

AGRICULTURAL RESEARCH SERVICE

**Statement of Dr. Chavonda Jacobs-Young, Administrator
Before the Subcommittee on Agriculture, Rural Development,
Food and Drug Administration, and Related Agencies**

Mr. Chairman and members of the Subcommittee, I appreciate this opportunity to present the Fiscal Year (FY) 2016 Budget request for the Agricultural Research Service (ARS). The President's FY 2016 Budget request for ARS' salaries and expenses is \$1,191,540,000, a net increase of \$58,915,000 above the FY 2015 enacted level.

Under its Salaries and Expenses account, ARS' FY 2016 Budget requests increases of \$77.3 million in new and expanded research program initiatives, \$20 million for repair and maintenance of the agency's laboratories, and \$9 million for pay costs. Partially offsetting the proposed increases are reductions of \$47.4 million in proposed project terminations and program reallocations.

Under its Buildings and Facilities account, ARS' FY 2016 Budget requests \$206 million, an increase of \$160 million above 2015, for the construction and modernization of high priority facilities and laboratories. These facilities and laboratories have been identified as such because of their program importance and need for modernization.

Specific information about the components of ARS' FY 2016 Budget are as follows:

Research Program Initiatives (\$77.3 million)

Translational Crop and Livestock Genetics for Accelerating Advances in Food Production -- \$11.1 million

The current priorities for the Nation's crop and livestock genetic/genomic research are to enhance domestic production, food security, and farmer profitability. However, excessive genetic uniformity must be addressed to prevent genetic vulnerability to rapidly changing environmental conditions, emerging diseases and pests, and evolving market demands. To address these challenges, genetics and genomics must transform the capacity of plant and animal

breeding to improve production efficiency, yield, sustainability, resilience, health, and product quality.

In support of the recommendations of the President's Council of Advisors on Science and Technology on Agricultural Preparedness, the goals of the Interagency Working Group on Plant Genomics, and the National Plant Genome Initiative, an increase of \$11.1 million is proposed to generate innovative new technology platforms, and genetic and genomic resources for transforming the speed and effectiveness of crop and animal breeding.

Climate Change Resilient Crops -- \$11 million

Maintaining crop and animal production to feed a growing population during a period of climate change is one of the greatest challenges we face today. By 2050, global agricultural demand is projected to grow by 70 to 100 percent due in part to population growth, energy demands, and higher incomes in developing countries. Meeting this demand for increased agricultural productivity will require development of production systems that are more resilient to the impacts of changing climates.

ARS' FY 2016 Budget requests an additional \$11 million to strengthen the science on how agricultural systems are impacted by climate change. Specifically, ARS will determine the genetic variation of crops necessary to maintain yields and nutritional quality; identify management practices that maximize genetic potential to achieve optimal yield and quality; and evaluate the effects of climate change on pests/beneficial insects.

Reducing Vulnerability to Climate Change -- \$8 million

Improvements in agricultural production during much of the 20th century have been possible in part because of healthy soils, water availability, and the relative stability of air temperatures. Increased variability of temperatures, rainfall, extreme weather, and biological pressures poses unprecedented risks to the production of sufficient food, fiber, and fuel.

With the proposed \$8 million increase, ARS will: use the LTAR (Long-Term Agro-Ecosystem Research) network to model long-term weather (e.g., temperature and drought) in the context of production impacts for cropping and livestock systems; identify the most vulnerable agro-ecosystems to climate induced shifts in invasive species; develop improved water management strategies; and utilize USDA's Climate Hubs to disseminate climate change research results.

Anti-Microbial Resistance -- \$17 million

As part of the Administration's initiative to respond to the increasing instances of anti-microbial resistance, USDA is requesting a total of \$77 million (\$57 million above the FY 2015 enacted level). ARS research represents \$30 million of that total, an increase of \$1 million as follows:

a. Combating Antibiotic-Resistant Bacteria (\$10 million)

The discovery of antibiotics in the early 20th century has been responsible for saving millions of lives. However, the rise of antibiotic-resistant bacteria now represents a serious public health threat. It is estimated that 23,000 deaths and two million illnesses each year are caused by antibiotic-resistant bacteria.

ARS' FY 2016 Budget requests an increase of \$10 million to develop alternatives (such as vaccines) to antibiotics used in preventing and treating infectious diseases in food animals which in turn will help reduce the development of antibiotic-resistant bacteria while preserving the efficacy of antibiotics. This research is in response to the President's 2014 Executive Order 13676, "Combating Antibiotic-Resistant Bacteria," and complements ARS' related research initiative, "Antimicrobial Resistance."

b. Antimicrobial Resistance (\$7 million)

Interactions among different kinds of microbes and their relationships with animals, the environment, and human hosts affects the development of animal diseases, the safety of foods and feeds, and the overall health of humans in ways that are poorly understood. Understanding these interactions/relationships will help reduce the use of antibiotics in food animals and improve food safety and agricultural productivity.

With the proposed \$7 million increase, ARS will determine the incidence of antibiotic-resistant pathogens in the environment, and their impact on the development of antimicrobial-resistant bacteria in food production animals. The research will lead to alternative strategies that result in the reduction of antibiotics and antimicrobial resistance.

Pollinator Health and Colony Collapse Disorder -- \$7 million

On June 20, 2014, President Obama issued a Pollinator Health Memorandum, "Creating a Federal Strategy to Promote the Health of Honey Bees and Other Pollinators." It directs Federal agencies to develop a National Pollinator Health Strategy with explicit goals and metrics to measure progress. In response, USDA, in conjunction with the EPA, the Department of the

Interior, and other relevant Federal partners, is currently scaling up efforts to address the decline of honey bee health.

As part of this effort, ARS' FY 2016 Budget requests an additional \$7 million (above its FY 2015 enacted level of \$14 million) to develop best management practices for beekeepers that will prevent CCD and reduce colony mortality to acceptable levels. Research will be conducted on the causes of CCD, controlling bee parasites (particularly varroa mites) and diseases, improving diets and forage to ensure adequate bee nutrition, and reducing exposure of bees to pesticides.

Improving Agricultural Sustainability -- \$8 million

As we approach the middle of the 21st century, the challenge of providing sufficient food, fiber, and fuel to support the growing global population is becoming more difficult as our natural resources, environmental health, and available arable land decline and climate changes. The unprecedented nature and increasing difficulty of these challenges heightens the sense of urgency for transformative changes to agriculture, that is, achieving sustainable agricultural systems that maximize production and economic return for producers while minimizing environmental degradation and adapting to climate change. Fully achieving such a transformation requires an improved understanding of the complexities of how agro-ecosystems function at multiple scales (i.e., fields to watershed or landscapes).

In 2012, ARS organized 10 of its existing research watersheds, ranges, and farms into a LTAR network. In 2014, ARS added eight additional sites to the LTAR network. ARS' FY 2016 Budget requests an increase of \$8 million to enhance the functionality of the eight newly designed sites (i.e., Chesapeake Bay; Florida; the Great Basin; the Great Lakes region; the High Plains aquifer; the Lower Mississippi River Basin; the Ohio River Basin; and the Texas Gulf coast). The LTAR sites will enable scientists, collaborating across ARS, universities, and other Federal agencies to conduct multidisciplinary research to determine how best to sustain or enhance agricultural productivity, profitability, and environmental quality across a wide variety of agro-ecosystems.

Sustainable Small Farms -- \$7.5 million

Small scale farming operations today face significant challenges to attaining sustainable profitability absent the advantages larger producers enjoy from economies of scale. Small scale farms must yield high value products, such as specialty crops and farm animals, and function

extremely efficiently to survive. Their products and operations must be tailored for local food production needs to reduce transportation costs, preserve product quality, and shorten the marketing chain between the producer and consumer.

With the proposed \$7.5 million increase, ARS will improve the competitiveness and sustainability of local and regional small scale farming operations by developing new, high value specialty crop varieties and farm animal lines with superior nutritional quality, which are tolerant of environmental extremes, and resistant to pests/diseases.

Vertical Farming -- \$5 million

As the population grows, urbanization increases, and climate change progresses, the need for self-contained, energy efficient, low cost food production that is environmentally sustainable is critical. Vertical farming in enclosed structures addresses that need, providing an opportunity for highly integrated food production systems for the future.

With the proposed \$5 million increase, ARS will develop high value crops that are adapted for greenhouses and other challenging urban environments that extend the growing season and that meet the needs of local food markets. Also, new technologies will be developed for insect/disease control, a major problem associated with greenhouse production systems.

Big Data, Earth Sciences, and Earth Observation -- \$2.5 million

Understanding and addressing global system level agricultural problems increasingly depends on the availability and use of high quality, easily accessible earth observation data. However, interoperable systems for earth observation data are challenged by the heterogeneous nature of the data and information; information system design decisions; and the wide range of disciplines producing and consuming the data. The large size of the datasets poses additional challenges for their collection, normalization, preservation, access, and interoperability.

With the \$2.5 million proposed increase, ARS will develop systems which provide new, more efficient ways for the agricultural community to unlock the potential of satellite data, particularly higher resolution satellite swath data. The agency will leverage the ongoing collaboration among the Federation of Earth Science Information Partners Agriculture and Climate Cluster, the LTAR network, USDA's Climate Hubs, the Climate Change Program Office, and the other Federal and non-Federal initiatives.

Apprentice Farmer Program -- \$0.15 million

ARS' FY 2016 Budget includes \$150,000 for an “apprentice farmer” program at its Beltsville Agricultural Research Center (BARC). Apprentice farmers will work with BARC researchers/staff to gain hands-on experience in planting, growing, and harvesting crops and preparing them for sale, storage, and/or silage.

Repair and Maintenance of Buildings/Facilities (\$20 million)

Many of the agency's laboratories were built in the 1950s and 1960s and are now more than 50 years old. The backlog of ARS' repair and maintenance (R&M) needs exceeds \$250 million and continues to grow. The annual R&M resources have typically been between \$18 to \$20 million range which has been inadequate to maintain the agency's laboratories. Routine repair and maintenance is required to prevent more extensive repairs and higher costs in the future.

With the proposed \$20 million increase, ARS will address specific R&M needs at selected laboratories such as the maintenance, repair, or replacement of their: HVAC/electrical/plumbing systems; roof; building envelope; site utility system; and fire protection and safety systems. Many of these systems/items have reached the end of their service life and no longer meet compliance or safety requirements.

Pay Costs (\$9 million)

In the FY 2016 Budget, ARS is requesting an increase of \$9 million for employee pay costs. Funding for pay costs is critical for retaining top level scientists and staff, conducting viable research programs, and carrying out ARS' mission.

Buildings and Facilities Improvements (\$206 million)

In April 2012, at the request of the Secretary and Congress, ARS completed an extensive review of the agency's laboratory portfolio, developing a plan for future capital investments. The review, reported as the “Capital Investment Strategy” (CIS), highlighted the agency's aging infrastructure and recommended modernization of selected priority facilities. Many of these facilities are at the limit or well in excess of their functional lifespan according to engineering standards.

Under its Buildings and Facilities account, ARS requests \$206 million for the following laboratories, identified in the CIS report as “high priority” because of their program importance and need for modernization.

Biocontainment Laboratory and Consolidated Poultry Research Facility, Athens, Georgia -- \$114 million

ARS' Southeast Poultry Research Laboratory (SEPRL) in Athens, Georgia is USDA's principal facility for conducting research on exotic and emerging poultry diseases, such as Avian Influenza, Hong Kong H5N1 virus, and Newcastle disease. Adjacent to SEPRL is ARS' Richard Russell Agricultural Research Center (RRC), which is USDA's primary facility for performing food safety research including antibiotic resistance research. The Avian Disease and Oncology Laboratory (ADOL) in East Lansing, Michigan, conducts research on poultry tumor viruses, Marek's disease, and retroviruses. All three of these laboratories -- SEPRL, RRC, and ADOL -- are outdated and inadequate for responding to highly virulent poultry diseases that require increased biocontainment capabilities and state-of-the-art facilities.

The new, modernized Biocontainment Laboratory and Consolidated Poultry Research Facility will meet the combined needs of SEPRL's/ADOL's/RRC's scientists, enabling them to more adequately address the exotic/emerging poultry diseases which threaten the Nation's poultry industry and potentially the health of thousands of Americans.

In 2015, Congress provided ARS \$45 million toward the planning and design of the entire facility, and construction of a Biosafety Level-3 animal laboratory and other facility buildings. For FY 2016, ARS requests \$114 million to complete construction of the entire facility.

Beltsville Agricultural Research Center (BARC), Building 307, Beltsville, Maryland -- \$37.1 million

Most of Building 307 has been vacated, its space no longer functional for ARS' research activities. Its basement currently serves as the IT hub for the agency's scientists and other Federal tenants located on BARC's East Campus. Many of BARC's animal science, human nutrition, and honey bee researchers are currently dispersed and housed in small, inefficient buildings that do not serve their needs. For FY 2016, ARS requests \$37.1 million to fully fund the renovation and modernization of Building 307 which will facilitate the consolidation of laboratories and offices at BARC, consistent with the Center's master plan.

National Laboratory for Agriculture and the Environment, Ames, Iowa -- \$13.5 million

The laboratory was constructed in 1987 and is now 27 years old. There are serious safety problems related to outdated systems and equipment including the water distribution system, fire alarm system, emergency generation equipment, and HVAC system. For FY 2016, ARS

requests \$13.5 million to fully fund the renovation and modernization of the National Laboratory for Agriculture and the Environment.

Southwest Watershed Research Center, Tucson, Arizona -- \$12.4 million

The Center currently consists of a number of small, aging buildings constructed over 40 years ago that are spread over the complex. The buildings' systems (including plumbing, HVAC, and fire safety) have exceeded their expected life service. For FY 2016, ARS requests \$12.4 million to fully fund the construction of a new, modern building which will bring all the scientists and staff together into one building.

Children's Nutrition Research Center, Houston, Texas -- \$29.2 million

The Children's Nutrition Center's scientist's research the dietary needs of pregnant and lactation women, and children from conception through adolescence. Many of the Center's structures and systems (e.g., the roof, elevators, exhaust system, fire alarm system, etc.) are obsolete and need to be replaced. For FY 2016, ARS requests \$29.2 million to fully fund the renovation and modernization of the Children's Nutrition Research Center.

Research Program Reductions and Reallocations (-\$47.4 million)

ARS' FY 2016 Budget includes \$47,383,000 in research program reductions and reallocations. These proposed reductions/reallocations from ongoing research programs will be redirected to finance and partially offset the research initiatives proposed in the FY 2016 Budget. The projects proposed for reduction or elimination are projects where the research objectives have generally been accomplished, are duplicative or can be accomplished elsewhere, or have inadequate funding, staffing or infrastructure. In addition, to improve the agency's research programs, ARS is proposing to close its U.S. Sheep Experiment Station in Dubois, Idaho, and consolidate its research activities to three other ARS laboratories in Kimberly, Aberdeen, and Boise, Idaho.

Closing

The world's population is expected to increase from 7 billion today to 9.7 billion by 2050. Agriculture faces multiple challenges: Most importantly, it must produce more food and fiber to feed a growing population. But, it also must adopt more sustainable and efficient production methods, and it must adapt to climate change.

ARS' proposed FY 2016 Budget initiatives -- increasing productivity through genetic/genomic advances, producing crops/food animals more resilient to climate change, reducing the use of antibiotics and the persistence antibiotic-resistant bacteria, and improving pollinator health -- directly respond to these challenges.

ARS' initiatives, including "Improving Agricultural Sustainability" and "Big Data, Earth Sciences, and Earth Observation," provide for increased research collaboration, partnering, and coordination with other Federal agencies, universities, and other stakeholders. Silos where information is not readily exchanged among organizations cannot continue if U.S. agriculture is to solve the formidable food production challenges it faces.

Mr. Chairman, this concludes my statement of ARS' Budget recommendations for FY 2016. I will be happy to answer any questions that the Subcommittee may have.