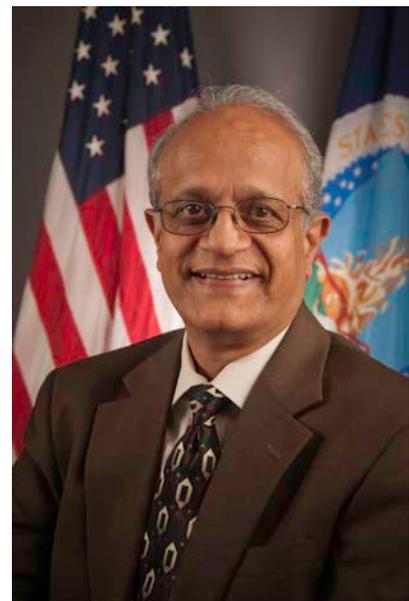


National Institute of Food and Agriculture: 2014 Annual Report

A message from Sonny Ramaswamy, Director, on the 2014 Report

I am pleased to introduce our 2014 NIFA Annual Report. This report provides a broad look at NIFA's science portfolios and initiatives, and describes how this agency is advancing agricultural science to solve societal challenges. This report supports our strong commitment to the American public, Congress, our land-grant university partners, stakeholders and other federal agencies to provide full transparency and increased accountability in the undertaking of our mission.



In alignment with Congressional priorities, USDA strategic objectives, and the Research, Education, and Economics mission area (REE) Action Plan, NIFA's focus is on solving our nation's most pressing food and agricultural challenges. Food production must increase by 70 percent or more to feed a global population that may exceed 9.5 billion by 2050. Today, about 14 percent of U.S. households are food insecure and do not have enough to eat on a daily basis; meanwhile, about one-third of U.S. adults (more than 72 million people) and 17 percent of children are obese. Nutritional deficiencies exist even when food is abundant and available.

NIFA is in a prime position to make the kind of investments needed to solve

these challenges. One of the hallmarks of NIFA funding is that it integrates the research, education, and extension functions. From my point of view, not only is this incredibly important as it ensures that science doesn't sit on a shelf, but rather, makes its way into the hands of the people who need it most: producers, families, state and local governments, decision-makers, etc.

This integration is leading to true innovations in agriculture.

For example, three large NIFA-funded Coordinated Agriculture Projects in California and Minnesota led research on developing new varieties of wheat and barley that are resistant to effects of climate change, such as drought. Through the integration of education and extension, these new varieties account for 20 percent of the harvested wheat acreage—worth approximately \$3.5 billion—and four percent of the harvested barley acreage in the United States. These projects are resulting in the training of 269 students, many of who will become the next generation of plant breeders in the United States. Through non-traditional classroom models, such as service learning, the next generation of leaders will be trained and capable of innovating and taking novel approaches to addressing society's problems.

There are, of course, countless other examples of how this tripartite model for undertaking science has proven effective, and I believe it is what makes NIFA unique among federal funding agencies. As I look back on 2014, the theme of "Innovation through Integration" comes to mind. NIFA has a lot to be proud of in 2014, and I am extremely proud of our dedicated staff for their hard work. Looking ahead, I am confident that NIFA's work will continue to drive groundbreaking innovations for food and agriculture that help us safely, securely, and sustainably feed a growing world.

A handwritten signature in black ink, appearing to read "Sonny Ramaswamy". The signature is fluid and cursive, with the first name "Sonny" and last name "Ramaswamy" clearly distinguishable.

Sonny Ramaswamy
Director

Overview

The U.S. Department of Agriculture's (USDA) National Institute of Food and Agriculture (NIFA) invests in the agricultural sciences to solve societal challenges related to food, agriculture, the environment, and communities. NIFA integrates research, education, and extension to ensure that innovative solutions to challenges go beyond the laboratory, into the classroom, and to people who can put the knowledge into practice.

Scientific advances resulting from NIFA-funded research—more than \$1.4 billion in fiscal year 2014—enhance the competitiveness of American agriculture, ensure the safety of the nation's food supply, improve the nutrition and health of the populace, sustain the environment and natural resources, and bolster the U.S. economy. NIFA's educational grants increase the capacity of institutions to educate the next generation of agricultural experts, while NIFA's investments in extension activities provide producers, communities, and families with practical information that can improve their lives.

The United States is expected to produce much of the food required to feed the projected growing global population. While this represents a great economic opportunity for U.S. agricultural and rural communities, producers of both food and non-food commodities struggle with static amounts of fertile land, unpredictable water supplies, and more frequent and extreme weather such as droughts and flooding. In addition, the number of farmers, extension educators, and scientists continues to decline, which creates a high demand for agricultural expertise.

NIFA's internal structure allows for the collaborative approaches necessary to provide direct funding and support to programs that address national and global challenges. The agency's four institutes, the Institute of Bioenergy, Climate Change, and Environment, the Institute of Food Production and Sustainability, the Institute of Food Safety and Nutrition, and Institute of Youth, Family, and Community, partner with institutions of higher education, other federal and state agencies, private sector businesses, non-profit organizations, international groups, and qualified individuals. NIFA's key partners are land-grant universities (LGUs), including the "1862" institutions, historically black "1890" institutions, and the tribal land-grant "1994" institutions, a total of 112 partner institutions; and partners with 101 Hispanic-serving Agricultural Colleges and Universities institutions. The Cooperative Extension System, working from land-grant institutions in each state, provides community services to bring science results directly to the regional and county level.

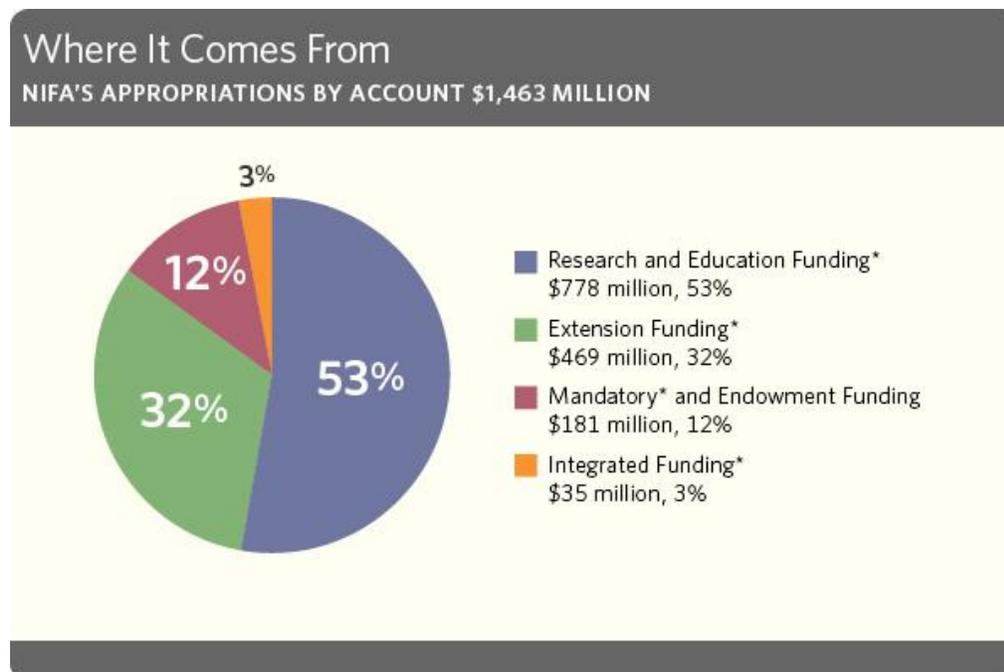
NIFA provides two types of federal financial assistance for more than 60 different programs. Competitive programs provide grants that address projects in six National Challenge Areas: food security, climate variability and change, water, bioenergy, childhood obesity, and food safety. Capacity and infrastructure grants help partner institutions maintain their ability to carry out research, education, and extension activities in the agricultural sciences. States

provide matching funds and submit project plans to NIFA every five years in an integrated Plan of Work. These non-competitive grants are directed by Congress to support designated institutions for topics of importance to a state or region.

Many projects use a systems approach, integrating research, education, and extension activities. This innovative approach to science ensures new discoveries get out of the laboratory and into the hands of those who can put them to work.

Our Programs - Brief Summary

In Fiscal Year (FY) 2014, NIFA funded 587 capacity and infrastructure awards for \$718 million.

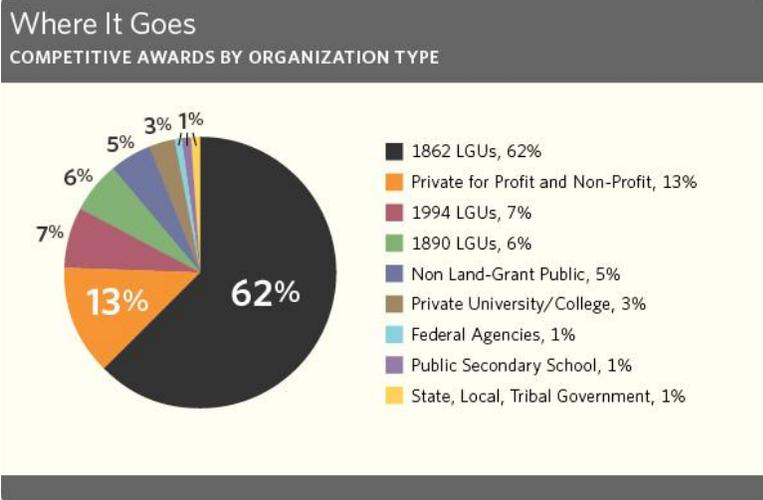


The Cooperative Extension Programs at 1862 land-grant institutions made 56 awards totaling almost \$285 million.

The Evans-Allen program funded 18 awards for more than \$49 million to carry out research at 1890 institutions.

Hatch Act awards totaled more than \$229 million for states and insular areas to conduct research at the 1862 land-grant colleges and universities.

In FY 2014, NIFA awarded 1,260 competitive awards totaling more than \$596 million. The Agriculture Food and Research Initiative (AFRI) is the nation's leading competitive agricultural grants program. In FY 2014, AFRI awarded 467 new grants totaling almost \$270 million with fiscal year appropriations, receiving more than 3,000 proposals of which more than half were recommended for funding.



The Integrated Research, Education, and Extension Competitive grants program awarded \$97 million to 133 projects, including the Water Quality, Organic Agricultural Research and Extension Initiative, Organic Transitions, Methyl Bromide Transitions, Crop protection and Pest Management, and Specialty Crop Research Initiative programs.

The Smith-Lever 3B, 3C, and 3D Programs awarded 168 projects totaling more than \$20 million for cooperative extension work.

Small Business Innovation Research (SBIR) awarded 102 projects totaling \$19 million to qualified small businesses to increase private sector commercialization of innovations supported by USDA research and development efforts.

Special Research Grants programs, including aquaculture research, IR-4 Minor Crop Pest Management, and potato research, awarded 12 projects for more than \$14 million.

Measure	Total NIFA	AFRI
Number of Requests for Applications (RFAs) [i]	64	6
Number of Applications Reviewed	6,316	3,151
Number of Peer Reviewers of Applications	1,210	508
Number of Application Reviews Submitted by Peer Reviewers	16,748	9,459 [ii]
Total Number of Students Reported to be Involved on Projects	3,047	1,907

Measure	Total NIFA	AFRI
Number of Undergraduate Students	957	601
Number of Graduate Students	1,418	908
Number of Post-Doctoral Students	672	398
Total Number of Capacity and Infrastructure Publications Reported	5,582	
Number of Capacity and Infrastructure Patents and Applications [iii]	503	
Total Number of Competitive Project Publications Reported	1,965	
Number of Competitive Program Patents Awarded	25	
Number of Competitive Program Patent Applications	41	

NIFA PORTFOLIOS

NIFA develops, delivers, and evaluates science objectives through 10 portfolios of science, education, and extension programs. These 10 science portfolios cover the following major topic areas:

1. Sustainable Agricultural Systems
2. Bioenergy
3. Climate Change
4. Education and Multicultural Systems
5. Environmental Systems
6. Family and Consumer Sciences
7. Food Safety
8. Human Nutrition
9. International Programs
10. Youth Development

Stakeholder input, portfolio planning, implementation, assessment, and communication of outcomes has allowed NIFA to continue its strategic investments that address important and urgent challenges for U.S. agriculture, natural resources, and food systems.

STRATEGIC PLAN

In 2014, NIFA published a new Strategic Plan that serves as the agency's "roadmap" for the next five years, keeping us focused on our mission and vision by

incorporating four major goals into how we plan programs, invest resources, and cultivate partnerships with stakeholders. These goals are:

- Goal 1 - Science: **Catalyze exemplary and relevant research, education and extension programs.**
- Goal 2 - People: **Transform NIFA into a model agency with a highly motivated workforce.**
- Goal 3 - Process: **Institutionalize streamlined, effective technologies, policies, and processes.**
- Goal 4 - Communication: **Advance America's global preeminence in food and agricultural sciences.**

The Strategic Plan was developed taking into account the Presidential and Congressional priorities, stakeholder input, NIFA's portfolio assessments, other federal agencies, and professional organizations.

This annual report highlights NIFA's progress to meet the goals and objectives of the Strategic Plan.

[i] Includes Capacity and infrastructure, and Competitive

[ii] Estimated

[iii] Land-grant universities report all patents and patent applications partially supported by AREERA Capacity funds, which include matching funds from states, local, non-profit, and private funders.

Science

Goal: Catalyze exemplary and relevant research, education and extension programs.

- Building Capacity with Our Partners
- Farm Bill
- Agriculture Food and Research Initiative
- Small Business Innovation Research
- International Participation
- Sustainable Agricultural Systems
- Sustainable Agriculture
- Plant Production and Protection Systems
- Responding to Global Climate Change
- Environmental Systems
- Sustainable Bioenergy Systems
- The Food We Eat: Security and Hunger, Nutrition, and Safety
- Families and Consumers
- Agricultural and Science Education and Literacy
- Youth Development
- Partnerships



BUILDING CAPACITY WITH OUR PARTNERS

NIFA allocates funds to eligible partner institutions non-competitively via capacity and infrastructure programs. More about these laws and how NIFA manages each program is available in the Explanatory Notes from the NIFA Budget Office. NIFA scientists work across the agency to provide oversight and leadership for these programs to support our partners in the agricultural sciences, working with state agricultural experiment stations and other state institutions to meet regional and local needs.

FARM BILL

February 7 marked the first anniversary of the Agriculture Act of 2014, commonly known as the 2014 Farm Bill. NIFA made tremendous efforts in 2014 to implement the many provisions of relevance to the agency. For example, NIFA:

Total Capacity and Infrastructure Program Funding Reported Spent by States in 2014

Hatch	\$160,348,169
Hatch Multistate	\$53,557,206
Evans Allen	\$36,440,847
McIntire Stennis	\$28,120,179
Animal Health	\$3,348,565
Contracts, grants, and cooperative agreements	\$39,414,620

- Developed language for the new requirement for financial matching—monetary, in-kind, or both, from non-federal sources—of some competitive grant awards. Later Congressional action waived this new matching requirement on Agriculture and Food Research Initiative awards made with fiscal year 2015 and prior funds;
- Developed an online process for academic institutions to be designated as non-land grant colleges of agriculture;
- Welcomed three new land-grant institutions, including two 1994 institutions: College of the Muscogee Nation (Oklahoma) and Keweenaw Bay Ojibwa Community College (Michigan), and the 1890 LGU Central State University (Ohio); and
- Developed language to prioritize Centers of Excellence in many of its competitive grants programs for forthcoming requests for applications.

In addition, the 2014 Farm Bill reauthorized the mandatory programs, including the Specialty Crop Research Initiative (SCRI), the Organic Agriculture Research and Extension Initiative (OREI), the Beginning Farmer and Rancher Development Program (BFRDP), the Biomass Research and Development Initiative (BRDI), and the Biodiesel Fuel Education Program. As a consequence, \$120 million of funding was reinstated for these critical research and extension programs. NIFA launched a new \$35 million competitive grant program, the Food Insecurity Nutrition Incentive Program, which is intended to enhance the purchase and consumption of fresh fruits and vegetables by Supplemental Nutrition Assistance Program participants.

AGRICULTURE FOOD AND RESEARCH INITIATIVE

In FY 2014, NIFA received more than \$316 million in Congressional appropriations to award competitive grants through the Agriculture and Food Research Initiative (AFRI). AFRI addresses national agricultural and food challenges through the AFRI-legislated priority area categories, which are designated as the AFRI Challenge Areas and the AFRI Foundational Program. Within the framework of these challenge areas, AFRI provided funding to address four of the AFRI Challenge Areas in 2014 with new awards such as food security, water for agriculture, childhood obesity prevention, and food safety. AFRI also continued funding previous awards for climate variability and change, and sustainable bioenergy for previously-awarded Coordinated Agricultural Projects. More information about AFRI in FY 2014 can be found in the AFRI Annual Synopsis.

AFRI supports several types of grants: standard grants, Coordinated Agricultural Projects (CAPs), Food and Agricultural Science Enhancement (FASE) grants, and conference grants.

Standard grants may address a project through a single activity or integrate two of the three activities: research, education, or extension.

CAP grants must integrate two of these three possible research, education or extension activities. These CAP grants award larger amounts for integrated projects that bring scientists together, across scientific disciplines, to solve complex problems by initiating research in new multidisciplinary areas of science, technology, and engineering.

FASE grants help to enhance institutional capacity and attract new scientists into careers in high-priority areas of national need in agriculture, food, and environmental sciences. FASE grants also provide support for postdoctoral fellowships, new investigators, and project directors at small and mid-sized colleges and universities with limited institutional success, minority-serving institutions, or at degree-granting institutions and state agricultural experiment stations in states where institutions have been less successful in receiving AFRI funding (these states are identified by NIFA as Experimental Program to Stimulate Competitive Research—EPSCoR—states). In FY 2014, approximately nine percent of AFRI funds, totaling more than \$680,000, supported FASE grants. NIFA awarded 22 conference grants through AFRI programs.

Multidisciplinary research teams are a fundamental part of many standard grant awards and CAP grants. Multidisciplinary teams are conducting 74 percent of AFRI awards made in 2014. These AFRI-funded projects cross the boundaries of conventional science disciplines. The top three cross-cutting science subject areas supported in 2014 were crops, food sciences and human nutrition, and animals. Fifty-eight percent of AFRI funding in 2014 was for integrated projects.

SPOTLIGHT: AFRI Pine Genome Sequencing CAP

The AFRI Pine Genome Sequencing CAP is an example of the breakthroughs in science that result from NIFA-funded multidisciplinary research in both basic and applied biology. With complex genomes that are 10 times greater in size than the human genome, the pine genome had not been sequenced prior to this project. NIFA-funded scientists developed a protocol for extracting a single set of pine chromosomes (haploid DNA) from a single pine seed. They produced high quality genetic sequence data from this DNA by combining multiple sequencing technologies with advanced computational tools. The researchers have already applied their method to the loblolly pine, one of the most commercially important species in the southeastern United States where it dominates about 29 million acres of land.

NEW AFRI PROGRAMS

As part of its continuing effort to improve the AFRI program, NIFA seeks opportunities to focus on critical and emerging issues. In FY 2014, NIFA introduced three new programs - one new challenge area and two foundational programs.

- Water for Agriculture is a new AFRI challenge area that focuses on developing solutions for water management that link food, water, climate change, energy, and environmental issues. Researchers will use funds to develop management practices, technologies, and tools for farmers, ranchers, forest owners, and citizens to improve water resource quantity and quality.
- The Foundational Program now includes the Exploratory Grants Program(EGP) and the Critical Agricultural Research and Extension (CARE) program.
 - EGP is a small grants initiative designed to support the development of proof-of-concepts for new and untested ideas, including high-risk research.

- The CARE program addresses stakeholder concerns that agricultural production research is underfunded. This program focuses on short-term issues important to agricultural production. Funding supports projects that address critical and emerging needs.

NIFA awarded \$102 million for Foundational Programs during 2014, up from \$97 million in 2013.

SMALL BUSINESS INNOVATION RESEARCH

The Small Business Innovation Research (SBIR) program stimulates technological innovations in the private sector and strengthens the role of federal research and development in support of small businesses. The program fosters and encourages participation by women-owned and socially or economically disadvantaged small businesses.

NIFA manages 10 SBIR topic areas and 50 subtopics areas. Funding for this program comes from a set-aside of all extramural research and development funds appropriated to the USDA each year. The three phases of this program help small businesses research and develop commercial solutions for agricultural issues:

- Phase I provides up to \$100,000 to successful applicants and to demonstrate the feasibility of a technology, product or service.
- Phase II projects offer up to \$500,000 to complete the research and development started in Phase I and move the technology, product or service to the marketplace, resulting in successful commercialization.
- Phase III is not funded by USDA, but successful Phase II grantees are encouraged to secure funding from personal, public, private, and state resources and investments to enable commercialization.

In 2014, NIFA awarded 76 SBIR Phase I projects for more than \$7.5 million and 26 Phase II SBIR projects for more than \$11.4 million. Recipients included six socially and economically disadvantaged businesses, 13 that were designated by the U.S. Small Business Administration as “HUB Zone (link is external)” businesses, and 12 women-owned businesses.

SBIR recipient Eureka Genomics developed low-cost genetic services to determine parentage in cows. Their product offers an affordable method of genetic testing for livestock and animal research, helping producers to avoid the genetic causes of diseases and improve the overall animal health of cattle herds.

As evidence of the value of Eureka Genomics’ work, the company was recently bought by Affymetrix for \$15 million.

INTERNATIONAL PARTNERSHIPS

In addition to NIFA’s work across the nation, the agency’s Center for International Programs (CIP) leads efforts to forge new international partnerships, further internationalize NIFA’s competitive grant programs, and harness the

tremendous resources of the research, education, and extension community to address societal issues that transcend borders. In 2014, NIFA greatly expanded its international partnerships. For example:

- Language was added to all AFRI RFAs that allows U.S. applicants to partner internationally to reach program goals.
- NIFA worked closely with the United Kingdom's Biotechnology and Biological Sciences Research Council to jointly support animal disease research.
- NIFA partnered with the U.S.-Israel Binational Agricultural Research and Development Fund to support water management projects.

RESEARCH provides answers to complex issues facing our nation and the world.

EDUCATION strengthens schools and universities training the next generation of scientists, educators, producers, and citizens.

EXTENSION translates knowledge into innovations and solutions, and delivers to the people.

- The agency became a member of the Partnerships for Enhanced Engagement in Research program, which enables scientists from USAID-assisted countries to partner with U.S. scientists already receiving NIFA support.
- Through a partnership with USDA's Foreign Agricultural Service and the University, NIFA is helping to guide agricultural vocational education in Haiti.

NIFA also continued its work to expand global food security and nutrition efforts. This included:

- Collaborating with a consortium of U.S. land-grant universities to develop a more effective, demand-driven extension system in Afghanistan. The Afghanistan (AAEP), funded by USAID, trained 350 Afghan extension personnel who went on to positively impact more than 5,000 farmers and almost 300 women. In recognition of its achievements, AAEP received a Secretary's Honor Award in 2014.
- Collaborating with the 4-H program to initiate a whole government approach to international youth development and establish affiliate memberships for youth organizations in other countries.
- Through the Food Aid Nutrition Enhancement Program (FANEP), NIFA-funded scientists at the Center for Human Nutrition at the Johns Hopkins School of Public Health tested ready-to-use, fortified complementary food products for their impact on childhood growth and stunting in Bangladesh.
- In 2014, NIFA supported 28 international science and education projects focused on international partnerships with institutions in 21 countries.

SUSTAINABLE AGRICULTURAL SYSTEMS

NIFA manages seven programs within agricultural systems that address the human interaction between science, technology, and agriculture. These programs include the AgrAbility, Beginning Farmer and Rancher Development, Safety, Sustainable (SARE), Small Farms, and AFRI Foundation programs in Agricultural Systems & Technology and Agricultural Economics and Rural Communities. These programs integrate biological, physical, environmental, and socio-economic factors essential to successful production enterprises and viable rural communities. Funded projects improve economic opportunities and the quality of life for producers and consumers and help the public understand and appreciate the nation's agricultural systems. NIFA provides oversight for more than 350 capacity and infrastructure and 290 competitive projects that are essential to creating more successful production enterprises and building more vital rural communities within this area of science.

One of these programs, AgrAbility, supports both national projects and state and regional AgrAbility projects that enhance the quality of life for farmers, ranchers, and other agricultural workers with disabilities. Funded projects develop educational and assistance resources, such as new technologies and devices to reduce and eliminate obstacles that prevent success in agricultural occupations.

In 2014, NIFA funded 21 projects for more than \$4 million. The web-based National AgrAbility Toolbox - Assistive Technology Database reported 47,713 visits during 2014. State and regional AgrAbility projects served more than 1,100 farmers and ranchers with disabilities.

Even as the need to produce more to feed the world's growing population, the United States is facing a future shortage of agricultural producers – the average age of the American farmer is 58 years old, while the number of beginning farmers declined by 20 percent from 2007 to 2012. The Beginning Farmer and Rancher Development Program (BFRDP) trains, educates, and enhances the sustainability of the next generation of agricultural producers. To address this, NIFA funded 38 projects worth approximately \$19 million in BFRDP grants in 2014. Projects funded in 2014 contribute to providing assistance to 19,818 farmers and will help establish more than 2,800 farms, according to projections. Thirty-nine percent of these recipients indicated they would be supporting veteran audiences.

SUSTAINABLE AGRICULTURE

Sustainable agriculture integrates production practices that will, over the long term, satisfy human needs, enhance environmental quality, make the most efficient use of non-renewable resources, sustain the economic viability of farm operations, and enhance the quality of life for farmers and society as a whole. This is the focus of NIFA's Sustainable Agriculture Research and Education (SARE) program.

NIFA provided more than \$20 million in SARE funds in 2014 to conduct research in a variety of competitive grant programs administered by four regional centers across the nation. Grants were awarded to university researchers, graduate students, agricultural professionals, farmers and ranchers, and non-profit community-based organizations.

See SARE's Video



Dan Forgey talks about No-Till Farming at: <http://www.sare.org/Learning-Center/Multimedia/Videos-from-the-Field/No-Till-Farmer-Steward-of-the-Land>

Cover crops have been a primary focus for the SARE program. Between 1988 and 2014, SARE has invested more than \$6,500,000 in 138 individual cover crop research and extension projects. The SARE publication, *Managing Cover Crops Profitably* – now in its third edition with nearly 50,000 hard copies in circulation and approximately 9,000 free downloads per year--documents this effort. The 2012 Census of Agriculture reported that cover crops are in use on 10.3 million acres, which can partially be attributed to SARE's support for this transformative conservation practice. This is an increase from USDA's estimate of approximately three million acres in the prior decade.

PLANT PRODUCTION AND PROTECTION SYSTEMS

Farmers face the challenge of producing sufficient crops to meet growing consumer demand while maintaining the quality and quantity of resources for future generations. NIFA-funded work helps in this area by developing research-based technologies to help farmers increase productivity and improve pest management practices.

To improve crop production, NIFA programs build on basic plant biology within a systems framework by leveraging breeding, biotechnology, genomics, and organic systems to increase yield, improve quality, and build sustainability. NIFA's portfolio of programs in this area includes more than 710 capacity and infrastructure and 370 competitive grants that address the dual challenges of food security and sustainability.

The Specialty Crop Research Initiative (SCRI) addresses research and extension needs for specialty crops, from researching plant genetics to improving crop characteristics; identifying and addressing threats from pests and diseases; improving production and profitability; developing new production innovations and technologies; and developing methods to respond to food safety hazards. NIFA's SCRI program funded 23 projects for more than \$51 million in 2014.

The Organic Transitions program supports the development and implementation of integrated projects that will improve the competitiveness of organic livestock and crop producers. NIFA's Organic Transition program funded eight projects for more than \$3.7 million.

The Organic Agriculture Research and Extension Initiative (OREI) funds research, education, and extension projects that enhance the ability of certified organic farmers and processors to grow and market their products efficiently and effectively. NIFA funded 19 projects totaling almost \$19 million through OREI in 2014. Examples of funded projects through OREI include designing new farm equipment, breeding new varieties, developing new management practices, and developing marketing strategies and tools to support farm management.

The Biotechnology Risk Assessment Program (BRAG) supports the development of science for regulatory decisions and other USDA policies and programs related to biotechnology. BRAG-funded projects help answer questions relating to the environmental impacts of biotechnology-derived organisms, gene transfer to natural populations, and development of best management practices to reduce environmental risk. In 2014, NIFA funded nine projects totaling more than \$3 million in areas related to biotechnology in crops and forest systems. Notable projects include developing pollen containment strategies in poplar trees to prevent gene transfer and analyzing variation in visible traits associated with gene insertion techniques versus traditional mutational approaches.

The Alfalfa and Forage Research Program supports improvements in breeding, stand establishment, and persistence. Eight awards totaling more than \$1.2 million were made in 2014, the first year for this program. The potato and canola programs concentrate on breeding for development of new pest resistant, high quality varieties. Together, NIFA funded seven projects totaling more than \$2 million for these programs in 2014.

NIFA-supported research and extension programs also focus on the development of environmentally friendly and economically sustainable plant protection systems. These systems contribute to food security by protecting crops from damage caused by diseases, insects, mites, nematodes, weeds, and a variety of other pests. In 2014, NIFA managed 10 competitive grant programs that funded 143 competitive awards worth \$56 million, and four capacity and infrastructure programs with 122 awards totaling \$232 million. NIFA competitive programs in this area are pollinator research and animal systems.

Pollinators: NIFA-funded research is addressing the serious decline in the populations of honey bees and other pollinators. Managed bees pollinate more than 130 fruit and vegetable crops that serve as the foundation of a nutritious diet in the United States. As a result of research and extension efforts supported by NIFA and other agencies, beekeepers have new technologies to help them better diagnose diseases, pests, and select colony stock for traits to increase resistance and enhance the genetic diversity of colonies. Field surveys led to the identification of six best management practices used by successful beekeepers. By bridging the gap between research and practice, beekeepers report that there has been a shift in their ability to maintain the health of honeybee colonies. They now have access to vital bee health data and are better informed about best management practices that will keep their bees healthy.

Animal Systems: NIFA promotes the development of knowledge that enables animal production systems to be efficient, economically competitive, environmentally sound, and socially acceptable. NIFA's focus includes both animal health and animal production. NIFA-funded projects range from fundamental research to the on-farm application of new technologies and methods. Programs ensure quality, quantity, and diversity of animal products; improve security, safety, and resilience of the food supply; and improve competitiveness and sustainability of animal agriculture. NIFA manages more than 1,100 capacity and infrastructure and 430 competitive projects in this subject area.

Extension and integrated programs include the Food Animal Residue Avoidance Database and the Food and Agriculture Defense Initiative, which supports important agrosecurity efforts such as the National Animal Health Laboratory Network and the Extension Disaster Education Network. Interagency programs include Dual Purpose with Dual Benefit: Research in Biomedicine and Agriculture Using Agriculturally Important Domestic Species, and Ecology and Evolution of Infectious Disease. Capacity and infrastructure programs include the Animal Health and Disease Research program and projects under the Hatch and Smith-Lever funding authorities. Programs aim to increase knowledge and facilitate the development of improved resources for animal producers, such as breeding decision support systems; genetic resources for accelerated breeding; and better methods to detect, treat, and control high-impact animal diseases that affect agricultural animals.

The National Animal Nutrition Program, a National Research Support project, provides an integrated approach to leveraging information, educational tools, and enabling technologies for animal nutrition to facilitate high-priority research of agricultural animals. More than 1.5 million feed composition records are now publicly available and key nutrition modeling technologies are continually improving. The program is currently researching porcine reproductive and respiratory syndrome (PRRS) virus, which has caused more than \$580 million in annual losses.

NIFA also addresses agriculture's shortage of veterinary expertise in rural areas. The Veterinary helps qualified veterinarians repay a portion of the college debt they incurred in pursuit of their veterinary medicine degree – in exchange for their service in areas that have critical veterinary service shortages. In 2014, this program awarded more than \$4 million to recipients serving in 24 states. The average eligible debt of these recipients was \$111,547.

RESPONDING TO GLOBAL CLIMATE CHANGE

NIFA manages projects designed to provide agricultural producers, land managers, and decision makers the information, technologies, and decision-support tools they need to adapt to climate change. The U.S. Global Change Research Program's National discusses these vulnerabilities, which include temperature increases, more frequent heat waves, and intense precipitation leading to more frequent floods. Effects of these changes on agricultural production can include instability in food surplus and shortfalls where food insecurity is already a problem. NIFA provided oversight for more than 750 capacity and infrastructure and 290 competitive projects in this area of science during 2014.

NIFA's climate-related programs help production systems learn to cope and lessen climate change impacts through new knowledge and tools, such as improved forecasting tools to help predict impacts at scales useful to producers and landowners. Forecasts are also needed for indirect effects such as risk pathways for pests, vulnerability to diseases, and changing environments as extreme weather events alter the landscape for plants and animals. The AFRI Climate Variability and Change portfolio includes \$31 million in projects, continuing work awarded from previous years.

The Triticeae Coordinated Agricultural Project (T-CAP), the Wheat CAP, and Barley have used knowledge gained from the genomes of barley and wheat crops to develop improved varieties. Approximately 20 percent of the harvested wheat acreage—worth approximately \$3.5 billion—and four percent of the harvested barley acreage in the United States comes from varieties developed by these projects. These new varieties have traits that include improved disease resistance, nutritional value, yield, drought tolerance, and adaptability to a changing environment. The T-CAP team also created a toolbox to provide plant breeders with additional information so they can develop improved wheat and barley lines. Project investigators have mentored 108 undergraduate students, 136 graduate students, and 25 postdoctoral researchers.

ENVIRONMENTAL SYSTEMS

NIFA manages a diverse portfolio of natural resources programs, contributing expertise in air, water, and soil, with land use specialties in forest and rangeland watershed management, wildlife habitat, agriculture land conservation,

and agricultural waste management. NIFA provides oversight for more than 1,110 capacity and infrastructure projects and 400 competitive projects in this area.

Three competitive programs in the environmental systems area include:

- AFRI Water for Agriculture challenge area
- Bioenergy, Natural Resources, and Environment (BENRE)
- Small Business Innovation Research (SBIR) program

NIFA also administers projects for capacity and infrastructure programs, including:

- McIntire-Stennis
- Renewable Resources and Extension Act (RREA)

NIFA funded \$34 million in 2014 via the McIntire-Stennis Cooperative Forestry Research Program to provide support to 78 forestry research programs. This program increases evidence-based research to help in the production, protection, and utilization of forests and forestlands, and helps educate the next generation of forestry professionals.

TYPE	NUMBER OF AWARDS
1862 LGUs	54
1890 LGUs	13
Non-Land Grant Institutions	11

Nearly all seedlings of slash pine – a fast growing tree that produces high quality lumber for home construction – are planted in the southeastern United States and come from the cooperative breeding program at the University of Florida, funded by the McIntire-Stennis Cooperative Forestry Research Program. These seedlings are valued at \$600 million in generated revenue.

The Renewable Resources Extension Act (RREA) provides capacity and infrastructure funding to help 72 land-grant institutions develop forest and rangeland extension programs that support the needs of private forest and rangeland owners.

In 2014, RREA impacts included:

- 3,719 forest, rangeland, and wildlife businesses were created or expanded.
- 962 new jobs were created.
- \$153.7 million have been earned or saved by forest, rangeland and wildlife income-generating businesses.
- 5.1 million acres of forest and rangeland were managed to adapt to climate change.
- 33,000 forest and rangeland owners learned to develop a forest stewardship plan for their land.
- 12.5 million acres of forest and rangeland were improved by landowners who participated in RREA-funded programs.

WATER FOR AGRICULTURE

NIFA is working on strategies to conserve, protect, and repurpose water resources since agricultural producers use roughly 80 to 90 percent of the nation's total consumption of freshwater. Research is needed to help America's farmers and ranchers adapt and remain prosperous in light of changes in water quantity and quality.

NIFA is working with other federal agencies, state and local governments, and private sector groups to reduce demands on dwindling water supplies while still meeting agricultural, residential, environmental, and other water needs. In 2014, NIFA introduced a new challenge area in the AFRI program: Water for Agriculture. This new funding area – along with the National Integrated Water Quality Program (NIWQP) and the National Science Foundation (NSF) and NIFA joint Water Sustainability and Climate (WSC) program – aims to expand and improve irrigation systems, monitor soil moisture levels, and understand how stream flow and groundwater pumping interact.

NIFA provided more than \$15 million in 2014 for 25 water for agriculture projects.

Nitrogen loading from the atmosphere accounts for as much as one-third of the total nutrient load going to impaired surface waters. The National Atmospheric Deposition Program (NADP) provides an assessment tool to track total nitrogen deposition for the United States. NIFA supports and coordinates NADP's federal funding through its National Research Support Projects-3. Additionally, a new multi-state land-grant university science committee (SERA-46) will coordinate and facilitate the research and extension needs across 12 states to reduce nutrient loading from agricultural sources to the Mississippi River Basin.

SUSTAINABLE BIOENERGY SYSTEMS

NIFA supports the development of regional systems to produce sustainable, renewable bioenergy resources and biobased products that help grow the bioeconomy. NIFA provides oversight for more than 240 capacity and infrastructure projects and more than 250 competitive projects in this area. Competitive programs in 2014 included the Biodiesel Fuel Education Program (two projects totaling more than \$960,000); the Sun Grant program (one regional project totaling more than \$2.3 million); the Critical Agricultural Materials program (one project for more than \$1 million); and the Biomass Research and Development Initiative. The AFRI Sustainable Bioenergy program portfolio includes \$37 million in grants for continuation projects from previous years to build regional bioenergy systems.

SPOTLIGHT: The Northwest Advanced Renewables Alliance

The Northwest Advanced Renewables Alliance (NARA), one of seven AFRI regional bioenergy CAP grants, is working to convert wood waste to renewable aviation fuel. Their industrial partner, Gevo, adapted their Integrated Fermentation Technology and hydrocarbon technology to successfully convert waste wood complex sugars to Gevo's alcohol-to-jet-fuel. NARA's airline partner, Alaska Airlines, plans to fly a demonstration flight using 1,000 gallons of the alternative biofuel next year. Sustainable biofuels are critical in helping the airline industry reduce its carbon footprint and reduce dependence on fossil fuels.

THE FOOD WE EAT: SECURITY AND HUNGER, NUTRITION, AND SAFETY

FOOD INSECURITY AND HUNGER

Food insecure households are unable to obtain sufficient food to sustain normal eating patterns throughout the entire year. About 14 percent of American households experienced food insecurity or hunger during 2013.

Expanding local access to healthy foods is the focus of the Community Foods Project Competitive Grant program. This program fights food insecurity by linking local food systems together to meet the needs of low-income people and increase the self-reliance of communities.

In 2014, NIFA provided more than \$4.8 million to 23 projects in 16 states.

A project in Newark, Delaware, distributed approximately 45,000 pounds of reliable, fresh, local, affordable, and sustainable produce to low-income communities. The program distributed tokens to 100 families for use at the local farmer's market. In addition to introducing local farmers to the community, participating families ate more nutritious foods and farmers enjoyed greater sales.

NUTRITION

The Expanded Food and Nutrition Education Program (EFNEP) provides education about nutrition and physical activity to low-income families, especially those with young children. EFNEP educators are members of the communities they serve, trained and supervised by local professionals. Using hands-on teaching methods, they teach participants how to eat healthy, be more physically active, stretch their food dollars, handle food safely, and be more food secure. The program operates in more than 800 counties, reaching more than 500,000 people each year; about 72 percent of adult participants are from minority populations. In 2014, EFNEP provided more than \$67 million to 75 programs that worked directly with 121,850 adults and 392,563 children.

NIFA manages almost 220 capacity and infrastructure projects and more than 160 competitive projects designed to help Americans prevent the major causes of chronic diseases such as diabetes and hypertension through good nutrition and physical activity. The AFRI Childhood Obesity challenge area awarded \$25 million in 2014.

FOOD SAFETY

NIFA awarded more than \$31 million in 2014 to improve food safety and health. The U.S. food supply ranks among the safest in the world, but foodborne illness remains a problem. The CDC estimates that each year roughly 48 million people get sick, 128,000 are hospitalized, and 3,000 die from foodborne diseases.

NIFA provides oversight for more than 460 capacity and infrastructure and 260 competitive projects that address food safety challenges through basic and applied research, education and outreach, technological solutions, and collaborative approaches that facilitate rapid response to disease outbreaks. New AFRI awards in this area totaled \$21 million in 2014. Examples of funded projects include:

- Through AFRI, NIFA supports the Norovirus Collaborative for Outreach, Research, and Education (NoroCORE), a team of scientists from more than 18 institutions. During a norovirus outbreak in November 2014, the NoroCORE team identified the cause of the outbreak, traced the path of the virus back to its source, and stopped the illness from spreading any further.
- The Antimicrobial Resistance program awarded projects worth \$6.7 million to combat resistance through improved management and other tools in the food production system. The goal was to reduce the overall use of antimicrobials along the food chain and the risks associated with overuse, while ensuring the availability of tools necessary for food production.

- The Food Safety Modernization Act required many changes to operations for food producers. Researchers from seven institutions are collaborating to test, improve, and educate workers on thermal processes, a low-cost solution for making food safe. This project will help small- and medium-sized producers meet new FDA standards, which will ensure a safe food supply through preventative measures.
- The Nanotechnology program supports research that uses plant materials for new renewable technologies. For example, mesoporous carbon, which has pores between 2 and 50 nanometers, can be made from plant materials and absorb toxic substances. These materials also serve as a matrix for hydrogen storage in fuel cells, energy storage in lithium batteries, and supercapacitors.

FAMILIES AND CONSUMERS

NIFA recognizes that improving well-being and the quality of life for individuals and families leads to vibrant communities and a stronger nation. NIFA programs address critical issues related to child and family development, financial literacy, housing and environmental health, community resource and economic development, regional rural development, and risk management education. NIFA provides oversight for more than 300 capacity and infrastructure projects and more than 130 competitive projects in this area. Some impactful example of programs include:

- The Healthy Homes Partnership, a collaboration between NIFA, the Department of Housing and Urban Development, and the Cooperative Extension Service, provides education and outreach to help families learn key, overarching healthy homes principles: to keep homes dry, clean, well-ventilated, pest-free, free from contaminants, safe, and well-maintained.
- The Extension Disaster Education Network (EDEN) reduced the impact of disasters by providing science-based education on disasters. EDEN, through its network of delegates in each state, helps improve communities' abilities to prepare for, survive, respond to, and recover from disasters.
- The Regional Rural Development Centers (RRDCs) link federal agencies and collaborate on issues that span regions such as e-commerce; the changing interface between rural, suburban, and urban places; and workforce quality and jobs creation.

Extension Risk Management Education Centers trained 16,747 farm producers throughout the United States on production, marketing, financial, legal, and human risks.

The USDA and NIFA support the President's directive for a coordinated government-wide approach to supporting military families. The Department of Defense-USDA Partnership for Military Families strengthens community capacity to support military families; increase professional development and workforce development opportunities; and expand and strengthen family, child care, and youth development programs. In 2014, NIFA administered 31 projects with the Department of Defense totaling almost \$28 million through these partnerships.

AGRICULTURAL AND SCIENCE EDUCATION AND LITERACY

NIFA develops the next generation of food, agriculture, natural resources, and human scientists, leaders and professionals by investing in a variety of programs. In addition to the education portfolio, NIFA supports capacity and infrastructure building at minority-serving institutions to address their unique research and outreach needs. NIFA provided oversight for more than 70 capacity and infrastructure projects and more than 1,090 competitive projects in this area. The education portfolio investments target three goals: learning and engagement, workforce development and careers, and capacity and infrastructure building for minority-serving institutions. In 2014, NIFA funded approximately 300 grants through 20 grant programs and managed a portfolio worth approximately \$191.1 million. Some of the highlights are:

- NIFA supported 134 students directly through scholarships, fellowships, and assistantships and supported 32,312 students through recruitment programs, courses, and distance education.
- The National Agriculture in the Classroom (NAITCO) supports a network of state programs to increase agricultural literacy through K-12 education. NIFA provides program guidance and grants to NAITCO to develop and conduct programs and initiatives that meet the overall mission and goals for advancing agricultural literacy. Annually, NAITCO programs reach nearly 7 million students.

HUMAN CAPITAL FOR AGRICULTURE

In 2014, NIFA and Purdue University produced the 2015-2020 Agricultural Employment Outlook report. This report estimates there are 57,900 job openings available annually in food, agriculture, renewable natural resources, and environmental fields in the United States. However, on average, only 35,400 new graduates with a bachelor's degree or higher in those fields are expected. The resulting shortfall of 22,500 jobs are left to be filled by graduates of allied disciplines, including biological sciences, engineering, health sciences, business, and communication.

The AFRI Education and Literacy Initiative, formerly the AFRI Fellowship program, provides funding to advance the next generation of food and agricultural scientists through undergraduate, pre-, and postdoctoral fellowships. These fellowships target talented, highly motivated students who demonstrate potential to become exceptional education, extension, and research professionals in the United States. In 2014, this program awarded \$7 million in fellowship grants.

HONORING EXCELLENCE IN EDUCATION

NIFA works with the Association of Public and Land-Grant Universities (APLU) to administer the National Food and Agricultural Sciences Teaching, Extension, and Research Awards Program. This program recognizes excellence in teaching, extension, and research within U.S. colleges and universities. NIFA staff work with APLU to administer support for the Teaching Awards Program, which recognizes a select group of college and university teachers who demonstrate a positive impact on student learning through innovative teaching practices.

YOUTH DEVELOPMENT

NIFA programs strengthen and promote healthy youth leadership to develop young people into responsible citizens and agents of community change. NIFA helps youth meet the complex challenges of adolescence and supports their transition into adulthood through educational experiences, and experiential and inquiry-based learning; emerging research and policy highlight responsive and viable positive youth development. During 2014, NIFA provided oversight for more than 30 capacity and infrastructure projects and 80 competitive projects in this area.

4-H

4-H is the Cooperative Extension System's dynamic, research-based, non-formal educational program and organization for youth. The program combines the cooperative efforts of youth, volunteer leaders, state land-grant universities, state and local governments, and NIFA. 4-H programs are conducted in 3,143 counties and Washington, DC, in the United States, as well as in Puerto Rico, the Virgin Islands, Guam, American Samoa, Micronesia, and the Northern Mariana Islands.

4-H National Headquarters, located at NIFA, hosts the annual National 4-H Conference, the premier 4-H civic engagement national opportunity for youth. In 2014, 209 4-H'ers from the United States and Canada participated in the National 4-H Conference. During the conference, groups of 4-H'ers presented youth perspective briefings to officials from 11 federal agencies across Washington, DC. Topics included:

- New Farmers and Ranchers (Department of Agriculture)
- Distracted Driving (Department of Transportation)
- School Turnaround (Department of Education)
- Bullying Prevention (Department of Health and Human Services)
- Media-Smart Youth (Department of Health and Human Services)
- Climate Change (Department of Interior)
- Military Families (Department of Defense)

In 2014, 4-H engaged with eight stakeholder groups, seven private organizations, nine federal interagency working groups, and 24 federal agencies. Some impacts of 4-H partnerships include:

- In response to a large domestic outbreak of influenza H3N2v, primarily in areas where children had extended contact with swine during 4-H agricultural fairs, 4-H and the Centers for Disease Control and Prevention (CDC) created an interdisciplinary approach to prevent and respond to zoonotic disease.
- Media-Smart Youth (MSY) Teen Leaders Program is a 10-lesson curriculum for youth ages 11 to 13 that explores media, nutrition, and physical activity. MSY teen leaders commit to carrying out the program from start to finish. In return, they receive leadership experience, community service hours, and recognition from NIH, plus training and funding for program expenses.
- The "Stop.Think.Connect." Campaign by the Department of Homeland Security (DHS) is a national public awareness campaign to increase the understanding of cyber threats and empower people to be safer and more secure online. A partnership between DHS and 4-H National Headquarters makes a variety of

online safety and cyber-bullying resources available to 4-H groups for meetings and workshops.

CHILDREN, YOUTH, AND FAMILIES AT RISK

The Children, Youth, and Families at Risk (CYFAR) program is based on research on effective programs for at-risk youth and families and of working across the lifespan in the context of family and community. To assure that critical needs of children and families are met, CYFAR supports community-based programs developed with active citizen participation in all phases. CYFAR programs include: Sustainable Communities projects with funding to 42 land-grant universities, which serve 26,600 youth ages pre-K to 19 and their parents, and professional development and technical assistance through CYFERnet.

Military Youth: NIFA, through partnerships with the Department of Defense, enhances the lives of military children by connecting them with quality support and educational programs to meet their unique needs and promote positive youth development. This funding enables Cooperative Extension to enhance staff training and expand youth engagement in 4-H clubs and other 4-H educational programs. Land-Grant University System extension personnel have contributed 305,760 hours in support of military child and youth programing. 4-H volunteers have also contributed 35,753 hours.

Rural Youth Development: The Grants for Youth-Serving Institutions, Rural Youth Development Grants program provides opportunities for rural youth to improve their lives and local communities. This grant program breaks down barriers to participation, especially for rural youth; enhances opportunities for youth involvement in policy and decision-making; creates safe and inviting environments for youth activities; and improves access to information and technology.

PARTNERSHIPS

NIFA engages minority partner organizations, such as the American Indian Higher Education Consortium (AIHEC), the Intertribal Agricultural Council (IAC), and the First American Land Grant Consortium (FALCON). Together, these groups work with NIFA program staff to share information, promote professional development and networking, and create new partnerships between tribal colleges and other institutions. NIFA partners with other federal agencies to leverage and increase program impacts and avoid duplication. The Food Distribution Program on Indian Reservations (FDPIR), offered by the USDA's Food and Nutrition Service, provides an example of this work. Other USDA agencies, including the Agricultural Research Service and the Forest Service, also partner with NIFA to leverage partnerships with Hispanic and programs.

People

Goal: Transform NIFA into a model agency with a highly motivated workforce.



NIFA's Strategic Plan focuses on the most essential element of NIFA: People. NIFA employees, stakeholders, and partners work hand-in-hand to fulfill NIFA's mission of investing in and advancing agricultural research, education, and extension to solve societal challenges. NIFA places emphasis on resource planning, workforce development, and maintaining a healthy work/life balance for NIFA staff. The agency's intent is to transform into a model organization with a highly motivated workforce capable of carrying out the agency's mission.

NIFA restructured its employee committees in April 2014 under the Secretary's Cultural. The new committees are aligned with the goals and objectives of NIFA's Strategic Plan.

Through a commitment to USDA's Cultural Transformation Initiative, NIFA has developed a highly effective Human Capital Planning Committee and a comprehensive Employee Engagement Committee. NIFA has made significant progress toward enhancing accountability by providing the infrastructure and oversight necessary to achieve high-performance human capital management. NIFA is building a high-performing, results-oriented culture, and effective leadership practices permeate the organization.

The agency's Competency-Centric Learning and Development Framework and the NIFA Mentoring Program supports workforce development. The framework incorporates competencies for all mission-critical positions, and a training needs assessment tool enhances the effectiveness of NIFA's training and development efforts.

By the end of 2014, NIFA developed and implemented competency-based training needs assessments for more than 60 percent of its employees.

The NIFA Mentoring Program offers all employees the opportunity to work with positive role models who can help enhance their personal development.

Each year, NIFA employees are invited to participate in the Federal Employee Viewpoint Survey (FEVS). The data are analyzed and used to develop an action plan to help improve employee perceptions related to leadership, performance culture, talent management, job satisfaction, communication, and diversity. The Partnership for Public Service computes Best Places to Work Rankings for federal agencies based on results of the FEVS results. As a result of NIFA's efforts, the agency's Best Places to Work rankings improved from 234 in 2013 to 209 in 2014.

NIFA'S COMMITMENT TO EQUAL OPPORTUNITY, CIVIL RIGHTS, AND DIVERSITY AND INCLUSION

NIFA is committed to Equal Opportunity, Civil Rights, and Diversity, and Inclusion in both its workforce and in its programs under Titles VI and VII of the Civil Rights Act. NIFA's Director issued the first Diversity & Inclusion Policy Statement on Sept. 2, 2014, applying it to both the workforce and to NIFA customers. In recognition of the importance of the Equal Opportunity Staff (EOS), the EOS Director was realigned to directly report to the NIFA Director.

NIFA continues to make significant strides in the number of awards and the level of funding to minority serving institutions (MSIs) with approximately \$286.3 million awarded in 2014. NIFA provided equal opportunity and civil rights training to applicants and recipients of NIFA federal assistance programs at the National Research and Extension Administrative Officers' Conference and at the University of the District of Columbia, reaching almost

300 workshop participants.

NIFA WORKFORCE

NIFA employed 335 permanent employees in 2014; 215 were females (64 percent) and 120 were males (36 percent). The racial and ethnic landscape of the workforce included 59 percent minorities. NIFA met or exceeded the Current Labor Force percentages for each minority group except Hispanics.

NIFA Special Emphasis Programs

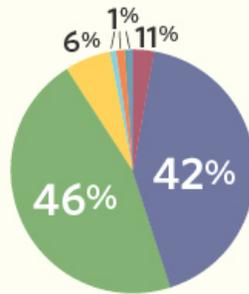
- African Americans
- Asian Americans/Pacific Islanders
- American Indians/Alaska Natives
- Women
- Hispanics
- Persons with Disabilities
- Veterans
- Lesbian, Gay, Bisexual, and Transgender Persons

NIFA's workforce also consists of the following groups:

- **36 permanent employees with a disability, which represented almost 11 percent of the NIFA workforce, with slightly more than two percent with targeted disabilities.**
- **Graduates of minority-serving institutions (MSIs) (e.g. Historically Black Colleges and Universities (HBCUs) and Hispanic-serving institutions.**
- **Commitment to public service as evidenced by the number of veterans and former Peace Corps volunteers across the agency.**

NIFA also conducted its second Diversity Week in 2014 to engage employees on importance of diversity in the workplace.

NIFA Diversity



TOTAL EMPLOYEES: 330



Process

Goal: Institutionalize streamlined, effective technologies, policies, and processes.

Customer service is very important to NIFA. As the Agency works with a broad array of partners across the nation, processes must be streamlined and efficient to ensure every transaction is cost effective, efficient, and of the highest quality. NIFA has made many investments to enhance business processes. Particular focus has been made on grants modernization to improve electronic systems and flatten the award curve.



GRANTS MODERNIZATION

NIFA's grants modernizations efforts will streamline the work done by NIFA employees and customers through effective technology and processes. The results of this effort in 2014 included:

- Improved management and data reporting
- Strengthened financial oversight
- Improved transparency and simplified processes
- Self-service capabilities for applicants and grantees
- Movement toward a paperless environment

The long-term grants modernization plan will reduce costs and staff time required to receive and process applications and manage awards throughout their lifespan. After

conducting analyses in 2014 to determine the optimal solution, NIFA chose to partner with USDA and use their future grants management system, Grantor, to underpin NIFA's grants management systems. NIFA plans to begin implementation of Grantor in fiscal year 2017.

CONTINUOUS PROCESS IMPROVEMENT

Continuous Process Improvement (CPI) efforts will reduce the number of days it takes to process a grant award. NIFA established an agency-wide CPI effort in 2014 as part of the USDA blueprint for stronger service. The CPI process is part of the Secretary Vilsack's Lean Six Sigma (LSS) initiative to build in efficiencies, or lean and improve NIFA's business processes.

The CPI pilot program has led to the leaning of the lengthy Request for Application (RFA) process. Specifically, the RFA CPI project goals are:

- Reduced cycle time in processing RFAs by leaning the review and approval process
- Reduced number of reviewers and RFA length
- Minimized writing and editing changes

The RFA cycle time improved from 67 days to 23 days during the pilot. Additional RFA pilots are on underway to further improve NIFA's RFA process.

STREAMLINE PROCESSES

Other 2014 NIFA process improvements include:

- Hard copy grant files have all been scanned and digitized, bringing NIFA one step closer to a paperless environment.
- NIFA has begun to phase in a consolidated help desk for all applicant and grant recipient questions to more efficiently serve our partners and the public. . Currently, the desk is supporting all pre-award and NIFA grant systems questions.
- Through extensive use of audio/video conferencing, NIFA saved an estimated \$1,640,000 in travel expenses.
- Overtime reductions accounted for another \$41,000 in savings.
- NIFA streamlined and standardized processes for administering non-competitive programs.
- The awards timeline for capacity and infrastructure funds was advanced from the 3rd quarter to the 1st quarter of FY 2015. All 13 capacity and infrastructure RFAs were published before Sept. 30, 2014. This allowed funding to be released in the 1st quarter of FY 2015. This is critical to stakeholders as it allows vital funding to be available earlier in the fiscal year.

NIFA by the Numbers

In 2014:

NIFA received and processed **6,872 APPLICATIONS** through our electronic systems.

NIFA's financial staff dispersed **46,543 TRANSACTIONS** for a total of more than **\$1.27 BILLION**, and closed more than **940 COMPLETED AWARDS**.

NIFA processed **5,805 AWARDS** and award-related transactions.

Communication

Goal: Advance America's global preeminence in food and agricultural sciences.

NIFA's 2014-2018 strategic plan places a strong emphasis on communications to highlight the Agency's important role in advancing agricultural and food science. Through traditional and contemporary communications channels such as social media, along with strategic domestic and

international partnerships, NIFA has made significant advances to increase transparency with the American public, Congress, stakeholders and partners, and to motivate the next generation of our nation's agricultural and food workforce. Significant communication efforts in 2014 have included:



New NIFA Website: NIFA finalized the last stages of its website, which serves as the primary media to educate and inform publics about the agency's programs and results. The new website is compatible with a variety of mobile devices so users can get their information on the go. New features on the website include a grants search tool accessible from the homepage, a new "Tools" section that explains the various NIFA web applications and databases, and an "Impacts" page that highlights the outcomes NIFA grantees have achieved in finding innovative solutions in key areas such as food security, food safety, climate change, health, and more.

Data Gateway: NIFA's new Data Gateway helps users find funding data, metrics, and other information about NIFA grant awards and gives them the ability to filter and

export results. Users can view recent and historical award information, Congressional funding data, award trends, and refine searches through three agricultural classification filters: Knowledge Area, Subject of Investigation, and Field of Science. More refinements to share data and other improvements are expected next year.

Impacts: In 2014, NIFA began work on an ambitious campaign named “Share Your Science” to gather and showcase NIFA-funded research, extension, and education impacts to the agency’s many audiences. This campaign involved hiring a communication staff employee to oversee impacts collection and archival; creating a dedicated email account, impactstories@nifa.usda.gov(link sends e-mail); creating a Twitter hashtag, #nifaimpacts; scanning daily for impacts via news media outlets, university websites, blogs, Twitter, Facebook, and other social media sites; establishing NIFA Communication Liaisons to help gather impacts; on-going solicitation of impacts from land-grant universities; and creating a dedicated public webpage showcasing impacts.

Blogs: In 2014, NIFA increased the number of blogs to help tell the story of NIFA-funded impacts from 3 in 2013 to 17. These blogs are being carried by numerous media outlets and are generating comments and questions for more information from the public. A NIFA blog about peanut research resulted in widespread national news attention.

Press Releases: NIFA increased the number of press releases from 22 in FY13 to 35 in FY14. The releases resulted in significant pick up by local and national news media outlets and requests for interviews and information.

Social Media: In 2014, NIFA hired a communications employee to oversee NIFA’s social media efforts. NIFA’s Twitter followers in 2014 jumped to 12,800, an increase of 2,000 followers since the previous year. NIFA’s Twitter efforts have resulted in positive comments about NIFA-funded programs from a vast cross section of the American public, including Congressional representatives.

100th anniversary of the Smith-Lever Act: In concert with land-grant universities across the nation and the Association of Public Land-Grant Universities, NIFA promoted the 100th Anniversary of the Smith Lever Act, throughout the year to inform the American public and other USDA employees about the importance of Extension. In addition to showcasing Extension all year through a variety of channels, blogs, web page, webinar, news media interviews, and social media, other activities included a NIFA celebration on May 6, 2014, at NIFA's headquarters and a lecture for USDA employees, partners, and stakeholders by NIFA Director Sonny Ramaswamy on Sept. 10, 2014, entitled the "Extension in the 21st Century."

Conferences, Speeches: In 2014, NIFA leadership hosted and participated in numerous federal, national, regional, and local conferences, forums, and summits to inform stakeholders and land-grant partners on NIFA programs and activities. These included the 2014 National Expanded Food and Nutrition Education Program (EFNEP) Conference; National Extension and Research Administrative Officer's Conference; National Urban Extension Conference; Public Issues Leadership Development (PILD) Conference; the APLU Annual Meeting; the Corn & Sorghum Seed and Soybean Seed Research Conferences; National Small Farm Conference; Forestry Research Advisory Council; the White House Summit on Asian American Pacific Islanders; First Americans Land-grant Consortium; Business Higher Education Forum; and the International Conference on One Medicine One Science, to name a few. Also during the year, NIFA Director Sonny Ramaswamy was invited by numerous organizations to serve as keynote speaker, addressing topics such as "The Internet of (Agricultural) Things," at the National Science Foundation 2014 Cyber-Physical Systems Principal Investigator's Meeting in November, and "Setting the Table for a Hotter, Flatter, More Crowded Earth at Washington State University in July.

