



National Institute of Food and Agriculture
U.S. DEPARTMENT OF AGRICULTURE

A collage of images related to agriculture and food processing. It includes a large industrial tank, a bowl of oranges, a field of green crops with a red tractor, a bowl of red tomatoes, and a tray of blueberries. The images are arranged in a geometric, overlapping pattern.

NIFA

ANNUAL REPORT FY 2022

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MESSAGE FROM THE DIRECTOR

The primary mission of the National Institute of Food and Agriculture (NIFA) is to address key national and global challenges. NIFA accomplishes its mission by effectively and efficiently directing federal funding to projects tackling the most important issues facing our nation and world today. The agency improves the lives of people in the United States and across the globe by facilitating the advancement and application of science and technological tools.

We provide real-world solutions for real-world problems. NIFA funding supports the advancement and application of science and technology to:

- develop climate-smart agriculture technologies and practices
- build new and better markets for U.S. agriculture
- improve food and nutrition security and food safety
- prepare the next generation of agricultural leaders and a strong agricultural workforce
- promote diversity, equity, inclusion and accessibility across all our programs



NIFA awarded more than 2,500 grants totaling \$2.2 billion to a diverse and inclusive stakeholder community in Fiscal Year 2022. In addition to our traditional funding opportunities, NIFA also managed more than \$512 million in new funds through the American Rescue Plan Act, the Infrastructure Investment and Jobs Act and the Inflation Reduction Act. These new funds equaled nearly one-third of our total NIFA appropriations.

Additionally, those new funds added new challenges to the agency in the form of additional RFAs to process, panels to conduct, and grants to process, announce and publicize. NIFA professionals rose to meet those challenges and ensured funds were distributed in an effective and efficient manner. Their success is due in part to the fact that the agency has reached near-full staffing levels. Currently, our workforce stands at more than 340 professionals, up from 262 in FY 2021.

I hope you find the FY 2022 Annual Report informative and inspiring. You will discover how we achieved our goals, learn about some of the impacts of our work and hear about our plans for the future.

A handwritten signature in black ink that reads "Dionne Toombs". The signature is fluid and cursive.

Dr. Dionne Toombs
Acting Director, NIFA

NIFA AT WORK

About 95% of NIFA's appropriated funds are used for program grants that ensure scientific discoveries reach the people who can put them to use.

The ratio of programs that are formula-based (capacity funding) versus competitively awarded is nearly even. Approximately 44% of program funding is distributed to Land-grant Universities and other colleges and organizations as capacity funding. Competitively awarded grants make up about 47% of funding, with another 9% supporting other noncompetitive awards and cooperative agreements.

These funds are provided to the nation's network of Land-grant Universities and other organizations, who are turning research into action nationwide — bringing groundbreaking discoveries from laboratories to farms, communities and classrooms. Capacity programs support state Agricultural Experiment Stations, Cooperative Extension and 4-H and Positive Youth Development in every community in the nation.

NIFA uses an integrated approach that brings together three formidable forces for fueling change.

RESEARCH to provide answers to the complex issues facing the nation and world

EDUCATION to strengthen schools and universities to train the next generation of scientists, educators, producers and citizens

EXTENSION to take knowledge gained through research and education to the people who need it most

Each of these areas has designated capacity funding directed to all the nation's Land-grant Institutions, including the Land-grant universities (LGUs) supported by the 1862 Morrill Act, the nineteen Historically Black Colleges and Universities supported by the Second Morrill Act of 1890 and the Tribal colleges and universities designated as Land-grant institutions in the Improving America's Schools Act of 1994.

Competitive grants are awarded for foundational and applied research, Extension and higher education activities, as well as for projects that integrate research, education and Extension functions. Competitive programs enable NIFA to attract large pools of applicants and to select the highest-quality proposals addressing agricultural issues of national importance.

NIFA administers our nation's flagship competitive grants program for agriculture, the **AGRICULTURE AND FOOD RESEARCH INITIATIVE (AFRI)**, which supports investigator-initiated research, education and Extension initiatives that contribute to major breakthroughs in solving agricultural challenges and help grow the next generation of scientists.

The projects and programs that NIFA supports – and the work conducted by our university and other partners – continuously make direct impacts in a variety of ways.

OUR WORK IS MAKING A DIFFERENCE FOR ALL WHO CALL AMERICA HOME.





HOW NIFA MAKES A DIFFERENCE

NIFA-supported programs ensure the long-term viability of agriculture while addressing major challenges. From climate change research and training to nutrition security initiatives, from Extension efforts targeting all ages and providing scholarships to ensure a sustainable agriculture workforce, NIFA is securing the future of the nation by investing in science.

We make an impact by:

- working to meet the growing global food demand
- tackling food and nutrition insecurity in vulnerable populations.
- developing regional programs focused on Climate, Rural Development, Farm Stress and Risk Management
- reducing greenhouse gas emissions and developing climate-smart practices
- enhancing youth, family and community development and ensuring we have a prepared food and agricultural science and industry workforce for the future
- investing in next-generation technologies like Artificial Intelligence and automation in agricultural production and processing to improve productivity and workplace safety

DEVELOPING CLIMATE-SMART AGRICULTURE TECHNOLOGIES AND PRACTICES

Significant increases in domestic and global agricultural production are required to feed and support a population that will exceed 9 billion by 2050. To provide sustainable solutions to addressing this global challenge, sufficient investments in scientific research, education, and Extension must be made to transform U.S. agricultural systems. In particular, AFRI funding is fundamental to supporting systems approaches that will lead to sustainable increases in U.S. agricultural productivity.

AFRI implemented a new program, the **RAPID RESPONSE TO EXTREME WEATHER EVENTS ACROSS FOOD AND AGRICULTURAL SYSTEMS**. This program is designed to rapidly identify and implement strategies to protect the nation's food and agricultural supply chains and the people who support them during and after extreme weather events.

The agency achieved a significant milestone in the **SMALL BUSINESS INNOVATION RESEARCH (SBIR)** program. USDA's total extramural research expenditures for research and development activities reached \$1 billion, mandating the creation of a new parallel effort, the **SMALL BUSINESS TECHNOLOGY TRANSFER (STTR)** program. Both SBIR and STTR programs are focused on developing innovative solutions to pressing problems that can then be commercialized as new products and services or as improvements to existing ones.

NIFA offered a one-time program in the AFRI Foundational and Applied Science Request for Applications to spur regional innovation and demonstration in **REGIONAL INNOVATION AND DEMONSTRATION OF CLIMATE-SMART AGRICULTURE FOR FUTURE FARMS (CAFF)**. This funding targeted development and implementation of climate-smart agricultural or forestry practices that will reduce greenhouse gas emissions and create positive economic, environmental and social impacts.



IMPACTS

- **UNIVERSITY OF CALIFORNIA** scientists are developing new instruments and analysis techniques that will provide new insights into the sources and chemistry of atmospheric aerosols and the role they play in global climate and regional air pollution. So far, researchers have conducted field studies in California, the southeastern United States and the Brazilian Amazon. These insights help create models of human impacts on climate and help government agencies and others develop evidence-based pollution reduction policy and climate change mitigation strategies.
- Researchers at **AUBURN UNIVERSITY** in **ALABAMA** have identified two genes that appear to coordinate the fitness of plants in defending themselves from drought while also stimulating growth. The genes appear to be unique, feasible candidates for introduction into the genomes of other plants to generate crops that are truly tolerant of drought. Scientists now are working on designing a gene cassette that can be used to insert the desired genes into other plants to engineer induced systemic tolerance commercial-grade drought tolerance in plants.
- At **FORT VALLEY STATE UNIVERSITY** in **GEORGIA**, researchers have found a combination of beneficial nematodes and a widely available insecticide provides an important tool in managing the peanut burrower bug. The insect pest poses a significant threat to the state's peanut crop.



Photo from Adobe Stock

- **OREGON STATE UNIVERSITY** scientists are working to find effective alternatives for a recently banned pesticide that was crucial to the state’s grass seed crop producers to battle insects. Oregon leads the country in grass seed production, with more than 400,000 acres grown annually.
- In **NEVADA**, NIFA provided important financial support through an AFRI grant to the **DESERT RESEARCH INSTITUTE** and its Native Waters on Arid Lands project, the first coordinated agriculture project (CAP) focused on the needs of Native American farmers. The project focused on working with tribal farmers, ranchers, resource managers, educators and students to understand how they are adapting to changes in climate and declining water resources and what they need to enhance the resilience of tribal agriculture. Researchers conducted cost/benefit analyses for water management improvements and identified policy, economic and societal barriers to enhancing tribal capacity to adapt and respond to a range of climate scenarios.
- In **NEW JERSEY**, **RUTGERS UNIVERSITY** showed that increased concentrations of atmospheric carbon dioxide could lead to changes in soil structure. Research is helping develop better crop fertilization and irrigation practices that maximize yields, while minimizing soil and water contamination from excess nutrients.
- **TEXAS A&M AGRILIFE** scientists and Extension specialists have developed effective heat-abatement (cooling) options that are part of a broader effort to maintain a comfortable environment for dairy cows. As a result, more than 90% of the dairies (435,000 dairy cows) in Texas have adopted some form of heat-abatement method in their operations.
- **UNIVERSITY OF GEORGIA EXTENSION** agents are using drones as a tool to assess agricultural damage. More than 2 million acres of planted cropland are now covered by trained Extension personnel. In **OHIO**, researchers are using drones to more quickly diagnose soybean defoliation by capturing aerial images and using software to analyze the data.
- A microclimate study conducted by **WEST VIRGINIA STATE UNIVERSITY EXTENSION SERVICE** is helping landowners learn more about the impact of climate change on regional weather, with the goal of minimizing negative impact on seasonal crops and overall farm livelihood. Data from more than 90 weather stations is used to create seasonal reports for the entire state and provide participants with personalized weather readings, which help farmers and other landowners improve their decision-making.
- At **NORTH DAKOTA STATE UNIVERSITY**, researchers developed web-based nitrogen calculators for more efficient nitrogen management without decreasing crop yields in crops like wheat, canola, barley and sugar beets.
- At **PRAIRIE VIEW A&M UNIVERSITY** in **TEXAS**, researchers are studying the potential impact of climate change on crop water requirement, crop yield and soil and water quality, which will help inform how limited resource farmers/ranchers adapt their practices to changing climate.

BUILDING NEW AND BETTER MARKETS FOR U.S. AGRICULTURE

In FY 2022, NIFA strengthened vital agricultural infrastructure and helped shore up the nation’s food supply chain — especially in meat and poultry production and processing via the **AMERICAN RESCUE PLAN ACT’S MEAT & POULTRY PROCESSING--AGRICULTURE WORKFORCE TRAINING PROGRAM**. These investments are enhancing equity and capacity across the food supply chain by supporting local meat and poultry research, education and training.

Workforce training will increase the resiliency and competitiveness of local and regional supply chains and support the industry’s urgent need for highly skilled talent to meet labor demands nationwide.

NIFA provided \$2.5 million for **EXTENSION RISK MANAGEMENT EDUCATION** and \$2.5 million for **SUSTAINABLE AGRICULTURE RESEARCH AND EDUCATION**. These programs will support development of meat and poultry processing training and educational materials for place-based needs, particularly relevant to small- or medium-sized farmers and ranchers.

Additionally, the agency offered competitive funding to support meat and poultry processing workforce development at community, junior, and technical colleges through the **AFRI MEAT AND POULTRY PROCESSING—AGRICULTURAL WORKFORCE TRAINING PROGRAM**.

NIFA provided funding for **CENTERS OF EXCELLENCE AT 1890 LAND-GRANT UNIVERSITIES** and educational programs at 1994 Land-grant Colleges, Alaska Native and Hawaiian Native Institutions, Resident and Insular Areas, and Hispanic-serving Institutions to develop or enhance existing meat and poultry processing training programs. This funding is critical to our and our partners’ efforts to prepare students for careers in the food, agriculture and natural resources sciences.



IMPACTS

- The **UNIVERSITY OF MINNESOTA** is developing new approaches to farm financial benchmarking. The university’s Center for Farm Financial Management is maintaining and expanding the existing national database, with a focus on developing new tools to help producers answer critical financial questions on topics including the economics of cover crops, direct marketing channels and aquaculture.
- The **UNIVERSITY OF CONNECTICUT** is generating new knowledge about forming preferential trade agreements, their impact on global trade, and the consequences for U.S. agricultural and food businesses and employment. The project will help inform policies that would foster the competitiveness of U.S. farmers and ranchers and increase their participation and success in international markets.
- The **UNIVERSITY OF PUERTO RICO AT MAYAGUEZ** is researching the manufacturing and marketability of value-added products using goat milk. Researchers are working to determine chemical characteristics, sensory attributes and consumer preferences for goat milk products including frozen dessert, confections, yogurt and cured cheese.
- **VERMONT EXTENSION** professionals and their partners created a voluntary food safety program to inform and recognize small- and medium-sized farms that adopt best practices for produce safety, prepare customized produce safety plans, and comply with federal and state regulations. Accreditation through the Vermont program reassures customers that produce was handled using best practices to not only minimize food safety risks but also to ensure quality.



Photo from Adobe Stock

- A **KANSAS STATE UNIVERSITY** program integrates crop insurance and forward pricing decisions in an educational environment, allowing participants to learn and understand, then try various risk management strategies without risk, prior to engaging in developing a plan for their operation. This program helps farms gain higher levels of profitability through better management of marketing and crop insurance tools and opportunities, which enhances sustainability of farm operations in the long run, leading to healthy rural communities and stronger local economies.
- **SOUTH DAKOTA STATE UNIVERSITY EXTENSION** created a Farmers Market Manual to be an information-packed resource for local food markets.
- High tunnels are a key tool used by direct-to-consumer farmers. They are a form of protected agriculture used almost exclusively to produce specialty crops. **PURDUE UNIVERSITY** is using high tunnels to better understand the impacts of crop diversity on pests and beneficial insects to support local food production across four seasons.
- Through the Virginia Quality Assured Program (VQA), **VIRGINIA TECH UNIVERSITY EXTENSION** has changed the beef business in southwest Virginia. In 2021, VQA participants received a total of \$871,455 in premiums or more than \$100 per VQA calf sold. Additionally, gross cash receipts for VQA animals exceeded \$7.8 million. With 113 tractor-trailer loads of VQA calves sold, revenues were 12.5% greater than values received at traditional state-graded livestock sales.

TACKLING FOOD AND NUTRITION INSECURITY

Recognizing that food and health are inherently intertwined, NIFA mobilized an **AGENCYWIDE NIFA FOOD AND NUTRITION SECURITY TEAM**. This team leads agency efforts to ensure Americans have consistent access to safe, healthy and affordable food. Through NIFA's five primary nutrition programs, the agency invested more than \$200 million to prioritize nutrition security in FY 2022.

Through new and modified priority areas, a number of NIFA's AFRI programs lift up and better integrate a focus on mobilizing NIFA's integrated approach to advance food and nutrition security including a variety of innovative enhancements to strengthen the intersections through research, education, and Extension with climate-smart agriculture.

Outside of AFRI, the team disseminated American Rescue Plan Act funding that expanded the impact of the **GUS SCHUMACHER NUTRITION INCENTIVE PROGRAM (GusNIP) PRODUCE PRESCRIPTION PROGRAM** to increase consumption of fresh produce and improve health and nutrition in low-resource communities.

In total, with these investments and mandatory annual appropriations, GusNIP has provided \$267 million in funding to 172 projects throughout the U.S. between 2019-2022.

Fundamental to our contributions to advance food and nutrition security is our administration of the nation's first nutrition education program – **EXPANDED FOOD AND NUTRITION EDUCATION PROGRAM (EFNEP)**. In its fifth decade, EFNEP continued to provide education and training for underserved communities through Cooperative Extension. In EFNEP's most recent national report, participants reported a collective food-cost savings of \$558,446, and 94% of adults increased their consumption of fruits and vegetables. Another 85% of the youth participants said the education program made them better equipped to make healthy food choices.



IMPACTS

- The **UNIVERSITY OF MARYLAND'S** Food Safety Outreach Program is providing small- and medium-sized farms that grow, harvest, pack and hold covered produce with training and tools to enhance and sustain an operational culture that champions food safety while supporting workers to provide Americans access to a safe, nutritious and secure food supply.
- The **UNIVERSITY OF ARKANSAS AT PINE BLUFF'S** EFNEP efforts provided sound, research-based nutrition practices through hybrid educational sessions to address how families could stay healthy during the pandemic. Participants learned how to choose healthier food options and to better incorporate physical activity while working and schooling their children from home. Participants received easy, healthy recipes as well as exercises for the family. In one county alone, 89% of adult and 78% of youth participants reported improved nutrition practices (eating more fruits and vegetables, drinking less sugary drinks and cooking dinner at home), and 76% of adult participants are now more physically active.
- The prevalence of diabetes is increasing every year across the country and is twice as high in Native American populations. Potatoes contain flavanols that have anti-obesity and anti-diabetic effects. **FORT PECK COMMUNITY COLLEGE** in **MONTANA** is researching low glycemic potatoes to determine if these plants can lower the effects of diabetes and obesity.



Photo from Adobe Stock

- As an archipelago, **HAWAI'I** needs to promote localized agriculture as a means to food security. The **UNIVERSITY OF HAWAI'I** created a comprehensive agriculture program, engaging students in the multidisciplinary analysis of the food and farming system of Hawai'i and beyond. More than 40% of the students are native Hawaiian and about 70% are women. The program covers agroecology, epidemiology, food security, ethics, traditional ecological knowledge, and indigenous resource management.
- Scientists with **CORNELL UNIVERSITY** in **NEW YORK** are working to incorporate more carotenoids into sweet corn, one of the most commonly eaten vegetables. Carotenoids are key for delaying onset of age-related macular degeneration, a leading cause of irreversible blindness in the elderly.
- **LOUISIANA STATE UNIVERSITY** researchers found a way to lower the high glycemic index while also raising the protein content of rice, a staple food across the world. This new rice variety provides possible solutions to two major health issues – diabetes and obesity.

GROWING THE NATION'S ENERGY INDEPENDENCE

Through both competitive and capacity funding, NIFA supports efforts to foster expansion of a circular bioeconomy. NIFA recognizes that a robust bioeconomy enhances communities, job growth, and agricultural systems and contributes to U.S. competitiveness.

In particular, NIFA's bioenergy investments support research, Extension, and education related to the enhancement of rural economic development, climate change, environmental services, and food and energy security. Bioenergy is a key priority area within **AFRI'S FOUNDATIONAL AND APPLIED SCIENCE PROGRAM** as well as in both the **SMALL BUSINESS INNOVATION RESEARCH** and **SMALL BUSINESS TECHNOLOGY TRANSFER** programs. Additionally, the Sun Grant Program works through university consortiums to enhance national energy security.

Our efforts aim to facilitate development of sustainable regional production systems for biofuels, biopower and biobased products, and for increased rural economic vitality and national energy security through partnerships and collaboration.

With funding from the Infrastructure Investment and Jobs Act, NIFA implemented a new program — the **BIOPRODUCT PILOT PROGRAM** — to support scale-up research and development for biobased products that have lower carbon footprints, lower solid waste consequences, and lower costs than conventional products on the market today.



IMPACTS

- **TENNESSEE STATE UNIVERSITY** is collaborating with **ALABAMA A&M UNIVERSITY, SOUTHERN UNIVERSITY, FLORIDA A&M UNIVERSITY** and **LANGSTON UNIVERSITY** to host the 1890 Center of Excellence for Natural Resources, Renewable Energy, and the Environment: A Climate Smart Approach. This will provide partnership opportunities to develop management practices that will conserve and promote natural resources, explore renewable energy sources, and develop climate-smart agricultural production practices to reduce carbon dioxide in the atmosphere and improve environmental quality and sustainability.
- Researchers at **VIRGINIA TECH** and the **UNIVERSITY OF FLORIDA** are collaborating on a project that is seeking to develop biomass-derived carbon materials to improve the energy density of lithium-ion batteries, a technology that has led to remarkable advances in portable electronics and electric vehicles.
- Research has shown golden pennycress, an oilseed crop, offers strong potential as cover crop that can be used both as a component in biofuels and livestock feeds. Investigators at **WESTERN ILLINOIS UNIVERSITY** led the five-year coordinated agriculture project that involved scientists from **ILLINOIS STATE UNIVERSITY, OHIO STATE UNIVERSITY, UNIVERSITY OF WISCONSIN-PLATTEVILLE, UNIVERSITY OF MINNESOTA** and an industrial partner.
- Scientists at **IOWA STATE UNIVERSITY** developed new lines of sorghum that offer economic and environmental benefits as a future biofuel crop for northern latitudes.
- In **INDIANA, PURDUE EXTENSION** provides research-based resources and educational programs to support renewable energy planning for Indiana professionals, government officials, citizen planners and residents.



Photo from Adobe Stock

- **NORTH CAROLINA A&T STATE UNIVERSITY** researchers have developed a waste-based biorefinery to enable the production of energy, fertilizers and clean water from agricultural and food wastes. Agricultural and food wastes are a rich source of fertilizer components and contain several components required to produce renewable energy.
- **UNIVERSITY OF FLORIDA** Extension professionals work with individuals to change daily habits around consumption and waste and ways to implement home efficiency improvements. These changes can increase efficiency, reduce spending and encourage healthier lifestyles in people and communities.
- Scientists with the **ILLINOIS AGRICULTURE EXPERIMENT STATION** are working to improve the design of a ground source heat pump system for different applications.

PREPARING THE NEXT GENERATION OF AGRICULTURAL LEADERS AND A STRONG AGRICULTURAL WORKFORCE

The lack of a skilled workforce continues to be a persistent challenge to enhancing rural prosperity in America. The goals of NIFA's education and workforce training programs are to enhance agricultural literacy and grow the kindergarten to doctoral education pathways to train the next generation of farmers, agricultural workers and scientists to enhance research and development.

For example, **AFRI'S EDUCATION AND WORKFORCE DEVELOPMENT (EWD)** program provides funding opportunities for undergraduate students, including those from underrepresented groups at minority-serving institutions and community colleges, to obtain hands-on experience at Land-grant Universities and USDA laboratories. Students obtain training to join the agricultural workforce or pursue graduate studies in food, agriculture, natural resources and human sciences. NIFA supports thousands of students through direct or indirect funding/contacts every year.

In 2022, NIFA announced an additional investment of more than \$14 million to support agricultural workforce training in underserved communities that will increase the resilience of the U.S. meat and poultry processing sector. This investment, through the American Rescue Plan Act, strengthens the nation's food supply chain by promoting fair and competitive agricultural markets.

NIFA invested \$23.9 million to 45 **BEGINNING FARMER AND RANCHER DEVELOPMENT** projects in the last fiscal year to provide those just entering the agricultural enterprise the education, technical assistance and training they need to be successful.

Additionally, a new NIFA initiative, **FROM LEARNING TO LEADING: CULTIVATING THE NEXT GENERATION OF DIVERSE FOOD AND AGRICULTURE PROFESSIONALS (NEXTGEN)**, funded through Section 1006 of the American Rescue Plan, as amended by Section 22007 of the Inflation Reduction Act, will support and prepare students for diverse careers in food, agriculture, natural resources and human sciences across research, education and Extension, with an emphasis on federal government sector employment. These investments provide critical support to our higher education partners and to students. Moreover, they provide a pathway to increase rural prosperity and economic sustainability.



IMPACTS

- **CALIFORNIA STATE UNIVERSITY, LONG BEACH** has launched an interdisciplinary program to promote the success of underrepresented undergraduate and graduate students in the food and human sciences professional and scientific workforce, emphasizing Latino nutrition through outreach, mentoring, education, support services, research and professional internships with community partners.
- An AgVets program is building workforce capacity for new and beginning veteran farmers within the USDA Strike Force Initiative counties in eastern **NORTH CAROLINA**.
- **SOUTH DAKOTA STATE UNIVERSITY** researchers developed a project to address the needs of both rural youths and front-line professionals who work with youths. "Strengthening the Heartland: Promoting life readiness in rural youth," is aimed at getting resources to communities that are underserved and under resourced.



Photo from Adobe Stock

- The STEM Engagement for the Enrichment of Diverse Students (SEEDS) project at **MESA COLLEGE** in **CALIFORNIA** is a four-year effort to encourage underrepresented students, primarily Hispanic, to pursue graduate degrees.
- Young Agri-Scientists is a collaborative program between **NEW MEXICO STATE UNIVERSITY** and **TEXAS TECH UNIVERSITY** designed to increase diverse student graduates to meet the global need for the next generation of leading agricultural scientists.
- **NORTH CAROLINA A&T STATE UNIVERSITY** is working to build the next generation of agriculture leaders through its 1890 Center of Excellence for Student Success and Workforce Development.
- At **TEXAS A&M UNIVERSITY, KINGSVILLE**, “GO START NOW: Getting Occupational Student Training in Agricultural Research Through Novel Workshops” seeks to empower underrepresented students through excellence in soil, animal, plant and agricultural sciences to build career skills addressing priority science areas.

DEVELOPING PEOPLE, COMMUNITIES AND A DIVERSE WORKFORCE

NIFA values equity, diversity and inclusion. This value is rooted in our dedication to justice and equal opportunity for our employees and those we serve.

In FY 2022, NIFA administered 16 programs specifically for Minority-serving institutions. NIFA invested \$194 million in total grant awards to 1890 LGUs, \$11.1 million to 1994 Tribal Land-grant Colleges and, over the past five years, awarded more than \$200 million to Hispanic-serving Colleges of Agriculture.

Additionally, the agency administered \$194 million in competitive and capacity grants to 1890 Land-grant Universities. This amount includes nearly \$26 million in capacity building grants, \$17 million in scholarships to students and \$7.6 million to fund 1890 Centers of Excellence.



IMPACTS

- The **EXCITE PROGRAM**, a cooperative agreement between NIFA, Center for Disease Control and the Cooperative Extension System to deliver vaccine education to hard-to-reach communities across the nation, reached more than 11 million people last year with lifesaving vaccine education. The program was particularly effective in rural, minority and Native American communities.
- The **UNIVERSITY OF GUAM** is conducting innovative applied research to create stronger, more resilient Pacific Islander communities. Researchers are investigating the use of biochar as a soil amendment and as a strategy for sequestering carbon.
- Through the New Beginning for Tribal Students program, **LAC COURTE OREILLES OJIBWA COMMUNITY COLLEGE**, which focuses on agriculture and natural resource management majors, is supporting student readiness and retention among Native American college students in **WISCONSIN**.
- The **UNIVERSITY OF NEVADA EXTENSION** program, “Stepping into STEM,” is increasing Latino children’s interest, knowledge and engagement in STEM activities, and encouraging and teaching Spanish-speaking parents to be positive forces for their children’s early STEM learning as they enter and progress through school.
- In **MINNESOTA, FOND DU LAC TRIBAL AND COMMUNITY COLLEGE** received Tribal Colleges Research Grants Program funds to develop a STEM-focused Research Experiences for Undergraduates (REU) program for Tribal college students focused on natural resource research.
- The **UNIVERSITY OF ARKANSAS PINE BLUFF** is increasing scholarship amounts while bolstering recruiting and marketing efforts to bring more than 90 new scholars into its program.
- At **NORTH CAROLINA STATE UNIVERSITY**, educators are working to expand opportunities for professional careers and educational equity in sustainable materials, science, and engineering for women attending community colleges.



VISION FOR THE FUTURE

To be an effective and proactive change agent, NIFA must have a clear and concise plan for the future. To succeed in our mission to lead and fund programs that advance agriculture-related sciences, NIFA must have an effective and efficient roadmap. NIFA's recently launched Strategic Plan provides both our plan and our roadmap.

As USDA's primary extramural research, education and Extension funding agency, NIFA investments address critical and emerging issues in agriculture and the food systems. NIFA's work is cross-cutting in nature and the key strategies in our strategic plan align with the USDA's goals for 2022-2026.

NIFA's strategic objectives align with the agency's three-pronged approach to deliver comprehensive program leadership and funding to partners and external stakeholders.

NIFA 2022-2026 STRATEGIC OBJECTIVES

- Bolster scientific research to enhance the nation's resilience and response to climate change by embracing innovative and novel approaches
- Enhance research and investment in communities to ensure equity, reduce barriers to access, and advance opportunities for underserved communities
- Focus on capacity building and facilitate equitable participation in NIFA programs for all eligible applicants
- Invest in research, education and extension programs which prioritize nutrition security and seek to ensure the food supply is safe
- Strengthen partnerships and focused outreach in underserved communities
- Build the agricultural workforce and cultivate a culture of mutual respect and accountability

As NIFA continues to lead agricultural innovation across the nation, these objectives will guide both our programmatic and operational decisions to ensure we address the most pressing issues facing our partners, our stakeholders, agriculture as a whole and our nation.

As an agency funded by Congress, it is imperative that we use taxpayer dollars in the most effective and efficient way. Our Strategic Plan will enable us to effectively and efficiently invest in projects that will deliver solutions to improve our food supply and nutrition, protect our environment, preserve our natural resources and prepare the next generation to continue our efforts to enhance and safeguard agriculture as well as the nation's future.

BY THE NUMBERS

(\$000)

PROGRAMS	FY 2022 CONSOLIDATED APPROPRIATIONS
DISCRETIONARY FUNDING	
RESEARCH AND EDUCATION ACTIVITIES	
Agriculture and Food Research Initiative (AFRI)	\$445,000
CAPACITY PROGRAMS:	
Hatch Act	260,000
McIntire-Stennis Cooperative Forestry	36,000
Evans-Allen Program (Research at 1890 Institutions)	80,000
Continuing Animal Health and Disease, Section 1433	4,000
SPECIAL RESEARCH GRANTS:	
Minor Crop Pest Management, IR-4	14,500
Aquaculture Research	2,000
Global Change, UV-B Monitoring	1,400
Potato Research	3,000
OTHER RESEARCH:	
1994 Research Grants	4,500
Capacity Building for Non-Land-Grant Colleges of Agriculture	5,000
Supplemental and Alternative Crops	2,000
Aquaculture Centers	5,000
Sustainable Agriculture Research and Education Program	45,000
Farm Business Management and Benchmarking Program	2,000
Sun Grant Program	3,500
Research Equipment Grants	5,000
Alfalfa and Forage Research	3,500
Agriculture Genome to Phenome Initiatives	2,000
Federal Administration (Direct Appropriation)	19,944
HIGHER EDUCATION:	
Tribal Colleges Education Equity Grants Program	5,500
1890 Institution Capacity Building Grants	28,500
Scholarships at 1890 Institutions	10,000
Centers of Excellence at 1890 Institutions	10,000
Hispanic-Serving Institutions Education Grants Program	14,000

(\$000)

PROGRAMS	FY 2022 CONSOLIDATED APPROPRIATIONS
Alaska Native-Serving and Native Hawaiian-Serving Institutions	4,000
New Beginning for Tribal Students	5,000
Grants for Insular Areas	2,000
Veterinary Medical Services Act (Loan Repayment Program)	9,500
Veterinary Services Grant Program	3,500
Institution Challenge, Multicultural Scholars, and Graduate Fellowship	10,000
Secondary/Two-Year Ag Ed Challenge Grant	900
Interest (Estimated) Earned on Tribal Colleges Endowment Fund	4,825
SUBTOTAL a/	1,051,069
General Provision 763: Blue Ribbon Panel b/	300
General Provision 764: Farm of the Future b/	5,000
General Provision 757: Open Data Standards b/	1,000
General Provision 101: Bioproduct Pilot Program c/	5,000
SUBTOTAL, RESEARCH AND EDUCATION ACTIVITIES	1,062,369
INTEGRATED ACTIVITIES	
Methyl Bromide Transition Program	\$2,000
Organic Transition Program	7,500
Regional Rural Development Centers	2,500
Food and Agriculture Defense Initiative	8,000
Crop Protection/Pest Management	20,000
SUBTOTAL	40,000
General Provision 780: Institute for Rural Partnership – Vermont b/	10,000
SUBTOTAL, INTEGRATED ACTIVITIES	50,000
EXTENSION ACTIVITIES	
CAPACITY PROGRAMS:	
Smith-Lever Formula 3(b)&(c)	320,000
Extension Services at 1890 Institutions	65,000
SMITH-LEVER 3(D) PROGRAMS:	
Expanded Food and Nutrition Education Program	70,000
Farm Safety and Youth Farm Safety Education and Certification	5,000
New Technologies for Agricultural Extension	3,550
Children, Youth, and Families at Risk	8,395
Federally Recognized Tribes Extension Program	3,500

(\$000)

PROGRAMS	FY 2022 CONSOLIDATED APPROPRIATIONS
OTHER EXTENSION PROGRAMS:	
Extension Services at 1994 Institutions	9,500
1890 Facilities (Section 1447)	21,500
Renewable Resources Extension Act	4,060
Rural Health and Safety	5,000
Food Animal Residue Avoidance Database Program (FARAD)	2,500
Women and Minorities in Science, Technology, Engineering and Mathematics (STEM) Fields	1,000
Food Safety Outreach Program	10,000
Food and Ag Service Learning	2,500
Farm and Ranch Stress Assistance Network	10,000
Federal Administration d/	9,100
SUBTOTAL	550,605
General Provision 739: Enhancing Agricultural Opportunities for Military Veterans in Agriculture b/	5,000
General Provision 747: Beginning Farmers and Ranchers Development Program b/	2,000
SUBTOTAL, EXTENSION ACTIVITIES	557,605
TOTAL, DISCRETIONARY FUNDING	1,669,974
MANDATORY AND ENDOWMENT FUNDING	
Tribal Colleges Endowment Fund	11,880
Agriculture Risk Management Education Program e/	9,430
Gus Schumacher Nutrition Incentive Program, Section 4205	49,979
Beginning Farmers and Ranchers Program, Section 12301	18,860
Organic Agriculture Research and Extension Initiative, Section 7210	28,290
Specialty Crops Research Initiative, Section 7305	\$75,440
Emergency Citrus Disease Research and Development Trust Fund, Section 12605	23,575
Community Food Projects Competitive Grants Program e/	5,000
TOTAL, MANDATORY AND ENDOWMENT FUNDING f/	222,454
OTHER USDA FUNDING	
Human Health and Soil Study	1,000

(\$000)

PROGRAMS	FY 2022 CONSOLIDATED APPROPRIATIONS
General Provision: Institute for Rural Partnerships b/	30,000
Technical Assistance Investment Program g/	73,569
From Learning to Leading (NEXTGEN) Technical Assistance and Outreach g/	2,500
Meat & Poultry Processing (MPP) - Work Force Development (WFD) g/	26,250
MPP-WFD Centers of Excellence g/	15,000
Center of Excellence for MPP and Food Safety Research and Innovation thru AFRI g/	5,000
Center of Excellence for MPP and Food Safety Research and Innovation thru Small Business Innovation Research Program (SBIR) g/	15,000
GusNIP Produce Prescription Projects g/	42,000
Community Foods Projects Competitive Meritorious Grants g/	10,000
From Learning to Leading: Cultivating the Next Generation of Diverse Food and Agriculture Professionals h/	250,000
TOTAL, OTHER USDA FUNDING	439,319
TOTAL, DISCRETIONARY, MANDATORY AND ENDOWMENT FUNDING, OTHER USDA FUNDING	2,331,747

NOTES:

a/ Estimated interest on Tribal Endowment Fund was included in the total.

b/ In FY 2022 Consolidated Appropriations Act (P.L. 117-103)

c/ In FY 2022 Infrastructure Investment and Jobs Act (P.L. 117-58) Section 70501.

d/ \$1M was provided for Agriculture in the Classroom.

e/ Mandatory program delegated to another USDA Agency but administered by NIFA.

f/ Farm Bill funding amounts were based on H.R.2, the Agriculture Improvement Act of 2018 and include impact of sequestration of mandatory funds in FY 2022 Consolidated Appropriations.

g/ In American Rescue Plan Act of 2021 (P.L. 117-2) delegated to another USDA Agency but administered by NIFA.

h/ In Inflation Reduction Act of 2022 (P.L. 117-169)

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ASSOCIATE DIRECTOR FOR OPERATIONS:

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