

Testimony of

Thomas G. Coon, Ph.D.

Vice President, Division of Agricultural Sciences and Natural
Resources
Oklahoma State University

Chair, Task Force on Deferred Maintenance
Board on Agriculture Assembly
Association of Public and Land-grant Universities

on

The State of Infrastructure in Rural America

Before the
Committee on Agriculture
United States House of Representatives
July 19, 2017

Introduction

Thank you, Chairman Conaway, Ranking Member Peterson, Congressman Lucas and other Honorable Members. I am honored to represent Oklahoma State University and the Association of Public and Land Grant Universities (APLU) today.

I also want to express my appreciation for the inclusion of agricultural research infrastructure needs in the Rebuild Rural Coalition – The Farm Credit Council, American Farm Bureau Federation and other members of the coalition clearly see the connection between the innovation that derives from agricultural research at the nation’s public agriculture colleges and the positive influence that has on economic development in rural America.

The Rural Prosperity Task Force that is being led by Agriculture Secretary Sonny Perdue also calls attention to the challenges that our rural communities face today. Because so much agricultural production takes place in America’s rural landscape, research that strengthens agriculture’s future helps to support strong school systems, health care delivery systems, and thriving businesses.

Perhaps I can summarize my message in this way: prosperity in food, agriculture and rural communities has depended on public investment in research that supports food and agriculture industries, and we stand at a crossroads of commitment for the future of the infrastructure that has supported publicly funded research.

Investments in research fuel innovation in rural America

I have been fortunate to work with farmers, ranchers and natural resource managers in my native Iowa, and in California, Minnesota, Michigan, Missouri and Oklahoma. In every case, I have worked with university colleagues who see their role as being in support of those front line producers and managers. Our scientists push the envelope of discovery to develop new insights and new technologies that enhance the yield of our rich natural heritage for food, fiber and environmental benefits for all Americans.

Just as roads, electricity, water and other infrastructures support and sustain people in our rural communities, the innovations from research have helped rural residents build individual and community wealth, whether through improved plant and animal genetics, in healthy soils and clean water, the latest irrigation scheduling application software or improved food safety practices on the farm or in the market.

Those of you on the Biotechnology, Horticulture and Research Subcommittee heard testimony from Dr. Jay Akridge of Purdue University in March about the importance of federal funding in support of agricultural research. In the 20th Century, that support transformed American agriculture and made our industry a leader of innovation. Dr. Akridge pointed out that other nations have followed our lead, and as public support for agricultural research has stagnated in the U.S., other nations have surpassed us. As of 2011, the nations of Brazil, India and China together spend \$2.15 for every \$1.00 that the U.S. invests in public agriculture research and development.

In June, a number of my colleagues from public and land grant agriculture colleges in Florida, California, Alabama and Texas expanded on how they have leveraged the federal investment in agricultural research with state, local and private funds to continue growth and innovation in their state's agricultural economy. One of the great strengths of the American food and agriculture system is the tremendous diversity of environments we use, the yields our farmers and ranchers produce and the processed food and fiber products consumers can purchase. The federal partnership with state and local governments and with industry and non-government organizations has created a unique engine of innovation across the breadth of that diversity.

We have a similar heritage of resourcefulness and productivity in Oklahoma, where in spite of diminished purchasing power of federal funds and recent declines in state funding, we continue to develop and release new varieties of hard red winter wheat and forage crops developed for the unique soil and farm management practices of the southern plains, our scientists develop and release new software applications to help manage beef cattle herd health and our scientists are creating faster and more definitive technologies for detecting and eliminating pathogens in food supply chains.

Research depends on modern facilities

One of the hallmarks of our agricultural colleges at public universities has been the infrastructure dedicated to research, teaching and Extension in agricultural and natural resource sciences. That includes laboratories on university campuses as well as field stations for research and Extension demonstrations. The Hatch Act of 1887 recognized the need for specialized facilities dedicated to research on agricultural topics, and many states have used the federal capacity funds they receive through the Farm Bill to build and maintain those facilities.

However, those facilities are aging, and with stagnant or reduced federal and state funding, many of the facilities that helped to drive innovation in

agriculture have deteriorated to the point of limiting their usefulness and safety for conducting 21st Century research.

In 2015, the APLU commissioned a study to document the state of research facilities at public colleges of food, agriculture and natural resources. The study was conducted by an independent organization, Sightlines, and they queried 101 institutions and received responses from 91 of them. The study included data from 15,596 buildings, which contain 87 million gross square feet of space. They estimate the replacement value of this space, based on a larger database that Sightlines maintains, at \$29 billion.

Our study followed one completed by the USDA Agricultural Research Service in 2012. In that study, they classified the status of 122 major research facilities owned by the ARS, which totaled \$3.7 in capitalization value. That study applied an industry standard of annual capital expenditures equal to 4% of the capitalization value to conclude that \$148 million would be needed annually for maintaining the ARS facilities and another \$100 million per year for replacement of outdated facilities. As much as 30% of the ARS research is conducted in facilities of cooperators, most of which are public universities, and not in ARS facilities. The Capital Investment Strategy of the ARS is complementary to the proposal we have developed based on the APLU study. Indeed, implementation of the recommendations from the APLU study will benefit ARS research as well.

One of the more noteworthy findings to emerge from the APLU study is that the total value of deferred maintenance across the 91 institutions is \$8.4 billion. Annual capital spending in agriculture research infrastructure is estimated to be \$1.82/GSF, which is 41% of the public university average (\$4.40/GSF). Of this, \$6.7 billion (80%) is in facilities that are more than 25 years old. Because buildings require more maintenance as they age, the combination of older infrastructure and underfunded maintenance is undermining the ability of our research enterprise to provide the information needs of today and the future.

The APLU study estimated the Net Asset Value of the infrastructure – in other words the replacement cost minus the cost of deferred maintenance to be at 71%. Moreover, the current deferred maintenance figure of \$95/GSF puts us very close to the threshold of \$100/GSF that is associated with a greater likelihood of building systems failures – such as HVAC or electrical systems – that can result in catastrophic losses of research findings.

Our study at Oklahoma State was reflective of the national study: Of our facilities on campus, 49% of the square footage was assessed as being in need of major repair or past useful life. Of our facilities at our research farms in Stillwater, 38% was in that state of disrepair.

In some respects, our faculty are being penalized for being too resourceful. One of our hallmark programs at Oklahoma State is our Wheat Improvement Team, which includes a wheat breeder, a molecular geneticist, two entomologists, a plant pathologist, a soil nutrient agronomist, a commodity market economist, and a cereal biochemist. Together, they have developed a number of varieties of hard red winter wheat well suited to the agronomic practices and environmental conditions of the southern Great Plains. For the crop that was harvested this summer, we had 15 OSU varieties of wheat available for growers to plant, and those comprised about half of the acreage planted in Oklahoma. Our wheat team continues to perform in a way that is meeting the agronomic demands of our growers and the wheat quality demands of millers. They are doing this in a greenhouse complex that was constructed before World War II and in field laboratory buildings that were constructed before I was born. We are extremely proud of their accomplishments, but we also wonder how much more successful they might be with modern facilities.

Addressing the challenge

A group of administrators and scientists from APLU developed a set of recommendations for following up on the findings of the facility survey. Those include two primary directions: one is that we need to be better stewards of our facilities. Clearly, the greatest assets of our Agricultural Experiment Station resources are the faculty, technicians and students who carry out the research. As universities have faced stagnant and declining budgets, the tendency has been to protect faculty positions as the top priorities. I think there has been a tendency to interpret a decrease in funding as a temporary phenomenon and so facility maintenance and upgrades are put off until the funding picture improves. In the meantime, faculty are expected to bring in funding through competitive grants and industry contracts to help finance the additional personnel and operating costs of their research. In many cases, the optimism that funding will return hasn't been fulfilled, and so the facility maintenance delays become permanent deferrals and we end up asking our scientists to "get by" with diminished capacity and increased unreliability of our facilities.

University administrators need to be more disciplined in adopting best management practices for facility maintenance and replacement. We need to direct more of the funding for Facilities and Administration – or Indirect Costs – into implementing those best management practices. In addition, we need to clearly communicate with our funding partners the real costs of research. Most federal agencies pay a negotiated F&A rate for university-conducted research. Those rates are carefully scrutinized by the funding agencies and each university. However, the US Department of Agriculture is authorized to fund

less than the full indirect costs rate, yet we need those funds in order to carry out the necessary stewardship of our research facilities.

Even improved stewardship will not fix the problems that the APLU study has demonstrated. Some of the facilities we are using are simply outdated and cannot be brought up to 21st Century standards. The other key recommendation from the APLU task force is to invest aggressively in new facilities or major renovations to upgrade and modernize our research infrastructure. There is still a great public good that comes from research in food, agriculture and natural resource management. The nation's interest depends on research findings that are made available to all participants in the food, agriculture and natural resource economy. The same is true for each state and local governmental entity. At the same time, many private interests, from producers to processors to wholesalers and retailers derive benefits from publicly funded and publicly available research findings. They have a part to play in financing investments in America's public agricultural research infrastructure.

We propose a funding mechanism whereby federal funds are used to leverage state, local, private industry, and private philanthropic investments into our research infrastructure needs. Our very successful public agricultural research enterprise has been built on this multi-partner model of collaborative funding.

Federal funding is especially important for addressing research needs in the national interest. It would seem important to provide federal funds with some contingencies, such as a required match with some combination of state, local, industry and/or non-governmental organization support. In addition, federal funds should be contingent on demonstrating that the research will address national or regional needs and that it will build on a record of accomplishment in research among the faculty and programs that will use the facilities. Collaboration across universities should be favored over duplicative programs in neighboring states.

Based on the findings in the APLU study, we determined that we would need to replace 68% of the research infrastructure over the next 10 years in order to position our scientists to be successful in addressing food security, food safety, agricultural productivity and environmental stewardship needs for the 21st Century. The estimated replacement cost of all research facilities included in the APLU study is \$29 billion, and 68% of that is \$20 billion. A federal program of investing \$1 billion per year over 10 years would help to stimulate the other investments needed to complete this initiative and would position the U.S. agriculture research system to be on par with other nations who are competing in the world food and agriculture markets.

This proposed level of funding is large. Whether our federal and other partners are up to this challenge, it is important to recognize that the need is real and it is of strategic importance. The competitiveness of our agriculture sector, the security and safety of our citizens' food supply – and in large part their health – as well as the health of our environment depends on the research our scientists produce. The challenging investments that federal and state funding made in our research infrastructure in the 20th Century have created a dynamic, innovative and job-creating food and agriculture industry and a safe and secure food supply today. We owe it to future generations to make the investments that will ensure they benefit from the bounty of our tremendous natural resources and uniquely American collaboration between scientists and the farmers, ranchers and workers in our nation's food and agriculture systems.