

STATEMENT FOR THE RECORD

By

DR KIRK SCHULZ
PRESIDENT KANSAS STATE UNIVERSITY

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Introduction

Chairwoman Stabenow, it is indeed my pleasure to welcome you, on behalf of Kansas State University, to Kansas, the heartland of our great nation. We are pleased to have you in Kansas, and we thank you and value your leadership in the work of this important committee. Senator Roberts, to you I simply say “welcome home”! Your record in support of U.S. agriculture is second to none, and we are appreciative of your service as Ranking Member on this committee. I would like to also welcome our valued friends and stakeholders to this hearing. Without question, this group represents a broad range of interests that are all, in one way or the other, affected by the health and vitality of Kansas and U.S. agriculture. These folks have been, and will continue to be, key leaders in ensuring a safe and secure food supply, not only for Kansas and the central plains, but indeed our nation and the world as well.

Kansas and the 2012 Farm Bill

The purpose of our gathering today is to continue the dialogue that began on May 31 in East Lansing, MI, among agricultural stakeholders and members of this Senate committee. The Michigan testimony and continuing discussions will shape the content of Title VII, the research title of the 2012 Farm Bill. It is indeed fitting and appropriate that these hearings begin in states where agriculture remains a major force in the economy. The title for this field hearing today, as posted on the committee’s webpage, is “Looking Ahead: Kansas and the 2012 Farm Bill.” Agriculture and related food system enterprises are indeed drivers of the Kansas economy. In Kansas, the value of commodity cash receipts from agricultural products is about \$12 billion annually. About 53% of that value is from livestock, mostly beef cattle. The livestock inventory on January 1, 2011, reported 6.3 million cattle and calves, ranking Kansas second in the nation in this category. In fact, cattle outnumber the citizens of Kansas by over 2:1 (2.8 million residents). In support of the beef cattle inventory in the state, Kansas is one of the leading states in numbers of cattle on feed, and it leads the nation in meat processing capacity. The remaining 47% of annual agricultural receipts in Kansas is found mostly in wheat, sorghum, corn and soybeans. Kansas continues to be a national leader in both wheat and sorghum acres and in grain milling capacity.¹ Because agriculture and related food

¹ Kansas Farm Facts 2010 at http://www.nass.usda.gov/Statistics_by_State/Kansas/Publications/Annual_Statistical_Bulletin/index.asp accessed August 11, 2011

industries are essential to the Kansas economy, this testimony and the content of the 2012 Farm Bill are of keen interest to Kansans.

The Land-Grant System and the 2012 Farm Bill

The land grant university history is another reason it is fitting that testimony on behalf of the 2012 Farm Bill began in Michigan and continues in Kansas. Kansas State and Michigan State maintain a friendly banter around which school was the first and which school the second land grant university. I am certain that debate will continue. That particular debate, however, has historic significance in that 2012 will mark 150 years since the signing of the Morrill Act and the establishment of the land grant system. At the time that federal legislation was signed by President Lincoln, little could he or the authors of the bill have imagined the far-reaching implications of the enactment of that landmark legislation. The partnership that was developed between the states and the federal government with the enactment of the Morrill Act and subsequently the Hatch and Smith-Lever Acts provided broader access to higher education and application of research findings on and off campus. One of the results was the development of an agricultural economy and a food system that is unmatched across the globe. Efficiencies that have been achieved through knowledge generated by research and communicated to producers through Extension programming have been a solid investment of public resources. A recent report written to make a compelling case for investment in agricultural research and development indicates the benefit-cost ratio to be on the order of 20:1.² The U.S. is fortunate to have abundant natural resources within its borders, and those resources have been critical in contributing to the food security enjoyed by her citizens. The public land grant system has been critical in leveraging that investment into a safe and abundant supply of food. In contrast, ongoing events in the eastern Horn of Africa underscore the tragic consequences that can accompany regional food insecurity, regardless of the root cause.

Public investment in agricultural biosciences is leveraged to maintain an abundant and safe food supply, sustainably use natural resources, and promote healthy communities. Therefore, we encourage the Committee to craft language that increases the authorization for capacity funding of Hatch, Smith-Lever 3(b)-3(c), Extension Services at the 1994 Institutions, Evans-Allen Program (1890s Research), 1890 Institutions Extension, and McIntire-Stennis Cooperative Forestry.

Looking Back at the 2008 Farm Bill

The 2008 Farm Bill contained important language in the form of an innovative proposal referred to as “Creating Research, Extension, and Teaching Excellence for the 21st Century” or simply CREATE-21. Some important elements of CREATE-21 are highlighted below:

- USDA reorganization/dissolution of CSREES and the establishment of the NIFA. NIFA director to be a high-profile scientist, appointed by the President and consulting with to the Secretary or designee. Provide leadership and vision for tackling societal challenges for which land grant universities would be key part of the solution.
- Enhanced competitive funding for food and agriculture emphasizing growth of competitive programs including increased authorization up to \$700 M/year with the establishment of AFRI.

² For Want of a Nail. The Case for Increased Agricultural R&D Spending at <http://www.aci.org/docLib/Final-Pardey-and-Akston.pdf> accessed August 11, 2011.

- Constituent-driven enhanced mandatory funding for organic agriculture, specialty crops, beginning farmer/rancher, and biomass research and development.
- Enhanced role for USDA REE under secretary, consolidation of REE budget lines and emphasis on enhanced capacity funding.

We affirm our continued support for the language adopted in the 2008 Farm Bill and request the language be carried forward in the 2012 Farm Bill. Following enactment of the 2008 bill, funding for AFRI grew from \$191 M in FY08 to \$262 M in FY11. However, that funding remains far short of the \$700 M authorized in the 2008 Farm Bill, and could be a target of budgetary cuts as congress continues to pressure reductions in discretionary federal spending. Like many land grant universities, especially those not affiliated directly with a medical schools, Kansas State University relies heavily on extramural funding from USDA to drive research and outreach programs in support of the food system. In FY09, for example, nearly one-third of all external awards coming to Kansas State University were from USDA. Therefore, for our scientists to continue to multiply 20-fold the federal investment in agricultural research and discovery for the good of the Kansas and U.S. economies, AFRI must grow to meet the \$700 M.

Since FY10, the request for applications from AFRI placed considerably more emphasis on larger, longer, multi-institutional, and multi-disciplinary grants. Program areas focused on broad priorities with opportunity for tremendous societal benefit (climate change, childhood obesity, sustainable bioenergy, food safety, and global food security). Although the need for investigation in these important areas can easily be justified, this approach resulted in unintended consequences across the land grant system. First, as noted previously, the difference between the rate of growth of authorized funding for AFRI anticipated by the 2008 Farm Bill and the enacted level of funding in the federal budget for AFRI meant that funds committed in the first year for larger multi-year awards resulted in a significantly smaller pool of competitive funds available for funding in other years. Secondly, focus on larger issues and larger, longer awards, though laudable, resulted in omission of program areas of critical importance to U.S. agriculture (e.g. emerging plant pathogens, diminishing ground water resources, etc.).

Therefore, we recommend the authorization for AFRI in the 2012 Farm Bill be no less than \$700 M. Moreover, it is absolutely critical that the authorized amount be fully funded within the federal budget. It is recognized that a similar argument could be made by other federally funded research programs that bring value to U.S. citizens (e.g. NIH, NSF). However, compared to NIH and NSF (about \$30 billion and \$7 billion, respectively), the total level of funding within USDA for research (about \$2 billion) is significantly less. Further cuts to competitive and capacity funding for agricultural programs may result in significant damage to improvements in food production efficiency, which will be required to feed the predicted growth in world population.

All Earmarks Are Not “Bridges to Nowhere”

The ongoing Continuing Resolution to the 2011 Federal Budget negotiations concluded this past spring with zeroing out of earmark spending. It is recognized that earmarks were seen by some in the public sector as secretly appropriated funds targeted to pet legislative projects that largely had limited practical benefit. In some cases, that arguably could have been true. However, federally directed spending in the agricultural sector has generally resulted in tremendous public good. The following are examples of earmark-funded activities led by Kansas State University that have delivered value for the federal investment.

- The **Wheat Genetics and Genomics Resource Center** (WGGRC) had been funded through earmark appropriations since 1984. Over that time period, the Center maintained a massive collection of wild wheat and goat-grass strains obtained from diverse geographical regions across the globe. Through the years, the genetic tools derived from this collection have been deployed around the world and have contributed significantly to the development of high-value wheat germplasm. This germplasm has been used by numerous wheat breeding programs at land grants across the country, including Kansas State University. Genes deployed in germplasm from the WGGRC have now been incorporated into wheat varieties to provide durable resistance against diseases and insect pests, including rust diseases of wheat. It is unknown when the next devastating disease like UG99 stem rust will come to the United States. If properly resourced, the WGGRC will, without question, contribute genetic tools to help maintain and improve wheat production with resistant varieties for Kansas and the world.
- Separate appropriations funded pre- and post-harvest **Food Safety** at Kansas State. Pre-harvest work focused on *Escherichia coli* O157:H7, a major cause of foodborne illnesses in humans in the United States. This work focused on the ecology of *E. coli* O157:H7 in cattle and recently provided important new and improved methods for the detection in environmental samples. The post-harvest food safety work focused on reducing hazard detection time to control pathogenic bacteria. Over the years of funding, the research has contributed to technology and information transfer that has been used by regulatory agencies to establish policy, by industry to establish safe processing and handling practices, and by consumers to improve food preparation. Additionally, this food safety research has also contributed to food security, protection, and defense strategies. The pre- and post-harvest food safety work established Kansas State University as a leader in food safety and security research. Excellence in this area contributed to the decision to build a state-of-the-art biosafety level 3 research facility at K-State. This building is the Biosecurity Research Institute, or BRI, at Pat Roberts Hall.
- It is said that water will be the oil of the 21st century. On July 21, 2011, Kansas Governor Sam Brownback convened an Economic Summit on the Future of the Ogallala Aquifer. That summit was held in Colby, KS, and focused on long-term sustainable use of the Ogallala, which is vital to the economy of western Kansas and several plains states. For years, Kansas State University has been focused on the Ogallala Aquifer. A federal earmark funded a studies evaluating **Water Use Efficiency**, including experimental subsurface drip irrigation site at Kansas State University. This system, now over 20 years in operation, is the oldest such system used for field crop research in the world. Practical, user-friendly computer decision aids developed by this project can maintain high grain yields while reducing applications of irrigation water by up to 25% and generating energy savings of \$40 per acre. Such results are critical for the western High Plains where ground water resources are rapidly dwindling.
- The **Great Plains Sorghum Improvement and Utilization Center** is the largest consortium of multi-disciplinary sorghum researchers covering all aspects of research and education from genomics through utilization and economics. It has facilitated the development of improved sorghum lines used in breeding programs at Kansas, United

States, Africa, Australia and Asia; improved technologies such as herbicide tolerance and in-season nitrogen management tools; improved crop management practices to enhance yield and feed and food quality; and create new market opportunities including new food and alternative bio-energy products. This project, formerly funded by a federal earmark, is squarely aimed at the national priorities of food security, advanced renewable fuels, water conservation, environmental stewardship, and climate variability.

All of the programs formerly funded by earmark appropriations have yielded tremendous results that provided excellent benefits to the citizens of Kansas and beyond. We encourage language in the 2012 Farm Bill that authorizes appropriations to restore these important programs. We understand the need for federal spending priorities, but these programs are investments that are good for Kansas and the nation.

Extension Delivering Solutions

As noted above, authorization for continued capacity funding is critical for maintaining not only discovery but also translation and delivery of new technologies to stakeholders. In simplified language, we think of research and discovery as asking questions and probing for new knowledge, whereas Extension **“delivers solutions”**.

Kansas State University takes pride in delivering educational solutions to issues and problems through our network of Extension offices in every Kansas county. Significant effort has been invested into the organization of multi-county Extension Districts which maintain a presence in each county. Maintaining local contact is a high priority. This district organization has been shown to serve clientele needs and interests better by allowing agents to become more specialized while providing a broader scope of educational programming. Further, it better leverages the economic investment through increased efficiency. To date, 40 counties have organized into 14 Extension districts. Extension’s programming is strategically focused on Kansas needs in growing our bio-economy through agricultural enterprises; improving the health of individuals, communities, and our natural resources; preparing our youth for our workforce; and enhancing quality of life. Technology has enhanced communication and educational delivery for Extension through routine use of webinars, web-based programming, smart phone delivery, and social networks. The national network of land grant university Extension has been further enhanced through on-line presence with eXtension.

The following points highlight specific examples of how the integration of academic programs, research and discovery, and Extension engagement results in **“delivering solutions”** in Kansas:

- **K-State Research and Extension delivers solutions to watershed protection and improvement.** In the last 8 years, environmental plans were developed and implemented by 1,500 farmers impacting over 100,000 animal units and 60,000 acres of cropland. Improvements include moving feeding and/or watering sites, changing grazing or feeding practices, establishing buffer strips, improving lagoons, reducing tillage and atrazine runoff. Extension programs have led to farmer adoption of pesticide BMPs and water quality improvements. Delivery of pesticide BMP educational programs in targeted watersheds resulted in BMPs being installed on approximately 50% of corn and grain sorghum acres in the watersheds and a 40% reduction of atrazine runoff. A KSU extension agronomist made 361 on-farm visits with farmers to get their commitment to implement atrazine BMPs.

From 2006-2009, farmers implemented atrazine BMPs on 51,525 corn and grain sorghum acres resulting in 66% (2006), 40% (2007), 65% (2008), and 51% (2009) lower atrazine concentrations in streams in targeted watersheds where BMPs had been implemented.

- **K-State Research and Extension delivers solutions for rural communities.** The Kansas PRIDE program links Extension with community volunteers to improve the quality of life in communities. In 2010, over 70 communities were engaged in PRIDE with 59,959 volunteer hours and 456 collaborative partnerships, towards completion of 1062 community betterment projects. PRIDE projects were supported with just over \$63,000 in public funds, \$118,000 in private funds and a total of \$1,067,000 in value of volunteer hours, for a total of roughly \$1.25 million investment in community betterment.
- **K-State Research and Extension delivers solutions for our future workforce.** With more than 62,600 youth participating in K-State Research and Extension's 4-H program in 2010, 4-H is the largest youth development organization in Kansas. In addition, more than 27,500 youth and adult volunteers leverage our capacity to reach youth across Kansas. Through "science ready" 4-H projects, youth in Kansas are learning about science, math, engineering and technology. Youth are discovering science is fun and relevant to today's most critical issues, including water quality, renewable energy, regional and local food systems, and American competitiveness in both rural and urban areas. In a 4-H food science club, comprising more than 50% African American boys, the students significantly increased their interest in improving dietary choices and enhanced their understanding of the process of digestion, individual caloric needs, and personal food choices. In addition, 54% of the young people reported they would consider a science related education and career path. We are reminded almost daily that workforce skills will challenge our ability to interact and be competitive with the world. Kansas 4-H is helping prepare youth for the workforce and to step up to the challenges of a complex world.
- **K-State Research and Extension delivers air quality solutions for beef feed yards.** K-State, in collaboration with other public universities and USDA, sought solutions to improving air quality around confined livestock feeding operations. Findings from this project were adopted by the National Cattlemen's Beef Association and EPA to satisfy feed yard reporting requirements under the Emergency Preparedness and Community Right-to-Know Act. Based economic surveys, abatement measure evaluations, and emissions measurements, researchers developed the first estimates of cost-per-unit for the reduction of emissions using sprinkler dust control on cattle feed yards. Nine central states regulators were trained on particulate matter emissions from agricultural sources, measurement methods, dispersion modeling, emission factor and emission reduction calculations, abatement measures and permit requirements.
- **K-State Research and Extension provides solutions leading to improved health and well being for individuals of all ages.** In 2010, The Expanded Food and Nutrition Education Program (EFNEP) found more than 95% of participants eat more healthfully, roughly 60% handle food more safely, 40% increased their physical activity, and more than 60% have less chance of running out of food before the end of the month. Research indicates that for every dollar spent on EFNEP, there is more than \$8 in future health savings. Through supplemental nutrition assistance program education, more than 180,000

educational contacts were made with clients, who receive an average \$273.33/household. The programming helps them choose the most nutritious foods within their limited budgets. More than 70% of clients indicate an intention to improve dietary intake by consuming more whole grains, more fruits and vegetables, more low fat dairy products, or less fried foods per day. More than 40% intended to increase their physical activity as a result of participating in SNAP-Ed. The “Walk Kansas” program promoted physical activity and healthy eating habits to the over 19,000 participants in 2010. Roughly 85% of participating Walk Kansas teams reached the goal of 30 minutes of exercise at least five days per week, and more than 95% reported increasing their consumption of fruits and vegetables during the 8-week program. Walk Kansas for Kids encourages youth to exercise at least one hour each day and eat healthier foods and to exercise with their families.

Training the Next Generation Food System Workforce

Recent revisions from the Population Division of the United Nations Department of Economic and Social Affairs of the United Nations Secretariat project world population growth to 9.3 billion people by 2050.³ Awareness of the growth in population, the need for action to prepare for the predicted growth, and the desire of that population for a higher standard of living was highlighted prominently in *A New Biology for the 21st Century: Ensuring the United States Leads the Coming Biology Revolution*. This National Research Council publication became the roadmap for the organization of the AFRI requests for applications released in FY10 and those so far released in FY11.⁴ As noted above, one of the grand societal challenges highlighted in those requests was global food security. Feeding a world with over 9 billion people is a complex and multifaceted problem that will require significant advances in plant and animal genetics, soil fertility, water and nitrogen use efficiency, animal nutrition, tillage and irrigation practices, and other areas. These advances must occur in a world with potentially more variable climate and will need to include major improvements in food distribution and breakthroughs in stored food preservation. The grand challenge to feed the growing world population again points to the need for AFRI to be re-authorized in the 2012 Farm Bill at no less than \$700 M and that it grow quickly to that level of appropriated funding.

Since its inception, the land grant university system has played an important role in continually providing new knowledge that advances the science and application of new technology. These advances allow production agriculture and agribusiness to meet and defeat agricultural production challenges to ensure food security for the United States. Undoubtedly the land grant university system will play a major role in global food security to meet ever increasing population challenges in the future. But, who will continue the education, discovery and outreach in the coming decades?

Replacing faculty positions vacated by retirements and lost to budget cuts at land grant universities over the coming decade is going to be a major challenge, if not a crisis. However, awareness of this looming challenge is increasing. As an example, The Coalition for a Sustainable Agricultural Workforce formed a partnership aimed at increasing the workforce pipeline by generating greater numbers of bachelor to doctoral degree recipients in an array of disciplines within agriculture.⁵ This coalition, a collection of prominent agriculturally related scientific societies, agribusinesses, and industry leaders, has proposed federal partnerships with leading agribusinesses to help resource this

³ World Population to reach 10 billion by 2100 if Fertility in all Countries Converges to Replacement Level at http://esa.un.org/unpd/wpp/Other-Information/Press_Release_WPP2010.pdf accessed August 11, 2011.

⁴ For example, see pages 1-2 at http://www.nifa.usda.gov/funding/rfas/pdfs/11_afri_food_safety.pdf accessed August 11, 2011.

⁵ Found at <http://www.sustainableagworkforce.org/initiatives> accessed August 11, 2011.

effort. This effort and others are examples of the kind of initiatives that will be needed to address this growing crisis. We support initiatives to enhance the number of students selecting agriculture and related disciplines for their university training. We encourage the Committee to explore avenues so that the 2012 Farm Bill can raise national awareness of and authorization to begin to tackle this challenge to worldwide food security.

Related to the issue of the workforce pipeline, we additionally would encourage the committee to consider another problem that we face. Like many STEM (Science, Technology, Engineering and Mathematics) disciplines, graduate programs in agriculture attract bright and very capable international applicants into their doctoral programs. If these doctoral recipients are not placed in faculty or research associate positions in land grant universities in the United States, they return home. Home often means returning to the growing economies of India and China. It would seem prudent to consider ways to “reinvest” these doctoral recipients in the land grant university system to nurture and diversify the system.

Conclusion

It is my hope that this testimony captures the enduring optimism and “can do” spirit that has been a common thread connecting almost 150 years of history of the land grant university system. That thread is one of valued service to the clientele of the that system. Faculty and staff at Kansas State University and land grant universities across the nation recognize that their work takes place on behalf of a greater good, a broader goal, and a common vision that is much bigger than their individual achievements. Members of this United States Senate Committee on Agriculture, Nutrition, and Forestry can be confident that every dollar of federal investment authorized by the 2012 Farm Bill and expended at Kansas State University will be a wise investment. That investment is guaranteed to be leveraged further and to spawn innovation and discovery that will be translated into solutions to improve the lives of Kansans and others. I thank you for this opportunity to provide testimony.