

**Statement by
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and Biotechnology
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Chair Baird, Ranking Member Spanberger, and Members of this Subcommittee, thank you for the opportunity to come before you today to discuss the state of the United States Department of Agriculture's Research, Education, and Economics (REE) mission area, which includes Agricultural Research Service (ARS), Economic Research Service (ERS), National Agricultural Statistics Service (NASS), National Institute of Food and Agriculture (NIFA), and Office of the Chief Scientist (OCS). The success of the REE mission area is rooted in partnerships—partnerships with technical assistance providers, including the Cooperative Extension System, that give producers the tools they need to adapt as they feed the world, with institutions to advance agricultural innovation and cultivate the next generation of agricultural leaders, and with Congress to ensure that decision-makers have the tools they need to support farmers and ranchers across the country.

Publicly funded agricultural research and development often have a less-told story, but we live and reap the benefits of these investments every single day. The impacts of USDA-funded research in particular shape the way we eat, clothe ourselves, and adapt to a changing climate. In Indiana, for example, NASS collects corn and soybean data, while ARS is spending upwards of \$40 million this year to fund research on sustainable biomass production, feedstock conversion technologies, and new ways of turning agricultural wastes into clean energy. NIFA, through its new Bioproduct Pilot Program, is helping to accelerate the development of a more circular economy where agricultural resources are harvested, consumed, and regenerated sustainably.

In states like Virginia, where the Delmarva region produces most of the poultry consumed by Americans on the east coast, ARS is spending upwards of \$7 million this year to combat the threat of Avian Influenza. ARS is currently researching veterinary medical countermeasures such as diagnostics and vaccines for the early detection, prevention, and eradication of disease outbreaks. This research helps producers make well-informed decisions for their operations.

Production agriculture requires constant innovation and adaptation as farmers and ranchers pursue climate-smart solutions to extreme weather, rural businesses seek new markets, and underserved communities seek trusted partners to tackle systemic concerns. Access to information and new technologies underpins each of these objectives, and when appropriately resourced, REE is well-positioned to be a partner in providing timely research, data, training, Extension services, and economic analysis to support informed decision-making.

American farmers, ranchers, and producers are incredibly resilient. Production agriculture requires constant innovation and adaptation as farmers and ranchers pursue climate-smart solutions to extreme weather, rural businesses require new markets to increase profitability, and underserved communities seek trusted partners to tackle systemic issues. Access to new information and technologies undergirds each of these objectives, and when appropriately

resourced, REE has a proven track record in providing timely research, data, training, Extension services, and economic analysis to support farmers, ranchers, and producers across the supply chain.

For example, ARS and the U.S. Forest Service through USDA's ten domestic Climate Hubs deliver science-based, region-specific information and technologies to agricultural and natural resource managers. These Hubs link USDA research and program agencies to deliver the timely and tailored support agricultural producers and professionals need to make climate-informed decisions on the ground. This model of providing science-based climate tools and strategies through coordinated technical assistance has proven especially effective at reaching underserved and vulnerable communities and tribes.

The U.S. has a long track record of making investments in research that pays off for farmers and our economy. Between 1948 and 2019, total agricultural output in the United States grew by 175 percent¹. This rise cannot be attributed to increases in agricultural land or labor—both inputs declined over the period—but stem instead from the adoption of a whole suite of publicly-funded innovations in crop and livestock breeding, nutrient use, and pest, farm and field management. These new practices have yielded significant dividends; ERS found that public agricultural research and development investments from 1900 to 2011 generated, on average, \$20 in benefits to the U.S. economy for every \$1 of spending.

Yet, federal investments in agricultural research have declined by a third in the past two decades, falling far behind our international partners. Once the world's leader, the United States now trails far behind other major nations in public agricultural research investments. This declining investment means that we are missing critical opportunities to capitalize on the powerful potential of our world-class scientists to conduct the type of high-risk, high-reward research necessary to meet the overlapping and rapidly emerging challenges our farmers face. We are missing our chance to help farmers – especially small and mid-sized producers – be profitable, to help rural communities remain vital, and to ensure that our global food supply chains are resilient to future shocks.

Alarmingly, another impact of these declining investments is that there are not enough college graduates available to meet private and public sector employer needs across the food, agriculture, renewable natural resources and the environment (FARNRE) disciplines. According to NIFA-supported research published by Purdue University in the [2022-2025 Employment Outlook Report Summary](#), employer demand for college graduates with degrees and expertise in FARNRE will continue to exceed the number of available graduates. Of the 59,400 annual job opportunities expected within this period, 31% (or 18,400) are projected to be for graduates from science and engineering fields.

This employment gap comes at a time when extreme weather is leading to large crop and livestock losses for farmers and ranchers, resulting in greater liabilities for producers. Innovative research in climate science has never been so critical nor had such a positive impact on the U.S. economy.

That's why I am pleased that President Biden and Secretary Vilsack are strongly committed to supporting federal agricultural research, development, and deployment, which will define innovation for decades to come. With Congress' support we are making unprecedented investments to train the next generation of agricultural professionals and accelerating research to support climate-smart agriculture and forestry, advance nutrition security and precision nutrition, build a stronger bioeconomy, and ensure equitable access to our research, programs, and data.

This work is especially critical at a time when, despite record farm incomes over the past two years, ERS reports that about half of farm households had negative farm income and most U.S. farm families rely mainly on off-farm income to stay afloat. Boldly reinvesting in our nation's public agricultural R&D portfolio will again enable us to create new revenue streams for producers regardless of size and geography, drive innovation and technology transfer to spur a new generation of agricultural businesses, and ensure that we have a capable, diverse workforce prepared to overcome emerging threats to our food system. The power of information and research is undeniable, and REE is well positioned to support farmers, ranchers, scientists, and academics alike in tackling some of the most pressing issues facing this country; to create a system where all farmers and ranchers, no matter what size or what they are producing, can be successful.

Workforce & Partnerships

The challenges facing agriculture, human and animal health, food supply and conservation are immense and growing under the pressures of a changing climate and swelling global population. Our farmers are on the front lines facing each situation as it arises, while planning for the best possible next season, next year, and future generation. The average age of American farmers, according to NASS's most recent Census of Agriculture, is 58 years old. I know the USDA research, education, and extension mission must support those producers' decisions every day, meeting them where they are with what they need. At the same time, we must also help attract and prepare a robust and diverse agricultural workforce to meet the challenges of the next generation.

First this means ensuring that the REE workforce—USDA's scientific enterprise—feels supported and able to carry out their mission. REE faced significant staff losses over the past five years and rebuilding that capacity has been a top priority for the mission area. ERS and NIFA have demonstrated outstanding resilience during this time, working hard to ensure their ability to deliver on their agency missions did not falter. Our continued efforts to support these rebuilt agencies will in turn improve our ability to support the nation's farmers, producers, and consumers from our research labs to the farm to the table. It's never been more critical to restore our employees' voices, respond to their needs, cultivate their talents, and champion their efforts to advance our research and extension mission.

The President and Secretary have both been very clear – this new workforce must look like America. Investing in inclusion, diversity, and inspiring future generations through formal and informal learning is critical for the future. As an agricultural scientist myself, I know that talent must be inspired, nurtured, and advanced across the country if the United States is to maintain its global leadership in science and technology. That's why Secretary Vilsack recently announced

\$250 million to enable Minority-Serving Institutions to create career development opportunities in agriculture for next gen scholars. This competitive funding, made possible through funding provided in the American Rescue Plan Act (ARPA) Section 1006, as amended by Section 22007 of the Inflation Reduction Act, is a necessary down payment for attracting, inspiring, and retaining diverse and talented students for careers in food and agriculture, and careers at USDA. It's also a foundation and model on which, in partnership with Congress, we can make changes that enable USDA internship, fellowship, and other professional development opportunities to become career opportunities for next gen scholars and professionals in food and agriculture.

USDA is especially dedicated to enhancing equity across its programs and policies through the development of a more diverse workforce that fully reflects the richness and diversity of the communities we serve.

Building a future-proof agricultural workforce requires leveraging existing partnerships with institutions to support programs that expand skilled agricultural employment opportunities. Last year Secretary Vilsack announced resources through American Rescue Plan funding to support the expansion of meat and poultry processing options, including \$40 million for NIFA for workforce development and training to build a pipeline of well-trained workers to meet the demand for both current processors and increased independent processing capacity. The primary investment will be through competitive grants to support workforce training at community, junior and technical colleges with programs specifically for meat and poultry processing.

Local and regional food systems will benefit from shortened or branched supply chains that impart some redundancy and diversity. And the availability of a trained workforce, with the right skills, at the right location, and at the right time is critical to ensuring reliable food and agricultural supply chains. This is particularly important as the agricultural enterprise in the U.S. is redesigned to become climate-smart, robust, culturally responsive, equitable, and resilient.

NIFA's broad array of workforce training programs and strong partnerships with educational institutions, including community colleges and Land-grant Universities (LGUs), can provide an effective way to implement additional workforce development initiatives.

Research

To best support producers and communities as they face new and evolving challenges, we must ensure that USDA's research arm is flexible, nimble, and working on timely and relevant research and data collection.

In response to the immediate need for research, data, and analysis, ERS developed the COVID-19 Working Paper Series as a "rapid response" vehicle for publishing non-academically reviewed research and analyses on the impacts of COVID-19 for policymakers, other researchers, and the public. ERS researchers are also actively contributing to USDA efforts around tracking supply chain challenges and food prices.

REE agencies conduct essential research on climate mitigation and adaptation and translate that research to inform our farmers as they work to feed the world. In 2021, NASS and ERS released the first results from 2019 Survey of Irrigation Organizations (SIO). ERS's analysis of the data in

the report [Irrigation Organizations: Water Storage and Delivery Infrastructure](#), suggest that, in many cases, water delivery organizations may not be able to supply all water demands, even under normal water supply conditions. ERS is also evaluating the impacts of climate change on U.S. field crop farm productivity using farm level data.

NASS collects a broad range of information from U.S. farmers and ranchers, and produces data on land use and production practices, specifically found in the Census of Agriculture, the Agricultural Resource Management Surveys, and geospatial products. While many of these statistics can be used in the evaluation of climate adaptation science and results, NASS does not yet have any programs directly related to climate adaptation but looks forward to coordinating with USDA agencies to develop new survey tools.

REE research also plays a critical role in advancing nutrition security by defining the role of food and its components in optimizing health throughout the lifecycle for all Americans. ARS seeks to more precisely understand the nutritional needs of under studied groups and is eager to utilize machine learning and AI approaches to better predict interactions between food and nutrition-related data and health outcomes. NIFA, through critical programs like the Gus Schumacher Nutrition Incentive Program (GusNIP), enables income-eligible consumers to increase their purchase of fruits and vegetables. REE and the Office of the Chief Scientist are also proud to help advance the President's goal of cutting the death rate from cancer by at least 50 percent over the next twenty-five years. We are working across government to accelerate the preventative science and research necessary to improve nutrition in support of better health outcomes for all Americans. USDA's enhanced focus on precision nutrition will allow us to better understand the specific needs of underserved communities – particularly those most impacted by diet-related diseases including cancer. In December, USDA launched a new initiative called the Agricultural Science Center of Excellence for Nutrition and Diet for Better Health or ASCEND for Better Health. ASCEND's mission is twofold – accelerate research on diet-related chronic diseases and translate that research into impactful solutions that improve public health.

We are also working swiftly to provide quality science to help the global community understand and respond to high consequence animal and zoonotic diseases and other challenges. For example, REE has been a leader in making progress on the fight against African Swine Fever (ASF), a high-mortality disease impacting global hog populations that is considered to be the biggest threat to pork production worldwide, including here in the United States. No commercial vaccine for ASF is currently available in the United States, but significant progress has been made.

In 2020, ARS scientists published findings about a new ASF vaccine candidate, the most promising, safe and efficacious vaccine tested to date. Our scientists were invited by the Vietnamese government to help establish a Material Transfer Research Agreement with the Vietnamese company NAVETCO to further research and develop the vaccine. ARS scientists provided NAVETCO technical support to rapidly advance the development of the vaccine.

The Vietnamese Department of Animal Health is further evaluating the vaccine under field conditions in a two-phased approach for integrating the use of the vaccine in their national ASF control program. ARS is working closely with APHIS to determine the steps necessary to

develop an ASF vaccine that could provide control and management options for the United States.

This is a perfect example of the impact that collaboration and quickly executed research can have on agriculture. Because we maintain excellent in-house expertise, we have the power to react quickly and partner with producers to carry them into the future of farming.

Conclusion

In my time leading REE and in my 20 years of federal service, I have had the opportunity to travel across the country and meet with many of the people we serve. I have visited states in every region of the country—in many of your districts meeting with the people you represent. They are optimistic about the future of agriculture, and so am I. President Biden, Secretary Vilsack and REE are poised to catalyze food systems transformation—we can meet and expand our commitment to farmers and ranchers as they work to feed the world, and I look forward to working with the Subcommittee and broader Agriculture Committee to support this mission.