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PURPOSE STATEMENT

Section 7511(f)(2) of the Food, Conservation, and Energy Act of 2008 (FCEA) amended the Department of Agriculture Reorganization Act of 1994 ([7 U.S.C. 6971](#)) by establishing 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 programs propel cutting-edge discoveries from research laboratories to farms, classrooms, communities, and back again. Through three main federal-funding mechanisms, NIFA supports programs that address key national challenges. NIFA's mission is to invest in and advance agricultural research, education and extension to solve societal challenges.

Research and Education Activities

Research and Education programs administered by NIFA are the U.S. Department of Agriculture's (USDA) principal entree to the university system of the United States for the purpose of conducting agricultural research and education programs as authorized by:

- Hatch Act of 1887, as amended ([7 U.S.C. 361a-361i](#));
- McIntire-Stennis Cooperative Forestry Act of 1962, as amended ([16 U.S.C. 582a et seq.](#));
- Evans Allen Act, as amended (7 U.S.C 3221 et seq.)
- Competitive, Special, and Facilities Research Grant Act, as amended ([7 U.S.C. 3157](#)) (Note: 7 U.S.C. 450i was transferred to 7 U.S.C. 3157) (the 1965 Act);
- National Agricultural Research, Extension, and Teaching Policy Act (NARETPA) of 1977, as amended ([7 U.S.C. 3101 et seq.](#));
- 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](#));
- Equity in Educational Land-Grant Status Act of 1994 ([7 U.S.C. 301 note](#)) (the 1994 Act);
- Agricultural Research, Extension, and Education Reform Act of 1998 (Pub. L. 105-185), as amended (AREERA);
- Food, Agriculture, Conservation, and Trade Act of 1990 (Pub. L. 101-624) (FACT Act);
- Farm Security and Rural Investment Act of 2002 (Pub. L. 107-171) (FSRIA);
- Food Conservation, and Energy Act of 2008 (Pub. L. 110-246), as amended (FCEA);
- Agricultural Act of 2014 (2014 Farm Bill, Pub. L. 113-79);
- and the Agriculture Improvement Act of 2018 (2018 Farm Bill, Pub. L. 115-334).

Through these authorities, the USDA participates with State and other cooperators to encourage and assist the State institutions in agricultural research and education through the State Agricultural Experiment Stations (SAES) of the 50 States and territories; by approved Schools of Forestry; 1890 Land-Grant Institutions and Tuskegee University, West Virginia State University, and Central State University ([7 U.S.C. 321 et seq.](#), as amended); 1994 Land-Grant Institutions ([7 U.S.C. 301 note](#), as amended); by Colleges of Veterinary Medicine; and other eligible institutions. 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 people in rural communities in individual States naturally look to their SAES, universities, and colleges for solutions to the State and local problems and request services and solutions to address these problems.

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. 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. Food Security Act of 1985 (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).

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

Hatch Act

Funds under the Hatch Act of 1887 as amended ([7 U.S.C. 361a-361i](#)) 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 actively participates in the planning and coordination of research programs between the States and the Department at the regional and national levels.

McIntire-Stennis Act

The McIntire-Stennis Act ([16 U.S.C. 582a et seq.](#)) as amended 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 7604 of the 2018 Farm Bill (Pub. L. 115-334) amended the McIntire-Stennis Act to include 1994 Institutions (as defined in section 532 of the Equity in Educational Land-Grant Status Act of 1994 (7 U.S.C. 301 note; Pub. L. 103-382)) that offer an associate's degree or a baccalaureate degree in forestry.

Section 7101 of the 2014 Farm Bill (Pub. L. 113-79) which allowed 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 remained in effect until September 30, 2018. In accordance with Section 7102 of the 2018 Farm Bill, cooperating forestry schools will no longer have to opt out of that status to be considered as Non-Land-Grant Colleges of Agriculture (NLGCAs) because the definition of a NLGCA no longer excludes the cooperating forestry schools.

Payments to 1890 Colleges, including Tuskegee University, West Virginia State University, and Central State University

Section 1445 of NARETPA; Food and Agriculture Act of October 28, 1978, (Pub. L. 95-547); and subject to provisions of Agriculture and Food Act of 1981 (Pub. L. 97-98); Food Security Act of 1985 (Pub. L. 99-198); FACT Act; FAIR Act; AREERA; FSRIA; FCEA; Section 7129 of the 2014 Farm Bill (Pub. L. 113-79), and Section 7115 of the 2018 Farm Bill (Pub. L. 115-334), 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 Agriculture, Rural Development, Food and Drug Administration, and Related Agencies Appropriations Act, 2002 (Pub. L. 107-76) makes West Virginia State University eligible to receive funds under this program. Section 7129 of the 2014 Farm Bill makes Central State University eligible to receive funds under this program beginning in fiscal year 2016 and Section 7115 of the 2018 Farm Bill establishes a minimum additional funding amount for eligible entities in the fiscal years following certain eligible entities' qualification should the funding level increase by \$3 million. If there are insufficient funds appropriated for Section 1445 (or Section 1444) to continue the minimum additional funding amounts for eligible institutions, the provision provides for a reduction in allocations made to eligible institutions. 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 underprivileged people in rural areas 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, unless the funding amount is increased by \$3 million in particular fiscal years, in which case Section 7115 of the 2018 Farm Bill includes additional directives regarding allocation of that increase:

- 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 of NARETPA ([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.

Tribal Colleges Education Equity Grants Program

The 1994 Act ([7 U.S.C. 301 note](#)) 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 and strategic partnerships; 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 2014 Farm Bill (Pub. L. 113-79) 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 if the Institution declines to accept funds or fails to meet the accreditation requirements of section 533. Section 7502 of the 2018 Farm Bill (Pub. L. 115-334) amended section 532 of the 1994 Act by updating eligible institutions' names and adding Red Lake Nation College.

1890 Institution Teaching, Research, and Extension Capacity Building Grants Program

Pursuant to 1417(b)(4) of NARETPA 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 the 2014 Farm Bill (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.

Scholarships for Students at 1890 Institutions

Section 1446 of the 2018 Farm Bill (Pub. L. 115-334) provides mandatory funding in the enacted amount of \$40 million, until expended, to carry out this program, authorized by [7 U.S.C. 3222a](#). The purpose of the program is to award grants to each of the eligible 1890 Land-Grant Institution, including Tuskegee University. 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. Section 7129 of the 2014 Farm Bill (Pub. L. 113-79) designates Central State University as an eligible 1890 Land-Grant Institution. The grants are for awarding scholarships to individuals who have been accepted for admission to such college or university; will be enrolled at such college or university not later than one year after the date of such acceptance; and intend to pursue a career in

the food and agricultural sciences, including a career in agribusiness, energy and renewable fuels; or financial management. The Further Consolidated Appropriations Act, 2021 provides an additional \$10 million in discretionary funds for the program.

1890 Institutions Centers of Excellence

The Centers are designed to supply the country with a globally diverse workforce and support critical global development needs, thereby supporting U.S. national security, address trans-boundary research and education challenges including climate change, conservation, biodiversity and development, or strengthening of teaching curricula and student recruitment. The 1890 Universities have a long history of working on these topics but the small size of their individual programs and lack of sufficient investment in infrastructure have hampered their contributions. These Centers help the institutions increase their effectiveness in serving the nation. Section 1673 of the Food, Agriculture, Conservation and Trade Act of 1990, as amended by Section 7213 of the 2018 Farm Bill ([7 U.S.C. 5926](#)) authorizes funding for the recognition of Centers of Excellence at 1890 Institutions to focus on Student Success and Workforce Development; Nutrition, Health, Wellness, and Quality of Life; Farming Systems, Rural Prosperity, and Economic Sustainability; Global Food Security and Defense; Natural Resources, Energy, and Environment; and Emerging Technologies. Section 769 of the Consolidated Appropriations Act, 2021 (P.L. 116-260) provided \$10 million for NIFA grants to the 1890 Institutions to support the Centers of Excellence.

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 agricultural science and agribusiness. This competitive program expands and strengthens academic programs in the agricultural sciences, natural resources, forestry, veterinary medicine, home economics allied, and disciplines closely to the food and agriculture production and delivery systems 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 of NARETPA 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). Funds may support: 1) curricula design, degree programs, materials development, and library resources; 2) faculty preparation and enhancement for teaching; 3) instruction delivery systems; 4) scientific instrumentation for teaching; 5) student experiential learning; and 6) student recruitment and retention.

Alaska Native Serving and Native Hawaiian-Serving Institutions Education Grants

The 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 re-designated 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.

1994 Institutions Research Grants

The 1994 Act ([7 U.S.C. 301 note](#)), as amended by the 2014 Farm Bill (Pub. L. 113-79) and the 2018 Farm Bill (Pub. L. 115-334), 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 the 2014 Farm Bill (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 eligible to receive funds under McIntire-Stennis Cooperative Forestry Act; ([7 U.S.C. 3103](#)).

New Beginning for Tribal Students

Section 1450 of the National Agricultural Research, Extension and Teaching Policy Act of 1977 ([7 U.S.C. 3222e](#)), as added by section 7120 of the 2018 Farm Bill (Pub. L. 115-334) established this program to make competitive grants to land-grant colleges and universities to provide identifiable support specifically targeted for Tribal students, through recruiting, tuition and related fees, experiential learning, and student services (including tutoring, counseling, academic advising, and other student services that would increase the retention and graduation rate of Tribal students enrolled at the land-grant college or university, as determined by the Secretary). All grantees are required to provide a 100 percent match in the form of cash or in-kind contributions. The program includes an annual limitation of \$500,000 that may be awarded to Institutions located in the same State. Section 757 of the Consolidated Appropriations Act, 2021 (P.L. 116-260) provided \$5 million for the program.

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 the 2014 Farm Bill (Pub. L. 113-79) defined eligibility for this program and a certification process was implemented accordingly. Section 7102 of the 2018 Farm Bill (Pub. L. 115-334) amended the definition of NLGCA to clarify that eligible entities must offer study of agricultural sciences, forestry, or both in any of 32 specified areas of study or any other area determined appropriate by the Secretary.

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 and Agriculture and Food Science Facilities and Equipment 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 and extension programs in food and agricultural sciences that are in the insular areas. Funds may be used to 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.

Agriculture and Food Research Initiative

Subsection (b) of the 1965 Act ([7 U.S.C. 3157\(b\)](#)) as amended by section 7406 of FCEA (Pub. L. 110-246), section 7404 of the 2014 Farm Bill (Pub. L. 113-79), and section 7504 of the 2018 Farm Bill (Pub. L. 115-334) 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, and any group consisting of two or more of these 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:

- 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.

Of the 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 the 2014 Farm Bill (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. Accepted topics are incorporated, as appropriate, into AFRI requests for applications. 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.

Veterinary Medicine Loan Repayment Program

The 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. Section 7105 of FCEA amended section 1415A of NARETPA (7 U.S.C. 3151a) 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.

Veterinary Services Grant Program

The program, authorized by section 1415B of NARETPA ([7 U.S.C. 3151b](#)) as amended, provides for a competitive grants program to develop, implement, and sustain veterinary services. Program activities will substantially relieve veterinarian shortage situations, facilitate private veterinary practices engaged in public health activities, or support the practices of veterinarians who are providing or have completed providing services under agreement under the Veterinary Medicine Loan Repayment Program. Section 7106 of the 2018 Farm Bill (Pub. L. 115-334) amended section 1415B of NARETPA (7 U.S.C. 3151b) to give priority to grant awards for programs or activities with a focus on the practice of food animal medicine.

Animal Health and Disease Research

Section 1433 of NARETPA, as amended by Pub. L. 113-79 and 115-334 ([7 U.S.C. 3195](#)), 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 the 2014 Farm Bill (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 the 2014 Farm Bill 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.

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.

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) of NARETPA ([7 U.S.C. 3152\(b\)\(1\)](#)) supports competitive 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.

Higher Education Multicultural Scholars Program

Pursuant to section 1417(b)(5) of NARETPA ([7 U.S.C. 3152\(b\)\(5\)](#)) provides competitive grants to institutions for scholarships that attract and educate more students from groups currently underrepresented in the food and agricultural sciences for careers in agriscience and agribusiness.

Higher Education National Needs Graduate Fellowship Grants

Pursuant to section 1417(b)(6) of NARETPA ([7 U.S.C. 3152\(b\)\(6\)](#)) are competitive awards to provide 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 new graduate students for critical food and agricultural scientific positions.

Secondary Education, Two-year Postsecondary Education, and Agriculture in the K-12 Classroom

This 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.

Aquaculture Centers

Pursuant to section 1475(d) of NARETPA ([7 U.S.C. 3322\(d\)](#)) 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.

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 and help farmers and ranchers adopt practices that are productive, profitable, environmentally sound, and good for people and communities. Grants are awarded by four regional administrative councils for projects that address crop and livestock production and marketing, stewardship of 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 disseminate information about sustainable agricultural practices. The program supports the development of technical guides and handbooks plus education and training for Cooperative Extension System agents, and other university, private sector and agency agricultural professionals engaged in the education and transfer of technical information concerning sustainable agriculture. Funds are also used for statewide planning of sustainable agriculture programs.

Farm Business Management and Benchmarking Program

Section 1672D of the FACT Act ([7 U.S.C. 5925f](#)), as amended by Section 7211 of the 2018 Farm Bill (Pub. L. 115-334) authorizes a competitive program to make research and extension grants for the purpose of improving the farm management knowledge and skills of agricultural producers by maintaining and expanding a national, publicly available farm financial management database to support improved farm management.

Sun Grant Program

Section 7526 of FCEA ([7 U.S.C. 8114](#)), as amended by section 7516 of the 2014 Farm Bill (Pub L. 113-79) and reauthorized by section 7414 of the 2018 Farm Bill (Pub. L. 115-334), established this program for grants to sun grant centers and subcenters for competitive awards 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.

Research Equipment Grants Program

Section 1462A of the National Agricultural Research, Extension and Teaching Policy Act of 1977 ([7 U.S.C. 3310](#)), as added by section 7126 of the 2018 Farm Bill (Pub. L. 115-334) established this program for competitive grants to eligible institutions for the acquisition of special purpose scientific research equipment for use in the food and agricultural sciences programs of eligible institutions. Grants may not exceed \$500,000.

Minor Crop Pest Management (IR-4)

Pursuant to Section 2(c) of the 1965 Act ([7 U.S.C. 3157\(e\)](#)), 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.

Alfalfa Seed and Alfalfa Forage Systems Program

Pursuant to Section 1672 of the FACT Act ([7 U.S.C. 5925](#)) and as amended by the 2018 Farm Bill (Pub. L. 115-334), supports research for the purpose of studying improvements in alfalfa and forage yields, biomass and persistence, pest pressures, the bioenergy potential of alfalfa seed and other alfalfa forages, and systems to reduce losses during harvest and storage.

Agricultural Genome to Phenome Initiative

Section 1671 of the Food, Agriculture, Conservation and Trade Act of 1990 ([7 U.S.C. 5924](#)), as amended by section 7208 of the 2018 Farm Bill (Pub. L. 115-334) authorizes a program for competitive awards to build on genomic research and expand knowledge concerning genomes and phenomes of crops and animals of importance to the agriculture sector of the United States. Section 758 of the Consolidated Appropriations Act, 2021 (P.L. 116-260) provided \$1 million for the program.

Special Grants

Section 2(c) of the 1965 Act ([7 U.S.C. 3157\(c\)](#)), 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:

Global Change UV-B Monitoring

Pursuant to Section 2(c) of the 1965 Act ([7 U.S.C. 3157\(c\)](#)), 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. 3157\(c\)](#)), as amended, grants are awarded that develop and test improved potato varieties for commercial production. The program specifically seeks to improve aspects of potato varieties and production to include identifying traits for resistance to pests and diseases, stress, regional adaptation, increased yield, quality, and market appeal. Where appropriate, the program supports the use of technologies to rapidly identify traits for commercially suitable varieties. Further, a program aspect is to develop technologies to rapidly identify potential pest and disease threats, allowing producers a better opportunity to reduce losses. Funds are awarded on a competitive basis under the program.

Aquaculture Research

Pursuant to Section 2(c) of the 1965 Act ([7 U.S.C. 3157\(c\)](#)), as amended supports aquaculture research to address issues related to genetics, disease, systems, and economics.

Federal Administration (direct appropriation)

Authority for direct appropriations is provided in the annual Agriculture 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, Department of Homeland Security facility security services, and General Services Administration rent.

Native American Institutions Endowment Fund

The program, authorized by the 1994 Act ([7 U.S.C. 301 note](#)), 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 adjusting 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.

Agriculture Business Innovation Centers-Historically Black Colleges and Universities

The Agriculture Business Innovation Center was envisioned to serve as a technical assistance hub to enhance agriculture-based business development opportunities. Section 766 of the Consolidated Appropriations Act, 2021 (P.L. 116-260) provided \$2 million for NIFA through a competitive grant to support the establishment of an Agriculture Business Innovation Center at a historically black college or university to serve as a technical assistance hub to enhance agriculture-based business development opportunities.

Blue Ribbon Panel

A blue-ribbon panel will be convened for the purpose of evaluating the overall structure of research and education through the public and land-grant universities, including 1890 Institutions, to define a new architecture that can better integrate, coordinate, and assess economic impact of the collective work of these institutions. Section 798 of the Consolidated Appropriations Act, 2021 (P.L. 116-260) provided \$300,000 for NIFA to convene the Blue Ribbon Panel.

Farm of the Future

The Farm of the Future testbed and demonstration site is envisioned to be established through a competitive grant to an institution in the land grant university system. Section 799 of the Consolidated Appropriations Act, 2021 (P.L. 116-260) provided \$4 million to NIFA to support the Farm of the Future.

Open Data Standards

Solutions are desired to preserve and share big data generated by technological advancements in the agriculture industry and for the preservation and curation of data in collaboration with land grant universities. A public-private cooperative framework will be developed based on open data standards for neutral data repository. Section 779 of the Consolidated Appropriations Act, 2021 (P.L. 116-260) provided \$500,000 to NIFA to support Open Data Standards.

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 not less than 3.2 percent of appropriations in fiscal year 2017 and each fiscal year thereafter for extramural research and development 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, water, and soil resources; food and nutrition sciences; rural and community 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)

Section 1668 of FACT Act ([7 U.S.C. 5921](#)) as amended 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 fundamental risk assessment research, which is defined as the science-based evaluation and interpretation of information in which a given hazard, if any, is identified, and the consequences associated with the hazard are explored.

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 ([7 U.S.C. 341 et seq.](#)). 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 U.S. 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 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.

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 based on 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.

Extension Services at 1890 Colleges and Tuskegee University, West Virginia State University, and Central State University

Section 1444 of NARETPA, ([7 U.S.C. 3221](#)), 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 the 2014 Farm Bill (Pub. L. 113-79) designates Central State University as an eligible 1890 Land-Grant Institution and Section 7115 of the 2018 Farm Bill (Pub. L. 115-334) establishes a minimum additional funding amount for eligible entities in the fiscal years following certain eligible entities' qualification should the funding level increase by \$3 million. If there are insufficient funds appropriated for Section 1444 (or Section 1445) to continue the minimum additional funding amounts for eligible institutions, the provision provides for a reduction in allocations made to eligible institutions. 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, unless the funding amount is increased by \$3 million in any fiscal years, in which case Section 7115 of the 2018 Farm Bill includes additional directives regarding allocation of that increase:

- 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. Section 7114 of the 2018 Farm Bill amends section 1444(a) of NARETPA to allow 1890 colleges to carry forward to the succeeding fiscal year 100 percent of the funds they receive under this program in a given fiscal year. 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.

Extension Services at the 1994 Institutions

The 1994 Act ([7 U.S.C. 301 note](#)) 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 as authorized ([7 U.S.C 343\(b\)\(3\)](#)). Section 7402 of the 2014 Farm Bill (Pub. L. 113-79) amended section 532 of the 1994 Act by adding College of the Muscogee Nation and Keweenaw Bay

Ojibwa Community College, effective October 2014. Section 7502 of the 2018 Farm Bill (Pub. L. 115-334) amended section 532 of the 1994 Act by updating eligible institutions' names and adding Red Lake Nation College.

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 the 2014 Farm Bill (Pub. L. 113-79)).

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.

Rural Health and Safety Education

Rural Health and Safety Education Act of 1990, section 2390 of the FACT Act ([7 U.S.C. 2662\(i\)](#)). Per authorizing language, this program competitively awards projects that focus on issues related to 1) individual and family health education; 2) farm safety education; and/or 3) rural health leadership development. Per section 6101 of the 2018 Farm Bill (115-334), priority is to be given to an applicant that will use the grant for substance use disorder education and treatment and the prevention of substance use disorder. Land-grant colleges and universities are eligible to receive funds under the Act of July 2, 1862, including the University of the District of Columbia (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 Central State University. 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.

Food Animal Residue Avoidance Database Program (FARAD)

Section 7642 of AREERA ([7 U.S.C. 7642](#)) 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.

Women and Minorities in Science, Technology, Engineering, and Mathematics Fields

Section 7204 of FCEA amended section 1672 of the FACT Act ([7 U.S.C. 5925\(d\)\(7\)](#)), 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.

Food Safety Outreach Program

Section 405 of AREERA ([7 U.S.C. 7625](#)) authorizes this program. The Food Safety Outreach Program awards competitive grants to eligible recipients for projects that develop and implement Food Safety Modernization Act-related food safety training, education, extension, outreach, and technical assistance to owners and operations of small and medium-sized farms, beginning farmers, socially disadvantaged farmers, small processors or small fresh fruit and vegetable merchant wholesalers. Section 7301 of the 2018 Farm Bill strikes the prohibition on funding that restricts USDA from providing additional grant funding once an entity has received three years of grant funding.

Food and Agriculture Service Learning Program (FASLP)

Section 413 of AREERA ([7 U.S.C. 7633](#)) authorizes this program. FASLP awards competitive grants to increase the knowledge of agriculture and improve the nutritional health of children and to bring together stakeholders from the distinct parts of the food system to increase the capacity for food, garden, and nutrition education within host organizations or entities, such as school cafeterias and classrooms, while fostering higher levels of community engagement between farms and school systems. The initiative is part of a broader effort to not only increase access to school meals for low-income children, but also to dramatically improve their quality.

Farm and Ranch Stress Assistance Network (FRSAN)

Section 7412 of the Agricultural Improvement Act of 2018 amended [7 U.S.C. 5936](#), which authorizes competitive grants to establish a FRSAN that provides stress assistance programs to individuals who are engaged in farming, ranching, and other agriculture-related occupations. Funds will be used to initiate, expand, or sustain programs that provide professional agricultural behavioral health counseling and referral or other forms of assistance as necessary through farm telephone helplines and websites and training programs and workshops for a) advocates for individuals who are engaged in farming, ranching, and other occupations relating to agriculture; and b) other individuals and entities that may assist individuals who are engaged in farming, ranching, and other occupations relating to agriculture; and are in crisis. Funds also may be used in the dissemination of information and materials. Section 766 (Division M) of the Consolidated Appropriation Act, 2021 (P.L. 116-260) provided \$28 million for additional coronavirus response and relief to State Departments of Agriculture, to include District of Columbia, the Commonwealth of Puerto Rico and any other territory or possession of the United States.

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 amended 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. Section 7609 of the 2018 Farm Bill (Pub. L. 115-334) provided 1994 Institutions as eligible for certain competitively awarded Smith-Lever 3(d) programs (see below). 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](#)) as amended. 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 pro rata 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 pro rata 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](#) and [7 U.S.C. 2662](#)) – 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. Section 7214 of the 2018 Farm Bill reauthorizes appropriations through fiscal year 2023 for demonstration grants to provide agricultural education and assistance to individuals with disabilities engaged in farming or farm-related occupations. It adds language to clarify that this provision applies to veterans engaged in farming or farm-related occupations, or who are pursuing new farming opportunities.

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.

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 includes early childhood, school age youth, teens, and parent/family outcomes with emphasis on science and reading literacy and building youth and family programs and community capacity. Section 7609 of the 2018 Farm Bill provided 1994 Institutions as eligible to receive funds from this program by amending [7 U.S.C. 343\(d\)](#).

Federally Recognized Tribes Extension Program (formerly Extension Indian Reservations)

Section 1677 of the FACT Act, [7 U.S.C. 5930](#) as amended, authorizes competitively awarded projects to State Extension Services to provide assistance and educational programs in agriculture, community development, youth development, and other societal issues facing Native Americans on reservations. The purpose of this program is to support Extension education on Federally Recognized Indian Reservations and Tribal jurisdictions of Federally Recognized Tribes. This program seeks to continue the Land Grants' mission of inclusion--providing education and research-based knowledge to those who might not otherwise receive it. Section 7609 of the 2018 Farm Bill provided 1994 Institutions as eligible to receive funds from this program.

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)

Funds are appropriated under the administration line to support the AITC program administered under [7 U.S.C. 3152\(j\)](#). AITC advances agricultural literacy through a grassroots network of State coordinators, schoolteachers, 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.

Enhancing Agricultural Opportunities for Military Veterans Competitive Grants Program

Section 742 of the Consolidated Appropriations Act, 2021 ([Pub. L. 116-94](#)) provides \$5 million through September 30, 2022 for competitive grants to non-profit organizations to increase the number of military veterans gaining knowledge and skills through comprehensive, hands-on and immersive model farm and ranch programs offered regionally that lead to successful careers in the food and agricultural sector. The program encourages the development of training opportunities specifically designed for military veterans. The projects will offer onsite, hands-on training and classroom education leading to a comprehensive understanding of successful farm and ranch operations and management practices. Projects also may offer workforce readiness and employment prospects for service-disabled veterans.

Beginning Farmer and Rancher Development Program

Section 12301 of the 2018 Farm Bill (Pub. L. 115-334) amended Section 2501 of the Food, Agriculture, Conservation, and Trade Act of 1990 ([7 U.S.C. 2279](#)) and made available the enacted amount of \$15 million for FYs 2019 and 2020, \$17.5 million for FY 2021, \$20 million for FY 2022, and \$25 million for FY 2023 and each year thereafter to carry out the program. In addition to the mandatory funds provided under the 2018 Farm Bill, Section 756 of the Further Consolidated Appropriations Act, 2021, provided \$2.5 million for the program. The purpose of this 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 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 per year and the maximum project period is three years. In accordance with Section 12301 of the 2018 Farm Bill, 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. Section 754 (Division M) of the Consolidated Appropriation Act, 2021 (P.L. 116-260) provided \$37.5 million for additional coronavirus response and relief.

Integrated Activities

The following programs are included under the integrated activities account:

Section 406

The following programs are provided pursuant to the authority found in section 406 ([7 U.S.C. 7626](#)). Funding for all programs is provided on a competitive basis.

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.

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.

Crop Protection/Pest Management

This program will support Integrated Pest Management (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.

Section 7129 of FCEA amended section 406(b) of AREERA ([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.

Regional Rural Development Centers

Section 2(c)(1)(B) of the Act of 1965 ([7 U.S.C. 3157 \(c\)\(1\)\(B\)](#)) 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.

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 of 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.

Agriculture Risk Management Education Program

Section 524(a) of the Federal Crop Insurance Act ([7 U.S.C. 1524\(a\)](#)), as amended by section 133 of the Agricultural Risk Protection Act of 2000 and section 11125 of the 2018 Farm Bill (Pub. L. 115-334), establishes a competitive grants program for educating agricultural producers and providing technical assistance to agricultural producers on a full range of farm viability and risk management activities. These activities include futures, options, agricultural trade options, crop insurance, business planning, enterprise analysis, transfer and succession planning, management coaching, market assessment, cash flow analysis, cash forward contracting, debt reduction, production diversification, farm resources risk reduction, farm financial benchmarking, conservation activities, 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 \$10 million is to be made available annually for competitive awards.

Gus Schumacher Nutrition Incentive Program (formerly Food Insecurity Nutrition Incentive)

Section 4205 of the 2018 Farm Bill (Pub. L. 115-334), which amended section 4405 of the Food, Conservation, and Energy Act of 2008 ([7 U.S.C. 7517](#)), authorizes the Gus Schumacher Nutrition Incentive Program to support projects to increase the purchase of fruits and vegetables among low-income consumers participating in the Supplemental Nutrition Assistance Program (SNAP) by providing incentives at the point of purchase. Mandatory funding was made available in the enacted amount of \$45 million for FY 2019, \$48 million for FYs 2020 and 2021, \$53 million for FY 2022, and \$56 million for FY 2023 and each year thereafter to carry out the program. Section 755 (Division M) of the Consolidated Appropriation Act, 2021 (P.L. 116-260) provided \$75 million for additional coronavirus response and relief.

Organic Agriculture Research and Extension Initiative

Section 7210 of the 2018 Farm Bill (Pub. L. 115-334) amended section 1672B of the FACT Act ([7 U.S.C. 5925b](#)) to provide mandatory funding in the enacted amount of \$20 million for FYs 2019 and 2020, \$25 million for fiscal year 2021, \$30 million for FY 2022, and \$50 million for FY 2023 and each year thereafter for the Organic Agriculture Research and Extension Initiative. The purpose of this mandatory 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.

Specialty Crop Research Initiative

Section 7305 of the 2018 Farm Bill (Pub L. 115-334) reauthorized and amended 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:

- Research in plant breeding, genetics, and genomics to improve crop characteristics;
- Efforts to identify and address threats from pests and diseases, including threats to pollinators;
- Efforts to improve production efficiency, productivity, and profitability over the long term;
- New innovations and technology, including improved mechanization and technologies that delay or inhibit ripening; and
- 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 million is to be made available for FY 2014 and each year thereafter to carry out SCRI.

Section 7306 of the 2014 Farm Bill (Pub. L. 113-79) 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, Extension, Education and Economics Advisory Board.

Emergency Citrus Disease Research and Extension Program

Section 12605 of the 2018 Farm Bill (Pub. L. 115-334) also established the Citrus Trust Fund and provides \$25 million, available until expended, for each of the FYs 2019 through 2023, to carry out the Emergency Citrus Disease Research and Extension (ECDRE) Program in section 412 of AREERA ([7 U.S.C. 7632](#)). Funding is for a competitive research and extension grant program to combat diseases of citrus by 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. The ECDRE program also combats citrus diseases by supporting 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 NARETPA ([7 U.S.C. 3123a](#)).

Urban, Indoor, and Other Emerging Agricultural Production Research, Education, and Extension Initiative

Section 7212 of the 2018 Farm Bill (Pub. L. 115-334) amended section 1672 of the FACT Act (Pub. L. 101-624) to add [7 U.S.C. 5925g](#), establishing a competitive grants program to support research, education, and extension activities to facilitate the development of urban, indoor, and other emerging agricultural production, harvesting, transportation, aggregation, packaging, distribution, and markets. Activities are to include assessing and developing strategies to remediate contaminated sites; determining and developing the best production management and integrated pest management practices; identifying and promoting the horticultural, social, and economic factors that contribute to the successful urban, indoor, and other emerging agricultural production; analyzing the means by which new agricultural sites are determined, including an evaluation of soil quality condition of a building, or local community needs; exploring new technologies that minimize energy, lighting systems, water, and other inputs for increased food production; examining building material efficiencies and structural upgrades for the purpose of optimizing growth of agricultural products; developing new crop varieties and agricultural products to connect to new markets; or examining the impacts of crop exposure to urban elements on environmental quality and food safety. Mandatory funding in the enacted amount of \$10 million, until expended, is available to carry out the program.

Community Food Projects

Section 25 of the Food Stamp Act of 1977 ([7 U.S.C. 2034](#)), as amended, authorizes 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 annually in the amount of \$5 million.

Bioproducts Pilot Program

The Infrastructure Investment and Jobs Act, 2022 (P.L. 117-58, Title V, Section 70501) provides \$10,000,000 to remain available until expended, of which \$5,000,000 to remain available until expended, shall be made available for fiscal year 2022, and \$5,000,000 to remain available until expended, shall be made available for fiscal year 2023. Title V, Section 70501 establishes the Bioproducts Pilot Program on use of agricultural commodities in construction and consumer products. Covered agricultural commodities will be used as bioproduct feedstocks and will mean any agricultural commodity, food, feed, fiber, livestock, oil, or a derivative thereof, that the Secretary determines to have been used in the production of materials that have demonstrated market viability and benefits. Funds will be made available to no less than 1 qualified institution through a competitive grants process.

American Rescue Plan Technical Assistance Investment Program

Technical assistance partnerships focused on socially disadvantaged farmers and ranchers, including Black, Hispanic, Indigenous, Hawaiian/Pacific Islander, women, beginning farmers and ranchers, and veteran producers. USDA is creating opportunities to ensure that socially disadvantaged communities of farmers, ranchers, forest landowners, and operators have the tools, programs, and support they need to succeed in agriculture. Approximately \$100 million of American Rescue Plan Section 1006 funding will support technical assistance to connect underserved producers with USDA programs and services. Cooperative Agreements will support organizations with proven track records working with economically distressed and/or underserved communities, to provide an array of technical assistance specialized services that could include outreach, technical assistance, cooperative development training and support, financial training, mediation access, capacity building training, technical assistance concerning agriculture production, agriculture credit, and rural development to underserved farmers, ranchers or forest landowners.

NIFA program coordination and planning are carried out by staff located in the Washington, DC and Kansas City, MO. As of September 30, 2021, there were 300 permanent full-time employees, including 73 in Washington, DC and 227 in the field. There were 47 other employees.

OIG and GAO Reports

The following list are the OIG and GAO reports in-process or completed where NIFA is involved.

Table NIFA-1. Completed OIG Reports

ID	Date	Title
13601-0001-22	08/07/2019	NIFA Formula Grant Program Controls Over Fund Allocation to States (Report Complete – Implementation Timeline for Recommendations In-Progress)

Table NIFA-2. In-Progress OIG Reports

ID	Title
13601-0002-22	Agricultural and Food Research Initiative (NIFA is responding to all requests for information.)
50601-0010-31	Beginning Farmers and Ranchers Program (OPPE is the lead agency)

Table NIFA-3. Completed GAO Reports

ID	Date	Title	Result
20-187	03/19/2020	Sexual Harassment in STEM Research	The Final Report was issued. NIFA has 5 open recommendations and has implemented several actions outlined in the Statement of Action.
21-593	09/16/2021	Chronic Health Conditions: Federal Strategy Needed to Coordinate Diet-Related Efforts	The Final Report was issued with 1 matter for Congressional consideration.
21-413	06/30/2021	Small Business Innovation Research. Agencies Need to Fully Implement Requirements for Managing Fraud, Waste, and Abuse.	The Final Report was issued, and NIFA is currently in process of implementing the recommendations.

Table NIFA-4. In-Progress GAO Reports

ID	Title
104677	Small Business Research Programs. Agencies should Further Improve Award Timeliness. (NIFA received 1 recommendation. Implementation Timeline for Recommendations In-Progress.)
104449	Federal Efforts to Address Harmful Algal Blooms (HAB) and Hypoxia (ARS is the lead agency.)
104436	Compacts of Free Association Grants and Trust Funds Update (FNS is the lead agency. An entrance conference is planned for December 2021.)
104557	USDA and Climate Resilience (OCE is the lead agency.)
104709	USDA's Planning for and Relocation of Research Agencies (NIFA is responding to all follow up requests for information.)
104602	Tribal Funding and Transparency (OBPA is the lead agency.)
105088	PFAS Technologies and Knowledge Gaps (ARS is the lead agency.)

AVAILABLE FUNDS AND FTE*Table NIFA-5. Available Funds and FTEs (thousands of dollars, FTEs)*

Item	2020 Actual	FTE	2021 Actual	FTE	2022 Estimated	FTE	2023 Budget	FTE
National Institute of Food and Agriculture								
Research and Education Activities								
Discretionary Appropriations	\$962,864		\$992,642		\$992,642		\$1,213,315	
Native American Endowment Interest Earned	5,069		5,034		4,825		5,199	
Supplemental Appropriations	-	-	-	-	5,000	-	5,000	-
General Provisions	12,000		22,800		22,800		-	
Extension Activities								
Discretionary Appropriations	526,557	-	538,447	-	538,447	-	568,567	-
Mandatory Appropriations	73,000	-	75,500	-	83,000	-	91,000	-
Supplemental Appropriations	-	-	140,500	-	-	-	-	-
General Provisions	7,500		7,500		7,500		2,500	
Integrated Activities								
Discretionary Appropriations	38,000	-	39,000	-	39,000	-	39,000	-
Mandatory Appropriations	100,000	-	105,000	-	110,000	-	130,000	-
Emergency Citrus Disease	25,000	-	25,000	-	25,000	-	25,000	-
Transfers In	60	-	-	-	-	-	0	-
Transfers Out	-	-	-	-	-	-	0	-
Total Adjusted Appropriation	1,750,050	193	1,951,423	280	1,828,214	381	2,079,581	406
Balance Available, SOY	675,241	-	662,455	-	609,614	-	10,000	-
Sequestration	-11,682		-11,713		-12,426		-14,022	
Recoveries, Other	22,740	-	48,607	-	-	-	-	-
Total Available	2,436,349	193	2,650,772	280	2,425,402	381	2,075,559	406
Lapsing Balances	-2,437	-	-318	-	-	-	-	-
Balance Available, EOY	-662,455	-	-609,614	-	-10,000	-	-	-
Total Obligations	1,771,457	193	2,040,840	280	2,415,402	381	2,075,559	406
Other Funding:								
Community Food Projects Program								
ARP Act: Technical Assistance Program	5,000	-	5,000	-	5,000	-	5,000	-
Total Appropriation, Other Funding	-		100,000		-		-	
Total Available, Other Funding	5,000	-	105,000	-	5,000	-	5,000	-
Total Obligations, Other funding	5,000	-	105,000	-	5,000	-	5,000	-
Total Obligations, NIFA	1,776,457	193	2,145,840	280	2,420,402	381	2,080,559	406
Other USDA Obligations:								
GSA Buildout	1,250	-	-	-	-	-	-	-
Biotechnology Risk Assessment	1,527	-	1,548	-	1,548	-	1,548	-
National Atmospheric Deposition Program	5	-	5	-	5	-	5	-
Biotechnology Risk Assessment	108	-	98	-	98	-	98	-
National Atmospheric Deposition Program	203	-	210	-	210	-	210	-
Small Business Innovation	4,560	-	5,800	-	6,498	-	6,498	-

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Item	2020		2021		2022		2023	
	Actual	FTE	Actual	FTE	Estimated	FTE	Budget	FTE
Research Program (SBIR)								
Information System (CRIS)	672	-	564	-	564	-	564	-
Total, Other USDA								
Obligations	8,325	-	8,225	-	8,923	-	8,923	-
Total, NIFA Available	1,784,782	193	2,154,065	280	2,429,325	381	2,089,482	406
Research and Education								
Activities:								
NOAA National Atmospheric								
Deposition Program	81	-	74	-	74	-	74	-
Geological Survey, National								
Atmospheric Deposition								
Program	581	-	580	-	580	-	580	-
National Park Service,								
National Trends Network								
(NPS)	-	-	385	-	385	-	385	-
National Park Service,								
National Atmospheric								
Deposition Program	361	-	40	-	40	-	40	-
Bureau of Land								
Management, National								
Atmospheric Deposition								
Program	49		33		33		33	
Extension Activities:								
U.S. Air Force - Army								
Substance Abuse Program,								
Fort Sam, Houston	338		-		-		-	
U.S. Air Force 4-H								
Programs	1,156		1,155		1,155		1,155	
Clearinghouse for Military								
Family Readiness	6,300		5,544		5,544		5,544	
Family Advocacy Program								
Child and Youth Services -								
4H	600		-		-		-	
Military Family Learning								
Network	2,200		2,450		2,450		2,450	
Defense Programs Family								
Support - Youth Extension								
Services	1,000		500		500		500	
Military Community &								
Family Policy - Military								
REACH	720		778		778		778	
Military Community &								
Family Policy - Teen								
Adventure Camps	770		770		770		770	
Virtual Lab School	2,200		2,250		2,250		2,250	
Defense Human Resources								
Activity - Yellow Ribbon	650		-		-		-	
HUD, Healthy Homes	500		500		500		500	
HUD, Pest Management	289		-		-		-	
CDC- Vaccine Messaging	-		9,950		9,950		9,950	
Army- Early Learning								
Matters	-		1,063		1,063		1,063	
Army- FAP	-		2,000		2,000		2,000	
Army- Relocation Readiness	-		500		500		500	

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Item	2020		2021		2022		2023	
	Actual	FTE	Actual	FTE	Estimated	FTE	Budget	FTE
HHS- Employee Details			1,124		-		-	
Total, Other Non-USDA								
Federal	17,795	-	29,696	-	28,572	-	28,572	-
Total Available, NIFA	1,802,577	193	2,183,761	280	2,457,897	381	2,118,054	406

PERMANENT POSITIONS BY GRADE AND FTES

Table NIFA 6. Permanent Positions by Grade and FTES

Item	2020 Actual			2021 Actual			2022 Estimated			2023 Budget		
	D.C.	Field	Total	D.C.	Field	Total	D.C.	Field	Total	D.C.	Field	Total
ES	0	0	0		5	5		7	7		7	7
SES	1	1	2			-			0			0
SL	0	0	0			-			0			0
GS-15	11	29	40	13	36	49	17	54	71	17	53	70
GS-14	17	22	39	1	39	40	1	59	60	1	72	73
GS-13	10	25	35	1	61	62	1	83	84	1	95	96
GS-12	12	17	29	6	38	44	6	68	74	6	71	77
GS-11	4	28	32	3	53	56	3	85	88	3	98	101
GS-10	0	2	2	1		1	1	2	3	1	2	3
GS-9	3	31	34	2	22	24	2	28	30	2	28	30
GS-8	3	3	6	1	3	4	2	6	8	2	6	8
GS-7	1	4	5	1	3	4	1	9	10	1	9	10
GS-6	1	3	4	1	8	9	1	7	8	1	7	8
GS-5	1	1	2	1	0	1	1	1	2	1	1	2
GS-4	1	0	1	-	1	1	1	5	6	1	5	6
GS-3	0	0	0			-	1	2	3	1	2	3
GS-2	0	0	0			-	1		1	1		1
GS-1	0	0	0			-			0			0
Other Graded	0	0	0			-			0			0
Ungraded	0	0	0			-			0			0
Total Permanent	65	166	231	31	269	300	39	416	455	39	456	495
Unfilled, EOY		181	181		112	112		40	40			0
Total Perm. FT EOY	65	347	412	31	381	412	39	456	495	39	456	495
FTE			193			280			381			406

SHARED FUNDING PROJECTS**Table NIFA-7. Share Funding Projects (dollars in thousands)**

Item	2020 Actual	2021 Actual	2022 Estimated	2023 Estimated
Working Capital Fund:				
Administrative Services:				
Material Management Service.....	\$62	\$51	\$15	\$15
Mail and Reproduction Services.....	328	195	161	164
Integrated Procurement Systems.....	29	28	20	20
Procurement Operations Services.....	-	-	-	-
Human Resources Enterprise Management Systems.....	9	7	12	12
Subtotal.....	428	281	208	211
Communications:				
Creative Media & Broadcast Center.....	28	21	29	36
Finance and Management:				
National Finance Center.....	97	82	76	76
Financial Shared Services.....	2,226	2,151	1,478	1,292
Internal Control Support Services.....	137	97	101	118
Subtotal.....	2,460	2,330	1,655	1,486
Information Technology:				
Client Experience Center.....	670	1,474	1,439	1,471
Department Administration Information Technology Office	-	626	91	97
Digital Infrastructure Services Center.....	1,128	547	652	647
Enterprise Network Services.....	526	344	331	286
Subtotal.....	2,324	2,991	2,513	2,501
Correspondence Management Services.....	11	-	45	45
Total, Working Capital Fund.....	5,251	5,623	4,450	4,279
Department-Wide Shared Cost Programs:				
Agency Partnership Outreach.....	28	14	20	20
Human Resources Self-Service Dashboard.....	2	-	-	-
Intertribal Technical Assistance Network.....	11	7	9	9
Medical Services.....	13	8	8	8
National Capital Region Interpreting Services.....	-	59	6	7
Office of Customer Experience.....	-	20	23	23
Personnel and Document Security Program.....	6	4	5	5
Physical Security.....	21	9	11	12
Pre-Authorizing Funding.....	11	-	-	-
Security Detail.....	16	9	12	12
Security Operations Program.....	21	13	16	16
TARGET Center.....	4	2	4	4
USDA Enterprise Data Analytics Services.....	19	11	12	12
Total, Department-Wide Reimbursable Programs.....	152	156	126	128
E-Gov:				
Budget Formulation and Execution Line of Business.....	4	4	3	3
E-Rulemaking.....	24	5	20	21

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Financial Management Line of Business.....	1	1	1	1
Geospatial Line of Business.....	13	13	13	13
Benefits.gov.....	48	47	48	45
Grants.gov.....	347	353	312	365
Human Resources Line of Business.....	1	1	1	1
Hiring Assessment.....	-	-	1	1
Integrated Acquisition Environment.....	26	-	25	25
Total, E-Gov.....	464	424	424	475
Agency Total.....	5,867	6,203	5,000	4,882

ACCOUNT 1: SALARIES AND EXPENSES

APPROPRIATIONS LANGUAGE

The appropriations language 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, \$1,820,882,000: *Provided*, That \$695,424,000 to remain available until expended, shall be for research grants for 1994 institutions, education grants for 1890 institutions, the agriculture and food research initiative, veterinary medicine loan repayment, grants management systems, Hispanic serving institutions education grants, tribal colleges education equity grants, scholarships at 1890 institutions, extension services at 1994 institutions, New Beginning for Tribal Students, 1890s Centers of Excellence, and facility improvements at 1890 institutions: *Provided further*, That each institution eligible to receive funds under the Evans-Allen program shall receive no less than \$1,000,000: *Provided further*, That \$3,194,000 to remain available until September 30, 2024 shall be for providing grants food and agricultural sciences for Alaska Native- and Native Hawaiian-Serving Institutions: *Provided further*, That \$2,000,000 to remain available until September 30, 2024 shall be for providing grants for food and agricultural sciences for Insular Areas: *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 institutions eligible to receive funds under 7 U.S.C. 3221 for cooperative extension shall each receive not 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 \$5,000,000 is available for Enhancing Agriculture Opportunities for Military Veterans and shall remain available until September 30, 2024: *Provided further*, That \$2,000,000 is available for Business Innovation Centers at Historically Black Colleges and Universities and shall remain available until expended: *Provided further*, That \$1,000,000 is available for Open Data Standards Repository and shall remain available until September 30, 2024: *Provided further*, That \$3,000,000 is available for Farm of the Future and shall remain available until September 30, 2024: *Provided further*, That \$8,000,000 is available for the Food and Agriculture Defense Initiative and shall remain available until September 30, 2024: *Provided further*: That notwithstanding any other provision of law, indirect costs shall not be charged against any Extension Implementation Program Area grant awarded under the Crop Protection/Pest Management Program (7 U.S.C. 7626).

General Provision

There is hereby appropriated \$5,000,000 to carry out section 12301 of Public Law 115-334.

[Research and education activities]

[For payments to agricultural experiment stations, for cooperative forestry and other research, for facilities, and for other expenses, \$992,642,000, 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. 3157 may be retained by the Secretary of Agriculture to pay administrative costs incurred by the Secretary in carrying out that authority.]

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, \$538,447,000, which shall be for the purposes, and in the amounts, specified in the table titled "National Institute of Food and Agriculture, Extension Activities" 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, \$39,000,000, 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, 2022: *Provided further*, That notwithstanding any other provision of law, indirect costs shall not be charged against any Extension Implementation Program Area grant awarded under the Crop Protection/Pest Management Program (7 U.S.C. 7626).]

Change Description

The 2023 budget proposes a change in language, specifically to eliminate appropriations language contained in separate research and education, extension, and integrated accounts to incorporate the language into one agency account. The change creates a new appropriations language paragraph for a single merged National Institute of Food and Agriculture account and retains the Native American Institutions Endowment Fund in the Research and Education Activities account. It also deletes the remaining language contained in separate Research and Education, Extension, and Integrated Activities accounts while incorporating the language into one agency account. The account structure change has been proposed six of the last seven budgets and will improve the agency's budget and administrative processes. Streamlining the account structure will allow the agency to allocate staff resources to higher value tasks, such as program review and grants management. The change in account structure will not impact the function of any program.

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. In 2012, changes were made in the Congressional appropriations process to streamline the NIFA accounts so that the bill language was less cumbersome. The Committees’ changes also incorporated the report table into the bill by reference, making it easier to identify the specific funded programs along with their funding amounts and program authorizations. Building upon the need to further simplify the appropriations language while clearly identifying all NIFA-funded programs, NIFA proposes to organize the funding lines within a single NIFA account rather than the current three separate 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. Having a single appropriation account will reduce the complexity of the account structure by reducing the number of financial accounts by at least half. This will contribute to simplifying operational procedures and reduce staff time that is currently dedicated to managing multiple accounts. The change in account structure will simplify the management of funds within the financial systems. It will not change how NIFA implements funded programs. However, it will reduce the number of accounts that are included in the Congressional bill by eliminating the three older, existing accounts and substituting one consolidated account. The report language would also be simplified to mirror the bill language, reducing Committee staff time needed to draft legislative and report language. The language also requests no-year spending authority for several programs that provide grants to minority-serving institutions. Sometimes projects are completed but have funding remaining on the award. Normally, those annual funds are returned to Treasury because they expire. Changing the programs from annual funds to no-year funding availability will allow unused grant funds to be used for more awards.

A General Provision is also included to provide a total of \$5,000,000 for FOTO (Farming Opportunities Training and Outreach, of which \$2,500,000 is for Beginning Farmer and Rancher Development Grant Program administered by NIFA and \$2,500,000 for Outreach and Assistance administered by OPPE.

LEAD-OFF TABULAR STATEMENT

Table NIFA-8. Lead-Off Tabular Statement (in dollars)

Item	Amount
National Institute of Food and Agriculture	
Estimate, 2022	\$1,570,089,000
Change in Appropriation	253,293,000
Budget Estimate, 2023	<u>1,823,382,000</u>
Research and Education Activities Account	
Estimate, 2022	\$992,642,000
Change in Appropriation	-992,642,000
Budget Estimate, 2023	<u>-</u>
Extension Activities Account	
Estimate, 2022	\$538,447,000
Change in Appropriation	-538,447,000
Budget Estimate, 2023	<u>-</u>
Integrated Activities Account	
Estimate, 2022	\$39,000,000
Change in Appropriation	-39,000,000
Budget Estimate, 2023	<u>-</u>

PROJECT STATEMENTS – APPROPRIATIONS

Table NIFA-9. Project Statement (thousands of dollars, FTE)

Item	2020 Actual	FTE	2021 Actual	FTE	2022 Estimated	FTE	2023 Estimated	FTE	Inc. or Dec.	FTE Inc. or Dec.	Chg Key
Discretionary Appropriations: Research and Education Activities											
Hatch Act	\$259,000	-	\$259,000	-	\$259,000	-	\$265,000	-	+\$6,000	-	(1)
McIntire-Stennis Cooperative Forestry Research Program	36,000	-	36,000	-	36,000	-	43,283	-	+7,283	-	(2)
Evans-Allen (Research 1890 Institutions)	67,000	-	73,000	-	73,000	-	92,837	-	+19,837	-	(3)
Tribal Colleges Education Equity Grants	4,000	-	4,500	-	4,500	-	15,000	-	+10,500	-	(4)
Program/Payments to 1994 Institution Education Grants for 1890 Institution Capacity Building Grants	23,009	-	26,000	-	26,000	-	26,000	-	-	-	-
Scholarships at 1890 Institutions	5,000	-	10,000	-	10,000	-	10,000	-	-	-	-
Education Grants for Hispanic Serving Institutions Program	11,200	-	12,500	-	12,500	-	14,000	-	+1,500	-	(5)
Alaska Native-Serving & Native Hawaiian-Serving Institutions	3,194	-	3,194	-	3,194	-	3,194	-	-	-	-
Research Grants for 1994 Institutions	3,801	-	4,000	-	4,000	-	4,500	-	+500	-	(6)
Research Program Capacity Building Non-Land Grant Colleges of Agriculture	5,000	-	5,000	-	5,000	-	5,000	-	-	-	-
Grants for Insular Programs (combined program)	2,000	-	2,000	-	2,000	-	2,000	-	-	-	-

2023 USDA Explanatory Notes – National Institute of Food and Agriculture

Competitive Program-Native Alaskans, Native Hawaiians & Insular Areas	-	-	-	-	-	-	-	-	-	-
Agriculture and Food Research Initiative	425,000	-	435,000	-	435,000	-	564,000	-	+129,000	(7)
Veterinary Medicine Loan Repayment (Medical Services Act Program)	8,000	-	8,500	-	8,500	-	8,500	-	-	-
Veterinary Services Grant Program	3,000	-	3,000	-	3,000	-	3,000	-	-	-
Animal Health and Disease Research, Sec. 1433	4,000	-	4,000	-	4,000	-	4,000	-	-	-
Supplemental and Alternative Crops, Section 1437D	1,000	-	1,000	-	1,000	-	663	-	-337	(19)
Multicultural Scholars, Graduate Fellowship & Institution Challenge Grants	9,000	-	9,500	-	9,500	-	10,000	-	+500	(8)
Secondary / Post Secondary	900	-	900	-	900	-	1,000	-	+100	(9)
Aquaculture centers, Section 1475	5,000	-	5,000	-	5,000	-	5,000	-	-	-
Sustainable Agriculture Research and Education	37,000	-	40,000	-	40,000	-	60,000	-	+20,000	(10)
Farm Business Management and Benchmarking	2,000	-	2,000	-	2,000	-	2,000	-	-	-
Sun Grant Program	3,000	-	3,000	-	3,000	-	3,000	-	-	-
Research Equipment Grants	5,000	-	5,000	-	5,000	-	5,000	-	-	-
Alfalfa Seed and Alfalfa Forage Systems	3,000	-	3,000	-	3,000	-	-	-	-3,000	(20)
Minor Crop Pest Management (IR-4)	11,913	-	11,913	-	11,913	-	20,000	-	+8,087	(11)
New Beginning for Tribal Students	-	-	-	-	-	-	5,000	-	+5,000	(15)
HBCU Business Innovation Centers	-	-	-	-	-	-	2,000	-	+2,000	(13)
1890 Institutions, Centers of Excellence	-	-	-	-	-	-	10,000	-	+10,000	(14)

2023 USDA Explanatory Notes – National Institute of Food and Agriculture

Open Data Standards for Neutral Data Repository Farm of the Future	-	-	-	-	-	-	1,000	-	+1,000	(16)
Special Research Grants										
Aquaculture Research	2,000	-	2,000	-	2,000	-	2,000	-	-	-
Global Change	1,405	-	1,405	-	1,405	-	1,925	-	+520	(12)
Potato Breeding Research (Competitive)	2,750	-	2,750	-	2,750	-	-	-	-2,750	(21)
Subtotal, Special Grants	6,155	-	6,155	-	6,155	-	3,925	-	-2,230	(18)
Federal Administration (Direct Appropriations)										
Grants Management System	7,830	-	7,924	-	7,924	-	7,924	-	-	-
General Administration / Other	11,862	-	11,556	-	11,556	-	13,489	-	+1,933	(18)
Subtotal, Federal Administration	19,692	-	19,480	-	19,480	-	21,413	-	+1,933	(18)
Total, Research and Education	962,864	-	992,642	-	992,642	-	1,213,315	-	+220,673	
Extension Activities										
Smith-Lever 3(b&c)	315,000	-	315,000	-	315,000	-	320,000	-	+5,000	(1)
Extension Services at 1890 Institutions	57,000	-	62,000	-	62,000	-	65,000	-	+3,000	(2)
Extension Services at 1994 Institutions	8,000	-	8,500	-	8,500	-	19,000	-	+10,500	(3)
1890's Facilities	20,500	-	21,500	-	21,500	-	21,500	-	-	-
Renewable Resources Extension	4,060	-	4,060	-	4,060	-	4,100	-	+40	(4)
Rural Health and Safety	4,000	-	4,000	-	4,000	-	4,000	-	-	-
Food Animal Residue Avoid. Database	2,500	-	2,500	-	2,500	-	2,000	-	-500	(9)
Women and Minorities in STEM Fields	400	-	400	-	400	-	2,305	-	+1,905	(5)
Food Safety Outreach	8,000	-	10,000	-	10,000	-	10,000	-	-	-

2023 USDA Explanatory Notes – National Institute of Food and Agriculture

Food and Ag Service Learning	1,000	-	2,000	-	2,000	-	2,000	-	-	-
Farmer Stress Assistance Network	10,000	-	10,000	-	10,000	-	10,000	-	-	-
Enhancing Ag Opportunities Military Veterans (Ag Vets)	-	-	-	-	-	-	5,000	-	+5,000	(8)
Smith-Lever 3(d) Programs:										
Expanded Food and Nutrition Program (EFNEP)	70,000	-	70,000	-	70,000	-	70,000	-	-	-
Farm Safety and Youth Farm Safety Education	4,610	-	5,000	-	5,000	-	5,000	-	-	-
New Technologies for Ag Extension	1,550	-	3,550	-	3,550	-	3,002	-	-548	(10)
Youth and Families at Risk	8,395	-	8,395	-	8,395	-	8,860	-	+465	(6)
Federally Recognized Tribes Extension	3,200	-	3,200	-	3,200	-	7,700	-	+4,500	(7)
Federal Administration (Direct Appropriations)										
Ag in the Classroom	552	-	552	-	552	-	1,000	-	+448	(18)
Other General Administration - Extension	7,790	-	7,790	-	7,790	-	8,100	-	+310	(18)
Total, Extension Activities	526,557	-	538,447	-	538,447	-	568,567	-	+30,120	-
Integrated Activities										
Methyl Bromide Transition program	2,000	-	2,000	-	2,000	-	2,000	-	-	-
Organic Transition Program	6,000	-	7,000	-	7,000	-	7,000	-	-	-
Regional Rural Development Centers	2,000	-	2,000	-	2,000	-	2,000	-	-	-
Food & Agriculture Defense Initiative (FADI) (Homeland Security)	8,000	-	8,000	-	8,000	-	8,000	-	-	-
Crop Protection/Pest Management (CP/PM)	20,000	-	20,000	-	20,000	-	20,000	-	-	-
Total, Integrated Activities	38,000	-	39,000	-	39,000	-	39,000	-	-	-

2023 USDA Explanatory Notes – National Institute of Food and Agriculture

Subtotal, Direct Appropriations Mandatory Appropriations:	1,527,421	193	1,570,089	280	1,570,089	381	1,820,882	406	+250,793	+25
Extension Risk Management Education Program (ERME)	9,410		9,430	-	9,430	-	9,430	-	-	-
G. Schumacher Nutrition Incentive Program (GusNIP)/Food Insecurity Nutrition Program	45,168	-	45,264	-	49,979	-	52,808	-	+2,829	-
Beginning Farmers & Rancher's Development Program (BFRDP)	14,115	-	16,503	-	18,860	-	23,575	-	+4,715	-
Organic Agriculture Research and Extension Initiative (OREI)	18,820	-	23,575	-	28,290	-	47,150	-	+18,860	-
Specialty Crop Research Initiative (SCRI)	75,280	-	75,440	-	75,440	-	75,440	-	-	-
Emergency Citrus Disease Research and Extension Program (ECDRE) (Trust Fund)	23,525	-	23,575	-	23,575	-	23,575	-	-	-
Subtotal, Mandatory Funds	186,318	-	193,787	-	205,574	-	231,978	-	+26,404	-
Supplemental Mandatory Appropriations: IIIA Supp, Bioproduct Pilot Program					5,000		5,000			
Emergency Supp-COVID, Farming Opportunities & Outreach (Section 754, OPPE)	-	-	37,500	-		-	-	-	-	-
Emergency Supp-COVID, GusNIP/Food Insecurity Nutrition Program (Section 756)	-	-	75,000	-		-	-	-	-	-
Emergency Supp-COVID, Farm Stress (Section 766)	-	-	28,000	-		-	-	-	-	-

2023 USDA Explanatory Notes – National Institute of Food and Agriculture

Subtotal	-	-	140,500	-	5,000	-	5,000	-	-	-
Total Adjusted	1,713,739	193	1,904,376	280	1,780,663	381	2,057,860	406	277,197	25
Approp										
Add back:										
Rescission,	-	-	-	-	-	-	-	-	-	-
Transfers In and										
Out										
Sequestration	11,682	-	11,713	-	12,426	-	14,022	-	1,596	-
Total	1,725,421	193	1,916,089	280	1,793,089	381	2,071,882	406	278,793	25 0
Appropriation										
General Provisions										
General Provision	5,000	-	5,000	-	5,000	-	-	-	-5,000	-
742 - Enhancing										
Ag Opportunities										
Military Veterans										
(Ag Vets)										
General Provision	2,500	-	2,500	-	2,500	-	2,500	-	-	-
756 - Begin										
Farmers &										
Ranchers Dvlpmt										
Program (under										
FOTO)										
General Provision	5,000	-	5,000	-	5,000	-	-	-	-5,000	-
757 - New										
Beginning for										
Tribal Students										
General Provision	1,000	-	1,000	-	1,000	-	-	-	-1,000	-
758 - Agricultural										
Genome to										
Phenome Initiative										
General Provision	-	-	2,000	-	2,000	-	-	-	-2,000	-
766 - HBCU										
Business										
Innovation Centers										
General Provision	6,000	-	10,000	-	10,000	-	-	-	-10,000	-
769 - 1890										
Institutions,										
Centers of										
Excellence										
General Provision	-	-	500	-	500	-	-	-	-500	-
779 - Open Data										
Standards for										
Neutral Data										
Repository										
General Provision	-	-	300	-	300	-	-	-	-300	-
798 - Blue Ribbon										
Panel										
General Provision	-	-	4,000	-	4,000	-	-	-	-4,000	-
799 - Farm of the										
Future										
Subtotal, General	19,500		30,300		30,300		2,500		-27,800	-
Provisions										
Endowment										
Funding:										

2023 USDA Explanatory Notes – National Institute of Food and Agriculture

Tribal Colleges Endowment Fund (Native American Endowment Fund)	(11,880)	-	(11,880)	-	(11,880)	-	(11,880)	-	-	-	-
Interest on Tribal College Endowment Fund (Native American Endowment - Interest Earned)	5,069	-	5,034	-	4,825	-	5,199	-	+374	-	-
Total, Endowments	5,069	-	5,034	-	4,825	-	5,199	-	+374	-	-
Subtotal, Appropriations	1,749,990	193	1,951,423	280	1,828,214	381	2,079,581	406	+251,367	+25	-
Transfers In*: Congressional Relations	60	-	-	-	-	-	-	-	-	-	-
Total Transfers In	60	-	-	-	-	-	-	-	-	-	-
Total, Adjusted Appropriations	1,750,050	193	1,951,423	280	1,828,214	381	2,079,581	406	+251,367	+25	-
Transfers Out*: Institution/Program	-	-	-	-	-	-	-	-	-	-	-
Sequestration	-11,682	-	-11,713	-	-12,426	-	-14,022	-	-1,596	-	-
Recoveries, Other	22,740	-	48,607	-	-	-	-	-	-	-	-
Carryover, Bal. Available, SOY	675,241	-	662,455	-	609,614	-	10,000	-	-599,614	-	-
Total Available	2,436,349	193	2,650,772	280	2,425,402	381	2,075,559	406	-349,843	+25	-
Lapsing Balances	-2,437	-	-318	-	-	-	-	-	-	-	-
Bal. Available, EOY	-662,455	-	-609,614	-	-10,000	-	-	-	10,000	-	-
Total Obligations	1,771,457	193	2,040,840	280	2,415,402	381	2,075,559	406	-339,843	25	-

PROJECT STATEMENTS – OBLIGATIONS*Table NIFA-10. Project Statement Obligations (thousands of dollars, FTE)*

Item	2020 Actual	2021 FTE Actual	2022 FTE Estimated	2023 FTE Estimated	Inc. or FTE Dec.	FTE Inc. or Dec.
Discretionary Obligations:						
Research and Education Activities						
Hatch Act	\$259,000	- \$259,000	- \$259,000	- \$265,000	- +\$6,000	-
McIntire-Stennis Cooperative Forestry Research Program	36,000	- 36,000	- 36,000	- 43,283	- +7,283	-
Evans-Allen (Research 1890 Institutions)	67,000	- 73,000	- 73,000	- 92,837	- +19,837	-
Tribal Colleges Education Equity Grants Program/Payments to 1994 Institution	4,000	- 4,500	- 4,500	- 15,000	- +10,500	-
Education Grants for 1890 Institution Capacity Building Grants	18,329	- 21,977	- 56,983	- 26,000	- -30,983	-
Scholarships at 1890 Institutions	5,000	- 10,000	- 10,000	- 10,000	- -	-
Education Grants for Hispanic Serving Institutions Grants Program	11,200	- 12,000	- 12,500	- 14,000	- +1,500	-
Alaska Native-Serving & Native Hawaiian-Serving Institutions	3,194	- 3,194	- 3,194	- 3,194	- -	-
Research Grants for 1994 Institutions Research Program	2,305	- 7,493	- 5,495	- 4,500	- -995	-
Capacity Building Non-Land Grant Colleges of Agriculture	4,954	- 7,275	- 8,392	- 5,000	- -3,392	-
Grants for Insular Programs (combined program)	2,000	- 2,000	- 2,000	- 2,000	- -	-
Competitive Program-Native Alaskans, Native Hawaiians & Insular Areas	-	-	-	-	-	-
Agriculture and Food Research Initiative	434,847	- 523,559	- 885,148	- 564,000	- -321,148	-
Veterinary Medicine Loan Repayment (Medical Services Act Program)	5,945	- 6,927	- 23,804	- 8,500	- -15,304	-

2023 USDA Explanatory Notes – National Institute of Food and Agriculture

Veterinary Services Grant Program	3,000	-	3,000	-	3,000	-	3,000	-	-	-
Animal Health and Disease Research, Sec. 1433	4,000	-	4,000	-	4,000	-	4,000	-	-	-
Supplemental and Alternative Crops, Section 1437D	1,000	-	1,000	-	1,000	-	663	-	-337	-
Multicultural Scholars, Graduate Fellowship & Institution Challenge Grants	13,091	-	15,472	-	11,621	-	10,000	-	-1,621	-
Secondary / Post Secondary	900	-	900	-	900	-	1,000	-	+100	-
Aquaculture centers, Section 1475	5,000	-	5,000	-	5,000	-	5,000	-	-	-
Sustainable Agriculture Research and Education	37,000	-	40,000	-	40,000	-	60,000	-	+20,000	-
Farm Business Management and Benchmarking	2,000	-	2,000	-	2,000	-	2,000	-	-	-
Sun Grant Program	3,000	-	3,000	-	3,000	-	3,000	-	-	-
Research Equipment Grants	5,000	-	5,000	-	5,000	-	5,000	-	-	-
Alfalfa Seed and Alfalfa Forage Systems	3,000	-	3,000	-	3,000	-	-	-	-3,000	-
Minor Crop Pest Management (IR-4)	11,913	-	11,913	-	11,913	-	20,000	-	+8,087	-
New Beginnings for Tribal Students	-	-	-	-	-	-	5,000	-	+5,000	-
Agriculture Business Innovation Center at HBCU	-	-	-	-	-	-	2,000	-	+2,000	-
1890 Institutions, Centers of Excellence	-	-	-	-	-	-	10,000	-	+10,000	-
Open Data Standards for Neutral Data Repository	-	-	-	-	-	-	1,000	-	+1,000	-
Farm of the Future	-	-	-	-	-	-	3,000	-	+3,000	-
Special Research Grants										
Aquaculture Research	2,000	-	2,000	-	2,000	-	2,000	-	-	-
Global Change	1,405	-	1,405	-	1,405	-	1,925	-	+520	-
Potato Breeding Research (Competitive)	2,750	-	2,750	-	2,750	-	-	-	-2,750	-
Subtotal, Special Grants	6,155	-	6,155	-	6,155	-	3,925	-	-2,230	-
Federal Administration										
Grants Management System	7,830	-	7,924	-	7,924	-	7,924	-	-	-
General Administration / Other	11,862	-	11,556	-	11,556	-	13,489	-	+1,933	-
Subtotal, Federal Administration	19,692	-	19,480	-	19,480	-	21,413	-	+1,933	-

2023 USDA Explanatory Notes – National Institute of Food and Agriculture

Subtotal Research and Education	968,525	-	1,086,845	-	1,496,085	-	1,213,315	-	-282,770	-
Extension Activities										
Smith-Lever 3(b&c):	314,999	-	315,000	-	315,000	-	320,000	-	+5,000	-
Extension Services at 1890 Institutions	57,000	-	62,000	-	62,000	-	65,000	-	+3,000	-
Extension Services at 1994 Institutions	8,000	-	8,500	-	8,500	-	19,000	-	+10,500	-
1890's Facilities	20,594	-	24,577	-	46,138	-	21,500	-	-24,638	-
Renewable Resources Extension	4,060	-	4,060	-	4,060	-	4,100	-	+40	-
Rural Health and Safety	4,000	-	4,000	-	4,000	-	4,000	-	-	-
Food Animal Residue Avoid. Database	2,500	-	2,500	-	2,500	-	2,000	-	-500	-
Women and Minorities in STEM Fields	400	-	400	-	400	-	2,305	-	+1,905	-
Food Safety Outreach	8,000	-	10,000	-	10,000	-	10,000	-	-	-
Food and Ag Service Learning	1,000	-	2,000	-	2,000	-	2,000	-	-	-
Farmer Stress Assistance Network	10,000	-	10,000	-	10,000	-	10,000	-	-	-
Enhancing Ag Opportunities Military Veterans (Ag Vets)	-	-	-	-	-	-	5,000	-	+5,000	-
Smith-Lever 3(d) Programs:										
Expanded Food and Nutrition Program (EFNEP)	70,000	-	70,000	-	70,000	-	70,000	-	-	-
Farm Safety and Youth Farm Safety Education	4,610	-	5,000	-	5,000	-	5,000	-	-	-
New Technologies Ag Extension	1,550	-	3,550	-	3,550	-	3,002	-	-548	-
Youth and Families at Risk	8,395	-	8,395	-	8,395	-	8,860	-	+465	-
Federally Recognized Tribes Extension	3,200	-	3,200	-	3,200	-	7,700	-	+4,500	-
Federal Administration										
Ag in the Classroom	552	-	552	-	552	-	1,000	-	+448	-
Other General Administration - Extension	9,032	-	7,790	-	7,790	-	8,100	-	+310	-
Subtotal Extension Activities	527,892	-	541,524	-	563,085	-	568,567	-	+5,482	-
Integrated Activities										
Methyl Bromide Transition program	2,000	-	2,000	-	2,000	-	2,000	-	-	-
Organic Transition Program	6,000	-	7,000	-	7,000	-	7,000	-	-	-
Regional Rural Development Centers	2,000	-	2,000	-	2,000	-	2,000	-	-	-

2023 USDA Explanatory Notes – National Institute of Food and Agriculture

Food & Agriculture Defense Initiative (FADI) (2-year) (Homeland Security)	8,341	-	8,264	-	8,000	-	8,000	-	-	-
Crop Protection/Pest Management (CP/PM)	20,000	-	20,000	-	20,000	-	20,000	-	-	-
Subtotal Integrated Activities	38,341	-	39,264	-	39,000	-	39,000	-	-	-
Buildings and Facilities					538					
Subtotal Discretionary Obligations	1,534,758	193	1,667,633	280	2,098,708	381	1,820,882	406	-277,826	+25
Mandatory Obligations:										
Extension Risk Management Education Program (ERME)	13,555		9,806	-	9,430	-	9,430	-	-	-
G. Schumacher Nutrition Incentive Program (GusNIP)/Food Insecurity Nutrition Program	44,619	-	45,264	-	49,979	-	52,808	-	+2,829	-
Beginning Farmers & Rancher's Development Program (BFRDP)	14,483	-	18,241	-	20,652	-	23,575	-	+2,923	-
Organic Agriculture Research and Extension Initiative (OREI)	18,491	-	23,656	-	28,539	-	47,150	-	+18,611	-
Specialty Crop Research Initiative (SCRI)	72,118	-	77,395	-	76,647	-	75,440	-	-1,207	-
Emergency Citrus Disease Research and Extension Program (ECDRE) (Carryover)	-	-	-	-	4,544	-	-	-	-4,544	-
Emergency Citrus Disease Research and Extension Program (ECDRE) (Trust Fund)	45,497	-	25,057	-	27,990	-	23,575	-	-4,415	-
Urban, Indoor & Other Emerging Ag. Production (Urban Ag)	-	-	-	-	10,000	-	-	-	-10,000	-
Scholarships for Students at 1890 Institutions	9,500	-	19,000	-	10,000	-	10,000	-	-	-
Biomass Research and Development					3,932					
Subtotal Mandatory Funds	218,263	-	218,419	-	241,713	-	241,978	-	+265	-
Supplemental Obligations:										
IIJA Supp, Bioproducts Pilot Program	-	-	-	-	5,000	-	5,000	-	-	-
Emergency Supp-COVID, Farming Opportunities & Outreach (Section 754, OPPE)	-	-	30,106	-	7,394	-	-	-	-7,394	-

2023 USDA Explanatory Notes – National Institute of Food and Agriculture

Emergency Supp-COVID, GusNIP/Food Insecurity Nutrition Program (Section 756)	-	-	72,024	-	6,000	-	-	-	-6,000	-
Emergency Supp-COVID, Farm Stress (Section 766)	-	-	25,735	-	3,385	-	-	-	-3,385	-
Subtotal Supp Oblig	-	-	127,865	-	21,779	-	5,000	-	-16,779	-
Subtotal Obligations	1,753,021	193	2,013,917	280	2,362,200	381	2,067,860	406	-294,605	25
General Provisions										
General Provisions 742 (EXT.) - Enhancing Ag Opportunities Military Veterans (Ag Vets)	5,000	-	5,200	-	5,000	-	-	-	-5,000	-
General Provisions 756 (EXT.) - Begin Farmers & Ranchers Dvlpmt Program (under FTO)	2,500	-	2,500	-	2,500	-	2,500	-	-	-
General Provisions 757 (R&E) - New Beginnings for Tribal Students	5,000	-	5,000	-	5,000	-	-	-	-5,000	-
General Provisions 758 (R&E) - Agricultural Genome to Phenome Initiative	1,000	-	1,000	-	1,000	-	-	-	-1,000	-
General Provisions 766 (R&E)- Agriculture Business Innovation Center at HBCU	-	-	-	-	4,000	-	-	-	-4,000	-
General Provisions 769 (R&E)- 1890 Institutions, Centers of Excellence	-	-	6,160	-	19,600	-	-	-	-19,600	-
General Provisions 779 (R&E)- Open Data Standards for Neutral Data Repository	-	-	500	-	500	-	-	-	-500	-
General Provisions 798 (R&E)- Blue Ribbon Panel	-	-	300	-	300	-	-	-	-300	-
General Provisions 799 (R&E)- Farm of the Future	-	-	-	-	8,000	-	-	-	-8,000	-
Subtotal General Provisions	13,500		20,660		45,900		2,500		-43,400	-
Endowment Funding:										
Tribal Colleges Endowment Fund (Native American Endowment Fund)	(11,880)	-	(11,880)	-	(11,880)	-	(11,880)	-	-	-
Interest on Tribal College Endowment Fund (Native American Endowment - Interest Earned)	4,876	-	6,263	-	7,302	-	5,199	-	-2,103	-
Subtotal Endowments	4,876	-	6,263	-	7,302	-	5,199	-	-2,103	-

2023 USDA Explanatory Notes – National Institute of Food and Agriculture

Cong. Relations	60	-	-	-	-	-	-	-	-	-
Total Obligations	1,771,457	193	2,040,840	280	2,415,402	381	2,075,559	406	-340,108	25
Add back:	-	-	-	-	-	-	-	-	-	-
Lapsing Balances	2,437	-	318	-	-	-	-	-	-	-
Rescinded Balances	-	-	-	-	-	-	-	-	-	-
Total Bal. Available, EOY	662,455	-	609,614	-	10,000	-	-	-	-10,000	-
Total Available	2,436,349	193	2,650,772	280	2,425,402	381	2,075,559	406	-350,108	25
Less:	-	-	-	-	-	-	-	-	-	-
Rescission	-	-	-	-	-	-	-	-	-	-
Total Transfers In	-60	-	-	-	-	-	-	-	-	-
Total Transfers Out	-	-	-	-	-	-	-	-	-	-
Sequestration	11,682	-	11,713	-	12,426	-	14,022	-	-	-
Recoveries, Other	-22,740	-	-48,607	-	-	-	-	-	-	-
Bal. Available, SOY	-675,241	-	-662,455	-	-609,614	-	-10,000	-	+599,614	-
Total Appropriation	1,749,990	193	1,951,423	280	1,828,214	381	2,079,581	406	+249,506	+25

JUSTIFICATIONS OF INCREASES/DECREASES

Research & Education:

- (1) An increase of \$6,000,000 for the Hatch Act (\$259,000,000 available in 2022 annualized CR).

Hatch capacity funds support continuing agricultural research at State Agricultural Experiment Stations (SAES). Hatch funds are used to conduct original research, investigations, and experiments bearing directly on and contributing to establishing and maintaining a vibrant U.S. agricultural industry. Hatch-funded scientists undertake research on the problems of agriculture in its broadest aspects, which serve to develop and improve rural communities. Much of the research supported with Hatch funds at the state level is not amenable to support by competitive grants or funding from private/corporate interests. For example, plant and animal breeding and genetics research need long-term support provided by Hatch funds and cannot be sustained by individual 3 to 5-year competitive grants. The innovations supported by Hatch funds have demonstrably helped increase farm incomes, improved nutrition security, and enhanced the quality of life in America. In many cases, these funds provide seed money that enable researchers to become competitive for other sources of funding. Funding addresses local, regional, and national challenges in agriculture. This program serves Land-grant Universities which in turn serve the producers and consumers in their respective states. This funding provides critical support for data-driven long-term research on local and regional agricultural systems that are carbon-neutral, climate-smart and maintain profitability and productivity for U.S. farmers and ranchers. Capacity funding to SAES will be necessary to address climate change, nutrition security, rural economic development, and mitigation of agricultural greenhouse gas emissions.

- (2) An increase of \$7,283,000 for the McIntire-Stennis Cooperative Forestry Research Program (\$36,000,000 available in 2022 annualized CR).

The McIntire-Stennis Research Program supports development of new knowledge and innovations to sustain healthy and productive forests, agroforests, rangelands, and grasslands and address challenges facing forest owners and the forest products industry. The McIntire-Stennis Research Program develops critical research-based knowledge that enables researchers and land managers (along with their advisors such as Cooperative Extension) to develop plant materials and management practices that can maintain the flow of services and products the U.S. relies upon from these lands. As greater risks are realized by these lands, the resilience and productivity of forests and rangelands are also threatened, and the well-being of rural America is impacted through lost income, jobs, and resources. McIntire-Stennis is the only capacity fund that is directed exclusively to support forestry, range, and the forest products industry, and supports programs in the 1890 and 1862 Land-grant Universities and non-land-grant colleges of forestry, while strengthening the pipeline of new foresters, researchers, and range managers in the forestry workforce. The support is crucial to ensuring the continued success of these programs that provide researchers with the resources to deal with issues of local and regional importance; issues that other federal research programs have difficulty addressing. The funding will support research on healthy forest systems that deter wildfires and are resilient to climate change.

- (3) An increase of \$19,837,000 for Evans-Allen (\$73,000,000 available in 2022 annualized CR).

Evans-Allen capacity funds are authorized under section 1445 of the National Agriculture Research, Extension and Teaching Policy Act of 1977 (NARETPA), to support agricultural research activities at the 1890 Land-grant Colleges and Universities, purchase and rental of land and the construction, acquisition, alteration, or repair of buildings necessary for conducting agricultural research. The funds distributed to the 19 land-grant Historically Black Colleges and Universities (HBCUs) are leveraged with matching funds from non-federal sources. Currently, the program supports over 200 active research projects that will enhance innovation, support training of the next generation of African American leaders, innovators and researchers. The Evans-Allen program underpins and supports NIFA's competitive programs. Funding for the program is needed to help build capacity and reduce disparities between land-grant universities. This program directly contributes to advancing USDA's vision for equity in access and opportunities for historically underserved farmers, ranchers, and communities. In addition, the program supports many of the administration's budget priorities, including ensuring that benefits accrue to historically underserved communities. The funding supports 1890 LGUs' ability to address various

issues in limited-resourced communities such as small farm challenges, research on commodities and specialty crops that are commonly found on small and minority-owned farms, helping to grow new and better markets, improve food and nutrition security, address climate change, and encourage workforce development.

- (4) An increase of \$10,500,000 for Tribal Colleges Education Equity Grants Program/Payments to 1994 Institution (\$4,500,000 available in 2022 annualized CR).

The 1994 Act (7 U.S.C. 301 note) 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 key need areas of, 1) curricula design and instructional materials development; 2) faculty development and preparation for teaching; 3) instruction delivery systems and strategic partnerships; 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 2014 Farm Bill (Pub. L. 113-79) amended section 532 of the 1994 Act by adding the College of the Muscogee Nation and Keweenaw Bay Ojibwa Community College, effective October 2014. Also, FCEA amended section 534 to authorize funds payable to a 1994 institution be withheld and redistributed to other 1994 institutions if the institution declines to accept funds or fails to meet the accreditation requirements of section 533. Section 7502 of the 2018 Farm Bill (Pub. L. 115-334) amended section 532 of the 1994 Act by updating eligible institutions' names and adding Red Lake Nation College. An increase in funding will help maximize impact to tribal colleges and universities and help develop a stronger pool of Tribal students in the agriculture and food areas.

- (5) An increase of \$1,500,000 for Education Grants for Hispanic-serving Institutions Grants Program (\$12,500,000 available in 2022 annualized CR).

Base funding for this competitive program promotes and strengthens Hispanic-serving Institutions' abilities through funding for several areas including food and agriculture science curriculum design and development, faculty development, and to help attract and support graduates capable of enhancing the Nation's food and agricultural scientific and professional work force. This program has the potential to address the underrepresentation of Hispanic students in STEM jobs (currently less than 2 percent of STEM jobs in the nation) and in the food, agricultural, natural resource, and human sciences. Increased funding is needed to meet the needs of the increasing number of Hispanic-serving institutions in the country. Section 1455 of NARETPA (7 U.S.C. 3241) is the foundation for USDA's efforts to better serve Hispanic serving institutions as they help students prepare for careers in the agricultural and food science. This competitive program expands and strengthens academic programs in the agricultural and food sciences, natural resources, forestry, veterinary medicine, home economics, and disciplines closely to the food and agriculture production and delivery systems 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 of NARETPA 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). Funds may support: 1) curricula design, degree programs, materials development, and library resources; 2) faculty preparation and enhancement for teaching; 3) instruction delivery systems; 4) scientific instrumentation for teaching; 5) student experiential learning; and 6) student recruitment and retention.

- (6) An increase of \$500,000 for Research Grants for 1994 Institutions Research Program (\$4,000,000 available in 2022 annualized CR).

The Tribal Colleges Research Grants Program (TCRGP) (also known as 1994 Institutions Research Program) is a competitive grants program supporting fundamental and/ or applied agricultural research projects that address high priority concerns of tribal, national or multi-state significance. The program funds investigative and analytical studies and experimentation in the food and agricultural sciences (as defined in section 1404 of the NARETPA (7 U.S.C. 3103) and Part VIII, E. of this RFA). TCRGP seeks to advance the body of knowledge in the basic and applied natural and social sciences within the food and agricultural sciences. This program helps 1994 Land-grant institutions become centers of scientific inquiry and learning for remote and rural Tribal

communities. The program allows scientists at the legislatively eligible 1994 Institutions to participate in agricultural research activities that address tribal, national, and multi-State priorities. 1994 Institutions may work with the Agricultural Research Service or at least one of the other land-grant colleges or universities, a non-land-grant college of agriculture, or cooperating forestry schools eligible to receive funds under the McIntire-Stennis Cooperative Forestry Act. An increase in funding would help this essential program improve research capabilities and contributions from 1994 Institutions.

(7) An increase of \$129,000,000 to AFRI (\$435,000,000 available in 2022 annualized CR).

To support the transformative innovations needed to enhance profitability in U.S. agriculture and boost rural prosperity, NIFA proposes to increase its investment to \$564 million in AFRI, America's flagship competitive grants program for food and agricultural sciences. This investment is critical for supporting systems-level as well as foundational research on agricultural production and products, for integrated extension activities to transfer research findings to producers and consumers, and for continued development of the skilled workforce needed to spur the agricultural enterprise. Past AFRI investments have directly benefited agricultural producers by providing improved cultivars, creating climate-smart decision tools, and developing high-value uses of agricultural products. For example, an AFRI-funded project successfully genotyped and phenotyped more than 8,000 cattle from eight major U.S. beef breeds and identified variation in the primary genes responsible for improved feed efficiency. Use of this knowledge in marker-assisted cattle selection, depending upon breed, is projected to save U.S. beef producers more than \$1 billion annually in feed costs for every 1 percent improvement in feed efficiency, thereby reducing greenhouse gas emissions and improving economic sustainability of beef operations, global competitiveness of U.S. beef and rural prosperity.

NIFA will use \$10 million to support the Administration's efforts on the Cancer Moonshot through work on nutrition to reduce chronic disease, production of healthy foods that prevent or reduce the risk of cancer, creation of biobased agricultural products as anticancer supplements and treatment agents, and use of dual purpose with dual benefit studies in animals.

NIFA will continue emphasis throughout the AFRI program on climate-smart agriculture and forestry, as well as mitigation of agricultural greenhouse gas emissions and clean energy technology development. Focused investments in these topics will be made in the three major complementary components of AFRI: 1) Sustainable Agricultural Systems, 2) Foundational and Applied Science, and 3) Education and Workforce Development. These foci on data-driven solutions and technology-savvy workforce development will help catalyze foundational and large systems-level research needed to foster innovation in U.S. food and agricultural science, enhance economic prosperity in America's historically underserved communities, promote nutrition security, and enhance the Nation's global competitiveness in food and agricultural production. Collectively, these investments in AFRI will address the President's priorities to combat climate change, create more and better market opportunities, lay the foundation for economic growth and creation of good-paying jobs, increase nutrition security, and ensure that benefits accrue to marginalized and historically underserved communities.

NIFA proposes to invest \$140 million of appropriated funds in the Sustainable Agricultural Systems programs to support large integrative projects that develop technological solutions to major agricultural system challenges. This will enable NIFA's goal of advancing the convergence of agricultural sciences with engineering, data science, nutritional and food sciences, social sciences, and other disciplines, including nanotechnology, computational sciences, and advanced manufacturing, to generate new scientific discoveries, new products, new markets and, consequently, new high-skill jobs.

The agency proposes to invest \$368 million in the Foundational and Applied Science programs, support interagency partnerships to develop technologies such as robotics including unmanned aerial systems and cyberphysical systems. The agency will maintain increased investments made in previous years in plant and animal breeding that support classical breeding efforts to improve crop and animal productivity and will increase funding to support emerging technologies such as gene editing, sensors, autonomous systems, precision animal agriculture, and machine learning as applied to agriculture. NIFA will continue to invest in

research on the microbiomes of foods, food animals, plants, human gut, and soils, as well as agricultural biosecurity to protect our Nation's food supply agricultural economy. NIFA will invest in approaches to improve management and application of big data, artificial intelligence in agriculture, and data-driven entrepreneurship in rural America. An additional focused component of NIFA's investments to encourage rural prosperity will support research and related activities addressing societal acceptance and economic implications of agricultural technologies, including gene editing and big data.

The agency proposes to invest \$56 million in Education and Workforce Development programs to promote growth and skill improvement in the workforce needed to spur innovations in the agricultural economy, enhance rural prosperity, and advance competitiveness of U.S. agriculture. To connect rural skillsets to jobs of the future, investments will be increased in K-14 curricula development and training/retraining of workers for developing a technology- and data-savvy workforce ready for the field and industrial jobs. This Education and Workforce Development program contributes towards the OMB and OSTP guidance for future STEM education activities.

Through AFRI grants, NIFA will support the FY 2023 Administration priorities of addressing climate-smart agriculture and forestry practices, mitigation of agricultural greenhouse gas emissions, nutrition security, expanding markets for agricultural products, and promoting prosperity in America's marginalized and historically underserved communities. In 2023, the NIFA budget proposes to support the AFRI program at \$564,000,000, which includes:

- Development of climate-smart agriculture and forestry and carbon-neutral agricultural practices to support adaptation to climate change and to achieve net-zero greenhouse gas emissions by 2050
- Continued support for high-priority areas including sustainable production agriculture, soil health, agricultural biosecurity, food and agricultural microbiomes, food safety, water quality, and pollinator health
- Sustained support for plant and animal breeding, including adaption and resiliency to climate change through climate-smart agriculture and forestry
- Development of rural circular economies through clean energy technologies and high-value biobased products from agricultural feedstocks
- Enhanced support for understanding and using Indigenous Traditional Ecological Knowledge in developing new agricultural systems
- Increased investment in the Foundational and Applied Science Program, including continuation of the increased support for new investigators and increased award size commensurate with the scope of foundational work required and for promoting equity and inclusion in agricultural sciences, such as increased investments in challenges faced by historically underserved communities
- Increased investment in the Sustainable Agricultural Systems Program, to support innovative, transformative, integrated, and transdisciplinary systems-level approaches to promote for development of sustainable production systems, climate-smart agriculture and forestry, carbon-neutral agricultural practices, and local and regional food systems for improved production, nutrition security, and equitable economic development
- Increased investment in the Education and Workforce Development program for training and retraining of agricultural workers and the next generation of agricultural scientists, with special emphasis on rural and historically underserved communities
- Investments to enhance support for innovation, translation and entrepreneurship training and support for historically underserved rural communities.
- Continued fostering of interagency collaborations to leverage greater investment in agriculturally relevant areas of science, and to attract new communities of scientists to address challenging agricultural issues

(8) An increase of \$500,000 Multicultural Scholars, Graduate Fellowship & Institution Challenge Grants (\$9,500,000 available in 2022 annualized CR).

To meet the demands of today's food and agricultural systems, we must exponentially increase the size and diversity of the talent pool. The Multicultural Scholars Program helps colleges and universities recruit and

retain multicultural scholars who pursue degrees in food and agricultural science disciplines or the Doctor of Veterinary Medicine degree. A recent report from NIFA and Purdue University shows U.S. college graduates from agricultural programs can expect 59,400 job opportunities annually for the next four years and that diversity and inclusion are strategic imperatives for the future workforce. This increase will help support and develop a pipeline for a more diverse workforce that will be needed in the agricultural and food sciences.

(9) An increase of \$100,000 for Secondary/Post-Secondary (\$900,000 available in 2022 annualized CR).

The Secondary Education, Two-Year Postsecondary Education, and Agriculture in the K-12 Classroom Challenge Grants (SPECA) program seeks to: (a) promote and strengthen secondary education and two-year postsecondary education in the food and agriculture sciences in order to help ensure the existence of a workforce in the United States that's qualified to serve the food and agriculture sciences system; and (b) promote complementary and synergistic linkages among secondary, two-year postsecondary, and higher education programs in the food and agriculture sciences in order to advance excellence in education and encourage more young Americans to pursue and complete a baccalaureate or higher degree in the food and agriculture sciences. The increase sought will be devoted specifically to greater funding for community colleges.

(10) An increase of \$20,000,000 for Sustainable Agriculture Research and Education (\$40,000,000 available in 2022 annualized CR).

The proposed funding for SARE is an increase over FY2021 levels and will support development of climate-smart research and delivery of climate-smart education programs to help farmers and ranchers adapt to and mitigate effects of climate change in food production systems. Base funding will be used to increase knowledge of sustainable agricultural practices that are profitable, environmentally sound, and beneficial for quality of life and to help farmers adopt these practices. Grants awarded by the four regional administrative councils support projects that address crop and livestock production and marketing, stewardship of soil and other natural resources, economics, and quality of life in rural communities. The program will continue to focus on the high-priority solutions for farmers and ranchers across all U.S. regions through grants to develop innovative sustainable practices. The proposed funding will also allow enhanced support of stakeholder-driven research and education projects that address climate change, create more and better market opportunities, and address other problems faced by small and historically underserved producers and communities.

(11) An increase of \$8,087,000 for Minor Crop Pest Management, IR-4 (\$11,913,000 in 2022 annualized CR).

An increase 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. Increased funding will allow an increase in the number of funded pesticide data projects per year as well as additional biopesticide and organic projects and will increase the IR-4 program's harmonization activities with America's key trading allies. Unlike most major crops, many American specialty crops have difficulty reaching lucrative international markets due to the lack of a harmonized pesticide approval system between our trading partners. Increased funding for IR-4 aligns with the Administration's priority of creating more and better market opportunities, including new markets for organic products and safeguarding plant health.

(12) An increase of \$520,000 Global Change (\$1,405,000 available in 2022 annualized CR).

The climatological network in this program 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 are used with weather inputs to support climate forecasting models and to assess the impact of UV-B radiation on ecosystems, human health, and agricultural production. As USDA embarks on its climate-smart agriculture and forestry goals, these datasets are even more valuable now than in the past. The increased funding will allow the project to improve detection technologies and modernize the data

repository.

- (13) An increase of \$2,000,000 for HBCU Business Innovation Centers (\$0 available in 2022 annualized CR).

Funding for an HBCU to serve as a technical assistance hub to enhance agriculture-based business development opportunities. Opportunities may include: providing technical assistance to food and agricultural producers, production scale assessments, market planning and development, business planning, and other advisory services; technology transfer to commercialize innovations, particularly those that are derived from NIFA support; assisting startups and entrepreneurs in agriculture business including planning and funding; training and workshops in food and agricultural business; providing educational support for students enrolled in agriculture business programs; outreach services and activities, including the dissemination of information and materials.

- (14) An increase of \$10,000,000 for 1890 Centers of Excellence (\$0 in the 2022 annualized CR).

The Centers of Excellence at 1890 Land-grant Institutions are designed to supply the country with a globally diverse workforce and support critical global development needs, thereby supporting U.S. national security, address transdisciplinary research and education challenges including climate change, conservation, biodiversity and development or strengthening of teaching curricula and student recruitment. These Centers help the 1890 institutions increase their effectiveness in serving the nation. Section 1673 of the Food, Agriculture, Conservation and Trade Act of 1990, as amended by Section 7213 of the 2018 Farm Bill (7 U.S.C. 5926) authorizes funding for the recognition of Centers of Excellence at 1890 Institutions to focus on Student Success and Workforce Development; Nutrition, Health, Wellness, and Quality of Life; Farming Systems, Rural Prosperity, and Economic Sustainability; Global Food Security and Defense; Natural Resources, Energy, and Environment; and Emerging Technologies. With \$10 Million in FY2021 appropriation, NIFA has continued to fund four Centers of Excellence at 1890 Institutions: Student Success and Workforce Development; Farming Systems, Rural Prosperity, and Economic Sustainability; Global Food Security and Defense; and Nutrition, Health, Wellness, and Quality of Life. In addition, NIFA is in the process of awarding two additional Centers: COEs in Natural Resources, Energy and Environment; and Emerging Technologies. This increase will help to continue to support these centers in responding to current and future challenges in the food and agriculture sciences and related fields.

- (15) An increase of \$5,000,000 for New Beginning for Tribal Students (\$0 in the 2022 annualized CR).

New Beginning for Tribal Students is the newest program in the Tribal Portfolio. This program is open to all professions and will help more Native Americans graduate from land-grant institutions. Twenty schools have received this funding. The land-grant college or university that receives this grant can use funds for, but not limited to, support of Tribal students for articulation agreements with 1994's; dual credit programs; recruiting; tuition and related fees; experiential learning; student services, including tutoring; counseling; academic advising; and other student services that would increase the retention and graduation rate of Tribal students enrolled at the land-grant college or university, as determined by the Secretary.

- (16) An increase of \$1,000,000 for Open Data Standards Repository Sec 779 (\$0 available in 2022 annualized CR).

Funding will enable NIFA to develop a public-private cooperative framework based on open data standards for neutral data repository solutions to preserve and share the big data generated by technological advancements in the agriculture industry and for the preservation and curation of data in collaboration with land-grant universities. NIFA is drafting an implementation plan designed to lower barriers to information sharing and optimize the flow of information by providing for long-term curation and data standard governance with engagement by users and stakeholders.

- (17) An increase of \$3,000,000 for Farm of the Future (\$0 in the 2022 annualized CR).

NIFA plans to implement this program by supporting an integrated research and extension project. This project complements other NIFA investments, such as Sustainable Agricultural Systems; Artificial Intelligence grants; Extension Design Initiative, and the extension/education program with Climate Hubs.

- (18) A net increase of \$2,691,000 for Federal Administration (\$27,822,000 in the 2022 annualized CR under the Research and Education Activities and Extension Activities Accounts).

Funds for Grants Management and Reporting will continue to support NIFA's investments in building a modern grants management and reporting system. These funds will continue to enhance the current capabilities in addition to planning and implementing functionality to enable the processing of the more complex competitive grant programs. Continuation of the base funding is crucial to support operation and maintenance of current legacy systems during the remainder of the transition to a modern grants management system.

The Plan of Work (POW) Panel of Experts, composed of representatives from land-grant universities (LGUs) and the National Institute of Food and Agriculture (NIFA), convened in June 2015. The Panel recommended that NIFA work to streamline tactics to improve data quality in reports and reduce duplication and burden on LGUs and NIFA. Overall, the Panel recommended consolidating POW and REEport into one integrated system. These funds will continue to help with streamlining of the functionality.

(A) An increase of \$774,000, which includes \$527,000 for pay inflation and \$247,000 for FERS for 2022 Pay and FERS. This increase supports the pay increase which went into effect January 1, 2022, of a 2.7 percent Cost of Living pay increases for civilian employees, and a 1.1 percent increase to cover the expenses for the mandated increase of USDA's contribution to FERS.

(B) For 2023, an increase of \$559,000 for 2023 Pay. This increase will support the annualization of the 2022 2.7 percent Cost of Living pay increase and the 2023 4.6 percent Cost of Living pay increase. Reducing base funding for administration and pay costs will limit the agency's ability to train new staff, provide for travel and participation in scientific meetings to represent the agency, and provide mission support.

(C) An increase of \$448,000 for Ag in the Classroom (\$552,000 in the 2022 annualized CR). NIFA's Agriculture in the Classroom Program (AITC) serves nearly 5 million students and 60,000 teachers annually through workshops, conferences, field trips, farm tours, and other educational activities. AITC programs include working with state AITC activities engaged in a variety of issues relating to agricultural literacy. Increased funding will continue to support students in gaining a greater awareness of the role of agriculture in the economy and society, so they will become citizens who support wise agricultural policies

(D) Within the total, a decrease of \$2,228,000 for Office of Chief Scientist funding. NIFA along with the other REE agencies have historically provided direct funding to the Office of the Chief Scientist (OCS). In FY 2023, OCS is proposing to receive a direct appropriation which would no longer require annual agency transfers to support OCS. NIFA, ARS, ERS, and NASS are all proposing offsets to support the direct appropriation to OCS totaling \$4.95 million.

- (19) A decrease of \$337,000 for Supplemental and Alternative Crops (\$1,000,000 available in annualized 2022 CR).

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. This program may be supported by other funding sources, including other NIFA programs. The broad research goals of this relatively small program may 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.

- (20) A decrease of \$3,000,000 for Alfalfa Seed and Alfalfa Forage Systems (\$3,000,000 available in the 2022 annualized CR).

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. This program may be supported by other funding sources, including the AFRI Foundational and Applied Science programs. The broad research goals of this relatively small program may be more effectively addressed through higher priority programs in this request. This decrease in funding would allow for greater focus on national priorities, and efficiency in program management and implementation through consolidation

of program activities.

- (21) A decrease of \$2,750,000 for Potato Breeding Research (\$2,750,000 available in the 2023 annualized CR).

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. This program may be supported by other funding sources, including the AFRI Foundational and Applied Science programs. The broad research goals of this relatively small program may be more effectively addressed through higher priority programs in this request. This decrease in funding would allow for greater focus on national priorities, and efficiency in program management and implementation through consolidation of program activities.

Extension:

- (1) An increase of \$5,000,000 for Smith-Lever 3(b)(c) (\$315,000,000 available in 2022 annualized CR).

The Cooperative Extension System is a valued and trusted source of science-based education in every county and parish in the country. It is essential in ensuring that farmers, ranchers, and communities of all sizes are empowered to meet the challenges they face due to a changing climate; improve nutrition security; provide positive youth development through 4-H and other community programs; prepare for and respond to disasters; and protect the environment. Smith-Lever 3(b)(c) provides capacity funding for Cooperative Extension to deliver research-based educational programs, services, and resources for farmers, ranchers, communities, businesses, and individuals to meet local needs. States are required to provide at least a one-to-one match for each dollar of Smith-Lever funding received. Extension is a nimble organization that is increasingly a vital link for farmers, ranchers, rural businesses and communities dealing with unexpected stresses due to disruptions in the food supply chain by international trade issues, market uncertainties, and the current economic downturn due to the COVID-19 pandemic. Because these funds have remained flat for more than two decades, the Cooperative Extension System struggles to maintain appropriate service levels and updated technology required to meet the growing needs of the communities they serve with high-impact, high-return programs. This is particularly important for increasing services to minority, historically underserved, or Tribal communities with special emphasis on climate change, workforce, nutrition and health promotion education, and support for youth Climate Corps through 4-H programming.

- (2) An increase of \$3,000,000 for Extension Services at 1890 Institutions (\$62,000,000 available in 2022 annualized CR).

The 1890 Extension funding will continue to support these fundamental 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. The requested funding increase will be leveraged with matching funding from non-federal sources to support Extension programs to address critical issues including rural economic revitalization, mitigation of climate change on small farms, minority farmers, and rural communities, positive youth development in minority communities, food and nutrition insecurity to promote better health, prosperity, and quality of life in underserved communities. Increased funding will allow the Cooperative Extension Service at 1890 Land-grant Institutions to ramp up their efforts in serving the historically underserved agricultural producers and communities, ensuring equity in access and opportunities.

- (3) An increase of \$10,500,000 for Extension Services at 1994 Institutions (\$8,500,000 available in 2022 annualized CR).

This program supports the 1994 Land-grant Institutions to create Extension offices for Tribal communities. Each Extension office works with Tribal communities to build programs addressing local needs such as: 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 2021, this program supported 35 Extension offices in 18 states, but serves only 75 of the 567 Federally Recognized Indian Tribes. The requested increase will support much-needed Extension programs in rural economic revitalization, positive youth development in minority communities, nutrition, and food security issues to promote better health, prosperity and quality of life in tribal communities. Increased funding will allow 1994 Institutions' Extension Service to increase efforts in ensuring equity in access and opportunities for tribal communities.

(4) An increase of \$40,000 for Renewable Resources Extension (\$4,060,000 available in annualized 2022 CR).

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 rangelands. 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. These grants assist all states in carrying out a program of extension activities designed to: (1) disseminate research results 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 tailored to the educational needs of small, private non-industrial forest landowners, many of whom are in historically underserved communities; (4) develop and implement educational programs in range and fish and wildlife management; (5) provide 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 secure technical and financial assistance for appropriate expertise to address problems; and (7) help identify areas of needed research in renewable resources. Increased funding will allow the Cooperative Extension Service system to enhance renewable resources Extension programming, which is critical for achieving carbon-neutral agricultural systems.

(5) An increase of \$1,905,000 for Women and Minorities in STEM Fields (\$400,000 available in 2022 annualized CR).

The goal of the Women and Minorities in Science, Technology, Engineering and Mathematics (STEM) Fields Grant Program (WAMS) is to develop and implement robust collaborations to increase the representation, participation, and entrepreneurial skills and abilities of rural women and underrepresented minorities from rural areas in STEM careers, thereby contributing to economic prosperity in rural areas across the nation. Increased funding will continue to support this goal and lead to the development of a robust and diverse food and agricultural STEM workforce that is highly competent in the application of STEM knowledge and skills, with increased participation of women and minorities from rural areas across a broad spectrum of rural, local, state, or national communities. Increased funding will continue to support this goal and help develop the world's most advanced food and agricultural STEM workforce with expertise in STEM knowledge and skills, increased career equity for women and minorities from rural areas across a broad spectrum of rural, local, state, or national communities.

(6) An increase of \$465,000 for Youth and Families at risk (\$8,395,000 available in 2022 annualized CR).

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. Additional funding is requested for serving an increasing number of children, youth and families at risk in historically underserved communities. Section 7609 of the 2018 Farm Bill provided 1994 Institutions as eligible to receive funds from this program by amending 7 U.S.C. 343(d).

(7) An increase of \$4,500,000 for Federally Recognized Tribes Extension (\$3,200,000 in 2022 annualized CR).

The Federally Recognized Tribes Extension Program (FRTEP) builds capacity through 4-H youth development; agriculture and resource management; entrepreneurship; and business development to the Indian Country

communities across the nation. Focusing on tribal capacity-building, youth engagement, and promotion of tribal self-determination will begin to address educational and life outcomes for native youth, reduce teen suicide, and increase youth opportunities for an improved quality of life. FRTEP Extension offices have become a platform for state and federal agencies to provide resources and programs for Tribal communities. Educators from FRTEP bring a wealth of community-tested and science-based best practices from the 1862 and 1890 land-grants to provide informal learning to support youth development. Currently, FRTEP supports 36 Extension offices in 19 states but serve only 76 of the 567 Federally Recognized Indian Tribes. The average funding level for a FRTEP extension office is \$79,000, which includes a full-time educator. The 2018 Farm Bill included 1994s as eligible institutions to receive funds through this program. Increased funding will allow the program to serve the demand from 1994 Land-grant Institutions more fully and effectively.

- (8) An increase of \$5,000,000 for Enhancing Opportunities for Military Veterans Sec 742 (Ag Vets) (\$0 available in 2022 annualized CR).

The purpose of Ag Vets is to increase the number of military veterans gaining knowledge and skills through comprehensive, hands-on and immersive model farm/ranch programs offered regionally that lead to successful careers in the food and agricultural sector. Veterans constitute a rapidly aging and increasingly diverse group disproportionately living in rural America. Nearly 18 percent of veterans lived in rural (nonmetro) counties in 2015, compared to 15 percent of the U.S. adult civilian population. Veterans were also overrepresented in some rural counties: about 10 percent of all rural civilian adults were veterans, but in some rural counties, that share reached as high as 25 percent.

- (9) A decrease of \$500,000 for Food Animal Residue Avoidance Database (FARAD) (\$2,500,000 in the annualized CR).

The broad FARAD program goals of providing data infrastructure for practical information on how to avoid drug, pesticide, and environmental contaminant residue problems may be supported through AFRI as a part of its Food and Agricultural Cyberinformatics and Tools initiative. This decrease in funding would allow for greater focus on national priorities, and efficiency in program management and implementation through consolidation of program activities

- (10) A decrease of \$548,000 for New Technologies for Ag Extension (\$3,550,000 available in 2022 annualized CR).

The NTAE Program aims to increase the capacity of the Cooperative Extension System to adopt new and innovative technology applications for delivering science-based educational resources from land-grant and other partner institutions about matters of high public importance. NIFA supports projects that deliver state-of-the-art technology and software applications, high-quality leaders and staff, training for an exceptional Extension workforce, legally binding contractual and financial instruments, and comprehensive evaluation, communication and marketing activities promoting governance, collaboration and organization, a toolkit of evidence-based delivery models, and an entrepreneurial resource base.

GEOGRAPHIC BREAKDOWN OF OBLIGATIONS

Table NIFA-11. Geographic Breakdown of Obligations and FTE (thousands of dollars, FTE)

FISCAL YEAR 2021

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

STATE	HATCH FORM	REGIONAL RESEARCH MULT-STATE	TOTAL	COOP FORESTRY (MS)	1890 COLLEGES & TUSK (EA)	ANIMAL HEALTH & DISEASE RESEARCH	SPECIAL RSCH & OTHER GRANTS	COMP RSCH GRANTS	HIGHER ED GRANTS	TOTAL FEDERAL FUNDS
AK	\$1,121	\$205	\$1,326	\$617	\$0	\$0	\$0	\$200	\$1,741	\$3,884
AL	\$4,065	\$1,203	\$5,268	\$1,165	\$6,880	\$63	\$100	\$3,511	\$7,999	\$24,986
AR	\$3,458	\$1,054	\$4,512	\$1,012	\$2,975	\$103	\$559	\$3,174	\$2,573	\$14,908
AS	\$1,721	\$0	\$1,721	\$46	\$0	\$0	\$0	\$0	\$300	\$2,067
AZ	\$1,583	\$1,084	\$2,667	\$419	\$0	\$40	\$1,125	\$5,447	\$1,076	\$10,774
CA	\$4,900	\$2,318	\$7,218	\$858	\$0	\$253	\$552	\$49,234	\$7,634	\$65,749
CO	\$2,240	\$1,414	\$3,654	\$375	\$0	\$197	\$1,554	\$9,206	\$924	\$15,910
CT	\$1,655	\$714	\$2,369	\$485	\$0	\$11	\$0	\$6,833	\$250	\$9,948
DC	\$794	\$154	\$948	\$0	\$0	\$0	\$0	\$1,925	\$0	\$2,873
DE	\$1,185	\$534	\$1,719	\$222	\$1,464	\$22	\$0	\$1,967	\$2,301	\$7,695
FL	\$3,152	\$956	\$4,108	\$990	\$2,836	\$71	\$0	\$12,134	\$5,235	\$25,374
FM	\$1,805	\$0	\$1,805	\$0	\$0	\$0	\$0	\$0	\$296	\$2,101
GA	\$4,620	\$1,838	\$6,458	\$1,209	\$3,946	\$93	\$10,593	\$13,366	\$1,924	\$37,589
GU	\$1,761	\$176	\$1,937	\$112	\$0	\$0	\$0	\$0	\$230	\$2,279
HI	\$1,169	\$550	\$1,719	\$331	\$0	\$3	\$1,174	\$14,051	\$1,658	\$18,936
IA	\$5,654	\$2,283	\$7,937	\$551	\$0	\$292	\$2,216	\$25,756	\$175	\$36,927
ID	\$2,024	\$854	\$2,878	\$661	\$0	\$55	\$229	\$7,183	\$723	\$11,729
IL	\$5,680	\$1,492	\$7,172	\$507	\$0	\$46	\$248	\$23,483	\$0	\$31,456
IN	\$5,477	\$1,249	\$6,726	\$595	\$0	\$61	\$0	\$22,759	\$1,138	\$31,279
KS	\$3,466	\$1,148	\$4,614	\$353	\$0	\$137	\$977	\$5,963	\$605	\$12,649
KY	\$5,410	\$1,370	\$6,780	\$770	\$4,720	\$55	\$354	\$6,687	\$2,730	\$22,096
LA	\$3,108	\$995	\$4,103	\$1,055	\$2,556	\$51	\$0	\$1,412	\$3,556	\$12,733
MA	\$1,932	\$915	\$2,847	\$441	\$0	\$43	\$189	\$9,977	\$0	\$13,497
MD	\$2,321	\$937	\$3,258	\$463	\$2,004	\$28	\$2,240	\$20,740	\$4,126	\$32,859
ME	\$1,787	\$745	\$2,532	\$968	\$0	\$17	\$1,160	\$11,973	\$50	\$16,700
MH	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$179	\$179
MI	\$5,499	\$1,315	\$6,814	\$1,077	\$0	\$81	\$1,517	\$10,955	\$911	\$21,355
MN	\$5,369	\$1,310	\$6,679	\$858	\$0	\$175	\$10,785	\$5,517	\$1,511	\$25,525
MO	\$5,354	\$1,171	\$6,525	\$726	\$4,956	\$88	\$587	\$6,673	\$3,708	\$23,263
MP	\$1,713	\$0	\$1,713	\$0	\$0	\$0	\$0	\$0	\$0	\$1,713
MS	\$3,924	\$1,216	\$5,140	\$1,143	\$3,149	\$103	\$1,598	\$7,333	\$2,181	\$20,647
MT	\$1,963	\$957	\$2,920	\$682	\$0	\$35	\$11,302	\$3,156	\$1,638	\$19,733
NC	\$6,641	\$2,271	\$8,912	\$1,121	\$5,347	\$152	\$915	\$7,098	\$3,749	\$27,294
ND	\$2,258	\$882	\$3,140	\$178	\$0	\$25	\$12,357	\$7,557	\$1,179	\$24,436
NE	\$3,195	\$1,407	\$4,602	\$266	\$0	\$126	\$1,468	\$6,642	\$257	\$13,361
NH	\$1,439	\$536	\$1,975	\$551	\$0	\$9	\$323	\$2,860	\$0	\$5,718
NJ	\$1,930	\$1,082	\$3,012	\$397	\$0	\$12	\$0	\$8,529	\$750	\$12,700
NM	\$1,612	\$576	\$2,188	\$288	\$0	\$31	\$1,271	\$2,438	\$2,308	\$8,524
NV	\$1,116	\$774	\$1,890	\$134	\$0	\$9	\$0	\$650	\$370	\$3,053
NY	\$5,080	\$2,274	\$7,354	\$792	\$0	\$87	\$1,278	\$22,455	\$250	\$32,216
OH	\$6,632	\$1,420	\$8,052	\$704	\$4,304	\$93	\$548	\$13,166	\$2,438	\$29,305
OK	\$3,466	\$865	\$4,331	\$639	\$3,257	\$78	\$125	\$2,449	\$3,994	\$14,873
OR	\$2,651	\$1,355	\$4,006	\$1,187	\$0	\$70	\$0	\$18,674	\$1,190	\$25,127
PA	\$6,249	\$1,802	\$8,051	\$814	\$0	\$115	\$124	\$8,169	\$344	\$17,617
PR	\$4,259	\$1,071	\$5,330	\$90	\$0	\$10	\$430	\$1,999	\$2,986	\$10,845
PW	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$204	\$204
RI	\$1,072	\$555	\$1,627	\$156	\$0	\$24	\$0	\$1,365	\$280	\$3,452
SC	\$3,463	\$1,132	\$4,595	\$924	\$2,868	\$27	\$450	\$3,341	\$1,847	\$14,052
SD	\$2,434	\$890	\$3,324	\$266	\$0	\$70	\$3,029	\$3,233	\$636	\$10,558
TN	\$5,144	\$1,232	\$6,376	\$880	\$4,446	\$72	\$0	\$9,564	\$3,126	\$24,464
TX	\$7,467	\$1,752	\$9,219	\$946	\$7,094	\$256	\$1,533	\$28,801	\$8,643	\$56,492
UT	\$1,404	\$1,053	\$2,457	\$200	\$0	\$30	\$0	\$8,290	\$0	\$10,977
VA	\$4,369	\$1,137	\$5,506	\$1,034	\$3,721	\$54	\$964	\$5,368	\$2,977	\$19,624
VI	\$1,735	\$172	\$1,907	\$46	\$0	\$0	\$0	\$0	\$0	\$1,953
VT	\$1,490	\$470	\$1,960	\$529	\$0	\$13	\$9,467	\$3,118	\$0	\$15,087
WA	\$2,882	\$2,209	\$5,091	\$1,099	\$0	\$100	\$2,951	\$21,013	\$1,245	\$31,499
WI	\$5,443	\$1,432	\$6,875	\$880	\$0	\$99	\$2,161	\$14,840	\$1,009	\$25,864
WV	\$2,674	\$780	\$3,454	\$748	\$2,022	\$10	\$320	\$1,808	\$2,315	\$10,677
WY	\$1,353	\$763	\$2,116	\$244	\$0	\$21	\$0	\$994	\$0	\$3,375
SBIR										\$23,870
BRAG										\$6,028
FED ADMIN DIRECT										\$19,480
FED ADMIN										\$42,923
TOTAL	\$183,368	\$60,049	\$243,417	\$33,804	\$68,545	\$3,716	\$88,773	\$495,036	\$99,469	\$1,125,061

Table NIFA-12. Geographic Breakdown of Obligations and FTE (thousands of dollars, FTE)

FISCAL YEAR 2022

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

	HATCH FORM	REGIONAL RESEARCH MULTI-STATE	TOTAL	COOP FORESTRY (MS)	1890 COLLEGES & TUSK (EA)	ANIMAL HEALTH & DISEASE RESEARCH	SPECIAL RSCH & OTHER GRANTS	COMP RSCH GRANTS	HIGHER ED GRANTS	TOTAL FEDERAL FUNDS
FEDERAL ADMINISTRATION	\$5,726	\$1,808	\$7,534	\$1,080	\$2,190	\$160	\$21,146	\$21,750	\$2,113	\$55,973
UNDISTRIBUTED BALANCE	\$189,430	\$62,036	\$251,466	\$34,920	\$70,810	\$3,840	\$128,702	\$413,250	\$61,306	\$964,294
TOTAL OBLIGATIONS	\$195,156	\$63,844	\$259,000	\$36,000	\$73,000	\$4,000	\$149,848	\$435,000	\$63,419	\$1,020,267

Table NIFA-13. Geographic Breakdown of Obligations and FTE (thousands of dollars, FTE)

FISCAL YEAR 2023

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

	HATCH FORM	REGIONAL RESEARCH MULTI-STATE	TOTAL	COOP FORESTRY (MS)	1890 COLLEGES & TUSK (EA)	ANIMAL HEALTH & DISEASE RESEARCH	SPECIAL RSCH & OTHER GRANTS	COMP RSCH GRANTS	HIGHER ED GRANTS	TOTAL FEDERAL FUNDS
FEDERAL ADMINISTRATION	\$5,863	\$1,851	\$7,714	\$1,298	\$2,785	\$160	\$27,147	\$28,200	\$2,456	\$69,760
UNDISTRIBUTED BALANCE	\$193,750	\$63,536	\$257,286	\$41,985	\$90,052	\$3,840	\$124,854	\$535,800	\$73,937	\$1,127,754
TOTAL OBLIGATIONS	\$199,613	\$65,387	\$265,000	\$43,283	\$92,837	\$4,000	\$152,001	\$564,000	\$76,393	\$1,197,514

2023 USDA Explanatory Notes – National Institute of Food and Agriculture

Table NIFA-14. Geographic Breakdown of Obligations and FTE (thousands of dollars, FTE)

FISCAL YEAR 2021

DISTRIBUTION OF FEDERAL PAYMENTS FOR EXTENSION ACTIVITIES

STATE	SMITH-LEVER FORMULA	1890S AND TUSKEGEE	EFNEP	CHILDREN, YOUTH, AND FAMILIES AT RISK	NEW TECH AT AG EXT	FED RECOGNIZED TRIBES EXT	FARMSAFETY & YOUTHED & CERT	FOOD SAFETY OUTREACH PROGRAM	RENEWABLE RESOURCES EXTENSION ACT	OTHER	RURAL HEALTH SAFETY ED PROGRAM	1890 FACILITIES	INDIAN TRIBAL 1994 COLLEGES	TOTAL
AK	\$1,298	\$0	\$266	\$141	\$0	\$179	\$173	\$0	\$97	\$200	\$0	\$0	\$240	\$2,594
AL	\$7,413	\$5,690	\$2,253	\$0	\$0	\$0	\$0	\$845	\$120	\$2,524	\$0	\$1,981	\$0	\$20,826
AR	\$6,219	\$2,494	\$1,443	\$0	\$0	\$0	\$0	\$0	\$93	\$5,994	\$0	\$940	\$0	\$17,183
AS	\$1,811	\$0	\$104	\$0	\$0	\$0	\$0	\$0	\$0	\$500	\$0	\$0	\$0	\$2,415
AZ	\$2,253	\$0	\$756	\$141	\$0	\$650	\$0	\$0	\$64	\$4,536	\$0	\$0	\$480	\$8,880
CA	\$8,389	\$0	\$3,825	\$281	\$0	\$0	\$184	\$0	\$96	\$16,974	\$346	\$0	\$0	\$30,095
CO	\$3,477	\$0	\$688	\$141	\$0	\$0	\$184	\$0	\$58	\$3,999	\$350	\$0	\$0	\$8,897
CT	\$2,317	\$0	\$552	\$0	\$0	\$77	\$0	\$0	\$46	\$1,485	\$0	\$0	\$0	\$4,477
DC	\$0	\$0	\$114	\$0	\$0	\$0	\$0	\$0	\$14	\$3,328	\$0	\$0	\$0	\$3,456
DE	\$1,409	\$1,376	\$418	\$0	\$0	\$0	\$0	\$0	\$60	\$4,611	\$0	\$728	\$0	\$8,602
FL	\$5,042	\$2,482	\$2,574	\$0	\$0	\$94	\$0	\$967	\$90	\$6,675	\$698	\$954	\$0	\$19,576
FM	\$1,952	\$0	\$109	\$0	\$0	\$0	\$0	\$0	\$0	\$198	\$0	\$0	\$0	\$2,259
GA	\$8,456	\$3,363	\$2,461	\$0	\$0	\$0	\$184	\$0	\$108	\$3,673	\$350	\$1,043	\$0	\$19,638
GU	\$1,873	\$0	\$105	\$0	\$0	\$0	\$0	\$0	\$14	\$650	\$0	\$0	\$0	\$2,642
HI	\$1,452	\$0	\$353	\$141	\$0	\$0	\$0	\$546	\$46	\$10,306	\$350	\$0	\$0	\$13,194
IA	\$10,011	\$0	\$973	\$141	\$0	\$0	\$0	\$794	\$46	\$5,834	\$0	\$0	\$0	\$17,799
ID	\$3,069	\$0	\$397	\$301	\$0	\$261	\$0	\$544	\$52	\$689	\$0	\$0	\$0	\$5,313
IL	\$10,144	\$0	\$2,252	\$0	\$0	\$0	\$0	\$0	\$55	\$7,917	\$0	\$0	\$0	\$20,368
IN	\$9,619	\$0	\$1,319	\$141	\$0	\$0	\$719	\$395	\$54	\$1,191	\$350	\$0	\$0	\$13,788
KS	\$5,919	\$0	\$778	\$0	\$0	\$0	\$184	\$0	\$46	\$3,219	\$0	\$0	\$240	\$10,386
KY	\$9,756	\$4,162	\$1,850	\$141	\$0	\$0	\$0	\$0	\$85	\$2,973	\$0	\$1,128	\$0	\$20,095
LA	\$5,429	\$2,155	\$2,036	\$0	\$0	\$0	\$0	\$0	\$83	\$1,191	\$0	\$872	\$0	\$11,766
MA	\$2,845	\$0	\$1,064	\$0	\$0	\$0	\$0	\$547	\$46	\$2,587	\$0	\$0	\$0	\$7,089
MD	\$3,586	\$1,756	\$1,054	\$80	\$0	\$0	\$0	\$511	\$60	\$1,856	\$350	\$838	\$0	\$10,091
ME	\$2,549	\$0	\$506	\$141	\$0	\$0	\$184	\$276	\$59	\$1,752	\$0	\$0	\$0	\$5,467
MH	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
MI	\$9,670	\$0	\$1,927	\$0	\$0	\$87	\$184	\$0	\$78	\$8,079	\$0	\$0	\$720	\$20,745
MN	\$9,453	\$0	\$1,082	\$1,332	\$0	\$94	\$0	\$0	\$65	\$5,880	\$0	\$0	\$960	\$18,866
MO	\$9,562	\$4,440	\$1,766	\$141	\$0	\$0	\$184	\$0	\$89	\$6,128	\$350	\$1,232	\$0	\$23,892
MP	\$1,797	\$0	\$104	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$2,101
MS	\$7,266	\$2,568	\$1,870	\$0	\$0	\$87	\$0	\$0	\$103	\$7,350	\$0	\$921	\$0	\$20,165
MT	\$2,976	\$0	\$388	\$281	\$0	\$354	\$0	\$0	\$61	\$2,752	\$347	\$0	\$1,680	\$8,839
NC	\$12,307	\$4,662	\$2,793	\$991	\$0	\$86	\$184	\$394	\$105	\$10,003	\$0	\$1,164	\$0	\$32,689
ND	\$3,637	\$0	\$423	\$281	\$0	\$90	\$0	\$0	\$46	\$1,126	\$0	\$0	\$1,200	\$6,803
NE	\$5,369	\$0	\$619	\$141	\$0	\$0	\$296	\$400	\$46	\$12,379	\$0	\$0	\$480	\$19,730
NH	\$1,868	\$0	\$329	\$0	\$0	\$0	\$0	\$0	\$46	\$1,845	\$0	\$0	\$0	\$4,088
NJ	\$2,843	\$0	\$1,172	\$0	\$0	\$0	\$0	\$0	\$46	\$1,008	\$0	\$0	\$0	\$5,069
NM	\$2,337	\$0	\$611	\$0	\$0	\$86	\$184	\$1,200	\$68	\$5,255	\$0	\$0	\$720	\$10,461
NV	\$1,352	\$0	\$308	\$141	\$0	\$242	\$0	\$0	\$49	\$1,826	\$0	\$0	\$0	\$3,918
NY	\$8,869	\$0	\$3,512	\$141	\$0	\$0	\$0	\$397	\$87	\$11,147	\$350	\$0	\$0	\$24,503
OH	\$11,825	\$4,189	\$2,490	\$302	\$0	\$0	\$373	\$0	\$76	\$8,187	\$0	\$1,350	\$0	\$28,792
OK	\$6,091	\$2,794	\$1,261	\$441	\$3,408	\$228	\$0	\$0	\$80	\$1,150	\$0	\$1,031	\$0	\$16,484
OR	\$4,151	\$0	\$622	\$0	\$0	\$88	\$0	\$794	\$88	\$4,454	\$160	\$0	\$0	\$10,357
PA	\$11,100	\$0	\$2,754	\$0	\$0	\$0	\$184	\$0	\$81	\$3,965	\$0	\$0	\$0	\$18,084
PR	\$7,233	\$0	\$1,491	\$0	\$0	\$0	\$0	\$0	\$14	\$700	\$0	\$0	\$0	\$9,438
PW	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
RI	\$1,189	\$0	\$391	\$141	\$0	\$0	\$0	\$0	\$46	\$3,083	\$0	\$0	\$0	\$4,850
SC	\$6,059	\$2,379	\$1,736	\$281	\$0	\$0	\$0	\$0	\$86	\$2,050	\$0	\$908	\$0	\$13,499
SD	\$3,887	\$0	\$467	\$281	\$0	\$0	\$184	\$0	\$46	\$700	\$0	\$0	\$720	\$6,285
TN	\$9,319	\$3,845	\$2,194	\$141	\$0	\$0	\$184	\$0	\$87	\$3,557	\$0	\$1,132	\$0	\$20,459
TX	\$14,094	\$6,148	\$4,792	\$361	\$0	\$0	\$184	\$297	\$112	\$4,218	\$0	\$1,570	\$0	\$31,776
UT	\$1,936	\$0	\$423	\$0	\$0	\$0	\$298	\$0	\$51	\$1,325	\$0	\$0	\$0	\$4,033
VA	\$7,731	\$3,194	\$1,894	\$281	\$0	\$0	\$184	\$0	\$99	\$3,426	\$0	\$1,031	\$0	\$17,840
VI	\$1,837	\$0	\$103	\$0	\$0	\$0	\$0	\$0	\$14	\$500	\$0	\$0	\$0	\$2,454
VT	\$2,004	\$0	\$322	\$141	\$0	\$0	\$0	\$794	\$46	\$1,094	\$0	\$0	\$0	\$4,401
WA	\$4,624	\$0	\$827	\$142	\$0	\$187	\$184	\$0	\$84	\$12,247	\$0	\$0	\$240	\$18,535
WI	\$9,573	\$0	\$1,059	\$301	\$0	\$91	\$184	\$300	\$83	\$2,213	\$0	\$0	\$480	\$14,284
WV	\$4,418	\$1,825	\$1,145	\$0	\$0	\$0	\$0	\$0	\$70	\$2,213	\$0	\$858	\$0	\$10,529
WY	\$1,782	\$0	\$278	\$0	\$0	\$95	\$0	\$0	\$48	\$1,400	\$0	\$0	\$0	\$3,603
FED ADMIN DIRECT	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$7,790
FED ADMIN	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$18,344
TOTAL	\$304,447	\$59,522	\$69,403	\$8,052	\$3,408	\$3,076	\$4,803	\$10,001	\$3,592	\$226,122	\$4,001	\$19,681	\$8,160	\$750,402

Table NIFA-15. Geographic Breakdown of Obligations and FTE (thousands of dollars, FTE)

FISCAL YEAR 2022

DISTRIBUTION OF FEDERAL PAYMENTS FOR EXTENSION ACTIVITIES

	SMITH-LEVER FORMULA	1890S AND TUSKEGEE	EFNEP	CHILDREN, YOUTH, AND FAMILIES AT RISK	NEW TECH AT AG EXT	FED RECOGNIZED TRIBES EXT	FARMSAFETY & YOUTHED & CERT	FOOD SAFETY OUTREACH PROGRAM	RENEWABLE RESOURCES EXTENSION ACT	OTHER	RURAL HEALTH SAFETY ED PROGRAM	1890 FACILITIES	INDIAN TRIBAL 1994 COLLEGES	TOTAL
FEDERAL ADMINISTRATION	\$8,858	\$2,480	\$599	\$336	\$142	\$128	\$200	\$400	\$162	\$11,883	\$160	\$860	\$340	\$26,548
UNDISTRIBUTED BALANCE	\$306,143	\$59,520	\$69,401	\$8,059	\$3,408	\$3,072	\$4,800	\$9,600	\$3,898	\$97,128	\$3,840	\$20,640	\$8,160	\$597,669
TOTAL OBLIGATIONS	\$315,001	\$62,000	\$70,000	\$8,395	\$3,550	\$3,200	\$5,000	\$10,000	\$4,060	\$109,011	\$4,000	\$21,500	\$8,500	\$624,217

Table NIFA-16. Geographic Breakdown of Obligations and FTE (thousands of dollars, FTE)

FISCAL YEAR 2023

DISTRIBUTION OF FEDERAL PAYMENTS FOR EXTENSION ACTIVITIES

	SMITH-LEVER FORMULA	1890S AND TUSKEGEE	EFNEP	CHILDREN, YOUTH, AND FAMILIES AT RISK	NEW TECH AT AG EXT	FED RECOGNIZED TRIBES EXT	FARMSAFETY & YOUTHED & CERT	FOOD SAFETY OUTREACH PROGRAM	RENEWABLE RESOURCES EXTENSION ACT	OTHER	RURAL HEALTH SAFETY ED PROGRAM	1890 FACILITIES	INDIAN TRIBAL 1994 COLLEGES	TOTAL
FEDERAL ADMINISTRATION	\$8,857	\$2,600	\$599	\$354	\$120	\$308	\$200	\$400	\$164	\$9,092	\$160	\$860	\$760	\$24,474
UNDISTRIBUTED BALANCE	\$311,143	\$62,400	\$69,401	\$8,506	\$2,882	\$7,392	\$4,800	\$9,600	\$3,936	\$23,813	\$3,840	\$20,640	\$18,240	\$546,593
TOTAL OBLIGATIONS	\$320,000	\$65,000	\$70,000	\$8,860	\$3,002	\$7,700	\$5,000	\$10,000	\$4,100	\$32,905	\$4,000	\$21,500	\$19,000	\$571,067

2023 USDA Explanatory Notes – National Institute of Food and Agriculture

Table NIFA-17. Geographic Breakdown of Obligations and FTE (thousands of dollars, FTE)

FISCAL YEAR 2021

DISTRIBUTION OF FEDERAL PAYMENTS FOR INTEGRATED ACTIVITIES

STATE	FOOD AND AGRICULTURE DEFENSE INITIATIVE (FORMERLY HOMELAND SECURITY)	METHYL BROMIDE	ORGANIC TRANSITION - RISK ASSESSMENT	CROP PROTECTION/ PEST MANAGEMENT	REGIONAL RURAL DEVELOPMENT CENTERS	SPECIALTY CROP RESEARCH INITIATIVE	EMERGENCY CITRUS DISEASE RESEARCH AND DEVELOPMENT TRUST FUND	ORGANIC AGRICULTURAL RESEARCH AND EXTENSION INITIATIVE	TOTAL FEDERAL FUNDS
AK	\$0	\$0	\$0	\$132	\$0	\$0	\$0	\$0	\$132
AL	\$0	\$0	\$595	\$255	\$0	\$0	\$0	\$0	\$850
AR	\$0	\$0	\$0	\$180	\$0	\$0	\$0	\$456	\$636
AS	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
AZ	\$0	\$0	\$575	\$285	\$0	\$0	\$0	\$0	\$860
CA	\$943	\$0	\$0	\$1,770	\$0	\$7,324	\$5,000	\$49	\$15,086
CO	\$0	\$0	\$0	\$346	\$0	\$0	\$0	\$0	\$346
CT	\$0	\$0	\$0	\$198	\$0	\$0	\$0	\$0	\$198
DC	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$50	\$50
DE	\$0	\$0	\$0	\$203	\$0	\$0	\$0	\$0	\$203
FL	\$896	\$489	\$0	\$180	\$0	\$0	\$7,171	\$0	\$8,736
FM	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
GA	\$250	\$0	\$0	\$255	\$0	\$0	\$0	\$0	\$505
GU	\$0	\$0	\$0	\$15	\$0	\$0	\$0	\$0	\$15
HI	\$0	\$0	\$0	\$58	\$0	\$6,007	\$0	\$741	\$6,806
IA	\$250	\$0	\$0	\$598	\$0	\$50	\$0	\$4,267	\$5,165
ID	\$0	\$500	\$600	\$482	\$0	\$0	\$0	\$0	\$1,582
IL	\$0	\$0	\$0	\$205	\$0	\$7,527	\$0	\$0	\$7,732
IN	\$841	\$0	\$0	\$597	\$795	\$3,537	\$0	\$0	\$5,770
KS	\$797	\$500	\$0	\$200	\$0	\$0	\$0	\$50	\$1,547
KY	\$250	\$0	\$0	\$194	\$0	\$0	\$0	\$0	\$444
LA	\$250	\$0	\$0	\$435	\$0	\$0	\$0	\$0	\$685
MA	\$0	\$0	\$0	\$272	\$0	\$0	\$0	\$0	\$272
MD	\$0	\$0	\$0	\$760	\$0	\$0	\$0	\$0	\$760
ME	\$0	\$0	\$0	\$465	\$0	\$0	\$0	\$0	\$465
MH	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
MI	\$1,007	\$0	\$0	\$1,210	\$0	\$0	\$0	\$0	\$2,217
MN	\$250	\$0	\$0	\$225	\$0	\$8,000	\$0	\$1,434	\$9,909
MO	\$250	\$0	\$500	\$174	\$0	\$5,345	\$0	\$0	\$6,269
MP	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
MS	\$0	\$0	\$0	\$165	\$495	\$50	\$4,236	\$0	\$4,946
MT	\$0	\$0	\$0	\$255	\$0	\$0	\$0	\$0	\$255
NC	\$250	\$0	\$0	\$1,150	\$0	\$0	\$0	\$0	\$1,400
ND	\$0	\$466	\$600	\$720	\$0	\$10,306	\$0	\$1,300	\$13,392
NE	\$250	\$0	\$0	\$169	\$0	\$0	\$0	\$0	\$419
NH	\$0	\$0	\$0	\$170	\$0	\$0	\$0	\$0	\$170
NJ	\$0	\$0	\$0	\$173	\$0	\$4,000	\$0	\$0	\$4,173
NM	\$0	\$0	\$0	\$356	\$0	-\$648	\$0	\$0	-\$292
NV	\$0	\$0	\$0	\$136	\$0	\$0	\$0	\$0	\$136
NY	\$250	\$0	\$0	\$1,580	\$0	-\$812	\$0	\$3,446	\$4,464
OH	\$250	\$0	\$0	\$510	\$0	\$0	\$0	\$0	\$760
OK	\$0	\$0	\$0	\$380	\$0	\$0	\$0	\$0	\$380
OR	\$0	\$0	\$595	\$178	\$0	\$7,651	\$0	\$2,045	\$10,469
PA	\$0	\$0	\$0	\$803	\$494	\$3,796	\$0	\$3,000	\$8,093
PR	\$0	\$0	\$0	\$180	\$0	\$0	\$0	\$0	\$180
PW	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
RI	\$0	\$0	\$0	\$74	\$0	\$0	\$0	\$50	\$124
SC	\$0	\$0	\$1,100	\$169	\$0	\$50	\$0	\$1,278	\$2,597
SD	\$250	\$0	\$0	\$209	\$0	\$0	\$0	\$0	\$459
TN	\$0	\$0	\$455	\$225	\$0	\$0	\$0	\$0	\$680
TX	\$250	\$0	\$0	\$793	\$0	\$2,447	\$7,000	\$0	\$10,490
UT	\$0	\$0	\$0	\$143	\$495	\$1,969	\$0	\$0	\$2,607
VA	\$0	\$0	\$0	\$534	\$0	\$50	\$0	\$1,249	\$1,833
VI	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
VT	\$0	\$0	\$0	\$165	\$0	\$0	\$0	\$2,900	\$3,065
WA	\$250	\$0	\$0	\$250	\$0	\$8,570	\$0	\$1,546	\$10,616
WI	\$250	\$0	\$1,125	\$418	\$0	\$0	\$0	\$92	\$1,885
WV	\$0	\$0	\$0	\$55	\$0	\$0	\$0	\$0	\$55
WY	\$0	\$0	\$0	\$131	\$0	\$0	\$0	\$0	\$131
SBIR									\$0
BRA G									\$0
FED ADMIN DIRECT	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
FED ADMIN									\$4,644
TOTAL	\$7,984	\$1,955	\$6,145	\$19,785	\$2,279	\$75,219	\$23,407	\$23,953	\$165,371

Table NIFA-18. Geographic Breakdown of Obligations and FTE (thousands of dollars, FTE)

FISCAL YEAR 2022

DISTRIBUTION OF FEDERAL PAYMENTS FOR INTEGRATED PAYMENTS

	FOOD AND AGRICULTURE DEFENSE INITIATIVE (FORMERLY HOMELAND SECURITY)	METHYL BROMIDE	ORGANIC TRANSITION - RISK ASSESSMENT	CROP PROTECTION/ PEST MANAGEMENT	REGIONAL RURAL DEVELOPMENT CENTERS	SPECIALTY CROP RESEARCH INITIATIVE	EMERGENCY CITRUS DISEASE RESEARCH AND DEVELOPMENT TRUST FUND	ORGANIC AGRICULTURAL RESEARCH AND EXTENSION INITIATIVE	TOTAL FEDERAL FUNDS
SBIR	\$0	\$45	\$129	\$213	\$21	\$1,207	\$362	\$450	\$2,427
BIOTECH RISK	\$0	\$0	\$0	\$0	\$0	\$450	\$256	\$12	\$718
FEDERAL ADMINISTRATION UNDISTRIBUTED	\$320	\$80	\$280	\$800	\$80	\$3,018	\$943	\$189	\$5,710
BALANCE	\$7,680	\$1,875	\$6,591	\$18,987	\$1,899	\$70,765	\$22,013	\$27,640	\$157,450
TOTAL OBLIGATIONS	\$8,000	\$2,000	\$7,000	\$20,000	\$2,000	\$75,440	\$23,574	\$28,291	\$166,305

Table NIFA-19. Geographic Breakdown of Obligations and FTE (thousands of dollars, FTE)

FISCAL YEAR 2023

DISTRIBUTION OF FEDERAL PAYMENTS FOR INTEGRATED PAYMENTS

	FOOD AND AGRICULTURE DEFENSE INITIATIVE (FORMERLY HOMELAND SECURITY)	METHYL BROMIDE	ORGANIC TRANSITION - RISK ASSESSMENT	CROP PROTECTION/ PEST MANAGEMENT	REGIONAL RURAL DEVELOPMENT CENTERS	SPECIALTY CROP RESEARCH INITIATIVE	EMERGENCY CITRUS DISEASE RESEARCH AND DEVELOPMENT TRUST FUND	ORGANIC AGRICULTURAL RESEARCH AND EXTENSION INITIATIVE	TOTAL FEDERAL FUNDS
FEDERAL ADMINISTRATION UNDISTRIBUTED	\$320	\$80	\$280	\$800	\$80	\$3,018	\$943	\$1,886	\$7,407
BALANCE	\$7,680	\$1,920	\$6,720	\$19,200	\$1,920	\$72,422	\$22,632	\$45,264	\$177,758
TOTAL OBLIGATIONS	\$8,000	\$2,000	\$7,000	\$20,000	\$2,000	\$75,440	\$23,575	\$47,150	\$185,165

CLASSIFICATION BY OBJECTS

Table NIFA-20. Classification by Objects (thousands of Dollars)

Item No.	Item	2020 Actual	2021 Actual	2022 Estimated	2023 Estimated
	Personnel Compensation:				
	Washington D.C.	\$6,336	\$3,070	\$3,642	\$4,663
	Personnel Compensation, Field	8,989	22,727	32,440	34,518
11	Total personnel compensation	15,325	25,797	36,082	39,181
12	Personal benefits	8,306	10,414	13,107	14,607
13.0	Benefits for former personnel	1,083	-	-	-
	Total, personnel comp. and benefits	24,714	36,211	49,189	53,788
	Other Objects:				
21.0	Travel and transportation of persons	414	60	263	1,238
22.0	Transportation of things	625	170	446	500
23.1	Rental payments to GSA	2,097	1,334	82	1,100
23.2	Rental payments to others	-	-	-	-
23.3	Communications, utilities, and misc. charges	1,457	287	18	18
24.0	Printing and reproduction	135	23	26	26
25	Other contractual services	-	-	-	-
25.1	Advisory and assistance services	8,859	-	-	-
25.2	Other services from non-Federal sources	6,327	10,088	10,294	10,294
25.3	Other goods and services from Federal sources	5,307	1,971	2,011	2,011
25.4	Operation and maintenance of facilities	-	2,499	2,550	2,550
25.5	Research and development contracts	33,587	31,452	32,093	33,021
25.7	Operation and maintenance of equipment	-	185	189	189
26.0	Supplies and materials	61	28	123	200
31.0	Equipment	47	-	91	150
41.0	Grants, subsidies, and contributions	1,687,818	1,956,532	2,318,027	1,970,474
42.0	Insurance Claims and Indemnities	9	-	-	-
43.0	Interest and DividenDs				
	Total, Other Objects	1,746,743	2,004,629	2,366,213	2,021,771
99.9	Total, new obligations	1,771,457	2,040,840	2,415,402	2,075,559
	DHS Building Security Payments (included in 25.3)..	1,073	991	1,109	1,091
	Information Technology Investments:.....				
	Mission Area Non-Major Investment Totals.....	18,020	15,777	21,224	22,505
25.3	Mission Area WCF Transfers.....	2,323	2,991	2,513	2,501
	Total Non-Major Investment	20,343	18,768	23,737	25,006
	Total IT Investments.....	20,343	18,768	23,737	25,006
	Position Data:				
	Average Salary (dollars), ES Position	\$191,343	\$190,873	\$194,595	\$198,390
	Average Salary (dollars), GS Position	\$111,533	\$110,607	\$112,764	\$114,963
	Average Grade, GS Position	12.3	12.3	12.3	12.3

ADVERTISING EXPENDITURES

There are no contracts for advertising expenses to report.

STATUS OF PROGRAMS

Current Activities

Research and Education Activities

Selected Examples of Recent Progress

Hatch Capacity Program

Many agricultural communities depend on groundwater irrigation. Groundwater resources are finite, subject to depletion, and models on the economic impact of aquifer declines, often assuming irrigated cropland will transition to dryland crop production. Irrigation, however, allows crop production across a wider range of soils and climate conditions. Researchers at Colorado State University selected six counties in the High Plains Aquifer and modeled farm and community-scale economic outcomes (gross revenue and value added, respectively). They found that if the suitability of land use in going from irrigated to dryland production is not taken into account, the economic benefits of this transition can be overestimated by 12 – 45 percent. Community and regional land-use planning efforts should incorporate the possibility of transitioning irrigated cropland to uses other than dryland crop production, such as non-irrigated pasture production, which can have substantial ecological and economic benefits.

The AgroClimate project (<http://agroclimate.org/>) at the University of Florida develops new knowledge and decision support tools based on climate monitoring, short-term and seasonal forecasts, as well as long-term climate projections. Projects emphasize developing methodologies for monitoring and forecasting the effects of extreme events, such as droughts, extreme temperatures, and heavy rainfall, on crop development and yield, as well as on the occurrence of plant diseases. The main goal of this research is to explore alternative methodologies, including models and artificial intelligence, to calculate the most relevant climate indicators for agriculture and implement alert systems to inform farmers and agricultural managers about the potential effects of climate variability and change on crops. Ultimately, the intent is to help farmers reduce production risk and increase resource use efficiency and the profitability of their operations.

Food Safety

Production of safe, nutritious, affordable, and high-quality foods is a key component of the competitiveness of the U.S. livestock and poultry industry. Meat and poultry processors, chefs, and retailers all recognize that meat and poultry quality is a very important value trait for domestic and global customers who use fresh meat and raw materials for value-added products. Iowa State University is helping define reliable specifications for fresh meat products, novel non-meat ingredients, and reliable preservation methods, including identifying new uses and product streams from livestock and poultry and reducing the level of contamination on animal carcasses or processed meat products. Improved safety and shelf-life benefit American consumers and increase food and nutrition security by reducing waste and improving food quality and sustainability.

Nutrition

Mississippi State University is examining the implementation of federally funded child nutrition programs in Mississippi to understand the programs' roles in addressing food security. This work builds on complexity-aware methods and systems analysis framework to develop a food systems approach to child nutrition in Mississippi, maps actors engaged in child nutrition programs, resources available to these actors to improve food security, and relationships between them to further identify barriers for better food security from child nutrition programs.

Hatch Multistate Capacity Program

Collaboration between the Conservation Drainage Network and the North Central Extension and Research Activity (NCERA-217) produced new and effective drainage design and management options that reduce nutrient delivery to

our nation's waters, while maintaining high levels of crop productivity. In one case, members of the network studied the effectiveness of edge-of-field structures across the Midwest, New York, North Carolina, and Canada and worked with USDA-NRCS to establish Conservation Practice Standards (*Drainage Water Management*, *Saturated Buffer*, and *Denitrifying Bioreactor*) that detail Federal design specifications required for any cost-shared instance for a given practice and serves as a critical resource to consistently and effectively apply these practices across the country. With these standards, farmers can apply for cost-sharing with these practices, which dramatically increases producer interest.

The W4001 multistate research project (*Social, Economic and Environmental Causes and Consequences of Demographic Change in Rural America*) received the 2020 National Excellence in Multistate Research Award. This committee is dedicated to addressing rural population issues that matter to policy makers, communities, and local residents. The urgency of examining recent demographic trends in rural America is heightened by the economic shocks that have buffeted nonmetropolitan areas for more than 20 years. Physical and mental health are also affected by structural stressors and shocks, but they receive less attention than other measures of well-being in the rural social sciences. This project provided essential information about the effects of the COVID-19 pandemic on rural communities, guiding states' social distancing policies, resource allocations, testing, and reopening strategies, ultimately saving lives. W4001 researchers developed *COVID Crush* (a user-friendly model of disease transmission) and briefs on rural vulnerabilities related to age and chronic disease prevalence, disparities in testing and case and death counts, the spread of misinformation, and economic impacts. The project was the first to identify rising rural opioid overdose rates and explanations for those trends. This information shaped national legislation, influenced the design of an interactive data visualization tool that helps communities assess and respond to the overdose crisis, and led to rapid resource allocations.

Food Safety

The COVID-19 pandemic disrupted learning in higher educational institutions, but it also inspired innovations to create new opportunities and receptiveness to how we teach and learn. NC-1023, the multi-state project on Engineering for Food Safety and Quality, successfully broke the barriers caused by the pandemic and provided opportunities for students to interact with researchers from across the country through a new, online multi-institutional graduate course in food engineering. The online course provided unique opportunities for students to meet their peers and faculty from across the country, create a peer network of researchers and mentors to learn from their experiences, and build a sense of community. Their success in developing and delivering an online graduate course on advances in food engineering that enabled student and faculty engagement to 132 students at 12 universities was nominated for the NIFA Partnership Award in Mission Integration of Research, Education or Extension.

NCERA 215

The project, titled *Contribution of 4-H Participation to the Development of Social Capital Within Communities* strengthened the capacity of 4-H Youth Development and others to measure and communicate community and individual social capital change. The research methods and instruments developed by the team are making reliable information about social capital development available across the Extension system, helping address the need for more evidence-based programming in the areas of youth community engagement and citizenship.

McIntire Stennis

Managed forests generally produce high water quality, but degradation is possible via sedimentation. To mitigate harvesting effects on total watershed sediment yield, it is necessary to understand all the processes that contribute to these effects. Forest harvesting best management practices focus on overland sediment sources, whereas in- and near-stream sources go unaddressed, although they can contribute substantially to sediment yield. University of Minnesota researchers proposed a new framework to classify forest harvesting effects on stream sediment yield according to their direct and indirect processes. Direct effects are caused by erosion and sediment delivery to surface water from overland sources (e.g., forest roads). Indirect effects are caused by a shift in hydrologic processes due to tree removal that accounts for increases in subsurface and surface flows to the stream such that alterations in water quality are not based on overland sediment delivery to the stream, but rather in-stream processes. Although the direct/indirect distinction is often implicit in forest hydrology studies, the researchers have formalized it as a

conceptual model to help identify primary drivers of sediment yield with forest harvesting in a range of landscapes.

Woody biomass generated from harvest and wildfire management activities is an underutilized renewable energy source. Underutilized woody biomass in forests increases wildfire vulnerability. Exploring new market opportunities for this biomass will support local energy economies and reduce the cost of wildfire management. One promising option is to use this woody biomass to heat public schools, however, lower prices of fossil fuels (e.g., natural gas), and additional socioeconomic, environmental, and policy factors must be considered. This study involving the University of Wisconsin, the Wisconsin Department of Natural Resources, and the Wisconsin Association of School Boards seeks to identify barriers and challenges to the adoption of wood energy for heating by Wisconsin Schools. A combination of school surveys, focus group discussions, and case studies were employed. School Districts reported that the most common energy requirements were 5,000,000 and 17,000,000 BTUs per month, which requires approximately 0.62 and 2.12 tons of green wood chips, respectively. Central and northern Wisconsin show the greatest promise of having had access to enough woody biomass residue to meet their heat energy demands for a full school year.

When wildland fires occur in recently planted or naturally regenerated forests, the impacts of those fires on the survival and future productivity of fire-damaged saplings of different species are not well understood. The University of Idaho's state-of-the-art fire combustion lab exposed saplings of different commercial forest species (Ponderosa pine, lodgepole pine, western larch) to known quantities of fire intensity. Results show that not all saplings die following a fire, although their growth is reduced for up to a year following fire and sapling growth declines proportionally to the fire intensity level. This research provides a science-based tool to help forecast how those saplings will react to fire.

Evans-Allen Capacity Program

Researchers at the University of Arkansas at Pine Bluff found that cover crops in rotation with sweet potato tended to increase soil organic matter, nitrate, and ammonium and established a link between cover crop types and mixtures and microbial communities that ultimately influences soil biological activity. Several cover crop mixtures such as radish-wheat, Austrian peas-wheat, and radish-rye were examined. There was a positive correlation between cover crops and total biomass, and individual cover crop species also favored certain microbial groups. For example, Arbuscular mycorrhizal (AM) fungi were lower under fallow and wheat-radish mix cover crops, while Non-AM fungi were positively associated with a peas-wheat mix cover crop. The inclusion of cover crop mixtures in crop rotations also produced an increase in gram-positive bacteria, after only one year. This discovery will help to enhance microbiome-mediated soil health through cover crop selection in conventionally tilled sweet potato cropping systems.

Foodies and health advocates have long known about the benefits of ginger. Researchers at North Carolina A&T State University are testing the viability of a market for U.S.-sourced, tissue culture-propagated ginger and want to bring ginger off the spice aisle and into more prominence as a niche specialty crop for North Carolina growers. The tissue-cultured ginger has shown great promise in the past two years of testing, demonstrating better disease resistance, significantly more vigorous and healthier growth, higher yield per cultivar, and an overall better consistency than seed-sprouted ginger. The amounts of the phytonutrients 6-gingerol and 6-shogaol were significantly higher, too, so tissue-cultured ginger may be healthier for consumers.

Sustainable Agriculture Research and Education Program

Leafroll virus is infecting California grapevines at an alarming rate due to an aggressive insect vector, the vine mealybug. Leafroll virus infections reduce crop yield and quality, decrease a vineyard's lifespan, and make the land less suitable for future grapevine plantings. Led by the Lodi, California Wine Commission, a team of farmers, assisted with *Sustainable Agriculture Research and Education Program* funding, practiced cooperative, regional mealybug biocontrol. Farmers used plant protectants that are safe for beneficials, beneficial insect releases, and applied a protective pheromone mating disruptor across five vineyards. This team of early-adopter-farmers has set an example for Lodi by demonstrating the environmental, social, and economic benefits of cooperatively using biocontrol to manage a threatening disease.

Cover crop acreage increased 50 percent nationwide from 2012 to 2017, according to the Census of Agriculture, but

in North Dakota, farmers have struggled to fit cover crops into their short growing season. With SARE support, partnerships with producers in the Red River Valley, where soil salinity is widespread, this project increased knowledge about how various cover crops perform in North Dakota. The team is well on its way to carrying out its primary goal: to create and share a body of knowledge about cover crops in North Dakota. They showed that cover crops can control weeds and support consistent soybean yields and weather challenges have helped them home in on the best time for seeding cover crops in North Dakota. Through dozens of workshops, publications, and videos, each project reached over 2,000 farmers and more than 300 professionals with cover crop information. Their Soil Sense podcast which was developed as part of this project has been listened to more than 109,000 times since July 2019 (<https://anchor.fm/soilsense>).

Minor Crop Pest Management Program (IR4)

Based on IR-4 data and/or submissions, EPA reviewed 22 chemistries in 2020 and established 107 tolerances that can support 573 new uses. The 573 new uses in 2020 bring the IR-4 57-year total of clearances to 21,932. There was also one emergency/time-limited tolerance set based on IR-4 preliminary data. There are approximately 190 active projects that will result in future registrations in 2021.

SP3014 is a new insecticide developed by SePro for controlling scales, mealybugs, and other insects on environmental horticulture crops. The IR-4 Project completed 22 crop safety trials on 16 environmental horticulture plant species or genera from 2018 to 2021. In these trials, all 16 species or genera exhibited minimal or no injury. One species (*Impatiens walleriana*) exhibited minimal or no injury in 3 trials and 15 species or genera exhibited minimal or no injury in the limited number of trials for each crop. When first registered, it may be possible to include these in the list of crops with no known adverse effects.

Small Business Innovation Research

As the world faces increased demand for food, it is imperative that resources like land, water, and fertilizers are managed proactively and optimally. Rapid soil testing will enable growers to be more proactive in soil treatment and efficient in their use of water and fertilizer inputs while protecting soil and water quality. Rapid, on-farm soil testing will enable highly localized and frequent measurements at a low cost and rapidly initiate any required intervention. In Phase I, Optimal Solutions, Inc. achieved a 1,000-times faster analysis cycle time at 10 percent of the cost of laboratory analysis using portable sensors and custom data processing algorithms. This allowed for 80 times as many soil tests per acre covering a wide range of soil properties. Resin from slash pine is a renewable and alternative source to petrochemicals for a variety of industrial, commercial, and household products. Historically, collecting and manufacturing products from slash pine gum resin was a significant industry in Georgia and the Southeastern United States and provided a substantial number of agricultural and manufacturing jobs. The U.S. produced 53 percent of the world's turpentine in 1937, and gum resin production peaked in 1949, after which the industry began a slow decline due to forest fires, petrochemicals, labor costs, and foreign competition. The last U.S. gum resin processing plant closed in 1991. Georgia currently has over 300 million slash pine trees suitable for tapping. New tariffs, gum resin import market volatility, and the push towards renewable, recyclable materials, and biofuels could mean a resurgence of the gum resin and turpentine industry in Georgia. Resin-tapping and collection automation is one option for addressing labor challenges and providing the U.S. with a competitive edge. B & L Naval Stores and Georgia Southern University found automated systems are feasible to replace the formerly labor-intensive process of tapping and collecting oleoresins from slash pine trees in a cost-effective way, by successfully integrating existing technologies (e.g., robotic arm, tool changer, tool gripper, machine vision system, a laser scanner, and GPS).

Symbrosia, Inc. aims to selectively breed the next generation of a promising new algal candidate for ruminant livestock feed. When supplemented at just 0.5 percent in cattle feed, red macroalgae *Asparagopsis taxiformis* can reduce methane emissions, a significant contributor to climate change, by over 90 percent reductions. In fact, livestock methane is one of the few greenhouse gas sources that still does not have an effective, commercialized, technical mitigation strategy. Additionally, *taxiformis* could improve livestock health by providing essential nutrients and minerals. Through the course of this SBIR Phase I program, Symbrosia, Inc., will breed resilient and high-yield lines of this marine algae to improve commercial feasibility and reduce implementation costs for those in agribusiness keen to reduce supply chain emissions. Key traits to be improved within the species include specific

yield at a variety of temperature thresholds and concentration of the active anti-methanogenic compounds in the tissue. Symbrosia, Inc., will commercialize resulting strains at Hawaii's facilities and provide seed to domestic partners for grow-out.

HaloFilm technology offers residual disinfection efficacy for up to 30 days when used in combination with a weekly application of a chlorine-based disinfectant, without the requirements for a major change in cleaning routines. This enables residual disinfection claims against bacteria and viruses on a wide range of surfaces. While commonly used chlorine-based disinfectants are highly effective in killing bacteria and viruses on surfaces, they do not protect surfaces after the initial disinfection, leaving surfaces susceptible to nearly immediate recontamination. SBIR funding supports investigations into production and product performance testing. Currently, in the US, Halomine, Inc has 15 employees, including microbiologists, chemists, and food safety and product engineers, performing the experimental work.

Ozone nanobubble technology will improve food-safety systems and extend product shelf-life of postharvest-washed fresh tree and pome fruits. Postharvest wash is a critical control point in fresh produce processing for reducing or eliminating pathogens and other field-acquired contaminations that can result in foodborne illness outbreaks or fungal infections that impact shelf-life. This project offers a cost-competitive, more effective alternative to the current postharvest wash method. The proposed technology installs directly into existing packing lines and uses ozone nanobubble-infused water to wash apples via application as a spray to the surface of the product or directly to the wash water in which the product is immersed. The high concentration ozone nanobubble wash water can destroy bacteria and other harmful pathogens on the surface of the product and in the wash water, effectively preventing cross-contamination.

Extension Activities

Selected Examples of Recent Progress

Renewable Resources Extension Act (RREA)

RREA activities are an integral component of renewable resource Extension programs at land-grant institutions. Many renewable resource Extension professionals have developed highly innovative and effective programs to get the most out of funds provided, and address RREA strategic issues. However, these successes are not generally known outside of their respective land-grant universities. A web-based conference series helped Extension professionals strengthen and/or create new networks of colleagues; develop regional and national collaborations addressing RREA strategic issues; and learn innovative approaches for stakeholder education and outreach. This 2021 series, now archived at <https://globalrangelands.org/rreasp/webinars>, was developed to increase capacity among renewable resource Extension professionals from the cross-pollination of ideas, approaches, technology use, and methodologies and will lead to more informed and better-served stakeholders and a stronger RREA program.

Rural Health and Safety Education (RHSE)

Food safety and security and animal welfare are increasing consumer concerns. Researchers and public health officials are focused on the use of antibiotics in agriculture and the human risk for acquiring antibiotic-resistant enteric bacteria through the food supply. If cattle are well-managed to better prevent common bacterial infections, then fewer antibiotics are required. Veterinarians trained in cattle health management can help farmers produce healthier cattle and provide guidance on responsible antibiotic use. Extension professionals at Mississippi State University have an ultimate goal: *change perceptions and behavior regarding responsible antibiotic use among our many stakeholders from producer to consumer*. They are leading an effort to beta test, with a small number of beef cattle producers, a smartphone application for capturing cattle health and performance data (iOS and Android operating systems) and a 4-H project booklet on animal care—both are complete, and in the hands of Extension agents across Mississippi.

University of the Virgin Islands (UVI) is leading a two-year pilot outreach program to inform the community of coronavirus by leveraging access and information in health to limit the spread. UVI Extension professionals are offering listening (counseling) sessions for agriculture, nutrition, food security through gardening and mental health to allow experts to talk about and listen to participants share about how they are dealing with COVID-19 as a disease, what they are doing to shelter in place, if they are accessing health services and how they are holding up as

far as mental health. FY 20 (Year 1) is the listen and learning stage; FY21 (Year 2) is actively engaging themselves, their families and sharing knowledge with others reducing stress and increasing participants' ability to grow foods they can eat that match their personal taste and preferences.

Food Safety Outreach Program

The discovery of novel bioactive natural products can lead to the identification of new pharmaceuticals and agricultural agents (i.e., herbicides and pesticides). University of Arizona scientists used plants and microorganisms (i.e., endophytic fungi and plants of the genus *Physalis*) from arid and semiarid environments and identified such natural products (NPs). They also characterized the enzymes and isolated the genes required for their biosynthesis. After determining the biological activity of NPs, the enzymes and their encoding genes will be used to change the chemical structures of these NPs into practical, safe, useful agents that will improve human health, agricultural productivity, and the safety of US produce.

Food Safety Modernization Act (FSMA) compliance is especially challenging for socially disadvantaged farmers, who may have language barriers, financial hardship, and limited education. Through the Food Safety Outreach Program, the University of California Cooperative Extension provides educational resources to this underserved population to assist with food safety Good Agricultural Practices, and FSMA recordkeeping requirements. UC does this through culturally appropriate workshops, farm visits, tailgate meetings, and one-on-one training and technical assistance.

Smith-Lever 3(d)

EFNEP

The COVID-19 pandemic completely disrupted community-based programs. The Expanded Food and Nutrition Education Program (EFNEP) pivoted to a virtual platform to provide much needed nutrition education to families and youth with limited financial resources. As an example, when COVID-19 forced a statewide shutdown in New York, programs were "re-imagined" using virtual technology and new partners. Libraries became one new recruiter and support for EFNEP programming. Preliminary FY 2021 data from Cornell University shows that although program reach was initially hampered, EFNEP's effectiveness continued. That is, 2,598 adults and 1,459 youth participated in EFNEP; an additional 8,387 family members were reached indirectly. Ninety four percent (94 percent) of adult program graduates reported at least one positive change in food group consumption, 97 percent reported making healthier food choices, and 92 percent reported having improved food shopping and preparation skills. Overall, EFNEP is reaching vulnerable populations and supporting increased food and nutrition security for improved health despite pandemic challenges.

The University of California Cooperative Extension (UCCE) and University of Nevada Cooperative Extension (UNCE) will integrate the 4-H Student Nutrition Advisory Councils (SNAC) Club program into communities in San Luis Obispo County (CA), El Dorado County (CA), and Clark County (NV) with SNAP-Ed eligible youth who qualify for free or reduced-price meals. This combined EFNEP program has established communication and support from their local school districts to host 4-H SNAC clubs in two of their elementary schools and middle schools in El Dorado County, and one elementary school in Clark County. Parents from the elementary PTAs have also been contacted to inform and gain their support about having 4-H SNAC on school campuses. Curricula have been reviewed and adapted for use with specific target audiences. Additionally, materials have been translated to be used in virtual/hybrid formats in response to shelter in place orders. A review of digital formats was conducted to determine which platforms will be adapted for regular school delivery. Many schools have not yet determined which platform they will use, but their program staff has reviewed several options and will align program delivery with the school's selection.

Children, Youth and Families at Risk (CYFAR)

The focus of this Colorado State University grant is a Two-Generation approach to building youth and family leadership and civic skills, to meet two important community needs: 1) building citizen communities in a positive, nonthreatening way, and 2) creating a community of trust that supports collaboration between formal leaders and families. In 2020 and 2021 their CYFAR project focused on building capacity to provide local training at two CYFAR sites, Sheridan and Longmont Colorado, by pivoting programs to be offered virtually and offering limited

short-term programming that focused on leadership development and parenting. They are transitioning from offering one-time training and group mentoring sessions focused on self-efficacy, leadership, and communication skills to offering our 20-week classes for parents and 6-week classes for youth in 2021/22.

The collaborative project between Oklahoma State University and Langston University, United We Can! (UWC) addresses three primary aims known to impact academic attainment and workforce preparation: 1) improving African American parental involvement in school, 2) building African American youth self-efficacy and social emotional learning, and 3) creating a sense of belonging among a group of positively focused African American peers and to a positive social institution (school). These aims are accomplished through six primary evidence-based activities: 1) five weekly educational workshops that increase parental involvement and teach youth entrepreneurship skills; 2) seven monthly Family Night booster sessions that enhance family cohesion and access to community resources; 3) weekly data-driven success coaching that provides youth with essential role models, teaches critical thinking, problem solving, goal setting, and empowers parental engagement; 4) monthly 4-H clubs for youth that build life-skills through continued entrepreneurship training and internships with local businesses; 5) eight weekly summer activities that enhance peer affiliations, culminating in an extended stay on the Oklahoma State University-Stillwater, and Langston University campuses to expose youth to career opportunities; and 6) the formation of a local project advisory committee to guide sustainability efforts.

Enhancing Agricultural Opportunities for Military Veterans (AgVets)

AgVets grants help transform veterans' military identity to that of a civilian member in farming and promote self-resiliency and well-being. Rogue Farm Corps' network of host farms and teaching farms across Oregon employ successful, holistic, diversified production and business practices to teach and mentor the next generation of farmers, including a Veteran Internship program. The Growing Veteran Agripreneurs Teaching Farm is a 1.3-acre plot at Oregon State University's Southern Oregon Research and Extension Center in Central Point, OR where up to ten Veterans are being trained annually.

The University of Mount Olive and NCSU NC Farm School collaborative AGVET project, encourages farm entry by removing initial barriers faced by the next generation of farmers by providing access to, 1) training, education, and technical assistance, 2) funding options and land acquisition, and 3) markets for trade, export, and exchange. Veterans Employment Base Camp and Organic Garden (VEBCOG) is collaborating with: NCSU NC Farm School; University of Mount Olive Incubator Farm; NC Cooperative Extension; and a variety of local farmers to network and increase the awareness of USDA programming that will improve their transition. With Cherry Point located in Craven County and Camp Lejeune in Onslow County, the area attracts veterans who are interested in local farming, who were stationed at one of the three Marine Corps bases. Of the more than 214,058 people living in the four counties, veterans and their families represent approximately 10 percent of the residents, a significant segment of the population. To meet the current demands for a skilled workforce, they teach economies of scale, which include cost advantages reaped by farms when production becomes efficient. Farms can achieve economies of scale by increasing production and lowering costs.

Farm and Ranch Stress Assistance Network

FRSAN plan is to establish a network that connects individuals who are engaged in farming, ranching, and other agriculture-related occupations to stress assistance programs. The term "farmer" is used in the broadest sense and may be interpreted to include agricultural farmers, ranchers, workers, business owners, and non-industrial private forest owners and managers.

Network members must initiate, expand, or sustain programs that provide professional agricultural behavioral health counseling and referral for other forms of assistance as necessary through: farm telephone helplines and websites; training, including training programs and workshops support groups; and outreach services and activities, including the dissemination of information and materials.

In FY20, USDA NIFA awarded three-year continuation awards totaling \$28.7 million to four regional entities to help ensure vulnerable agricultural producers and their families have increased options for access to supportive services where they live and work. The North Central Farm and Ranch Stress Assistance Center (NC FRSAC) is a 12-state collaborative effort led by the University of Illinois to provide stress assistance, management, and reduction

resources to agricultural communities. The NC FRSAC has successfully launched www.farmstress.org as a regional clearinghouse of farmer assistance programs, hotlines, and helplines.

All four regions have been assessing the impact of the COVID-19 pandemic on producers. A survey of Illinois farmers and agricultural stakeholders from April to July 2020 (in progress, not yet published) found that those who experienced anxiety or depression were less likely to follow certain CDC-recommended COVID-19 protective behaviors, and less likely to think certain CDC-recommended COVID-19 protective behaviors were effective. In open response questions, producers shared that disrupted supply chains, especially for those with livestock, created significant stress as did fluctuating commodity prices and a halt of sales of some agricultural products and markets. The suite of services offered through FRSAN to address COVID and other stress-inducing concerns include:

1. Farm telephone helplines and websites
2. Training, including training programs and workshops, for the following:
 - a. advocates for individuals who are engaged in farming, ranching, and other occupations relating to agriculture
 - b. other individuals and entities that may assist individuals who are engaged in farming, ranching, and other occupations relating to agriculture, and are in crisis
3. Support groups; and
4. Outreach services and activities, including the dissemination of information and materials.

All FY 2021 funds have been obligated to the regional leads with associated periods of performance between September 1, 2021, and August 31, 2022. The regional leads will continue to offer the suite of services listed above as reflected in their approved scopes of work.

In addition to the regional leads' FY 2021 obligated funds, the 50 State Departments of Agriculture (SDA) that requested funds authorized in Section 766 of Division M (Coronavirus Response and Relief Act, 2021) of the FY 2021 Consolidated Appropriations Act (H.R. 133) have received up to \$500,000 each to alleviate farm stress during a 12-month performance period September 1, 2021, to August 31, 2022. The SDAs are encouraged to establish sustainable collaborations with the regional leads and associated state entities. NIFA staff conducted an orientation session with the SDA project directors on September 1, 2021.

Integrated Activities

Selected Examples of Recent Progress

Regional Rural Development Centers (RRDCs)

The RRDCs are uniquely positioned to connect and support multi-state groups such as the National Extension Climate Initiative. Through this work, the RRDCs harness the capacity of the Land-grant's Cooperative Extension Service to address issues of climate change and sustainability and to reach rural audiences that have a long history of partnering with Extension.

The RRDCs leveraged their strong connection to the land-grant network of experts to foster the adoption of resilience-promoting strategies and to conduct real-time research on impacts and responses to the pandemic in several sectors. Findings from these rapid-response research and outreach efforts have led to the development of evidence-based response and recovery plans. In addition, the RRDCs lead or support research on the many facets of rural vitality, innovation, and economic resilience. The collective expertise of the RRDCs and their partners provides policy-relevant information to help guide economic recovery planning.

With leadership from the RRDCs, the Coming Together for Racial Understanding initiative, formed as a rapid response team by the Extension Committee on Organization and Policy in 2016, has since trained 80 Extension professionals from 29 states to help communities engage in civil dialogues around racial issues. The dialogue-to-change model is guiding positive change.

The Northeast Center for Rural Development continued the development of their COVID-19 Issues and Data Briefs series looking at the pandemic's food systems impacts. Findings from this and other work were shared with the Penn

State Ag Council, which comprises organizations, groups, and businesses that represent a strategic agricultural or related interest in Pennsylvania. The presentation, "*Resiliency Examined: An Overview of COVID-19 Impacts to U.S. Food Supply*" demonstrated disruptions that occurred, both for businesses and individuals, and that the food system accommodated pandemic-related shocks through supply-chain adjustments and short-term price increases. They showed that larger shocks came from the consumer/demand side than the agricultural worker/supply side. This research also showed that Pennsylvania food insufficiency reached a new high at the end of 2020, and there will be a forthcoming paper in the Journal of Agricultural and Resource Economics on the role of community food services in mitigating hunger during the pandemic. For these products, companion news releases are helping to disseminate findings to stakeholder groups and the public.

Food and Agriculture Defense Initiative (FADI)

National Animal Health Laboratory Network

In FY2021, the National Animal Health Laboratory Network (NAHLN) continued the critical work of providing essential and continuous animal disease surveillance, responding quickly to disease events, communicating diagnostic results rapidly, meeting diagnostic needs during disease outbreaks, and providing assistance for rapid recovery. The network provides testing for high consequence animal diseases, including African swine fever (ASF), chronic wasting disease, foot-and-mouth disease, and influenza. There are now 48 laboratories approved to test for ASF in foreign animal disease investigations. The laboratories have the capacity to run 86,000 PCR tests in 24 hours, and with pooling can test 430,500 animals in one day. Any presumptive positive animal samples identified in NAHLN laboratories are sent to the USDA-APHIS-VS National Veterinary Services Laboratories (NVSL) for confirmatory testing. NAHLN continued responding to the needs of the animal and public health community during the COVID-19 pandemic, with many NAHLN laboratories sharing equipment, reagents, and analysts with their public health laboratory partners. As of September 2021, the NAHLN laboratories had tested approximately 5.6 million human samples and over 10,000 animal samples. In FY2021, NAHLN had 32 Level 1 laboratories in 23 states, 22 Level 2 laboratories in 20 states, and 4 Level 3 laboratories. The NAHLN laboratories also completed the fourth year of their AMR pilot project, monitoring resistance in pathogens important for animals.

In 2021, The Rollins Animal Disease Diagnostic Laboratory continued to work to enhance their surveillance and diagnostic capabilities including for High consequence and foreign animal diseases. The laboratory is proficiency-tested for Health Level Seven messaging, is approved for African Swine Fever (ASF) surveillance testing, and works with the USDA and Swine Industry on preparations for disease outbreak testing. This laboratory conducted: 1) multiple foreign agricultural disease investigations due to the senecavirus; and 2) High consequence disease investigations with the poultry industry in North Carolina. Many instances of influenza were detected in a commercial turkey flock, and testing confirmed by National Veterinary Services Laboratories (NVSL) further characterized the virus as of Swine Origin. With the potential for migratory waterfowl spreading avian influenza (AI) in North Carolina, the laboratory has been enhancing AI testing capacity and readiness. The laboratory is actively conducting surveillance for Highly Pathogenic Avian Influenza and Exotic Newcastle Disease in domestic poultry.

National Plant Diagnostic Network

The National Plant Diagnostic Network (70 diagnostic labs in 50 states and four territories (Puerto Rico, US Virgin Islands, Guam, and American Samoa)), serves a diverse clientele on a wide array of plant health issues, and are at the heart of land-grant university extension mission to connect citizens with research-based information. A recent review identified current challenges in plant disease diagnostics, as well as diagnosticians' and administrators' perceptions of the many roles of plant diagnostic laboratories. Surveys of diagnosticians and administrators were conducted to understand the current climate on these topics. (Laura C. Iles *et al*, [Everything Is Faster: How Do Land-grant University-Based Plant Diagnostic Laboratories Keep Up with a Rapidly Changing World?](https://doi.org/10.1146/annurev-phyto-020620-102557) *Phytopathology*, 2021. 59:333–49 (<https://doi.org/10.1146/annurev-phyto-020620-102557>))

In FY21, NIFA provided funds to five regional NPDN hub labs in land-grant universities and the national data repository to support the functioning of a nationwide plant diagnostic network that aims to quickly detect and accurately identify plant pests and pathogens and safeguards agricultural productivity. The NPDN collaborated with over 70 diagnostic labs in 50 states and 4 territories (Puerto Rico, US Virgin Islands, Guam, and American Samoa).

The network continued to improve producer understanding and accessibility to diagnostic information on various tools (bioassay, conventional, molecular, serological, sequencing, and others) for routine pests and emerging and remerging threats to agriculture and food production.

In FY2021, NPDN laboratories tested well over 550,000 samples, including those for highly regulated pathogens, helping the timely implementation of management measures to minimize losses. The network worked closely with APHIS to provide surge capacity for regulated pests. Additionally, the NPDN was involved in 305 referred publications, 1,140 non-referred publications, and 759 presentations. The network reported the first occurrence of more than 300 pests/diseases in various states and territories, including several for the first time in the United States, such as the first report of *Beet curly top virus* in hemp in Nevada, *Cacao mild mosaic virus* in cacao in Florida and Puerto Rico, Coffee leaf rust in coffee in Hawaii, *Cotton leafroll dwarf virus* in cotton North Carolina and South Carolina, Gisborne cockroach in California, Hemlock woolly adelgid in Eastern Hemlock in Alabama, Plum bud gall mite in Oregon, *Phylloxera riley* in oak in Alabama, *Tomato brown rugose fruit virus* in tomato in Nebraska, *Turnip vein-clearing virus* in petunia in Kentucky, and *Wheat mosaic virus* in corn in Colorado.

Extension Disaster Education Network (EDEN)

EDEN gathered impacts of Extension's delivery of services in the wake of COVID-19; collecting 1160 entries on COVID-related programming and identifying innovative ways to deliver preexisting programming. EDEN used focus groups from across the nation to learn about regional priorities and current gaps that could inform priorities for the competitive grants program.

Floods are expanding and becoming more frequent in New York and the rest of the northeastern United States as climate change alters precipitation patterns and raises sea levels. Floods threaten households, businesses, and communities. Flood insurance is a key tool in responding to growing flood risk, enhancing resilience when floods occur by enabling property owners to recoup damage losses. However, households may avoid purchasing flood insurance or adopting other preparedness measures due to a lack of information, cognitive biases, poor understanding of flood risk or insurance options, limited resources, other priorities, or social norms. Rising insurance costs can also affect property values, degrade municipal tax rolls, and harm community vitality. This new project from Cornell University focuses on flood preparedness and insurance-related behavior in Hudson River municipalities, community workshops on flood preparedness, and the creation of research-based outreach programs on flood insurance for residents and local governments. They address a key gap in research on flood insurance in the U.S.

Crop Protection and Pest Management Program

The four regional integrated pest management (IPM) centers funded by the Crop Protection and Pest Management program have had a tremendous impact through their programs. For example, the North Central IPM Center supports the Crop Protection Network, which provides research-based IPM information to farmers and agricultural personnel. In 2020, CPN updated or published 13 publications, had more than 117,000 unique website page views, and had approximately 75,000 publication downloads. The Western IPM Center Signature Programs helped develop weather-based pest models growers nationwide use over 150,000 times a year to predict and prevent pest outbreaks, as well as an assessment tool that's documented significant pesticide reductions and hundreds of millions of dollars in savings from using IPM practices in cotton and other crops. The Southern Center offers pest reporting and prediction tools for 350 pests and diseases on 22 commodities including corn, soybean, and cucurbits.

Understanding the ecology of dense white-tailed deer populations in suburban landscapes is important for mitigating a variety of conflicts that arise with dense human populations, including zoonotic diseases and impacts to understory vegetation. The University of Maryland wildlife scientists collared white-tailed deer in highly suburban areas of Howard County, MD. High-resolution GPS data enabled the creation of an image of home ranges and provided deer speed, rates of activity, and proximity to residential buildings over time. Home ranges encompassed approximately 35 percent residential land and an average of 71 and 129 residential properties were found within female and male core ranges, respectively. Sex, time of day, and day of the year all influenced deer speed, activity, and proximity to residences. Deer moved into residential areas nightly, especially in winter, and exhibited bouts of increased speed and activity shortly after sunrise and sunset, though with distinctive seasonal changes. Variation in home ranges and movements may influence population management success and their work explores year-round periods of increased

risk of deer transporting ticks to residential areas. These findings support improved deer population management, efforts to limit human-wildlife conflict, and manage against the spread of ticks and tick-borne disease in suburban areas.

New York State is ranked fifth in the country for onion production, with an annual production of approximately 142,000 tons from 2,800/ha each year, with a value of \$46 M at the farm gate. A project at Cornell University will investigate forecasting models based on environmental conditions as a means of timing fungicide applications in onion crops more effectively, develop a better understanding of the biology of the fungus, *Stemphylium vesicarium*, that causes *Stemphylium* leaf blight of onion so that weak points in the lifecycle can be targeted by management strategies other than fungicides, and develop molecular tools to better monitor for, and advise growers of, the extent of fungicide resistance.

The most common cropping system in the semi-arid region of the Pacific Northwest (PNW), where low annual precipitation prevents alternative crops, is winter wheat followed by one year of fallow. To save water during the fallow period, weeds must be controlled with herbicides or tillage. One significant challenge to these cropping systems is the Russian thistle. A project at Montana State University will determine the biological and ecological factors that make Russian thistle a recurrent problem, demonstrate that reducing Russian thistle problems is possible by integrating practices that prevent Russian thistle plants from tumbling, and prove that Russian thistle infestations can be decreased more efficiently with a cooperative control effort. By improving integrated Russian thistle practices the project seeks to enhance the economic and environmental sustainability of dryland cropping systems in the PNW and similar semi-arid regions.

Mandatory Funds

Selected Examples of Recent Progress

Extension Risk Management Education (ERME)

The Northcentral ERME hosted by the University of Nebraska implemented a strategy that documents and communicates the impact of the program on *risk-management-education* stakeholders and the public. The current RFA funding opportunities were widely broadcast through the listserv and social media sources. The Center has an extensive online presence and staff led and participated in monthly conference calls, national committee meetings, and the annual ERME summer meeting. The Center staff represented the ERME program at multiple national meetings to provide information, network, and encourage applications to the ERME regional grants program from the broad, diverse agricultural audience in attendance. In September, Center staff managed a display at the National Association of County Agricultural Agents Annual Meeting and Professional Improvement Conference in Ft. Wayne, Indiana. In October, Center staff managed a display at the National Direct Agricultural Marketing Summit in Rosemont, Illinois. 12 success stories (from funding in previous years) that demonstrate risk management education results and the impacts of projects on producers across the region are now available and include projects in Illinois, Iowa, Nebraska, Michigan, and Minnesota. A Nebraska project was also recognized in the spring of 2021, as the region's outstanding project from the 2017 funding cycle. These stories are available at <https://ncerme.org/funding/success-stories/>.

Oklahoma agriculture endures economic burdens originating from depressed prices, weather, and other industry shocks. Oklahoma State University is focusing on assisting producers to mitigate the production and financial risks that have plagued Oklahoma agriculture for years. This assistance will come through education on the assortment of USDA insurance products available such as Multi-Peril Crop Insurance, Pasture, Rangeland, and Forage, Livestock Risk Protection, and the Noninsured Crop Disaster Program. The mix of presentations and experiential activities will provide knowledge of product options, the ability to apply it to their specific operation, and an understanding of how the investment will impact their operation. These lessons will strengthen their resilience to natural disasters, preserve equity positions and cash flow and provide a stronger financial base to build upon. There will be a minimum of 10 training activities for crop and livestock producers across Oklahoma, with the workshops tailored to that location's commodities. Working with the Oklahoma Women in Ag, Oklahoma Veteran Affairs, and various Native American tribal organizations, this proposal intends to target traditionally underserved Oklahoma producers.

Beginning Farmer and Rancher Development Program

The project included specialists from industry and Montana State University Extension specialists, and agendas and itineraries were created for the BeefMT (changed to RanchMT in 2021) program, and disseminated information via in-person workshops, virtual webinars, in-person case study visits to host ranches, and in-person industry trips. This combination of teaching techniques was the most effective for sharing/learning the wide variety of information necessary for ranch operations. During the planning for the RanchMT program, it was determined that more time was necessary for the formal housing of this statewide comprehensive program and members identified a three-year timeframe for Montana State University to create the space and capacity to house the RanchMT program. In the interim, Winnett ACES (Agricultural Community Enhancement and Sustainability) received funding from the World Wildlife Fund to implement a local, scaled-down version of RanchMT in the central Montana community.

The goal of the Community Involved in Sustaining Agriculture Project was to improve the sustainability and profitability of beginning farm businesses in Massachusetts by providing tailored technical assistance. The project served 521 beginning farmers in entrepreneurship and business training, financial and risk management training, diversification and marketing strategies. Activities included 81 workshops, 19 networking events, and 343 one-on-one assistance consultations, plus detailed program evaluation. Outcomes of these training culminated in 92 percent of participants (520/568 surveyed) moderately increased knowledge; 66 percent of participants (374/568 surveyed) substantially increased knowledge in the areas of marketing, business planning, financial analysis, diversification, or value-added production. At the end of the project, 119 farmers implemented a change (88 percent of the 134 respondents) and 23 participants have already seen an increase in their income by at least 5 percent (45 percent of the 51 respondents to this question). These outcomes will improve the economy and food security of the region.

Community Foods Projects

The Cheyenne River Youth Project (CRYP) is planning for food sovereignty and security on the Cheyenne River Lakota Sioux Reservation. The planning project aims at raising a new generation of youth who have the skills and knowledge to lead their Tribe toward a healthier and more sustainable future. Increased food production on the Cheyenne River reservation has the potential to create new local markets through the Tribe, schools and restaurants, and new businesses that will strengthen a local food system. The mission is to offer Lakota teens an opportunity to learn valuable and employable life and work skills, while increasing their knowledge of local and traditional food systems. CRYP's vision is for a localized food system powered by individuals growing, processing and trading their own food, including traditional Lakota foods like buffalo, chokecherries, timpsila, ceyaka and flat cedar tea, wasna, and Ba'Ba soup, to ensure food and nutrition security.

Food and Agriculture Service-learning Program

The Black North Carolina Youth Pipeline to Food and Agriculture-driven Health Improvement project seeks to create a mechanism to enhance the pipeline of African American youth who: 1) are connected to the historical and modern-day contributions of African American farmers; 2) understand and are connected to potential career paths in agriculture and nutrition in the food system, and 3) can apply increased nutrition literacy on food choices to invest in personal health. The historical context of today's African American food and farming traditions will be explored and used to teach students skills and strategies for healthy food and beverage choices. Children will be connected with African American role models who are working in agricultural, nutrition, and food system-related careers.

Organic Agriculture Research and Extension Initiative

The Organic Farming Research Foundation (OFRF) entered into a three-year cooperative agreement with NIFA. OFRF will analyze the Organic Agriculture Research and Extension Initiative (OREI) and Organic Transitions (ORG) funded projects by commodity, region, and research topics. OFRF will compare priorities identified in the 2016 and 2021 National Organic Research Agenda (NORA), summarize research findings on top challenges for farmers, and identify gaps and provide recommendations for organic research priorities. Research assessment will be conducted as it relates to climate mitigation, and how well OREI and ORG are serving 1890 historically Black Land-grant Universities (LGUs), 1994 Tribal LGUs, Hispanic-serving institutions, and Black, Indigenous, and People of Color NGOs. Additional activities, including the creation and dissemination of information sheets and webinars, will be part of the comprehensive external review of OREI and ORG projects.

A team of plant breeders led by Iowa State University is developing new field and sweet corn varieties for organic producers. The new varieties will be protected against transgene contamination, a major constraint in organic corn production. During the 2021 season, 38 of the 2nd cycle new lines (BS39-DH lines) were grown in Ames in 2-row plots. Lines were uniform, plant heights varying between 0.9 and 1.79 m, and flowering times were between 1273 to 1556 Growing Degree Days (GDD). These are very promising results and data from other sites are being analyzed. Crosses conducted between those lines will be sent to the winter nursery in Puerto Rico, and haploids induced. Haploids will be planted in Ames during the 2022 growing season to develop improved BS39-derived breeding materials. In 2021, this research team also tested six commercial organic field corn varieties (BR 54C27, BR 64K93, Prairie Hybrids 4211, Prairie Hybrids 5141, Viking 0.51-04, and Viking 0.74-10) using four on-farm sites. Mid-season commercial organic corn plant height varied across varieties and sites, with the Blue River 54C27 variety being tallest (273 cm), compared to the Prairie Hybrids 5141 variety (257 cm). These studies will be repeated in 2022.

Emergency Citrus Disease Research and Extension Program

The citrus industry producing orange juice and fresh fruit is threatened worldwide by a devastating bacterial disease, Huanglongbing (HLB), also known as citrus greening or CLas (*Candidatus Liberibacter asiaticus*). This disease threatens citrus production in the US, which is worth \$3 billion, and in Florida and California provides nearly 100,000 jobs. This bacterium is difficult to stop because it lives in the tree's circulatory system, just beneath the bark. The disease is carried by a flying insect, a psyllid that transmits the disease by feeding on the leaves of infected trees, ingesting the bacterium, and spreading it to the trees it feeds upon. A library of more than 150,000 isolated microbial strains is being searched for strains that could naturally control citrus greening. In addition, more than 200,000 synthetic compounds are being screened to determine if they can boost a plant's defense system in a manner similar to vaccines and protect against the disease. Implementing several approaches to controlling citrus greening can help in preventing HLB from developing immunity to therapies.

In FY21, an interdisciplinary team of researchers from USDA-ARS and AgroSource, Inc began developing a NON-GMO HLB treatment delivery system using a novel agrobacterium symbiont delivery method invented and patented by this team. Using plant cell culture/synthetic biology, a novel non-transgenic biomolecule delivery method was optimized for the continuous synthesis and delivery of molecules to protect trees in the field, for which proof-of-concept is now complete. Early field trials indicate that symbiont-treated HLB infected trees perform significantly better compared to non-treated trees. These symbionts also can produce therapeutic molecules via in vitro production systems which can then be harvested and used in direct plant applications. The team is working to improve protein in export and systemic movement from symbiont to the entire citrus tree. In 2022, the team will continue to evaluate the in-field effect of symbionts on citrus performance. Ultimately this research aims to develop an affordable and environmentally friendly biological therapeutic plant production system targeting HLB.

SMALL BUSINESS INNOVATION RESEARCH (SBIR) PROGRAM

The Small Business Innovation Research Act (SBIR), codified at §9 of the Small Business Act, 15 U.S.C. §638, was designed to strengthen the role of small, innovative firms in federally funded research and development. Under this program, the Small Business Act requires SBIR participating agencies to allocate a certain percentage of its extramural R/R&D budget to fund small business R/R&D activities through the SBIR Program.

The National Defense Authorization Act for Fiscal Year 2017 (Public Law 114-328, §1834(a) Extension of SBIR and STTR programs) amended the SBIR Small Business Act (15 U.S.C. 638) and extended its implementation through September 30, 2022. The act mandates that not less than 3.2 percent of federal agency expenditures in budget years FY 2017, and each fiscal year thereafter, which has an extramural budget for research and development funds, are set-aside and used to fund the SBIR program.

Table NIFA-20. Funding for SBIR by Agency (thousands of dollars)

Agency	2020	2021	2022	2023
Agricultural Research Service	\$ 3,421	\$ 4,413	\$ 5,452	\$ 5,452
Animal and Plant Health Inspection Service	50	31	31	31

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National Institute of Food and Agriculture	25,480	21,033	23,774	30,890
Economic Research Service	130	152	152	152
Forest Service	927	1,182	838	838
National Agriculture Statistics Service	32	22	25	25
Total	30,040	26,833	30,272	37,388

Note: Estimates are provided for 2022 and 2023. A report to the Small Business Administration for planned investments in 2021 and 2022 will be updated based on final appropriations.

The staff functions of USDA’s SBIR program 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 enhance the protection of the Nation’s forested lands and forest resources and help to ensure the continued existence of healthy and productive forest ecosystems.
2. Plant Production and Protection – Biology. Research proposals are solicited that employ biological 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 reliable and safe supply of animal protein and other animal products while conserving resources and reducing production costs.
4. Conservation of Natural Resources. Research proposals are solicited to develop technologies for the conservation of soil, water, air and other natural resources on landscapes that produce agricultural, natural and forest/rangeland goods and services.
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. Proposals are solicited to improve the quality of life in rural America by creating and commercializing technologies that address important economic and social development issues or challenges in rural America.
7. Aquaculture. Research proposals are solicited to develop new technologies that will enhance the knowledge and technology base necessary for the expansion of the domestic aquaculture industry.
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-size 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.

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 2014 Farm Bill. The scope of the final RFAs will depend upon the final levels of appropriations 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 new developments in science. For the most up-to-date AFRI RFA publication schedule, please refer to the NIFA website at: <https://nifa.usda.gov/afri-request-applications>.

The Expected FY 2023 RFA Publication Dates for AFRI are March 2022 for the Foundational and Applied Science RFA and the Sustainable Agricultural Systems RFA, and April 2022 for the Education and Workforce

Development RFA. NIFA will continue to release the Foundational and Applied Science RFA and the Education and Workforce Development RFA as single funding opportunity announcements for each respective program spanning two years of appropriations (i.e., FY 2022 and FY 2023). In contrast, the yearly Sustainable Agricultural Systems RFA will span a single year of appropriations to reflect the changing goals of the program. Funding amounts for AFRI reflect those amounts of appropriated funds anticipated for programs including interagency programs and legislative set-asides for programs such as the Small Business Innovation Research program, except where noted otherwise.

FY 2023 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: 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 (RFAs) with the Farm Bill priorities is described in this document.

Through AFRI, NIFA seeks to ensure our nation’s food security and safety by addressing challenges to U.S. agriculture, promoting America’s global competitive edge in agricultural exports, driving research and development to support rural economic development, and supporting the country’s investments in agricultural research, education, and extension. A major food systems challenge is the need to substantially increase food production, while reducing food waste and loss, and to ensure nutrition security for a burgeoning global population, projected to approach ten billion in just three decades. Increased domestic and global production of food, however, must occur on diminishing arable land and increasingly adverse impacts of climate change. Additionally, American agriculture will need to build upon its global competitive edge. A well-trained workforce and next generation of researchers are needed to meet these challenges posed by the ever-changing landscape of production agriculture. Transformation of agriculture in response to these challenges requires ethical use of data and artificial intelligence (AI), scale-neutral technologies that support small, medium and large producers, and prudent management practices coupled with promotion of local and regional food systems and expansion of market opportunities for ensuring equity and access to historically underserved producers, communities and consumers.

AFRI supports the creation, delivery, and application of new knowledge in a broad range of agriculturally relevant areas, including sustainable livestock and crop production systems, farm profitability, resiliency of agriculture to impacts of climate change, water management, natural resources and the environment, rural development, human nutrition, food safety, and the food and agriculture workforce pipeline. These efforts are addressed through the three major components of AFRI including the Foundational and Applied Science Program, the Sustainable Agricultural Systems Program, and the Education and Workforce Development Program. Research, education, and extension efforts are supported by AFRI in the six priority areas established in the Farm Bill cited above.

Fundamental and applied research that aligns with the six Farm Bill priority areas is supported by the AFRI Foundational and Applied Science Program. The Foundational and Applied Science Program also funds several cross-cutting programs that support interdisciplinary work in two or more AFRI Farm Bill priorities to generate knowledge to position U.S. agriculture at the global forefront, including the Critical Agricultural Research and Extension (CARE) program area which is intended to result in rapidly-implementable solutions to critical problems faced by food producers and consumers.

Sustained funding for the Foundational and Applied Science Program will increase the funding rate (i.e., the number of grants awarded), especially for new investigators and minority-serving institutions, which is essential for continued development of the pipeline for the next generation of diverse scientists critical for maintaining a vigorous research enterprise in food and agricultural science. Discoveries made through research supported by

the Foundational and Applied Science Program, in turn, provide the knowledge base required for subsequent transformative future research, extension, and education programs at NIFA (including those in the AFRI Sustainable Agricultural Systems Program) that aim to solve problems in applied areas of the food and agricultural sciences. Additionally, discoveries derived from the Foundational and Applied Science Program often lead to innovations that are commercialized and drive local economic development. Additional high-priority science will be supported in collaboration with other Federal science agencies as well as international science agencies. These interagency programs are aligned with NIFA’s relevant programs aimed at developing the foundational knowledge needed to address challenges to the food and agriculture production system. In addition, interagency programs with science agencies in other countries provide an opportunity for NIFA to exert global leadership through the Agriculture Innovation Mission for Climate (<https://www.aimforclimate.org/>).

Through AFRI grants, NIFA will support the FY 2023 Administration priorities of addressing climate-smart agriculture and forestry practices, mitigation of agricultural greenhouse gas emissions, nutrition security, expanding markets for agricultural producers, and promoting prosperity in America’s historically underserved communities. NIFA will also incorporate the Administration’s priorities for research and development (<https://www.whitehouse.gov/wp-content/uploads/2021/07/M-21-32-Multi-Agency-Research-and-Development-Priorities-for-FY-2023-Budget-.pdf>). NIFA will use \$10 million to support the Administration’s efforts on Moonshot for Cancer through work on nutrition to reduce chronic disease, production of healthy foods that prevent or reduce the risk of cancer, creation of biobased agricultural products as anticancer supplements and treatment agents, and use of dual purpose with dual benefit studies in animals.

Agriculture and Food Research Initiative Requests for Applications

In FY 2023, the AFRI program will issue three Requests for Applications (RFA) to solicit new applications; the Foundational and Applied Science RFA, the Sustainable Agricultural Systems RFA, and the Education and Workforce Development RFA. All three of these RFAs collectively address the six AFRI priority areas established in the 2014 Farm Bill.

Table NIFA-21. Agriculture and Food Research Initiative Requests for Applications

FY 2023 Estimated	
Program	New Grant Awards
Agriculture and Food Research Initiative	\$564,000,000

The NIFA 2023 budget proposes to support the AFRI program at \$564,000,000, which includes:

- Development of climate-smart agriculture and forestry and carbon-neutral agricultural practices to support adaptation to climate change and to achieve net-zero greenhouse gas emissions by 2050 (EO 14008, <https://www.federalregister.gov/documents/2021/02/01/2021-02177/tackling-the-climate-crisis-at-home-and-abroad>)
- Support for understanding and using Indigenous Traditional Ecological Knowledge in a broad range of food and agricultural topics (<https://www.whitehouse.gov/wp-content/uploads/2021/11/111521-OSTP-CEQ-ITEK-Memo.pdf>)
- Development of rural circular economies through clean energy technologies and high-value biobased products from agricultural feedstocks
- Sustained investment in the Foundational and Applied Science Program, including continuation of the increased support for new investigators and increased award sizes commensurate with the scope of foundational work required including promoting equity and inclusion in the food and agricultural sciences, and increased investments in addressing challenges faced by historically underserved communities
- Investments in the Sustainable Agricultural Systems Program, to support innovative, transformative, integrated, and transdisciplinary systems-level approaches for development of sustainable production systems, climate-smart agriculture and forestry, carbon-neutral agricultural practices, and local and regional food systems for improved production, nutrition security, and equitable economic

development

- Investments in the Education and Workforce Development program for training and retraining of agricultural workers and the next generation of food and agricultural scientists, with special emphasis on historically underserved rural communities and use of technology
- Investments to enhance support for innovation, translation and entrepreneurship training, and support for historically underserved rural communities
- Sustained support for Plant and Animal Breeding, including adaption and resiliency to climate change through climate-smart agriculture and forestry
- Continued support for high priority areas including sustainable production agriculture, soil health, agricultural biosecurity, food and agricultural microbiomes, nanotechnology, food safety, water quality, food loss and waste, and pollinator health
- Continued fostering of interagency collaborations to leverage greater investment in food and agriculture-relevant areas of science, and to attract new communities of scientists to address challenging agricultural issues
- Support for the Moonshot for Cancer through work on nutrition, production of healthy foods, creation of biobased supplements and treatments agents, and dual purpose with dual benefit studies in animals.

AFRI Requests for Applications (RFA):

Foundational and Applied Science RFA | The AFRI Foundational and Applied Science RFA is organized by, and directly aligns with, the six priority areas established in the 2014 Farm Bill. The Foundational and Applied Science Program priorities are designed to include the scope of topics listed within each of the six AFRI priority areas established in the Farm Bill. NIFA will invest \$368,000,000 of appropriated AFRI funds to support *new* grants in the Foundational and Applied Science Program, as well as interagency programs. These investments will allow increased foundational efforts on mitigation of greenhouse gases, adaptation and resiliency of agricultural systems to climate change, as well as enhanced focus in promising new areas of agricultural science such as robotics, unmanned aerial systems, cyberphysical systems and application of big data. NIFA proposes to continue increased investments in the plant and animal breeding program area priorities that support classical breeding efforts to improve crop and animal productivity, local adaptation of cultivars and breeds, and development of public cultivars. Investments will also be made through interagency programs related to technology and data-driven solutions in agriculture such as the application of artificial intelligence to climate-smart agriculture and forestry and food system supply chains. To ensure American prosperity, additional investments will be made in emerging technologies such as gene editing for agricultural applications, autonomous systems and machine learning for agricultural applications, and production of new agriculture-based products, including clean energy. Enhanced investments will also foster research on agricultural biosecurity; precision livestock farming; the microbiome of foods, human gut, food animals, plants, and soils; food waste and loss; and on strategies to mitigate antimicrobial resistance. Increased funding for new investigators to support the next generation of scientists and educators will ensure America's food security, as well as its preeminence in the agricultural and food sciences. In FY 2023, the AFRI Foundation and Applied Science program will include the following additional goals:

- Improve mitigation, adaptation, and resiliency of agricultural systems to climate change in all program areas and cross-cutting programs
- Enhance capacity of diverse educational institutions, promote equity and inclusion, and serve historically underserved communities through increased proportion of Food and Agricultural Science Enhancement (FASE) awards
- Continuation of increased support for new investigators through awarding of New Investigator Seed Grants and more New Investigator Standard Grants
- Incorporation of Indigenous Traditional Ecological Knowledge in appropriate priority areas.

Table NIFA-22. Foundational and Applied Science RFA (thousands of dollars, FTE)

Request for Applications (RFA)	New Grant Awards
Foundational and Applied Science Program	\$368,000,000

Sustainable Agricultural Systems RFA | In FY 2023, NIFA will invest \$140,000,000 of appropriated funds in the AFRI Sustainable Agricultural Systems Program, which will build on advances made in research, education, and extension outcomes through the previous AFRI investments, and which will support the Administration’s climate crisis priorities that were presented in EO 14008, including development of climate-smart agriculture and forestry practices, carbon-neutral agricultural practices, and development of clean energy technologies to achieve net-zero emissions of greenhouse gases by 2050. The integrated transdisciplinary approach taken in the Sustainable Agricultural Systems Program will enable NIFA’s goal of advancing the convergence of agricultural and food sciences with engineering, social sciences, nanotechnology, computational sciences, and advanced manufacturing to generate new scientific discoveries, new products, new markets and, consequently, new high-skill jobs. These systems-level projects will marshal the many facets of the agricultural system, from farms to supply-chain businesses to consumers, to transform the way we produce, process, transport, and consume food. In doing so, it will address interrelated challenges of agricultural productivity, climate change, water quality and availability, food safety, environmental resilience, and nutrition security. Through investments in technology, data, and innovation, NIFA will catalyze transformative changes throughout U.S. agricultural systems and contribute to the following goals:

- Climate-Smart Agriculture and Forestry: Improve mitigation, adaptation, and resiliency of agricultural systems to climate change
- Creating more and better market opportunities in the food and agricultural sector, especially for socially disadvantaged and historically underserved producers and communities: these opportunities include high-value biobased products, circular agricultural economies, local and regional food systems, and use of scale-appropriate technologies and management practices.
- Nutrition Security: Enhance the contribution of food and agriculture to health of the nation through development, adoption, and application of new or existing technologies, tools, education, and other resources to ensure access to sufficient quantities of safe, nutritious, and affordable food
- Invest in systems-level Coordinated Agricultural Projects (CAPs) up to \$10 million per project, to generate transformative new scientific discoveries, new products, and new markets that will provide high-skill jobs and ensure America’s global leadership in agriculture
- Offer opportunities for mid-size integrated projects of up to \$5 million each that include Research, Education and Extension

Table NIFA-23. Sustainable Agricultural Systems RFA (thousands of dollars, FTE)

Request for Applications (RFA)	New Grant Awards
Sustainable Agricultural Systems Program	\$140,000,000

Education and Workforce Development RFA | NIFA will invest \$56,000,000 of appropriated AFRI funding in Education and Workforce Development for grants that focus on further enhancing three distinct components of the pipeline for developing the workforce in the food and agricultural sciences. The first component is enhancing agricultural and climate literacy through institutional grants to help increase knowledge of food and agricultural sciences in K-14 teachers and administrators and helping them develop improved curricula to train the food and agricultural workforce of the future. This will also include training or retraining of agricultural workers for the new economy to create a technology and data-savvy workforce that is ready for the field or industrial jobs. The second component is developing pathways for providing undergraduates in the food and agriculture sciences and related disciplines with the applied technical and leadership skills required for careers in agricultural sectors and farming enterprises or in graduate programs. Finally, the third component will advance science to support graduate and post-graduate education in food and agriculture, and related disciplines by

awarding pre- and post-doctoral fellowships. This investment will address the projected shortfalls in the availability of a qualified scientific workforce in food and agriculture in the United States. In FY 2023, the AFRI Workforce Development RFA will increase emphasis on:

- Workforce development at diverse educational institutions, promote equity and inclusion, and support historically underserved communities;
- Increase support for STEM education.

Table NIFA-24. Education and Workforce Development RFA

Request for Applications (RFA)	New Grant Awards
Education and Workforce Development Program	\$56,000,000

Table NIFA-25. Funding Allocations by Request for Applications for the FY 2023 President’s Budget for AFRI

FY 2023 President’s Budget	
Program	New Grant Awards
Agriculture and Food Research Initiative	\$564,000,000
Request for Applications	
Foundational and Applied Science Program ¹	\$368,000,000
Sustainable Agricultural Systems Program	\$140,000,000
Education and Workforce Development Program	\$56,000,000

¹ Funding for interagency programs is included within the Foundational and Applied Science Program, as appropriate.

Table NIFA-26. Estimated Funding Allocations by Farm Bill Priority Area for the FY 2023 President’s Budget for AFRI

FY 2023 President’s Budget				
Farm Bill Priority Area	Agriculture and Food Research Initiative	RFA Topic Area		
		Foundational and Applied Science	Sustainable Agricultural Systems	Education and Workforce Development
A. Plant Health and Production and Plant Products	20%	23%	13%	24%
B. Animal Health and Production and Animal Products	20%	21%	20%	20%
C. Food Safety, Nutrition, and Health	15%	14%	12%	18%
D. Bioenergy, Natural Resources, and Environment	18%	15%	29%	14%
E. Agriculture Systems and Technology	16%	17%	15%	14%
F. Agriculture Economics and Rural Communities	11%	10%	11%	10%

Table NIFA-27. Funding allocations by RFA for FY 2019 to FY 2021 Enacted, FY 2022 CR and FY 2023 President's Budget for AFRI

AFRI Program Areas	2019 Enacted	2020 Enacted	2021 Enacted	2022 CR	2023 President's Budget
Foundational and Applied Science Program	\$273,282,000	\$279,647,000	\$298,601,000	\$298,601,000	\$368,000,000
Sustainable Agricultural Systems Program	98,374,000	87,351,000	78,022,000	78,022,000	140,000,000
Education and Workforce Development Program	43,344,000	58,002,000	58,377,000	58,377,000	56,000,000
Total	415,000,000	425,000,000	435,000,000	435,000,000	564,000,000

OTHER COMPETITIVE PROGRAM RFAS

Non-AFRI competitive programs Requests for Application are listed below. FY 2022 estimates for discretionary funding are based on the Annualized FY 2022 Continuing Appropriations. Programs funded by mandatory funding are included based on the Agriculture Improvement Act of 2018 (2018 Farm Bill). FY 2022 and FY 2023 mandatory funding reflects the impact of a 5.7 percent sequestration reduction.

Table NIFA-28. Other Competitive Program RFAs

Program	Authority	Scope of RFA and Budget Justification	2022 Estimated Budget (\$000s)	2023 Estimated Budget (\$000s)	RFA Dates (Actual/ Estimated)
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	The FY 2022 RFAs will fund four regional centers and one national coordination center which were selected in FY 2018 through a rigorous competitive review process. The centers will emphasize innovative projects to help farmers and ranchers to adopt practices that are productive, profitable, environmentally sound, and enhance the quality of life for farmers and society as a whole. Proposals for projects are submitted by scientists at academic institutions, public and private sector agricultural professionals and directly by farmers and ranchers. To promote development of the next generation of agricultural scientists the SARE program has also pioneered accepting grant applications directly from graduate students in agricultural	\$40,000	\$60,000	2022: February 2022 2023: November-December 2023

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Program	Authority	Scope of RFA and Budget Justification	2022 Estimated Budget (\$000s)	2023 Estimated Budget (\$000s)	RFA Dates (Actual/Estimated)
		<p>discipline. Grants awarded by the four regional administrative councils will support applied projects that address crop and livestock production and marketing, stewardship of private lands, the rural economy, 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 2022 RFA will continue funding the centers for competitively reviewed projects to help farmers and ranchers.</p>			
Methyl Bromide	7 U.S.C. 7626	<p>The FY 2022 RFA focuses 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 and extension-only projects. The program focuses on integrated commercial and field-scale research on methyl bromide alternatives and associated extension activities that foster the adoption of these alternatives. The program will support new methodologies, technologies, strategies, and systems for controlling economically important pests for which methyl bromide has been the only effective pest control option.</p> <p>The FY 2023 RFA will consist of similar priorities to the FY 2022 RFA.</p>	\$2,000	\$2,000	<p>2022: February 2022</p> <p>2023: November-December 2023</p>
Minor Crop Pest Management	7 U.S.C. 3157(e)	The FY 2022 and FY 2023 RFA will focus on continued funding	\$11,913	\$20,000	2022: April 2022

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Program	Authority	Scope of RFA and Budget Justification	2022 Estimated Budget (\$000s)	2023 Estimated Budget (\$000s)	RFA Dates (Actual/ Estimated)
Program – Interregional Research Project #4 (IR-4)		for projects that provide safe, effective, and economical pest management solutions for minor agricultural uses and specialty crops. NIFA anticipates funding one national project that will consist of an administrative headquarters and four geographically based regional IR-4 centers (North Central, Northeastern, Southern, and Western). The funding period will be four years and the project will be funded as a continuation project.			2023: April 2023
Organic Transition Program (ORG)	7 U.S.C. 7626	The FY 2022 and FY 2023 RFAs will focus on the development and implementation of research, extension, and higher education programs to solve critical organic agriculture issues, priorities, or problems to improve the competitiveness of organic livestock and crop producers, as well as those who are adopting organic practices. Practices and systems to be addressed include those associated with organic crops, organic animal production, and organic systems that integrate crop and animal production. The program will focus on (1) Documenting and understanding the effects of organic practices on soil health and fertility, greenhouse gas mitigation, enhanced biodiversity, and understanding of weed, pest and disease dynamics for better management; (2) Developing improved technologies, methods, models, and metrics to document and optimize the ecosystem services and the climate variability adaptation and mitigation ability of organic crop, livestock, and integrated crop-livestock production systems; (3) Developing cultural practices and	\$7,000	\$7,000	2022: February 2022 2023: November-December 2023

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		<p>other allowable alternatives to substances recommended for removal from NOP’s National List of Allowed and Prohibited Substances; and (4) Overcoming barriers to organic transition.</p> <p>The FY 2023 RFA will include priorities similar to the FY 2022 priorities.</p>			
Crop Protection and Pest Management Program (CPPM)	7 U.S.C. 7626	<p>The purpose of the CPPM program is to address high priority issues related to pests including insects, nematodes, pathogens, weeds, and other pests and their management using integrated pest management (IPM) approaches at the state, regional and national levels. The CPPM program provides support for this activity through three linked program areas: the Applied Research and Development Program (ARDP) area, the Extension Implementation Program (EIP) area, and the Regional Coordination Program (RCP) area that emphasizes research and development for discovery of IPM knowledge; extension activities for IPM adoption and implementation; and enhanced coordination, collaboration and communications among related CPPM programs and awardees. The FY 2022 RFA will support competitive ARDP and EIP, and continuation RCP projects.</p> <p>The FY 2023 RFAs will focus on competitive ARDP and RCP, and continuation EIP projects.</p>	\$20,000	\$20,000	<p>2022: January 2022</p> <p>2023: November-December 2023</p>
Specialty Crop Research Initiative	7 U.S.C. 7632	The FY 2022 and FY 2023 RFAs will continue to give priority to projects that are multistate, multi-institutional, or trans-	\$75,440	\$75,440	2022: Pre-Application-November

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		disciplinary; and include explicit mechanisms to communicate results to producers and the public. It is also required that applications address one of the five legislatively mandated focus areas.			2022 2023: October-November 2023
Emergency Citrus Disease Research and Extension Program (ECDRE) Trust Fund	7 U.S.C. 7632(j)	7 U.S.C. 7632(j) authorizes the ECDRE Trust Fund to provide \$25,000,000 per year in mandatory funding for the program. The ECDRE program solicits proposals to develop effective tactics and strategies to control Huanglongbing (HLB) and its disease complex for financially sustainable citrus growth in the United States. All projects funded by the ECDRE program will incorporate collaborative approaches that utilize available knowledge to develop new solutions that can be deployed by growers to manage and prevent HLB infection in the near term. The FY 2022 and 2023 RFAs will support three types of projects designed to provide citrus growers with effective management strategies for citrus greening; applicants will decide which project type is best suited to the research and extension efforts they propose to undertake. Standard projects will support research and extension efforts focused on specific aspects of the disease organism or its insect vector. Cooperative agricultural projects will provide support to consortia or groups of qualified applicants with the expectation that they project will make significant contributions to the sustainability of the system or system component. A research and development coordination project will facilitate regional	\$23,575	\$23,575	2022: Pre-Application-February 2022 2023: November-December 2023

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Program	Authority	Scope of RFA and Budget Justification	2022 Estimated Budget (\$000s)	2023 Estimated Budget (\$000s)	RFA Dates (Actual/ Estimated)
		and national coordination of research and extension activities, assess the progress, and identify priority needs for future research and extension efforts.			
Beginning Farmer and Rancher Development Program (BFRDP) Mandatory Funds	Section 12301 of the 2018 Farm Bill; 7 U.S.C. 2279(d)	The FY 2022 and 2023 BFRDP RFAs will continue to focus on education and training through standard grants and educational enhancement grants with the reauthorized and new topics. At least five percent of funds will focus on training for Veteran Beginning Farmers and Ranchers (BFRs), and at least five percent of funds will focus on training for limited resource BFRs, socially disadvantaged BFRs, and farmworkers desiring to become BFRs. Criteria for consideration of waiving matching fund requirements will be included in the RFAs.	\$18,860	\$23,575	2022: February 2022 2023: November-December 2023
Discretionary Funding	7 U.S.C. 2279(d); Section 756 of the FY 2021 Omnibus and COVID Relief and Response Act	The FY 2022 RFA will address the same goals as described above for the BFRDP. The FY 2023 President’s budget does not include discretionary funds for this program.	\$2,500	\$0	2022: February 2022
Organic Agriculture Research and Extension Initiative (OREI)	7 U.S.C. 5925b	The FY 2022 and FY 2023 RFAs will focus on solving critical organic agricultural issues, priorities, or problems through the integration of research, education and extension activities in order to enhance the ability of producers and processors who have already adopted organic standards to grow and market high quality organic agricultural products. Priority concerns	\$28,290	\$47,150	2022: February 2022 2023: November-December 2023

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		<p>include biological, physical, and social sciences, including economics. The focus will be on the eight legislatively-defined goals: (1) Facilitating the development and improvement 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, marketing, food safety, socioeconomic conditions, and farm business management; (7) Examining optimal conservation, soil health, and environmental outcomes relating to organically produced agricultural product; and (8) Developing new and improved seed varieties that are particularly suited for organic agriculture.</p>			
<p>Scholarships for Students at 1890 Institutions</p> <p>Mandatory Funds</p>	<p>7 U.S.C. 3222a</p>	<p>The 2018 Farm Bill provided \$40 million to support the program, with up to \$10 million per year to be used for scholarships.</p> <p>Through the FY 2019 RFA, the program provides scholarships to outstanding students at 1890 institutions to pursue and complete baccalaureate degrees in the food and agriculture</p>	<p>(\$10,000 from carryover funds, 2019)</p>	<p>(\$10,000 from carryover funds 2019)</p>	<p>2022: April 2022 Continuation Awards</p> <p>2023: April 2023 Continuation Awards</p>

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		sciences and related fields that would lead to a highly skilled food and agricultural systems workforce.			
Scholarships for Students at 1890 Institutions Discretionary Funds	7 U.S.C. 3222a	Through the 2019 RFA, the program provide scholarships to outstanding students at 1890 institutions to pursue and complete baccalaureate degrees in the food and agricultural sciences and related fields that would lead to a highly skilled food and agricultural systems workforce.	\$10,000	\$10,000	2022: April 2022 Continuation Awards 2023: April 2023 Continuation Awards
Gus Schumacher Nutrition Incentive Program (GusNIP)	7 U.S.C. 7517	GusNIP brings together stakeholders from various parts of the food and healthcare systems to foster understanding of how they might improve the health and nutrition status of participating households. Funding for FY 2022 and FY 2023 will be used to: 1) support and evaluate projects intended to increase the purchase of fruits and vegetables by low-income consumers participating in the Supplemental Nutrition Assistance Program (SNAP) by providing incentives at the point of purchase; 2) demonstrate and evaluate the improvement of dietary health through increased consumption of fruits and vegetables, reduced individual and household food insecurity, and 3) provide training and technical assistance to applicants and grantees, facilitate growth in states with low participation as well as collect and aggregate core data from eligible entities through a central system to capture program success and identify best practices and areas to improve future efforts, on a broad scale.	\$49,979	\$52,808	2022: March 2022 2023: November-December 2023

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		<p>The FY22 and 23 RFAs will include language that selection for funding will be weighed in favor of proposals aligning with and advancing the GusNIP priorities, such as providing services to underserved communities. NIFA will focus promotion and outreach for GusNIP to states, tribal nations, SNAP recipients, vendors, and/or retailers that have not previously participated in GusNIP.</p> <p>The GusNIP grant program Nutrition Incentive Program Training, Technical Assistance, Evaluation and Information Centers (NTAE) cooperative agreement applicants will be invited again in FY 2022, when the current cooperative agreement ends.</p>			