Need for Ongoing Public Investment in Agricultural Research and Cooperative Extension

Testimony to Farm Bill Hearings
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Preamble:

The Colorado Agricultural Experiment Station (AES) and Cooperative Extension are integral units of Colorado State University, Colorado's land-grant university. We conduct mission-oriented research on agricultural and natural resource problems and provide non-credit educational opportunities to the state's youth and citizens. The AES is not a single location; rather it is an integrated, state-wide system involving research conducted at the main campus in Fort Collins, at off-campus research centers and with individual cooperators. While the comments below are pertinent to Colorado, they apply equally to all land-grant institutions and their associated AES's.

Inclusive Agriculture:

Agriculture, and thus the related research and extension program needs, encompasses a continuum of activities involving:
? Management of natural resources
? Production of commodities from farming and ranching
? Agribusiness providing the inputs for agricultural production
? Processing, marketing, and distribution of agricultural commodities
? Food processing and human nutrition
? Families, communities and rural development.

Colorado Agriculture:

? Agriculture is a major component of Colorado's economy involving over 30,000 individual farms.
? Colorado's diverse climate and soils support a wide-range of livestock and crop enterprises with many commodities ranked among the top 10 states in the U.S.
? One in five Coloradoans are employed in jobs directly related to the farm and food system in Colorado. Farming and ranching remains the principal economic activity in rural areas of Colorado.
? Sale of agricultural commodities exceeds $4.5 billion. It is estimated that the Green Industry and equine related activities contribute an additional $5 billion to the state economy.
? Gross sales in the farm and food system approach $30 billion per year. Thus, the farm and food system in Colorado is an important component of Colorado's economy.

Research Needs:

A strong and balanced Colorado economy in the future is dependent on having research based information to solve current and future problems and a Cooperative Extension system for technology transfer to landowners and other constituents. In addition to their impact on farm and ranch production, agricultural research and extension programs also deal with natural resource issues that have a direct impact on non-agricultural sectors of the economy such as

tourism and on the overall quality of life for all Coloradoans. A vast majority of Colorado grown agricultural products are exported out-of-state and, in many cases, to international markets. Agriculture thus contributes to Colorado's competitiveness in the emerging global economy.

The AES research program works closely with private industry to provide research based information for Colorado's agriculture. The profit motive of the private sector dictates their placing an emphasis on product development while the AES research programs emphasize basic and applied research. Studies have documented the distribution between basic, applied and product development for private and public sector agricultural research and they indicate that public and private research efforts are complementary rather than duplicative. Similarly, research conducted by the AES and the USDA-Agricultural Research Service (ARS) is complimentary. ARS programs focus on basic and applied research with a regional or national orientation. Numerous collaborative programs are conducted between AES and ARS scientists.

The differences in public and private sector research activities are illustrated by research conducted after the introduction of a new pest into Colorado. The Russian wheat aphid entered Colorado in the mid-1980s from Mexico and caused significant economic losses to farmers by reducing wheat yields. The AES responded to this crisis by initiating statewide research efforts on control of the aphid and by redirecting plant breeding efforts to develop a variety of wheat resistant to the aphid.

An active research program is needed to respond to new and emerging agricultural and natural resource problems, including socio-economic issues. Using the Russian wheat aphid problem as an example, the AES has released several new aphid resistant wheat varieties to Colorado farmers. The development of the first new wheat varieties was accomplished in 7 years since the faculty, staff and facilities existed within the AES. This infrastructure has been developed and enhanced over the past 100 years and thus has the tools and expertise to respond to the recent emergence of a new aphid strain. Since no insecticides are needed to control the aphid, production costs to farmer are minimized with no adverse environmental impacts.

The above example also illustrates the importance of maintaining a balanced portfolio of funding approaches for agricultural research and extension. The following comments are submitted relative to funding mechanisms for agricultural research.

? Formula funds as distributed to the CES and AES in each state/territory (e.g., Smith-Lever, Hatch, McIntire-Stennis, Animal Health, and Multi-State Research). These funds provide for the basic infrastructure needed for agricultural research in each state and enable response to new problems such as the Russian wheat aphid example described above. Other examples of the absolute requirement for sustained, base funding include studies in animal breeding, crop rotations, tillage, water quality, and ecosystem response to management inputs.
? Competitive grants as provided by the National Research Initiative in CSREES. Competitive grants are an integral part of a viable research enterprise because it emphasizes investigator interests and creativity to advance basic knowledge in agricultural disciplines. However, the short-term, low budget, and narrow focus of such grants minimizes their applicability to

applied, interdisciplinary problems.
? Integrated programs involving both AES and CES require additional emphasis and funding to conduct the interdisciplinary research needed to solve the problems posed by agricultural stakeholders as well as provide the required technology transfer and outreach of research results. New funding for the Integrated Activities program in CSREES is strongly encouraged.

Agricultural research and extension is a sound investment of public funds. A variety of studies have documented the economic benefits derived from agricultural research. A recent study showed that the return on investment in agricultural research was 35% per year. This excellent return was obtained after considering research conducted by the private sector, the impact of taxation to generate research funds, and the time period needed for research results to be implemented by users.

The land-grant university system through their AES and CES components are also contributing to economic development. For example, production of wine grapes and the associated development of wineries has significantly encouraged the agro-tourism industry in western Colorado. Development of the industry has been enhanced by local research and extension programs located at nearby Colorado State University facilities. Another example is extensive research and extension activities in the Arkansas Valley where community stability is threatened by water transfers and resulting changes in agricultural production practices and water quality. The statewide network of research and extension expertise enables faculty and staff at the main campus to readily complement expertise located in county and regional extension centers and in research centers. Programs try to address the economic development needs at the community level.

In summary, enhanced support of agricultural research and extension through CSREES to each land-grant university is strongly encouraged as well as continued support of the complimentary programs of ARS. This publicly supported agricultural research and extension system has resulted in significant increases in the productivity of farms and ranches resulting in a low-cost, safe and nutritious food and fiber supply for the consumer. The ongoing consolidation of agricultural enterprises and the increasing emphasis on natural resource and environmental issues further necessitate the need for enhanced investment of public funds in agricultural research and extension. Since the private sector is product development oriented, public investment in agricultural research will be increasingly important in the future to address natural resource, environment and product safety issues as well as providing an excellent return on investment.