

**NATIONAL INSTITUTE OF FOOD AND AGRICULTURE**

**Statement of Dr. Sonny Ramaswamy, Director  
Before the Subcommittee on Agriculture, Rural Development,  
Food and Drug Administration, and Related Agencies**

Mr. Chairman and Members of the Subcommittee, I appreciate the opportunity to present the President's 2015 Budget for the National Institute of Food and Agriculture (NIFA), one of the four agencies in the Research, Education, and Economics (REE) mission area of the United States Department of Agriculture (USDA).

NIFA works in partnership with the land-grant university system, other colleges and universities, and public and private research and education organizations to support exemplary research, education, and extension that address many national issues from agricultural production, nutrition, and food safety to energy independence and the sustainability of our natural resources. These partnerships result in a breadth of expertise that can quickly and efficiently deliver critical knowledge through innovative systems.

**NIFA Institutes**

NIFA is organized into four institutes that administer Research, Education, and Extension programs in the areas of: Food Production and Sustainability; Bioenergy, Climate, and Environment; Food Safety and Nutrition; and Youth, Family, and Community. NIFA Institutes, including the Center for International Programs, continue to fund outcome-driven programs, which address science priorities that will ensure the global preeminence of United States agriculture. The Institutes provide leadership and administer Federal assistance programs that bring together experts in various disciplines and functions to form multidisciplinary, outcome-based teams on projects that have a global presence in a wide array of agricultural and related disciplines. The programs also are reflective of Farm Bill priorities, and the investment in

research and development is providing transformative solutions to the Nation's challenges, creating jobs, and promoting local economies.

### **Proposal**

The NIFA 2015 budget proposal for discretionary funding is \$1.34 billion. In particular, NIFA's budget includes increases for the Agriculture and Food Research Initiative and several new programs including: (1) public-private partnerships for innovation institutes; (2) veterans in the agricultural sector; and (3) food safety outreach activities. The NIFA 2015 budget request maintains capacity funding and requests an increase for the Hispanic-Serving Agricultural Colleges and Universities Endowment Fund.

The 2015 budget request aligns funding and performance objectives with USDA strategic goals and the REE Action Plan. NIFA defines distinct performance criteria, including strategic objectives and key outcomes, with identified annual targets. As part of an integrated budget and performance process, NIFA conducts periodic portfolio reviews by external experts.

### **Agriculture and Food Research Initiative (AFRI)**

The President's 2015 budget proposes \$325 million for AFRI. AFRI is NIFA's flagship competitive grants program for research, education, and extension. The program provides funding for projects that address critical issues in U.S. agriculture in the following program areas: (1) food security; (2) water for agriculture; (3) climate variability and change; (4) sustainable bioenergy production; (5) food safety; (6) childhood obesity prevention; (7) foundational science; and (8) food, agriculture, natural resource, and human sciences education and literacy initiative.

**Food Security:** In 2015, programs will address pressing issues in food production that contribute to national and global food security while helping America promote sustainable agricultural production and biotechnology exports. Funding will support efforts to develop more sustainable, productive, and economically viable plant and animal production systems. This investment will

strengthen food security, enhance production capacity and capabilities at all levels, and encourage diversification of agricultural systems.

An AFRI Coordinated Agricultural Project (CAP) with the University of Maryland is empowering honey beekeepers to work closely with apiculturists to implement management tactics that help reverse losses of honeybees. By bridging the gap between research and practice, beekeepers report that the bee CAP has contributed to a seismic shift in the ability to maintain healthy colonies. As a result, the project is contributing to the sustainable production of crops that depend on honey bees for pollination, while helping to ensure access to an affordable and abundant food supply.

**Water for Agriculture:** The development of new science and technologies focusing on widening the array of choices for conserving water and sustaining water quality at multiple scales is needed. This new science priority would evaluate how knowledge and technology, incentives, and policies help to promote appropriate decision-making. It will focus on solutions for water management in light of the extreme weather events and droughts, and it will link food, water, climate change, energy, and environmental issues. Funding will allow development of management practices, technologies, and tools for farmers, ranchers, forest owners and managers, public decision-makers, public and private managers, and citizens to improve water resource quantity and quality.

**Climate Variability and Change:** AFRI will support efforts to help farmers, ranchers, forest owners, and rural communities adapt to climate variation, reduce greenhouse gas emissions, and increase carbon sequestration. Specifically, the program will fund research on the effects of climate on microbes, pathogens, arthropods, weeds, and other pests which provide process-level knowledge of the impact of climate on the environmental-microbial matrices and host-pest interactions in food, plants, animals, and aquatic and soil ecosystems. In addition, program results may be used by the Climate Hubs to educate farmers, ranchers, and forest landowners on practices to ameliorate and/or adapt to climate change variability.

A study at the University of Florida is working on adapting kernel metabolism to enhance maize yield under adverse climatic conditions. This will be done by using modified genes to mitigate the yield loss that occurs during growth at elevated temperatures. The expected outcome is to enhance the heat stability of maize endosperm thereby increasing yield. In another project, Oklahoma State University is developing selection tools for livestock producers that focus on traits influencing adaptation to climate change. The project includes reducing water intake or increasing efficiency of water utilization, increasing pest resistance, and enhancing heat stress tolerance. The goal is to develop and deliver tools for producers to select for animals that are adaptable to drought and climate change.

**Sustainable Bioenergy Production:** AFRI sustainable bioenergy funding will focus on the societal challenge to secure America's energy future with high relevance to the development of sustainable regional feedstock systems for the production of bioenergy and bio-based products. The program strives to reduce U.S. dependence on fossil fuels, meet the production goals for biofuels within the Energy Independence and Security Act, and ultimately help develop the bio-based economic enterprises in rural communities. This will be accomplished through the production of sustainable bioenergy in regional systems that materially deliver liquid transportation biofuels.

AFRI is continuing its support of the Loblolly Pine Genome Project. With the goal of sequencing the genome of Loblolly Pine and other conifer genomes (Sugar Pine and Douglas-fir), the University of California developed a whole genome shotgun (WGS) strategy used to create the loblolly pine genome assembly. This successful WGS strategy is now underway for the Sugar Pine and Douglas-fir for supporting the growth of a biobased economy that generates biofuels and other non-traditional biobased products (e.g., pharmaceuticals, industrial chemicals, and lubricants) through agricultural production.

**Food Safety:** NIFA is committed to advancing the safety of the U.S. food supply through efforts to minimize antibiotic resistance transmission through the food chain and reduce microbial food safety hazards of fresh and fresh-cut fruits and vegetables. NIFA will fund work to advance

investigator-driven integrated research to solve complex food safety challenges in plant and animal food systems; amplify applied research to advance education and outreach activities to food safety audiences; expand and improve: mitigation strategies for reducing antimicrobial resistance, safety of fresh and fresh-cut fruits and vegetables, and processing technologies for enhancing food safety; and integrate nutrition and food safety efforts to create a healthier food supply.

Virginia Polytechnic Institute and State University is developing a hands-on food safety educational program delivered through Virginia and North Carolina County Extension Agents to farmers' market managers and vendors. The program is designed to reduce risk and enhance positive food safety culture throughout farmers markets. Project outcomes include increasing the number of participants educated and trained in safe food handling and preparation and implementing risk reducing practices that enhance the safety of farmers' markets and the local food system.

**Childhood Obesity Prevention:** According to the National Health and Nutrition Examination Survey administered by the U.S. Center for Disease Control and Prevention, prevalence rates of overweight children and levels of obesity in adolescents have tripled over the past 30 years. To help improve nutrition and reduce obesity, the University of Southern California developed a smartphone application to help low income families and children access information about healthy foods. The program goal is to offer families a tool that is easy to understand and use and one that will provide specific nutrient information that matches available food options.

In 2015, AFRI will continue to address childhood obesity prevention for children and adolescents ages 2-19 in the population of greatest risk, including populations eligible for USDA nutrition education and food assistance programs, the Supplemental Nutrition Assistance Program, and child nutrition programs.

**Foundational Science:** NIFA has committed 40 percent of AFRI funding to foundational science. Funding will allow substantive research investments in AFRI's Farm Bill priority areas.

Included under this program area is the Critical Agricultural Research and Extension (CARE) competition, which funds projects that address critical needs related to plant and animal production and protection, and the new Exploratory Research Grants Program, which supports innovative, “blue-sky” ideas that lead to quantum leaps in the areas of food security, climate change, environmental quality and natural resources, nutrition, obesity, food safety, strong families and vibrant communities, and thriving youth.

### **Food, Agricultural, Natural Resource, and Human Sciences Education and Literacy**

**Initiative:** NIFA continues its investment to ensure development of a diverse workforce that contributes to the national food and agricultural system by supporting education and training programs for the workforce and scientists in the food, agriculture, natural resource, and human sciences. AFRI will support activities for pre-doctoral and post-doctoral education and research training through awards made to individuals pursuing careers in NIFA research priority areas. The research and extension experiential learning initiative for undergraduates will provide opportunities for underrepresented students, including those from minority serving institutions, community colleges, and other universities to obtain hands-on experience and training at land-grant and non-land-grant universities and USDA laboratories, thus preparing the graduates to join the agricultural workforce or pursue graduate studies in agricultural and related sciences.

### **Public-Private Partnerships for Innovation Institutes**

In December 2012, the President’s Council of Advisors on Science and Technology (PCAST) proposed that a new innovation ecosystem for agriculture is needed to leverage the best from different parts of the broad U.S. science and technology enterprise and recommended creation of six large, multidisciplinary innovation institutes focused on emerging challenges to agriculture. In line with this recommendation, in 2015 NIFA proposes funding to establish three new Institutes, with an investment of \$25 million for each Institute. Funds will support a competitive selection process that leverages public-private partnerships. The three Innovation Institutes will include: 1) Pollination and Pollinator Health for research on pollinator health to combat pollinator decline and Colony Collapse Disorder (as part of USDA’s commitment of over \$70 million to this important government-wide initiative); 2) National Network for

Manufacturing Innovation to focus on biomanufacturing and bioproduct development; and 3) Antimicrobial Resistance to promote a systems approach from the farm and farm environment to the consumer in order to address antimicrobial resistance.

### **Food and Agriculture Resiliency Program for Military Veterans (FARM-Vets)**

Understanding why and how best to engage veterans in the agricultural sector is congruent with the critical need to identify the next generation of farmers, producers, and entrepreneurs as an aging farm population and workforce transitions to retirement, especially in rural areas where labor shortages are acute. The proposed FARM-Vets program promotes competition that explores career opportunities and pathways, therapeutic interventions, resource conservation, and related studies for the veteran population in the food and agriculture sector. Funds totaling \$2.5 million will be used for projects to inform the establishment and scalability of programming that helps veterans develop farming and ranching skills, business plans, and agriculture systems management.

### **Food Safety Outreach Program**

NIFA, in close collaboration with the Food and Drug Administration, will establish a food safety outreach program to provide food safety training, education, extension, outreach, and technical assistance to owners and operators of small farms, small food processors, and small fruit and vegetable vendors affected by the Food Safety Modernization Act (FSMA) of 2011. The program will facilitate the integration of food safety standards and guidance in a variety of agricultural production systems encompassing conventional, sustainable, organic, conservation, and environmental practices. The budget requests \$2.5 million for the program.

### **Capacity Programs**

NIFA recognizes the importance and the significant impact capacity funding has on our State partners and on the research, education, and extension activities they perform in support of our Nation's globally preeminent food and agricultural enterprise. Therefore, during these challenging times for limited financial resources, we request that funds for capacity programs be maintained at the 2014 funding level. NIFA requests a total of \$746 million for Hatch Act, McIntire-Stennis Cooperative Forestry, Evans-Allen Program, Smith-Lever Formula 3(b) and (c),

Extension Services at 1890 Institutions, Smith-Lever 3(d) Expanded Food and Nutrition Education Program, and Renewable Resources Extension Act. This level of funding will help maintain current research and extension efforts in production agriculture by our state and university partners.

### **Hispanic-Serving Agricultural Colleges and Universities Endowment Fund**

The Hispanic/Latino community is the fastest growing sector of the American population. For 2015, the NIFA budget requests \$10 million to establish an endowment fund for the Hispanic-Serving Agricultural Colleges and Universities (HSACU). This investment is needed to assist HSACUs compete effectively for NIFA competitive grants. Funds from this endowment will help in the development of a skilled and marketable Hispanic student population from the HSACUs for employment in the food and agriculture sector, which in recent years has seen unprecedented growth and is unable to meet the demand for a qualified workforce. Additionally, as Hispanics have historically been underrepresented in such professions as science, technology, engineering, and mathematics, the Nation could face serious shortages in many critical professions, including the agricultural sciences. Increasing investment in HSACUs will help close this educational gap while addressing our Nation's need for a qualified workforce.

### **Consolidation of Science, Technology, Engineering and Mathematics (STEM) Programs**

The Budget includes a proposal to consolidate Science, Technology, Engineering and Mathematics (STEM) programs as part of a government-wide initiative. Affected NIFA programs include the Research and Education Activities – Institution Challenge Grants, Multicultural Scholars Grants, and Graduate Fellowship Grants; and Secondary/2-year Post Secondary Education Program. Also consolidated is funding for Extension Activities – Women and Minorities in STEM Fields and Agriculture in the Classroom.

### **Other Programs**

The 2015 Budget continues many programs at the 2014 funding level. We will continue support for Sustainable Agriculture Research and Education Program; Minor Crop Pest Management, IR-4; Crop Protection/Pest Management; and Food and Agriculture Defense



Initiative. Funding also is maintained for 1890 and 1994 land-grant universities and Hispanic-Serving Institutions. NIFA will continue funding for most of the other research, education, and extension programs.

### **Management Initiatives**

The proposal includes \$9.8 million (an increase of \$2 million) in Federal administration costs to support continued modernization of our grant application systems and processes. Such improvements are desperately needed and will improve transparency and reporting with a system that is completely paperless and links the functionality of all business processes associated with NIFA's mission as a Federal funding agency for research, education, and extension. In addition, as part of a USDA proposal to decentralize funding, funds are requested within the agency budget to support rental payments to the General Services Administration for facility space and to the Department of Homeland Security for security costs.

### **Opportunity, Growth, and Security Initiative**

Recognizing the importance of the two-year budget agreement Congress reached in December, the President's Budget adheres to the Bipartisan Budget Act of 2013 discretionary funding levels for 2015. Within a separate Opportunity, Growth, and Security Initiative (OGSI), additional funds above the Budget level are allocated to support AFRI, Hatch Act, and Evans-Allen. Under the OGSI, AFRI will focus on climate resilient agricultural production systems: climate change adaptation and mitigation, water resources and drought mitigation, and food security and sustainability. A new competitive portion of the Hatch Act capacity grant and the Evans-Allen capacity grant will fund competitive research that are multi-state collaborations to support national and regional challenges pertaining to food security, water and climate change, nutrition, and obesity. The OGSI provides \$80 million to enhance NIFA's capacity and competitive programs, including \$60 million for AFRI and \$20 million for competitively awarded grants for Hatch and Evans-Allen.

## **Conclusion**

NIFA acknowledges and appreciates Congress passing and the President signing the Agricultural Act of 2014 (2014 Farm Bill). Along with other USDA agencies, NIFA is diligently working to implement the 2014 Farm Bill. NIFA will continue to organize and manage programs to maximize our research, education, and extension investments in America's agricultural future. With this 2015 budget proposal, NIFA will persevere in leading the food and agricultural sciences to create a better future for the Nation and the world.

Mr. Chairman, this concludes my statement. I will be glad to answer any questions the Subcommittee may have.