

U.S. Department of Agriculture

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HIGHLIGHTS

- The Agricultural Act of 2014 (Public Law 113-79) signed into law on February 7, 2014.
- \$200 million authorized in the new farm bill to establish a nonprofit Foundation for Food and Agriculture Research.
- \$325 million in proposed FY 2015 funding for the Agriculture and Food Research Initiative (AFRI).
- \$75 million proposed in FY 2015 to establish three Innovation Institutes in pollination and pollinator health, manufacturing innovation, and anti-microbial resistance research.

OVERVIEW

It is a generally accepted world view that American agriculture represents one of the strongest and most vibrant food and fiber systems in the world. The fact that Americans spend around six percent of their income on their food bill reinforces this world view. The research and development funded and generated by the U.S. Department of Agriculture (USDA) contributes meaningfully to this happy reality. And in a world recovering from recession, American agriculture shines as an example of healthy economic recovery. Indeed, in 2012, the President's budget cites 16.5 million jobs alone in the agricultural sector.

The biggest challenge currently confronting American agriculture is how to be more innovative while quickly responding to economic needs and realities in rural America as well as the health and well-being of America's citizenry. In the FY 2015 budget proposal, the Administration identifies several strategic goals that define specific research and

development areas that seek to address these needs and realities: (1) revitalize rural America, (2) conserve the nation's natural resources and combat climate change, (3) promote agricultural exports while increasing food security, (4) ensure access to nutritious meals, and (5) modernize USDA for the 21st century.

Like all government agencies, USDA faces finite financial resources. The President's budget provides an insight into how USDA would allocate these resources. For example, in FY 2015, the overall budget outlays are proposed at the level of \$140 billion. Of this amount, \$116 billion would be designated for mandatory programs, leaving \$24 billion for discretionary programs. The discretionary programs of rural development, research, food safety, marketing and regulatory, and departmental management represent five percent of the discretionary funding. And therein lies the challenge. Research shares a fairly small piece of the pie with several other critical agency activities. Below is a brief discussion of what might be done with the portion dedicated to research.

NEW FARM BILL PASSED

A significant milestone was reached when the new Farm Bill, the Agricultural Act of 2014 (Public Law 113-79), was signed into law on February 7, 2014. This day marked the culmination of significant efforts over the past few years for new reauthorization legislation for the programs of USDA. The last farm bill expired in 2012. A key tool for agricultural and food policy, a farm bill reauthorizes programs for a period of five years and invigorates the process and development of critical programs. Research (and extension) programs are authorized within Title VII. A few research highlights include: (1) section 7111: continuation of animal health and research capacity programs distributed by formula; establishment of a new, \$25 million per year competitive grants program which is open to land-grant and non-land-grant colleges of agriculture; (2) section 7128: establishment of a new, uniform matching requirement for National Institute of Food and Agriculture competitive grants; (3) section 7209: establishment of high priority research and extension initiatives in coffee plant health, corn and soy meal, pulse crop health, and training coordination for food and agriculture protection; reauthorization of pollinator protection, which has been amended to include health and population status surveillance; (4) section 7211: reauthorization of the organic agriculture research and extension initiative providing a total of \$100 million in mandatory

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funding, disbursed at \$20 million per year; and, (5) section 7601: the authorization of the Foundation for Food and Agriculture research (see below).

Foundation for Food and Agriculture Research. The Agricultural Act of 2014 authorizes a new Foundation for Food and Agriculture Research, a nonprofit corporation designed to supplement USDA's basic and applied research activities, at a funding level of \$200 million (\$20 million per year) in mandatory funding that is available until expended. One criterion requires that the research efforts of this nonprofit will not duplicate research currently undertaken by USDA. The foundation would create a public-private partnership, soliciting donations from the private sector to conduct additional research in areas such as food safety and nutrition, plant and animal health, technology, renewable energy, etc.

INITIATIVES

Agriculture and Food Research Initiative (AFRI). The Agriculture and Food Research Initiative resides in the National Institute of Food and Agriculture, part of the Research, Education, and Economics (REE) mission area. AFRI is the premier agricultural research program of the United States and funding is based on a competitive, peer-reviewed process.

The research programs funded through AFRI will support all of USDA's strategic goals, namely, (1) assist rural communities to create prosperity so they are self-sustaining, repopulating, and economically thriving (e.g., biomass/biofuels research); (2) ensure that national forests and private working lands are conserved, restored, and made more resilient to climate change, while enhancing the nation's water resources (e.g., water management research to understand links between food, water, climate change, energy, and the environment); (3) help in promoting agricultural production and biotechnology exports as the nation strives to increase food security (e.g., reproductive fertility in food animals); (4) ensure that all of America's children have access to safe, nutritious, and balanced meals (e.g., human nutrition research); and, in general, (5) create an agency for the 21st century that is high-performing, efficient, and adaptable. The President's budget states that "major studies have consistently found that the net social returns from public agricultural research in the United States are high."

The President's FY 2015 budget proposes AFRI funding at a level of \$325 million, an increase of 2.8 percent over the FY2014 level of \$316 million. While at first glance this may not appear to be a sizeable increase, one can consider that in FY 2013 AFRI was funded at a level of \$276 million, which represents a 14.5 percent increase between FY 2013 and FY 2014. Therefore, one can conclude that the Administration continues to support vigorously the aspirations and programs of AFRI, especially when considering the proposal to fund the creation of three new innovation institutes (see below).

Innovation Institutes. Responding to a report issued in December 2012 by the President's Council of Advisors on Science and Technology (PCAST), the Administration's budget proposal calls for the creation of three innovation institutes. A core feature of these institutes would be a public-private partnership that would seek to leverage knowledge and funding resources from both sectors. To be housed in AFRI, the FY 2015 budget proposes an initial investment of \$75 million. This level of investment would be repeated annually for up to a minimum of five years. During this five-year period, an annual total of \$75 million would be divided into three equal parts and support the following three research areas: (1) \$25 million for pollination and pollinator health, (2) \$25 million to build a national network for manufacturing innovation, and, (3) \$25 million for anti-microbial resistance research. All research dollars would be spent only on actual research and not on bricks and mortar.

For several years now, there has been a great deal of concern expressed about the plight of the honey bee. Populations are decreasing at an alarming rate. The honey bee, as we know, is a critical subset of pollinators. Of the \$25 million proposed for this research focus, \$5 million would be utilized in a multi-agency effort to address the decline of honey bee health and Colony Collapse Disorder.

A second institute would focus on biomanufacturing and bioproduct development. The aim of the institute would be for bioenergy and biobased research efforts to culminate in development, deployment, and commercialization of new products.

The third institute would focus on antimicrobial resistance research (AMR). Research efforts would seek to identify gaps in mitigating AMR. Trans-disciplinary teams would develop and disseminate newfound knowledge to consumers.

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USDA AGENCIES

Research, Education, and Economics (REE). The programs of the REE area support critical research that allows for the discovery of new knowledge which is then delivered to the general population through education and outreach (extension) programs. This new knowledge and understanding allows for innovation and improved practices that ensure a safe, sustainable, and competitive food, fuel, and fiber system that leads to individuals and communities that are sound economically, nutritionally, and environmentally.

The Research, Education, and Economics area houses several agencies that conduct or support the principal research and development activities of USDA: the Agricultural Research Service (ARS), the National Institute of Food and Agriculture (NIFA), the Economic Research Service (ERS), and the National Agricultural Statistics Service (NASS).

To provide context to these research activities, the bulk of USDA's agricultural research is carried out in ARS, the in-house research agency, and NIFA, which extends its hand in partnership to the university community, principally to the land-grant community.

Agricultural Research Service (ARS). ARS is the principal in-house research agency of USDA. Along with NIFA, it serves as a major producer of the nation's agricultural research. The agency also houses the National Agricultural Library (NAL), the nation's primary information resource on food, agriculture, and natural resource sciences. The President's budget proposes a total funding level – including non-R&D funding – of \$1.136 billion for FY 2015, a decrease of 1.6 percent. The major research highlights in the FY 2015 ARS budget proposal are climate change, genetic improvements and translational breeding, and the Pollinator Health Initiative.

Climate change research would focus on three areas: (1) develop decision support systems and data management tools, (2) create new knowledge on the sensitivity of agroecosystems to climate change, and (3) create management technologies and strategies to enhance sustainability. Big data systems will play a principal role in this research area.

Genetic improvements research would focus on: (1) genetic resources and tools that enhance productivity and resilience of new breeds, lines,

and strains; and, (2) advance translational breeding programs and expand access to genetic resources, tools, and knowledge that will increase agricultural resiliency and, thus, enhance food production.

The Pollinator Health Initiative would be a part of the Innovation Institutes efforts and would focus on developing and testing best management practices to prevent Colony Collapse Disorder.

National Institute of Food and Agriculture (NIFA). The National Institute of Food and Agriculture administers AFRI funding as well as the historic federal/state partnership between USDA and the nation's land-grant institutions – both 1862 institutions and the historically black 1890 land-grant institutions – and funding to the tribal colleges (1994 institutions) and Hispanic-serving institutions. Through an extensive network of research, education, and extension programs, NIFA is able to deliver newly-discovered knowledge, new practices, and innovation to the practitioners that work in the agriculture, food, fuel, and fiber system. This partnership and these programs are a unique feature of the U.S. food and fiber system that is envied all over the world. The ability to direct cutting-edge research from the laboratory to the classroom and finally onto the “kitchen table” through education and extension programs is one of the major reasons that U.S. agriculture has been on the forefront of global best practices.

The President's budget proposes for FY 2015 a funding level of \$876 million for R&D in NIFA. This represents an 8.6 percent increase over the FY 2014 R&D funding level of \$807 million. Of this proposed \$876 million, funding for AFRI would be \$325 million or 37 percent of the total. The proposed Innovation Institutes (\$75 million) would constitute another 8.6 percent of total funding.

A significant and historical funding mechanism for the federal-state partnership between USDA and the land-grant systems is what is known as “formula or capacity funds.” Formula funds are non-competitive awards given to each land-grant institution. The awards are based on a statutory formula and the funds are used to address ongoing research needs that are often specific to a state or region. The Hatch Act provides formula funds for the agricultural experiment stations based at the nation's land-grant colleges and universities. As stated, formula funds ensure the continuity of agricultural research programs that address state and regional issues. While formula funds are valued, the Obama Administration – as well as past Administrations – prefers to target the

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AFRI competitive grants program for significant funding increases. There is a genuine interest in creating in USDA the same funding prowess that exists in the National Institutes of Health or the National Science Foundation. For FY 2015, the President's budget proposes level funding for the Hatch Act at \$244 million. However, there was a meaningful increase (11.5 percent) in funding between FY 2013 (\$219 million) and FY 2014 (\$244 million). Like the Hatch program, other capacity funding received no increases over FY 2014 in the President's FY 2015 budget: the Evans-Allen (1890) Program at \$52.5 million and McIntire-Stennis Cooperative Forestry at \$34 million. As in FY 2014, the Administration proposes zero funding for the Animal Health and Disease (section 1433) Program, which is currently funded at a level of \$4 million.

Economic Research Service (ERS). ERS provides economic and social science information, and analysis on agriculture, food, the environment, nutrition and food assistance programs, and rural development. USDA uses this information to inform policy and program decisions made within its various agencies. The President's budget proposes R&D funding at a level of \$83 million for FY 2014, an increase of 6.4 percent. Research would focus on: (1) the design of environmental markets and their interaction with conservation programs; (2) identification of improvements in nutrition for schools; (3) understanding family participation in safety net programs, such as nutrition and financial assistance; and (4) analysis of farm safety net programs to better coordinate with farmer incentives and thus reduce program duplication.

National Agricultural Statistics Services (NASS). NASS provides timely, unbiased data to agricultural markets, rural communities, and researchers. The President's FY 2015 budget proposes an R&D funding level of \$10 million, an increase of 42.9 percent over FY 2014 levels. Increased funding would be used to restore surveys previously eliminated due to budget constraints. The surveys include fruit and vegetable in-season surveys and the chemical use survey. Also, the budget requests additional funding for expansion of NASS's geospatial information surveys. Finally, survey efforts would include a focus on honey bee health.

Forest Service (FS). One of USDA's strategic goals is to conserve, restore, and increase the resilience of our national forests to climate change, while also improving the nation's water resources. These efforts are carried out by the Forest Service, the world's largest forest research

organization. Research is conducted at five research stations, the Forest Products Laboratory, and the International Institute of Tropical Forestry located in Puerto Rico, with approximately 500 scientists at 67 sites located throughout the United States. FS R&D provides scientific information and new technologies to support sustainable management of the nation's forests and rangelands across all of the United States and its territories (including both federal and non-federal lands). These products and services increase the basic biological and physical knowledge of the composition, structure, and function of forest, rangeland, and aquatic ecosystems. Research is directed toward sustaining healthy watersheds, forest products, wildlife protection, outdoor recreation opportunities, and other benefits. Experimental forests and rangelands are maintained at 81 locations and in every major forest ecosystem type in the United States; these provide a resource for long-term data (more than 50 years in many cases) to forest researchers worldwide.

Within this agency, the President's FY 2015 budget proposes \$275 million for forest and rangeland research, a 6.1 percent decrease below the FY 2014 level of \$293 million. Research efforts would include a focus on domestic energy security, which features work to stimulate the creation of industrial and commercial markets for underutilized forest resources.