

Why Increase Federal Investment in Agricultural Research, Extension, and Education?

Joseph Coffey

The 1996 Farm Bill, officially known as the *Federal Agricultural Improvement and Reform (FAIR) Act*, dramatically changed agricultural policy. One of those changes is reflected in the treatment of *Title VIII: Research Extension, and Education*. Congress did not feel it had the time to adequately study the issues surrounding Title VIII, given all the other changes being made to the Farm Bill. Consequently, the programs included in this Title were reauthorized for two years. During this time, Congress is expected to review the programs, possibly with an eye to—at worst—no changes in funding levels to—ideally—increases for research, extension, and education.

“The Farm Bill” conjures up the mid-west with fields upon fields of wheat, corn, soybeans, and feedlots for cattle and hogs. However, Title IV of the Farm Bill is Nutrition Assistance; Title VI is Rural Development; Title VIII is Research, Extension, and Education; and Title IX is Miscellaneous, which includes, among other provisions, Student Intern Programs, agricultural quarantine and inspection services, and a new provision in 1996, Safe Meat and Poultry Inspection Panel. Thus, the Farm Bill does not stop with the farm.

Under the new welfare reform act, welfare recipients can receive benefits for a maximum of two years before they are removed from the welfare roles. It is assumed that they will be able to find and hold jobs that provide adequate income to meet their families' needs. Can rural communities meet these needs for jobs? What kinds of businesses or industries will be needed to boost the

economic welfare of these rural communities without leaving them worse off because they have provided incentives to entice an industry only to find that that industry has no commitment to the community? Suburban and many urban communities have the resources and personnel to provide the information to answer these questions. More and more rural communities, lacking the personnel and resources to hire them, will depend on the programs and research that Cooperative Extension provides. Farmers seeking to diversify their production from tobacco and the traditional corn and soybeans rely heavily on the research that is disseminated through Cooperative Extension programs.

Cooperative Extension operates on federal, state, regional, and county levels, serving as the chief vehicle for disseminating the research findings from the land-grant universities and for providing the university specialists with information about local problems that need to be solved. County extension offices hold training sessions for farmers, homemakers, and other rural residents who themselves use the information, as well as for volunteers who further disseminate the information that the land-grant universities have provided.

Extension also helps solve quality-of-life problems by supporting and developing programs for improving agricultural productivity and marketing; creating new products; protecting animal and plant health; promoting human nutrition and health; strengthening children, youth, and families; and, most importantly, revitalizing rural communities. Educational programs emerging from the

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research performed at land-grant universities frequently provide opportunities for the preparation of future business leaders and researchers.

Agricultural research, extension, and classroom instruction contribute to the citizens of the Commonwealth in several ways: (a) innovative farmers benefit from lower costs per unit of production following their adoption of the new technologies, (b) consumers benefit through increased quantities of high quality food and fiber at lower prices, (c) research and education enhance competitiveness of Virginia products in national and world markets, (d) multiplier effects on income and employment are created, (e) agricultural research and education contribute to improvements in food safety and environmental quality, and (f) extension and other teaching programs provide a cadre of educated farmers, government officials, scientists, and agribusiness leaders.
Thomas Johnson and George Norton

Why Fund Title VIII?

Agriculture is becoming increasingly sophisticated and productive. Some 40 years ago a herd of cows was milked by hand in a dirt-floored shed. Dairying was strenuous, but simple. There were no computers to program and no meters to monitor. Each cow was given a coffee can full of ground corn and was milked by hand. Of course, the herd of six cow gave less than many individual cows do today. And the price the consumer paid for milk in 1995 dollars was double what it is today: \$0.89 per quart then compared to \$0.44 per quart now. The success of agriculture may have once depended upon grit and grip, but today it depends upon knowledge and technology. Technology is also finding alternative uses for agricultural commodities, especially in the areas of fibers, energy, and pharmaceuticals.

The private sector recognizes the value of research at the land-grant universities. As the recent Government Accounting Office (GAO) report states: "Private sector funding [of agricultural research at land-grant universities] more than doubled over the [1975-94] period, from about \$196 million to about \$418 million in constant 1994 dollars."¹ According to the most recent data, 1992, \$6.3 billion were spent on agricultural research, of which 60

¹ United States General Accounting Office. *Agricultural Research--Information on Research System and USDA's Priority Setting*. March, 1996. p 23.

percent was funded by the private sector, 25 percent was federal, and 15 percent was state.

Publicly funded agricultural research generates huge payoffs to society. Study after study has consistently documented that agricultural research and education are not expenditures, but long-term investments with high payoffs to society. For example, in Virginia, a \$1 increase in research boosts agricultural production \$9 over 12 years.² These dollar amounts translate, in real terms on an annual basis, to a rate of return to research of 58 percent, to extension of 37 percent, and to education of 53 percent. However, "research would be worth less without educated farmers and the extension of the research results. Likewise, teaching and extension would be worth less without research."³ One of the most frustrating ironies of these returns is that they are so high that it is hard to convince Congress and the public that the payoffs are credible.

Public versus Private Research

Although public research is thought to be a competitor of private research, the two are, in fact, complementary. While private research tends to be narrower and shorter term, public research can work with more basic, broader, and longer term issues and problems. The decisions for funding should not involve pitting public research against private research. A symbiotic relationship should be recognized and accommodated.

Duplication of effort and lack of coordination in undertaking research is much less of a problem than is often alleged. Research proposals go through an extensive review process to assure that the project does not duplicate current investigations elsewhere or worse yet, research that has already been completed. Moreover, many agricultural practices are site-specific and require adaptation to the locality. Critics alleging duplication not only underestimate the variability of agriculture, they also overestimate the ability of a central planner to do a better job than the present decentralized land-grant system which is closely linked via extension to the grassroots level. Professor Theodore W. Schultz, economist and Nobel prize

² George Norton, summary of comments in "The Council on Food, Agricultural, and Resource Economics," *Agricultural Research Assessment--A Symposium Summary*, Greenbelt, Md.: 1996. p. 14.

³ Johnson, Thomas and George Norton. "Virginia Agriculture and Returns on Investments in Research and Education." Summary sheet.

recipient, has observed: "Agricultural research in the United States has been spared the potential serious inefficiencies of a highly centralized funding and control. Decentralized decision making has become an important attribute of United States agricultural research . . ."⁴

Improved communications and computer technology have boosted the efficiency and effectiveness of trained workers. Such advances facilitate multidisciplinary and multisite research collaboration; reduce the layers of management and administration required; eliminate the need for costly travel; provide discussions among people at scattered sites; hasten the dissemination of the results; and provide on-line, instantaneous access to massive electronic libraries of information.

The key to the success of United States agricultural research is the cooperation among extension, teaching, and research at our land-grant universities. Knowledge is of little value if it is cloistered on campuses or walled-up in Washington. But when put to work on the farm and in communities and homes, knowledge works wonders.

"Cooperative Extension," as its name suggests, is designed to cooperate and extend. "Extension" is derived from the word "extend" which means to "increase in scope, meaning, or application" (Webster). For Cooperative Extension "extend" means to transfer or communicate information to people who would otherwise be unable to obtain it.

Extension professionals not only accelerate the flow of information, they contribute to it and adapt it to local situations. Local extension agents play a crucial role in assisting people, communities, and businesses in identifying local problems and communicating these problems to researchers on campus and at regional research stations. Surveys conducted by the GAO and the research performed by Johnson and Norton corroborate the widespread agreement of the advantages of research, teaching, and extension professionals working together on land-grant campuses and around the state.

The Need for Up-to-date Information Systems

Agricultural research depends on more investment in information technology. USDA's present research and information system is distressingly inadequate, as

⁴ Theodore W. Schultz, Foreword, in Wallace E. Huffman and Robert Evenson, *Science for Agriculture - A Long-Term Perspective*, Iowa State University Press, Ames, 1993.

documented by a recent GAO study. The improved system being proposed by USDA would enable both public and private researchers to quickly find out what projects have been done, what is underway, and who is doing it. This system would result in reducing potential duplication of public- and private-sector work, filling voids, and fostering collaboration.⁵

Increased Funding Is Beneficial, Necessary, and Justifiable

Rural communities, lacking the expertise and resources to hire that expertise, will turn to the land-grant universities to help them develop the economic programs that will help provide jobs for welfare recipients in their communities. They will need to provide services with reduced federal funding, and to find ways to fund services that will keep the communities from continuing to decline. *Agricultural and rural development research should be core components of long-term agricultural policy.*

United States agricultural producers have two choices in competing in the global market: either they can work for lower wages than anyone else in the world, or they can work more productively and market more effectively. Obviously, the latter is the better alternative. As United States agriculture moves from a governmentally controlled sector toward a more market-oriented one, all areas of agricultural research, from production to marketing to financial management, will become more strategic to its success than ever before.

Although competitive grants play an increasingly important role, they should not be relied upon too heavily. Basic programs at the land-grant universities which are funded by the Hatch, Smith-Lever, and related legislation must be maintained and strengthened. These fundamental programs are designed to maintain and enhance the core of knowledge and expertise needed to increase the capacity to respond to crises such as "mad-cow" disease or sudden death disease in turkeys or floods along the Mississippi or Karnal Bunt outbreak in Arizona. Not only do these federally funded, basic programs at the land-grant universities provide the core research, they also provide seed money, which is used to leverage state, local, and private funding. Each dollar of federal funding generates \$4 to \$5 of state funding.

⁵ Statement of B.H. Robinson, before the Subcommittee on Agriculture, Rural Development, Food and Drug Administration, and Related Agencies, March 20, 1996.

By tightening spending, which is perceived as too loose, and specifying priorities, which are perceived as too vague, federal funding of agricultural research, extension, and education could be increased. *Currently, we are investing only two pennies in federal agricultural research, extension, and teaching per dollar of consumers' food and fiber expenditures.*⁶ Furthermore, federal support is slipping, both relative to the economic significance of the food and fiber sector and in absolute terms as well. The food and agricultural sectors and their related industries provide almost 20 percent of the jobs in the United States and account for 16 percent of the Gross National Product (GNP).⁷ Agricultural exports are expected to generate a record \$61 billion in 1996 and will help to reduce the trade deficit.⁸ Real (inflation-adjusted) federal funding of agricultural research and education programs at the land-grant universities has declined 15 percent in the past 5 years alone. There has been a 20 to 25 percent reduction in the research capacities of the land-grant universities in the past 5 years.⁹

Public funding of agricultural research needs to be based on measures of the anticipated value to society. What is needed, according to Dr. Robert L. Thompson, President, Winrock International, is "for researchers and research administrators to answer two fundamental questions. . . . Who cares? and So what?"¹⁰ Rewards and incentives should not be based on counting publications, presentations, or projects, but on measurable results.

Research in the agricultural sciences may be on the brink of many promising breakthroughs which can pay big dividends to future generations. These publicly supported programs are crucial to help United States farmers retain and expand their competitive edge in the global marketplace, while maintaining the proper balance with human and environmental concerns. Public agricultural research, extension, and education will enable better and safer production of foods, help find new uses for agricultural products, minimize the use of potentially harmful chemicals, and curb the deterioration of natural

resources. Publicly supported rural economic development research will help rural communities remain viable as the federal government shifts the responsibility of welfare to state and local governments. *Public agricultural and rural economic development research, extension, and education programs are, therefore, needed more today than ever before.*

The original version of the text of this *Horizons* was presented by Joseph Coffey on May 14, 1996 as a testimony to the Resource Conservation, Research and Forestry Subcommittee of the Committee on Agriculture, U. S. House of Representatives on behalf of the Council for Agricultural Research, Extension, and Teaching (CARET).

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⁶ Norton, *op cit.* page 14.

⁷ USDA, ERS, unpublished employment data.

⁸ USDA. *Agricultural Outlook*. ERS.

⁹ Gary Mitchell and John Goldberg, Agricultural Research Questionnaire Summary, United States House of Representatives, memo dated January, 4, 1996.

¹⁰ Robert L. Thompson, summary comments, "The Council on Food, Agricultural, and Resource Economics," *Agricultural Research Assessment - A Symposium Summary*, Greenbelt, Md. 1996, page 7.

A Plan to Serve Virginia Agriculture, Human, and Natural Resources: Virginia Tech's Commitment to Title VIII: Research, Extension, and Education of the FAIR Act, 1996

Lester Myers

This title restates the major goals of federal support for agricultural research, extension, and education. They are to: (1) enhance competitiveness; (2) increase long term productivity; (3) develop new uses for existing crops and new crops; (4) promote economic opportunity; (5) improve risk management; (6) protect the environment; (7) support higher education; and (8) maintain an adequate, nutritious, and safe food supply. It also authorizes funding, at 1995 levels, for experiment station research, extension, and education through 1997. Funding for 1998 through 2002 is generally authorized but how the funds are allocated depends on the results of mandated studies on the effectiveness of formula funding versus other mechanisms including competitive grants.

Research, Extension, & Education—Goals

- * Enhance Competitiveness
- * Increase Long-Term Productivity
- * Develop New Uses & New Crops
- * Promote Economic Opportunity
- * Improve Risk Management
- * Protect the Environment
- * Support Higher Education
- * Adequate, Safe, & Nutritious Food

University Response

The research, extension, and teaching goals embedded in Virginia Tech's "A Plan to Serve Virginia Agriculture, Human, and Natural Resources" (Plan to Serve Virginia) are entirely consistent with the broad goals set out in this title. The ability of Virginia Tech to fully deliver on these goals is, however, highly dependent on two factors:

1. achieving a goal of somewhat expanded state funding over the next three biennium budgets, and
2. the continuation of long-term funding commitments from federal sources.

This text was presented as part of the concluding comments made by Dr. Lester Myers at a conference in November, 1996, *Virginia Farmers Adjusting to the 1996 Farm Bill*. Dr. Myers is Head of the Agricultural and Applied Economics Department, Virginia Tech.

Research, Extension, & Education—Challenges

- * Increased State Support
- * Stable Federal Support
- * Formula Funding vs. Competitive Grants

The federal formula funding guidelines now in place for funding research and extension contribute about 20 percent of Virginia Tech's total program costs. A reduction in the federal component would hamper our ability to fully implement the Plan to Serve Virginia and our ability to respond to critical issues resulting from major policy changes. If some system of competitive grants is substituted for the formula funding, Virginia Tech has the capability to effectively compete for funds. There are two unresolved issues with the competitive system:

- Grants are usually for a two to three year period and are not well suited to funding faculty and staff salaries and benefits.
- It is not certain how national panels charged with awarding grants for research and extension proposals will view priority issues of a state or regional nature versus more pervasive national issues.

Concluding remarks

The new directions of national farm policy toward more free market solutions and toward support of rural development present many opportunities and challenges for Virginia's agricultural and rural communities. We believe that Virginia Tech is well positioned to provide the technology, education, and technical assistance needed to give our producers an edge in competing in the new environment. I will close with two quotes from our Dean, Andy Swiger:

Agricultural development is not limited to rural areas as production, processing, and distribution of food and fiber products . . . are located in both urban and rural areas of the state. Our Plan to Serve Virginia Agriculture, Human, and Natural Resources will provide the research and education to fuel this powerful growth industry.

The modern theme for rural communities will be holistic, involving people, their well-being, hopes, and desires; economic development; infrastructure such as schools, financial institutions; and utilities as well as land use policies and environmental protection. I believe we in Virginia are leaders in this approach.

NOTICES

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