

Importance of Agricultural Research: Non-Land Grant Colleges of Agriculture

Hearing Before:

U.S. House of Representatives Committee on Agriculture:
Subcommittee on Conservation, Research, and Biotechnology

Testimony of:

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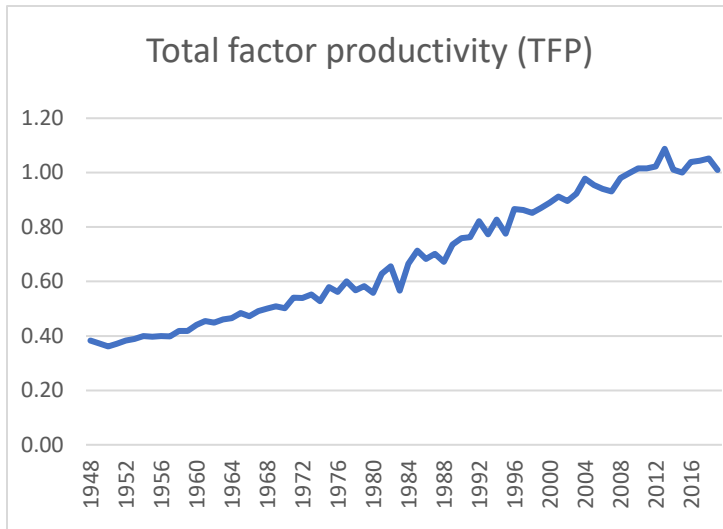
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TEXAS TECH UNIVERSITY
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Thank you, Chairman Baird, Ranking Member Spanberger, and Members of the Subcommittee on Conservation, Research, and Biotechnology for convening this hearing to address the continued importance and needs for agricultural research, education, and infrastructure. It is an honor to address this committee on the important issue of agricultural research and its connection to productive and competitive U.S. agriculture, and vibrant, successful, rural communities. My name is Clint Krehbiel and I am the Dean of the Davis College of Agricultural Sciences and Natural Resources at Texas Tech University. Texas Tech is a comprehensive non-land grant university with an enrollment of over 40,000 students across the university, medical school, veterinary school, law school, and graduate school. In addition, the Texas Tech University system includes the non-land grant Angelo State University with significant investments in agriculture as well as Midwestern State University with an agricultural program. The Davis College at Texas Tech University has an enrollment of approximately 3,400 students across all disciplines of agriculture and generated approximately \$48.8 million in annual research expenditures, including approximately \$25 million in federal research awards, primarily from USDA, over the 2021-2022 period.

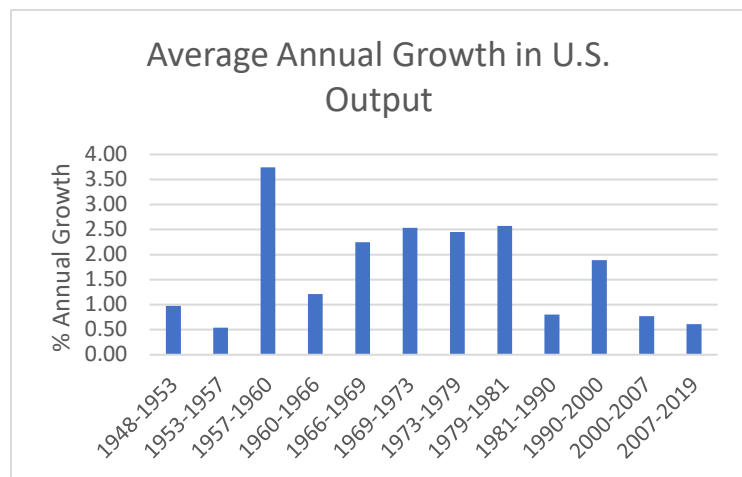
As you know, agriculture is a critical component of the U.S. economy. According to USDA's Economic Research Service, agriculture contributed \$1.3 trillion, or 5.4%, of U.S. Gross Domestic Product in 2021. In addition, agriculture accounted for 10.5% of U.S. employment, and food alone accounted for 12.4% of U.S. household expenditures in 2021. But despite the overall economic impact and the widespread availability of food, food insecurity in the U.S. remains a critical problem, and global food insecurity is often listed as a critical issue for U.S. national security.



U.S. investments in agriculture have traditionally paid important dividends in terms of increasing U.S. productivity and competitiveness. In terms of total factor productivity, output per unit of input has almost tripled since 1948. In short, your investments

mean that we have been able to produce more with less, which is key to keeping our food supply safe, stable, and affordable. In a world of limited budgets and scarce resources, however, agricultural investment has waned in recent years. In inflation-adjusted terms, U.S. public expenditure on agricultural R&D was

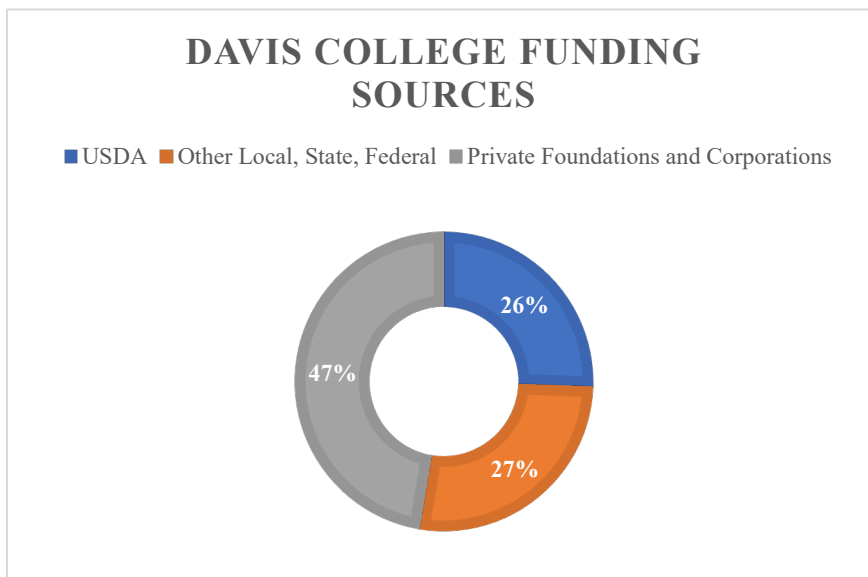
about one-third lower in 2019 compared to the peak in 2002 according to USDAs Economic Research Service. This waning investment has had an impact on U.S. agricultural production growth and



U.S. competitiveness globally. The U.S. had experienced sustained output growth from the late 1950s through the early 1980s, but annual output growth has slowed since that time. The result has been that China, India, and Brazil, among others, have achieved total factor productivity levels that rival or exceed the U.S., generating concern about the long-term competitiveness of U.S. agriculture. For perspective, the National Institute of Food and Agriculture had a FY23

budget allocation of \$1.7 billion while the National Science Foundation had a budget allocation of \$11 billion the same year. Of course, NSF covers a broader range of research issues, but USDA-NIFA is being tasked with funding basic and applied research in genomics, animal and crop production, food science and food safety, rural development, markets, and economics, among others. The funding disparity between the agricultural and food system versus other federal priorities serves to undermine the performance of the most critical of national assets in our food and fiber system.

Funding, of course, comes from a variety of sources. Specific to Davis College, research



awards from USDA sources have totaled \$16.9 million (or 68% of total federal research awards) over the 2021-2022 period. Over the past several years, 26% of the total funding from all

sources in Davis College comes directly from USDA as part of Congress' commitments from the research title of the Farm Bill and other programs. I know that Texas Tech's Davis College as well as my other colleagues on this panel are grateful for this Committee's commitment to funding agricultural and natural resources research. Looking toward the future, however, we note that nearly half of all our research awards are from private foundations, organizations, and corporations. Engagement with these outside organizations generates important problem-solving research but means that nearly half of our research program is being guided by the needs of

specific groups and not necessarily focused on issues for the public good or addressing essential basic research that will drive agricultural innovation in the future. The mix of funding sources experienced by Davis College is not unique compared to other non-land-grant institutions and is sustainable, but I believe that we must not let our institutions slip towards a mix of funding that is over-reliant on private sector funding if we are to continue to credibly deliver on our mission to serve the public good.

Congressional support for our research programs has real, direct impacts. For example, USDA-NIFA funding helps support our genomics research on crop stress tolerance that is leading to seed technology that improves drought tolerance in cotton, sorghum, and soybeans, which is a critical asset for future agricultural production. Our vital research relationship with the USDA Agricultural Research Service's Ogalalla Aquifer Program has led to important improvements in water conservation strategies and increased productivity and profitability in water-limited regions of the Great Plains region. Finally, your support for policy research through the USDA Office of the Chief Economist results in high-quality policy and market analysis that is annually briefed to and used by the US House Ag Committee staff.

Therefore, I believe that the data clearly indicate that the U.S. needs a concerted effort and investment in the research and outreach necessary to enhance U.S. agricultural output productivity and competitiveness and that we must be cognizant of the influences that different funding sources may have on our ability to consistently deliver high-quality research that serves all of U.S. agriculture. Not only will this investment enhance the competitiveness of U.S. agricultural exports that generate over \$200 billion in revenue annually, but also provide pathways to improve food and fiber affordability, quality, and access to U.S. citizens supporting household well-being and economic outcomes.

Importance of Non-Land Grant Institutions

The creation of the Land-Grant university system in 1862 and follow-on creation of the 1890 land grants has contributed heavily to U.S. agricultural productivity. These institutions have a storied tradition in basic agricultural and social sciences and engineering. They will continue to play that vital role. But non-land grant institutions have dramatically increased their footprint and impact over time.

There are approximately 70 institutions in 27 states with non-land-grant Colleges of Agriculture, all with long histories of successful programs in educating and preparing professionals in agricultural sciences and natural resources. In those 27 states, as much as half of all baccalaureate degrees awarded in agricultural sciences and natural resources are from non-land-grant schools, with more than 50,000 students educated annually in those institutions. Texas Tech University is a Hispanic-serving institution. And like Texas Tech, many of these non-land-grant schools serve under-represented groups that include first-generation, minorities, and rural students. Educating these groups is an engine towards improving equality of economic opportunity and rural development and economic growth. Like other similar institutions, we are very proud of our role in educating these critical student populations and at Davis College and we are proud of the role we play in providing important agricultural and economic education that focuses on rural and underserved communities.

Our institutions will need to continue to produce well-trained graduates in agricultural sciences. According to the Bureau of Labor Statistics, growth in employment for agricultural and natural resource sciences students will be an average of 8% from 2021-2031, which is above

average growth compared to other industries. And these are high-paying jobs, with a median income of \$74,000 in 2021. In Texas, the land-grant Texas A&M has capped its total enrollment, so any growth in the number of agricultural science graduates will have to come from non-land-grant schools of which Texas Tech is the largest in the state. Angelo State University is a Hispanic-Serving Institution and designated as a non-land-grant college of agriculture that contributes to the agricultural workforce, working directly with regional commercial producers through development of livestock as well as training secondary teachers in agriculture.

Infrastructure Needs

A 2021 report by Gordian estimated that the cost to upgrade and address deferred maintenance at US colleges of agriculture to be \$11.5 billion, with \$38.1 billion to replace dilapidated facilities. At Texas Tech, the deferred maintenance number alone is \$6.3 million. The State of Texas and private donors have made significant investments in our research infrastructure, but that investment simply cannot repair or replace all the requirements to meet the research challenges and problems faced by US agriculture.

On our own campus, critical research in wildlife management and improvement, food safety, rural and urban water management, and other critical research issues are being stymied or limited by insufficient quality or quantity of research laboratory space. The reality is, we can no longer meet 21st century food and fiber research need with mid-20th century facilities.

In Fiscal Year 2023, Congress made a modest investment in modernization through the Research Facilities Act competitive funding program. We appreciate that support. To better address the long-term needs for modernization to remain competitive internationally, we ask that

Congress support a \$5 billion mandatory funding program through the Research Facilities Act through Title VII of the Farm bill.

Investment impact has spillover effects in attracting great research talent. Texas Tech was able to attract a member of the National Academy of Science in genomics because of a substantial investment in research laboratory space through a private donation. The opposite is also true. Lack of facilities are major hurdles to recruiting talent. Corporations with deep R&D pockets can recruit key talent into the private sector, effectively locking up that expertise for private benefit at the exclusion of public benefits from broad-based, publicly accessible research for all.

Conclusions

Mr. Chairman, Ranking Member Spanberger and Committee Members. Thank you again for this opportunity to share our experiences and perspectives on this critical component of the farm bill process. The non-land-grant agricultural programs across the U.S. serve as a critical engine for future growth in educating our next generation of leaders as well as proving important research and outreach programs within our respective states. Our goal is to complement Congress' investment in the land-grant system and to service important elements of our populations and agricultural industries alongside our sister institutions to foster the long-term productivity and competitiveness of U.S. agriculture.