, evaluate, and implement effective and sustainable strategies, techniques, technologies or tools that mitigate emergence, spread or persistence of antimicrobial resistant pathogens within the agricultural ecosystem, in animals, in crops, and in food.
- Design training, education, and outreach resources (including web-based resources) that can be adapted by users across the food chain, including policy makers, producers, processors, retailers and consumers.
- Design and conduct studies that evaluate the impact and efficacy of proposed research, education and extension/outreach interventions on antimicrobial resistance, across the food chain.

USDA Strategic Goal 5: Create a USDA for the 21st Century that is high-performing, efficient, and adaptable

Objective 5.1: Develop a customer-centric, inclusive, and high-performing workforce by investing in and engaging employees to improve service delivery.

Objective 5.2: Build a safe, secure, and efficient workplace by leveraging technology and shared solutions across organizational boundaries.

Objective 5.3: Maximize the return on taxpayer investment in USDA through enhanced stewardship activities and focused program evaluations.

Agency Strategic Goals	Agency Objectives	Programs that Contribute	Key Outcomes
<p>Agency Goal 2: Transform NIFA into a model agency with a highly motivated workforce.</p>	<p>Subgoal 2.1: Enhance Accountability by providing the infrastructure and oversight necessary to achieve high-performance human capital management and extend human capital responsibility and accountability to all levels.</p> <p>Subgoal 2.2: Establish a world-class workforce through innovative talent management, targeted at attracting, selecting, engaging, developing and retaining talented individuals with the right technical and professional skills needed to meet our mission.</p> <p>Subgoal 2.3: Build a high-performing, results-oriented performance culture.</p> <p>Subgoal 2.4: Cultivate effective leadership practices that permeate the organization, promote continuous learning and innovation, and develop the next generation of food and agricultural scientists.</p>	<p>NIFA Institutes and Offices</p>	<p><u>Key Outcome:</u> Functionally staffed with talented people with the right skills in the right positions to carry out the agency's mission.</p>
<p>Agency Goal 3: Institutionalize streamlined, effective technology, policies, and processes.</p>	<p>Develop consistent review processes and procedures for all programs (competitive and non-competitive) and develop enhanced business practices for managing and processing grants across the agency.</p>	<p>NIFA Institutes and Offices</p>	<p><u>Key Outcome:</u> Reduce operational costs and improve customer service through the use of a grant processing model to schedule workload while optimizing workflow and reducing bottlenecks (e.g., year-end award processing).</p>

Key Performance Measures and Targets:

Percentage of NIFA staff engaged in NIFA Management Initiatives							
	2010 Actual	2011 Actual	2012 Actual	2013 Actual	2014 Actual	2015 Target	2016 Target
Percentage Engaged	N/A	N/A	N/A	75%	95%	96%	97%

Efficiency Measure: Competitive grant proposal review time in days (from receipt of proposal to award)							
	2010 Actual	2011 Actual	2012 Actual	2013 Actual	2014 Actual	2015 Target	2016 Target
Number of Days	184	184	190	190	170	165	160

Selected Past Accomplishments toward Achievement of the Key Outcome:

NIFA reduced the time to process a competitive award in FY 2014 by the following:

- Reduced the time to process awards by reducing staff overtime hours by 40 percent, thus achieving a 40 percent cost savings in staff overtime.
- Improved the balance of staff workload in Financial Operations Division by implementing a cross training program to increase the number of staff available to process competitive awards and therefore reducing the time to process competitive awards.
- Implemented End-of-Year guidelines on overtime and compensatory time, increased flexibility of telework program to increase the number of staff available to process competitive awards and therefore reducing the time to process competitive awards.

Selected Accomplishments Expected at the FY 2016 Proposed Resource Level:

Funding for the grants management system will enable NIFA to move forward with developing the modernization of its grant management system. NIFA's goal is to have a robust, up-to-date IT infrastructure and well-defined modern business process in place to support internal customers for planning, prioritizing, and executing daily operations, thus improving efficiency and external customer service.

NATIONAL INSTITUTE OF FOOD AND AGRICULTURE

Full Cost by Department Strategic Goal

(Dollars in thousands)

Department Strategic Goal 1: Assist Rural Communities to Create Prosperity So They Are Self Sustaining, Repopulating, and Economically Thriving

Program / Program Items	2013 Actual	2014 Actual	2015 Estimate	2016 Estimate
<u>Discretionary</u>				
Program.....	\$562,657	\$640,051	\$656,177	\$764,203
Administrative costs (direct).....	15,004	17,068	17,498	20,379
Indirect costs.....	8,440	9,601	9,843	11,463
Total Costs.....	586,101	666,720	683,518	796,045
FTEs.....	213	204	218	220
<u>Endowment Funds</u>				
<u>Hispanic Serving Ag Colleges and Univ. Endowment Fund</u>				
Program.....	11,880	11,880	11,880	11,880
Total Costs.....	11,880	11,880	11,880	21,880
<u>Mandatory Programs:</u>				
<u>Food Insecurity Nutrition Incentive Program</u>				
Program.....	-	31,500	-	18,000
Administrative costs (direct).....	-	2,240	-	1,280
Indirect costs.....	-	1,260	-	720
Total Costs.....	-	35,000	-	20,000
<u>Risk Management Education</u>				
Program.....	4,555	4,454	4,450	4,800
Administrative costs (direct).....	122	119	119	128
Indirect costs.....	68	67	66	72
Total Costs.....	4,745	4,640	4,635	5,000
<u>Beginning Farmers and Ranchers Program</u>				
Program.....	-	19,200	17,798	19,200
Administrative costs (direct).....	-	512	475	512
Indirect costs.....	-	288	267	288
Total Costs.....	-	20,000	18,540	20,000
Total Costs, Strategic Goal.....	602,726	738,240	718,573	862,925
Total FTEs, Strategic Goal.....	213	204	218	220

NATIONAL INSTITUTE OF FOOD AND AGRICULTURE

Full Cost by Department Strategic Goal

(Dollars in thousands)

Department Strategic Goal 2: Ensure our national forests and private working lands are conserved, restored, and made more resilient to climate change, while enhancing our water resources

Program / Program Items	2013	2014	2015	2016
	Actual	Estimate	Estimate	Estimate
<u>Discretionary</u>				
Program.....	177,277	179,706	186,414	217,103
Administrative costs (direct).....	4,727	4,792	4,971	5,789
Indirect costs.....	2,659	2,696	2,796	3,257
Total Costs.....	184,663	187,194	194,181	226,149
FTEs.....	57	56	60	63
Total Costs, Strategic Goal.....	184,663	187,194	194,181	226,149
Total FTEs, Strategic Goal.....	57	56	60	63

Department Strategic Goal 3: Help America promote agricultural production and biotechnology exports as America works to increase food security

Program / Program Items	2013	2014	2015	2016
	Actual	Estimate	Estimate	Estimate
<u>Discretionary</u>				
Program.....	\$3,302	\$2,461	\$2,486	\$2,895
Administrative costs (direct).....	88	66	66	77
Indirect costs.....	50	37	38	43
Total Costs.....	3,440	2,564	2,590	3,016
FTEs.....	66	69	76	76

Mandatory Programs:

Biomass Research and Development

Program.....	-	2,880	2,670	2,880
Administrative costs (direct).....	-	77	71	77
Indirect costs.....	-	43	40	43
Total Costs.....	-	3,000	2,781	3,000

NATIONAL INSTITUTE OF FOOD AND AGRICULTURE

Full Cost by Department Strategic Goal

(Dollars in thousands)

Organic Research Initiative Sec. 7206

Program.....	-	19,200	17,798	19,200
Administrative costs (direct).....	-	512	475	512
Indirect costs.....	-	288	267	288
Total Costs.....	-	20,000	18,540	20,000

Biodiesel Fuel Education Program

Program.....	-	960	890	960
Administrative costs (direct).....	-	26	24	26
Indirect costs.....	-	14	13	14
Total Costs.....	-	1,000	927	1,000

Community Food Projects Competitive Grants Program

Program.....	4,800	4,800	8,640	8,640
Administrative costs (direct).....	128	128	230	230
Indirect costs.....	72	72	130	130
Total Costs.....	5,000	5,000	9,000	9,000

Specialty Crop Grant Programs Sec. 7311

Program.....	-	52,800	48,946	52,800
Administrative costs (direct).....	-	1,408	1,305	1,408
Indirect costs.....	-	792	734	792
Total Costs.....	-	55,000	50,985	55,000

Emergency Citrus Research and Extension Program

Program.....	-	24,000	22,248	24,000
Administrative costs (direct).....	-	640	593	640
Indirect costs.....	-	360	334	360
Total Costs.....	-	25,000	23,175	25,000

Total Costs, Strategic Goal.....	8,440	111,564	107,998	116,016
Total FTEs, Strategic Goal.....	66	69	76	76

Department Strategic Goal 4: Ensure that all of America's children have access to safe, nutritious and balanced meals

Program / Program Items	2013 Actual	2014 Estimate	2015 Estimate	2016 Estimate
<u>Research</u>				
Program.....	357,854	408,647	397,684	463,155
Administrative costs (direct).....	9,543	10,897	10,605	12,351
Indirect costs.....	5,368	6,130	5,965	6,947
Total Costs.....	372,765	425,674	414,254	482,453
FTEs.....	51	51	56	58
Total Costs, Strategic Goal.....	372,765	425,674	414,254	482,453
Total FTEs, Strategic Goal.....	51	51	56	58
Total Cost, All Strategic Goals.....	1,168,594	1,462,672	1,435,006	1,687,543
Total FTEs, All Strategic Goals.....	387	380	410	417

NATIONAL INSTITUTE OF FOOD AND AGRICULTURE

Report on Anticipated RFA Publication Date

Information on the publication schedule for NIFA Requests for Applications (RFAs) is included below, as required by a directive from the FY 2015 House Report on the Agriculture Appropriations Bill and the 2014 Farm Bill. The scope of the final RFA will depend upon the final appropriations levels enacted by Congress. The actual publication dates may change due to factors such as amount and timing of appropriations, unexpected delays in the review process, and science developments. For the most up-to-date AFRI RFA publication schedule, please refer to the NIFA website at: <http://nifa.usda.gov/funding/rfas/afri.html>.

The anticipated RFA publication dates are provided for Other Competitive Programs. The Expected FY 2016 RFA Publication Dates for AFRI are 9/1/2015 through 12/31/2015. Funding amounts reflect funding amounts anticipated for programs excluding Interagency programs, and legislative set asides for programs such as the Small Business Innovation Research program.

FY 2016 President's Budget for the Agriculture and Food Research Initiative

The U.S. Department of Agriculture (USDA) established the Agriculture and Food Research Initiative (AFRI) competitive grants program, under which the Secretary of Agriculture may make competitive grants for fundamental and applied research, education, and extension to address food and agricultural sciences (as defined under section 1404 of the National Agricultural Research, Extension, and Teaching Policy Act of 1977 (NARETPA) (7 U.S.C. 3103)), as amended, in six priority areas. The six priority areas are: 1) plant health and production and plant products; 2) animal health and production and animal products; 3) food safety, nutrition, and health; 4) bioenergy, natural resources, and environment; 5) agriculture systems and technology; and 6) agriculture economics and rural communities. The alignment of AFRI program Requests for Applications (RFA) with the Farm Bill priorities are described in the following document.

Within the six priority areas, AFRI supports research, education, extension, and integrated research, education, and extension programs by awarding grants that address key problems of national, regional, or multi-state importance in sustaining all components of agriculture, including farm efficiency and profitability, ranching, bioenergy, forestry (both urban and agroforestry), aquaculture, rural communities and entrepreneurship, human nutrition, food safety, biotechnology, and conventional breeding. AFRI advances fundamental sciences as well as translational research and developing and coordinating opportunities to build on these discoveries. Additionally, through the support of education and extension efforts, AFRI enhances the delivery of science-based knowledge to people, allowing them to make informed practical decisions related to the food and agricultural sciences.

The AFRI program is structured to address critical societal challenges while continuing to support foundational agricultural science and build human capacity in the food and agricultural sciences. To accomplish this, the AFRI program is competed in eight program areas: six *Challenge Area* programs, one *Foundational* program, and one *Education and Literacy Initiative* program.

The *Challenge Area* programs address the following areas: food security; climate variability and change; water for agriculture; sustainable bioenergy production; childhood obesity prevention; and food safety. Applications within the Challenge Area programs are solicited for larger awards for longer periods of time to enable greater collaboration among institutions and organizations, as well as enhance integration of basic and applied research with education and extension programs to address complex problems. The expectation is that the Challenge Area programs integrate the six 2014 Farm Bill AFRI Priority Areas and build on the discoveries in the Foundational Program to address societal challenges. These awards are made as continuation awards, an award instrument by which NIFA administers support for a specific number of objectives within a project for a specified period of time (typically one year) with a statement of intention to provide additional support at a future date based on accomplishments.

The *Foundational Program*, in contrast, focuses on building a foundation of knowledge critical for solving current and future societal challenges. The Foundational Program is organized by, and directly aligns with, the 2014 Farm Bill AFRI priority areas. The Foundational Program priorities are designed to include the scope of topics listed within each of the six 2014 Farm Bill Priority Areas.

The *Food, Agriculture, Natural Resources, and Human Sciences Education and Literacy Initiative* provides fellowships to outstanding pre- and postdoctoral students in the food, agricultural, natural resource, and human sciences. The initiative also advances the development of the agricultural-related science learning and engagement activities focused on the academic pipeline. The Education and Literacy Initiative directly aligns with the 2014 Farm Bill AFRI priority areas.

Agriculture and Food Research Initiative Requests for Applications

In FY 2016 the AFRI program will issue eight Requests for Applications (RFA) to solicit new grant awards: six separate RFAs will be issued for each of the Challenge Areas. One RFA will be issued for the Foundational Program, and one RFA will be issued for the Education Initiative. All eight of these RFAs collectively address the six AFRI Farm Bill Priority Areas: 1) plant health and production and plant products; 2) animal health and production and animal products; 3) food safety, nutrition, and health; 4) bioenergy, natural resources, and environment; 5) agriculture systems and technology; and 6) agriculture economics and rural communities.

FY 2016 President's Budget			
Program	New Grant Awards	Existing Grant Awards	Total
Agriculture and Food Research Initiative	\$374,651,372	\$75,348,628	\$450,000,000

The NIFA 2016 budget proposes to increase the AFRI program by \$125,000,000, which includes:

- A new initiative on Pollinator Health to be included in both the Food Security Challenge Area and Foundational Program;
- A new initiative on Antimicrobial Resistance to be included in both the Food Safety Challenge Area and Foundational Program;
- Continuation of the Critical Agricultural Research and Extension (CARE) program area initiated in FY 2014 as part of the Foundational Program;
- Continued support for high priority areas including production agriculture, food security, adaptation of crop and livestock agriculture to climate variability, food safety, sustainable bioenergy, and nutrition and health;
- Continuation of the Water for Agriculture Challenge Area, that was initiated in FY 2014 and is focused on critical water and water resources problems;
- Continuation of the Exploratory Research program area that was initiated in FY 2014 as part of the Foundational Program;
- Continuation of a new Food, Agricultural, Natural Resources, and Human Sciences Education and Literacy Initiative that was initiated in FY 2015; and
- Fostering inter-agency collaborations to leverage greater investment in agriculturally-relevant areas of science, and attract new communities of scientists to address challenging agricultural issues.

AFRI Request for Applications (RFA):

Foundational Program RFA | The AFRI FY 2016 Foundational Program RFA is organized by, and directly aligns with, the Farm Bill AFRI priority areas. The Foundational Science priorities are designed to include the scope of topics listed within each of the six Farm Bill Priority Areas. The Foundational Program focuses on building a foundation of knowledge critical for solving current and future societal challenges. In addition, a new Critical Agricultural Research and Extension (CARE) program area and the Exploratory Research program area have been added as part of the AFRI Foundational Program. Funding for the CARE program area will be used to support integrated projects that address critical and emerging needs in plant and animal health, production, and products. The program will emphasize achieving results that can be applied by the producer as quickly as possible following project completion. The Exploratory Research program area will provide support for research projects that develop proof of concept for untested novel ideas, especially high risk-high reward research that will lead to a significant change in U.S. agriculture. A total of \$168,600,000 will be available for *new* grants. Includes funding to support Interagency Agreements.

Request for Applications (RFA)	New Grant Awards	Total
Foundational Program	\$216,898,000	\$216,898,000

Food, Agriculture, Natural Resources, and Human Sciences Education and Literacy Initiative RFA (Previously the NIFA Fellowships Grant Program) | The AFRI FY 2016 Food, Agriculture, Natural Resources, and Human Sciences Education and Literacy Initiative RFA will focus on developing a diverse

workforce that contributes to the national food and agricultural system. This initiative addresses the continuing lag in the production of a sufficient number and quality of graduates in agricultural-related disciplines. It has been estimated that during the years 2010-15, there were or will be 54,400 new jobs annually in the food and agricultural sciences, but only an estimated 29,300 graduates (55 percent) have degrees from colleges of agriculture and life sciences, forestry and natural resources, and veterinary medicine. The remaining 45 percent will come from allied disciplines, but will not have all the necessary training or practical experience. Funding for the Food, Agriculture, Natural Resources, and Human Sciences Education and Literacy Initiative will support the two goals of: (a) promoting research and extension experiential learning for undergraduates; (b) preparing the next generation of scientists through doctoral and post-doctoral fellowships; and (c) developing pathways to engage youth will build on the best practices of programs that are supported by NIFA and other federal agencies to help reduce the number of students who drop out of K-14 education and fail to enroll in college by focusing on improving agricultural literacy. The Education and Literacy Initiative priorities are designed to include the scope of topics listed within each of the six Farm Bill Priority Areas. A total of \$24,782,000 will be available for *new* grants.

Request for Applications (RFA)	New Grant Awards	Total
Food, Agricultural, Natural Resources, and Human Sciences Education and Literacy Initiative	\$24,782,000	\$24,782,000

Challenge Area RFAs:

- **Food Security Challenge Area RFA** | The AFRI FY 2016 Food Security Challenge Area RFA will support agricultural production research, education, and extension to develop more sustainable, productive, and economically viable plant and animal production systems. New initiatives on and Plant and Animal Breeding, particularly using Phenomics, and Pollinator Health will be included in the Food Security Challenge Area. A total of \$34,027,000 will be available for *new* grants within these new initiatives. In addition, \$27,501,000 for *existing* grants will continue research, education, and extension work initiated in previous years focused on adaptation to and mitigation of climate impacts on food production; translational genomics to improve disease resistance and improve fertility in animals; minimize crop diseases due to fungal pathogens, improve management of plant pathogens vectored by arthropods and nematodes; enhance implementation of integrated pest management; reduce crop and livestock losses due to pests and diseases; support sustainable food systems to improve food security; and improve understanding of genomic information and classical breeding to develop new and improved animal breeds and crop cultivars for increased food production and quality. This challenge area will support projects that primarily address the Farm Bill AFRI Priorities of: Plant Health and Production and Plant Products; Animal Health and Production and Animal Products; and Bioenergy, Natural Resources and Environment.

Request for Applications (RFA)	New Grant Awards	Existing Grant Awards	Total
Food Security Challenge Area	\$34,027,000	\$27,501,000	\$61,528,000

- **Water for Agriculture Challenge Area RFA** | The AFRI FY 2016 Water for Agriculture program will focus on developing solutions for water management that could potentially impact health, food, climate, energy, and the environment. This program will address critical water resources issues such as drought, excess soil moisture, flooding, availability, and quality and quantity in an agricultural context. A total of \$16,669,800 will be available for *new* grants. In addition, \$9,586,200 for *existing* grants will continue work initiated in FY 2014 and FY 2015 in research, education, and extension activities on developing solutions for water management that link food, water, climate, energy, and environmental issues. This includes the development of management practices, technologies, and tools for farmers, ranchers, forest owners and managers, public decision-makers, public and private managers, and citizens to improve water resource quantity and quality. This area will support projects that address all six Farm Bill AFRI Priorities Areas.

Request for Applications (RFA)	New Grant Awards	Existing Grant Awards	Total
Water for Agriculture Challenge Area	\$16,669,800	\$9,586,200	\$26,256,000

- **Agricultural Science for Climate Variability and Change Challenge Area RFA** | The AFRI FY 2016 Agricultural Science for Climate Variability and Change Challenge Area RFA will support the adaptation of major agriculture and forestry production systems to climate variables and to mitigate

greenhouse gases in the atmosphere. A total of \$10,820,000 will be available for *new* grants. In addition, \$6,180,000 for *existing* grants will continue work initiated in previous years in research, education, and extension activities on adaptation and mitigation strategies for major regional cropping, livestock and forestry production systems. This Challenge Area will focus on climate and land use to understand the patterns, processes, and consequences of changes in land use, land condition, and land cover at multiple spatial and temporal scales, resulting from the interactions between climate variability, human activities, and the landscape mosaic comprising natural and production systems. This area will primarily support projects that address the Farm Bill AFRI Priorities of: Plant Health and Production and Plant Products; Animal Health and Production and Animal Products; and Bioenergy, Natural Resources and Environment.

Request for Applications (RFA)	New Grant Awards	Existing Grant Awards	Total
Agricultural Science for Climate Variability and Change Challenge Area	\$10,820,000	\$6,180,000	\$17,000,000

- **Food Safety Challenge Area RFA** | The AFRI FY 2016 for the Food Safety Challenge Area RFA will support research, education, and extension to advance investigator-driven integrated research to solve complex food safety challenges, including a new initiative on Antimicrobial Resistance. A total of \$33,592,463 will be available for *new* grants focusing on various aspects of Antimicrobial Resistance. In addition, \$9,494,537 for *existing* grants will continue research, education, and extension work to improve the safety of the U.S. food supply by promoting safe handling of food and application of good agricultural practices. This Challenge area will primarily support projects that address the Farm Bill AFRI Priority of Food Safety, Nutrition, and Health; and Animal Health and Production and Animal Products.

Request for Applications (RFA)	New Grant Awards	Existing Grant Awards	Total
Food Safety Challenge Area	\$33,592,463	\$9,494,537	\$43,087,000

- **Sustainable Bioenergy Challenge Area RFA** | The AFRI FY 2016 Sustainable Bioenergy Challenge Area will continue to support NIFA’s Sustainable Bioenergy portfolio that focuses on the societal challenge to secure America’s energy future and will include a new initiative on Feedstocks for Biobased Products. This Challenge Area program is designed to achieve the long-term outcome of reducing U.S. dependence on foreign oil through the production of sustainable bioenergy through regional systems that deliver liquid transportation biofuels to help meet the Energy Independence and Security Act. A total of \$30,931,500 will be available for *new* grants focused on Feedstocks for Biobased Products and economic analysis of policies impacting the feedstock supply chain. In addition, \$5,455,500 for *existing* grants will continue research, education, and extension work on grasses, willow, and beetle-killed trees as feedstocks for biofuels. This area primarily supports projects that address the Farm Bill AFRI Priority of: Plant Health and Production and Plant Products; Bioenergy, Natural Resources, and Environment; Agriculture Systems and Technology; and Agriculture Economics and Rural Communities.

Request for Applications (RFA)	New Grant Awards	Existing Grant Awards	Total
Sustainable Bioenergy Challenge Area	\$30,931,500	\$5,455,500	\$36,387,000

- **Childhood Obesity Prevention Challenge Area RFA** | The AFRI FY 2016 Childhood Obesity Prevention Challenge Area RFA will support research, education, and extension focusing on populations of greatest risk including populations eligible for USDA nutrition education and food assistance programs, Supplemental Nutrition Assistance Program, and Child Nutrition Programs. A total of \$6,930,609 will be available for *new* grants. In addition, \$17,131,391 for *existing* grants will continue research, education, and extension work initiated in previous years on access to healthy nutritious food, and innovative programs that focus on the food and physical activity environments in communities of greatest need to provide long-term and sustained reductions in the incidence of childhood obesity. This area will support projects that address the Farm Bill AFRI Priority of Food Safety, Nutrition, and Health.

Request for Applications (RFA)	New Grant Awards	Existing Grant Awards	Total
Childhood Obesity Prevention Challenge Area	\$6,930,609	\$17,131,391	\$24,062,000

Table 1. Funding allocations by Request for Applications for the FY 2016 President’s Budget for the Agriculture and Food Research Initiative (AFRI).

FY 2016 President’s Budget			
Program	New Grant Awards	Existing Grant Awards	Total
Agriculture and Food Research Initiative	\$374,651,372	\$75,348,628	\$450,000,000
Request for Applications (RFA)			
Foundational Program*	\$216,898,000	\$ -	\$216,898,000
Education and Literacy Initiative	\$24,782,000	\$ -	\$24,782,000
Food Security Challenge Area	\$34,027,000	\$27,501,000	\$61,528,000
Water for Agriculture Challenge Area	\$16,669,800	\$9,586,200	\$26,256,000
Climate Variability and Change Challenge Area	\$10,820,000	\$6,180,000	\$17,000,000
Food Safety Challenge Area	\$33,592,463	\$9,494,537	\$43,087,000
Sustainable Bioenergy Challenge Area	\$30,931,500	\$5,455,500	\$36,387,000
Childhood Obesity Prevention Challenge Area	\$6,930,609	\$17,131,391	\$24,062,000

* Includes funding for interagency programs.

Table 2. Funding allocations by Farm Bill Priority Area for the FY 2016 President’s Budget for the Agriculture and Food Research Initiative (AFRI).

FY 2016 President’s Budget									
Farm Bill Priority Area	Agriculture and Food Research Initiative	RFA Topic Area							
		Foundational Program	Education and Literacy	Challenge Area					
				Food Security	Water for Agriculture	Climate Variability and Change	Food Safety	Sustainable Bioenergy	Childhood Obesity Prevention
A. Plant Health and Production and Plant Products	24%	29%	25%	40%	15%	10%	5%	28%	-
B. Animal Health and Production and Animal Products	21%	19%	20%	35%	15%	20%	40%	-	-
C. Food Safety, Nutrition, and Health	27%	30%	20%	5%	15%	5%	50%	-	100%
D. Bioenergy, Natural Resources, and Environment	15%	10%	20%	10%	20%	55%	3%	47%	-
E. Agriculture Systems and Technology	7%	7%	8%	5%	20%	5%	2%	10%	-
F. Agriculture Economics and Rural Communities	6%	6%	7%	5%	15%	5%	-	15%	-

Table 3. Funding allocations by Request for Applications for FY 2013 to FY 2015 appropriations and the FY 2016 President's Budget for the Agriculture and Food Research Initiative (AFRI).

AFRI Program Areas	2013 Enacted	2014 Enacted	2015 Enacted	2016 President's Budget
Sustainable Bioenergy Challenge Area	42,730,000	39,561,000	36,682,000	36,387,000
Climate Variability and Change Challenge Area	41,642,000	34,117,000	9,862,000	17,000,000
Water for Agriculture Challenge Area	0	6,522,000	15,839,000	26,256,000
Food Security Challenge Area	37,555,000	37,228,000	40,327,000	61,528,000
Childhood Obesity Prevention Challenge Area	15,591,000	27,631,000	22,870,000	24,062,000
Food Safety Challenge Area	22,770,000	22,806,000	23,839,000	43,087,000
<i>SUBTOTAL</i>	<i>160,288,000</i>	<i>167,865,000</i>	<i>149,419,000</i>	<i>208,320,000</i>
Foundational Program*	108,419,000	140,634,000	158,543,000	216,898,000
Education and Literacy Initiative	6,862,000	7,910,000	17,038,000	24,782,000
<i>Total</i>	<i>275,569,000</i>	<i>316,409,000</i>	<i>325,000,000</i>	<i>450,000,000</i>

* Includes funding for interagency programs.

Other Competitive Programs

Non-AFRI competitive programs included in the Congressional Directive and/or Farm bill language are listed below. FY 2015 discretionary funding is based on the Consolidated Appropriations for FY 2015. Programs funded by mandatory funding are included based on the Agricultural Act of 2014 (2014 Farm Bill). FY 2015 mandatory funds include the impact of a 7.3 percent sequestration order. FY 2016 Budget estimates are the estimated resources based on the President’s budget request and FY 2016 funding amounts provided in the 2014 Farm Bill, and may differ from final FY 2016 funding amounts appropriated by Congress.

Program	Authority	Scope of RFA and Budget Justification	2015 Estimate (\$000s)	2016 Budget (\$000s)	RFA Dates
Sustainable Agriculture Research and Education Program	7 U.S.C. 5811, 7 U.S.C. 5812, 7 U.S.C. 5831, & 7 U.S.C. 5832 in accordance with the general authorities in 7 U.S.C. 343(d)	<p>The FY 2015 RFA will focus on increasing the knowledge of and helping farmers and ranchers to adopt practices that are productive, profitable, environmentally sound, and good to communities. Grants awarded by the four regional administrative councils will support projects that address crop and livestock production and marketing, stewardship of soil and other natural resources, economics and quality of life. The program will support development of technical guides and handbooks and education and training for Cooperative Extension System agents, and other agricultural professionals involved in the education and transfer of technical information concerning sustainable agriculture.</p> <p>The FY 2016 RFA will focus on increasing the knowledge of and helping farmers and ranchers to adopt practices that are productive, profitable, environmentally sound, and good to communities. Grants awarded by the four regional administrative councils will support projects that address crop and livestock production and marketing, stewardship of soil and other natural resources, economics and quality of life. The program will support development of technical guides and handbooks and education and training for Cooperative Extension System agents, and other agricultural professionals involved in the education and transfer of technical information concerning sustainable agriculture.</p>	\$22,667	\$22,667	<p>2015: March 1, 2015</p> <p>2016: March 1, 2016</p>
Methyl Bromide	7 U.S.C. 7626	<p>The FY 2015 RFA will focus on supporting the discovery and implementation of practical pest management alternatives for commodities and uses affected by the methyl bromide phase-out. This program will request Integrated, Extension-Only, and State of the Commodity projects that use a systems approach to evaluate and deliver economically viable short- to medium-term solutions for all commodities impacted by the loss of methyl bromide.</p>	2,000	0	2015: February 2015

Program	Authority	Scope of RFA and Budget Justification	2015 Estimate (\$000s)	2016 Budget (\$000s)	RFA Dates
		<p>The FY 2016 RFA will focus on supporting the discovery and implementation of practical pest management alternatives for commodities and uses affected by the methyl bromide phase-out. This program will request Integrated, Extension-Only, and State of the Commodity projects that use a systems approach to evaluate and deliver economically viable short- to medium-term solutions for all commodities impacted by the loss of methyl bromide.</p>			2016: Winter, 2016
Minor Crop Pest Management Program – Interregional Research Project #4	7 U.S.C. 450i(e)	<p>The FY 2015 RFA will focus on funding projects that provide safe, effective, and economical pest management solutions for minor agricultural uses and specialty crops. NIFA anticipates funding five projects: one to establish a national headquarters and four to establish geographically-based regional IR-4 centers, three of which will include analytical chemistry programs.</p> <p>The FY 2016 RFA will focus on funding projects that provide safe, effective, and economical pest management solutions for minor agricultural uses and specialty crops. NIFA anticipates funding the five projects that are funded in FY 2015 as continuation awards in FY 2016.</p>	11,000	11,000	December 2014 Fall 2015
Organic Transition Program	7 U.S.C. 7626	<p>The FY 2015 RFA will focus on the development and implementation of research, extension and higher education programs to improve the competitiveness of organic livestock and crop producers, as well as those who are adopting organic practices. The program will focused on the development and implementation of biologically-based pest management practices that mitigate the ecological, agronomic and economic risks associated with a transition from conventional to organic agricultural production systems. The program will also fund the development of cultural practices and other allowable alternatives to substances recommended for removal from NOP’s National List of Allowed and Prohibited Substances</p> <p>The FY 2016 RFA will focus on the development and implementation of research, extension and higher education programs to improve the competitiveness of organic livestock and crop producers, as well as those who are adopting organic practices. The program will focused on the development and implementation of biologically-based pest management practices</p>	4,000	4,000	2015: February 2015 2016: January 2016

Program	Authority	Scope of RFA and Budget Justification	2015 Estimate (\$000s)	2016 Budget (\$000s)	RFA Dates
		<p>technology, including improved mechanization and technologies that delay or inhibit ripening; and E) Methods to prevent, detect, monitor control, and respond to potential food safety hazards in the production and processing of specialty crops. NIFA is obligated to reserve \$25 million for the Emergency Citrus Research and Extension Program to address citrus health issues. In 2015, the primary focus will be on Huonglongbing (HLB, citrus greening) and the insect that vectors the pathogen causing this disease.</p> <p>The FY 2016 SCRI RFA will continue to give priority to projects that are multistate, multi-institutional, or trans-disciplinary; and include explicit mechanisms to communicate results to producers and the public. It will also continue to require that applications address one of the five legislatively mandated focus areas. The Emergency Citrus Research and Extension Program RFA will again focus on Huonglongbing (HLB, citrus greening) and the insect that vectors the pathogen causing this disease.</p>			2016: Fall 2015
Beginning Farmer and Rancher Development Program	7 U.S.C. 3319f(c)(1)	<p>The FY 2015 Request for Application (RFA) will continue the focus on education and training through standard grants and educational enhancement grants, with the same two set-asides, and the same range of topics. Topical priorities may be adjusted based on stakeholder input received in FY 2014 and to complement and avoid duplicating the work funded in FY 2014. FY 2015 RFA was announced January 9, 2015.</p> <p>The FY 2016 RFA will continue to focus on education and training through standard grants and educational enhancement grants with the same range of topics. At least five percent of funds will focus on training for veteran Beginning Farmers and Ranchers (BFRs) BFR's, and at least five percent of funds will focus on training for limited-resource BFRs, socially disadvantaged BFRs, and farmworkers desiring to become BFRs (both set-asides as specified in the Agricultural Act of 2014). Topical priorities may be adjusted based on stakeholder input received in FY 2015 and to complement and avoid duplicating the work funded in FY 2015.</p>	18,540	20,000	2015: January 9, 2015 2016: January 2016
Organic Agriculture Research and Extension Initiative	7 U.S.C. 5925b(a)	The FY 2015 RFA will focus on solving critical organic agricultural issues, priorities and enhancing the ability of producers and processors who have already adopted organic standards to grow and market high quality organic agricultural products.	18,540	20,000	2015: February 2015

Program	Authority	Scope of RFA and Budget Justification	2015 Estimate (\$000s)	2016 Budget (\$000s)	RFA Dates
		<p>Emphasis will be given to research, education and outreach projects that will assist farmers and ranchers with whole farm planning by delivering practical research-based information relating to management of diseases, insect pests and weeds in specific regions, such as the southern region, where organic acreage is demonstrably increasing and yet the region remains deficient in terms of numbers of certified and exempt organic farms, compared to nationwide averages.</p> <p>The FY 2016 RFA will focus on the eight legislatively-defined goals: (1) Facilitating the development of organic agriculture production, breeding, and processing methods, (2) Evaluating the potential economic benefits of organic agricultural production and methods to producers, processors and rural communities, (3) Exploring international trade opportunities for organically grown and processed agricultural commodities, (4) Determining desirable traits for organic commodities, (5) Identifying marketing and policy constraints on the expansion of organic agriculture, (6) Conducting advanced on-farm research and development that emphasizes observation of, experimentation with, and innovation for working organic farms, including research relating to production and marketing, food safety, socioeconomic conditions, and farm business management, (7) Examining optimal conservation and environmental outcomes relating to organically produced agricultural products, (8) Developing new and improved seed varieties that are particularly suited for organic agriculture.</p>			2016: Fall 2015
Food Insecurity Nutrition Incentive Program	7 U.S.C. 7517	The FY 2016 RFA will focus on evaluating projects intended to “increase the purchase of fruits and vegetables by low-income consumers participating in [SNAP] by providing incentives at the point of purchase. The program will test strategies that could contribute to our understanding of how best to increase the purchase of fruits and vegetables by Supplemental Nutrition Assistance Program (SNAP) participants to inform future efforts, and develop effective and efficient benefit redemption technologies.	0	20,000	2016: Fall 2015