Thank you for that introduction. It’s great to be here today, addressing a room full of scientists who share USDA’s – and my – focus on helping producers of farm animals continue to provide for our country and the world.

I want to applaud your work – especially on your extraordinary success at improving animal production and efficiency, and for training the next generation of scientists.

We’ll need them to face the challenge of the projected population increase. Given all the predictions, food production may need to double by later in this century – and agricultural research is the only way to accomplish that. Science is also essential to making those productivity gains in a sustainable manner – in a way that stewards soil, water, biodiversity, community vitality, and other natural and human resources.

The other aspect of this challenge is what I call the “preservation gap.” Fully 40 percent of the food that’s produced is lost after harvest to insects, rodents and rot. Solving the preservation dilemma will go a long way toward solving our global food security problem.

In my role at USDA, I am keenly aware of how important the work university and USDA scientists pursue is to addressing these needs. To do that work, however, takes funding, and that is an over-arching difficulty facing our government today.

A look at our history and at countries around the world shows that increasing our investments in agricultural science, education, and technology are the foundation needed for a strong future. Many economic studies have shown that investments made in publicly funded research have earned substantial returns to the U.S. economy, with total economic benefits exceeding costs by at least 20 to 1.

Today, the U.S. enjoys one of the safest, most abundant, high-quality, and diverse food and agricultural systems in the world. We didn’t get here by accident. We got here by investing in agricultural science and education and by transferring scientific knowledge and technologies to America’s hardworking farmers and businesses.
One of the best things that public investment in science and education has done over the last 149 years is building an agricultural research, education, and extension system that is unequalled and that has contributed greatly to our nation’s success.

It’s the system that transformed the nation by making higher education not only practical, but accessible to all. It’s also the system that faces unparalleled challenges in a time of tight budgets. Budget cuts from the 2011 continuing resolution are already impacting the state experiment stations and Cooperative Extension as well as research that USDA scientists engage in to assure domestic food security and help feed the world. In addition, budget cuts are affecting our standing in the global scientific community. Our 2012 budget is currently being debated in Congress, but the outlook for USDA science is not promising. Unfortunately, USDA science has not been treated in the same manner as the other research agencies, and has lost substantial ground while others have received only modest reductions in their support.

What’s worrisome here at home is also occurring globally. Growth in public research investment has significantly slowed over the course of the last three decades as the world’s governments have underinvested in agricultural R&D.

In many developed countries, including the U.S., public investment in agricultural science has remained flat or shifted resources away from farm productivity research and toward other societal concerns. During the 1950s and 1960s, U.S. public sector agricultural R&D spending grew at over 3.58 percent per year but growth has slowed to less than 1 percent per year since 1990. Private investment in agricultural research has grown somewhat faster than public R&D, and now accounts for more than half the spending in agricultural R&D in the U.S. But the private sector focuses on areas where intellectual property allows it to earn a return on its research investment. It can’t do the kind of fundamental research and scientific training that have traditionally been strengths of government and academic research. And if the fundamental discoveries run out, so will the private avenues for development of new products and processes.

USDA science has a long history of doing that kind of fundamental research on livestock and poultry production. For over 100 years, we’ve helped dairy farmers breed more productive cows. Since 1940, that research has resulted in a 4-fold increase in milk yield per cow. In the United States today, 9.1 million dairy cows average over 21,000 pounds of milk per year. This was a result of years of incremental improvements in production and management and focused research.

Today, the promise is even better. As you know the USDA partnered with the NIH and university scientists to sequence the cattle genome, and, from that significant achievement, many new genetic and genomic technologies have flowed, including the development of
genotyping programs for dairy bulls and cows, with associated computer software for selecting superior parents for breeding. The use of these technologies increases by 2-fold the accuracy of predicting the genetic value of parents over conventional selection systems and reduces the cost of proving a young dairy sire. Genomic evaluations increase the accuracy and rate of genetic improvement as they reduce the costs -- as well as the time it takes to evaluate young sires by ninety-nine percent.

One consistent theme across our research is using genetics/genomics to improve both plant and animal breeding, and save farmers money through technology transfer – knowledge through cooperative extension and new products through the private sector.

Publicly funded science and private sector innovation have had great success developing genomic evaluation tools for cattle breeding -- SNP beadchips. The BovineSNP50 assay (a beadchip with 50,000 genetic markers), remains the global de facto standard for cattle genomics research and genetic prediction use, with sales expected to surpass 1,000,000 units worldwide this summer. The work on this project won the USDA Secretary’s Honor Award for Excellence. In addition, ARS and their university and industry collaborators have led the development of low density (3000 SNPs) and high density (777,000 SNPs) genome evaluation products. This could have a big impact on the industry because these tools will lower the cost of genotyping and extend the use of the tools to even more breeds of cattle.

USDA science has also been working on animal production issues through NIFA, where AFRI grants have gone to research feed efficiency in animals such as dairy cattle, swine and beef. The 2011 AFRI Foundational Program FRA focused its Animal Production and Health Program on the following 4 program areas: (1) Animal Reproduction; (2) Animal Breeding, Genetics and Genomics; (3) Animal Health and Well-Being, and (4) Animal Nutrition, Growth and Lactation. In addition, dual purpose AFRI grants will be leveraging research capabilities with NIH, to target issues such as reproduction, metabolism and zoonotic diseases where there is a similarity shared between animal and human health. It’s another example of working cooperatively across agencies to advance scientific achievement more broadly.

Another major concern is reducing the release of greenhouse gases from dairy operations. We’ve been collaborating closely with the Innovation Center for US Dairy, as part of Dairy Management, Inc., on a comprehensive life cycle analysis for dairy industry greenhouse gases. The single largest component to target for GHG reduction is feed – specifically feed and forage efficiencies to produce more milk with fewer cows and less manure.

We expect findings like these on livestock greenhouse gas emissions and mitigation strategies to be useful both here and abroad. But just as we know that our research has applications around the world, we also realize that researchers in other countries are working on this issue,
too. That’s why the international science community has come together and created the Global Research Alliance on Agricultural Greenhouse Gases. The Alliance’s charter was signed by more than 30 countries, including the United States, just last month in Rome. Scientists in Alliance Member countries work to leverage their resources through international cooperative research, development, and extension of technologies and practices to mitigate agricultural greenhouse gas emissions without compromising agricultural production. Researchers in the United States are major participants in the Alliance, including its Livestock Research Group. Through cooperative research efforts at home and abroad, USDA is striving to combine our intramural and university research resources and talents with those of industry and other nations to provide the world’s increasing population with meat and dairy products while decreasing greenhouse gas emissions.

What’s important to understand is that these kinds of breakthroughs require years of public investment in fundamental research before the scientific understanding is advanced enough to move toward practical technologies. Oftentimes, the technological development can be undertaken by the private sector, although even then, some kinds of technologies can’t be easily commercialized and may require direct public support. It’s this kind of work that points to the continued and essential need for publicly funded research, because the private sector will always need to answer to shareholders. Scientists funded by USDA – in university labs and intramural labs – aren’t constrained by the limits of current commercial demand. They follow the science, and taxpayers at home – as well as people around the globe -- end up benefiting. The long-term return on investment – rather than the quarterly results – pays off for everyone.

So our agricultural research system is doubly challenged by underinvestment and by the failure to keep the pipeline filled with the next generation of scientists to keep the research going. And in the near future, we’ll have concrete data to help us chart exactly what the status is of that pipeline.

APLU, the Association of Public and Land-Grant Universities, has agreed to work with us on an analysis of the landscape of students and their scientific education. They’ll be assessing the flow of students through the “pipeline” of science, from K-12, through undergraduate and graduate education. They will be a valuable partner in determining how prepared we are for the scientific workforce we will need in the future. Their findings will let us know exactly what the situation is, so we can design strategies to shore up the supply of students educated in science and ensure they get the advanced degrees they need. We’re working at the President’s direction to increase attention and participation in science, technology, engineering and mathematics (STEM) education, which is the foundation needed to go forward into science-related careers.
I know everyone here understands the importance of that mission, and I appreciate your being part of the team. Teamwork, mentoring, and collaboration are so important to developing the next generation of scientists. It’s something we’ve all experienced at some point in our careers. And it’s a legacy we need to pass on.

So I’ll close with thanks to you for your important work in continuing that legacy of teaching and mentoring, and also your hard work every day helping feed our country and the world. I really do believe our work is at the heart of that vital task.

By keeping our eye on the goal of food security and using our country’s scientific abilities in the best of collaboration and coordination, we can ensure that 21st century America is well nourished, that our farmers are prosperous, and that world hunger will one day be an issue we can see in the rear view mirror and say we’ve beaten. I believe, if we continue supporting our farmers and ag producers, along with the agricultural science that underpins their work, and educating the next generation of American researchers, we will get there.

Thank you.