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LAND GRANT COLLEGES AND UNIVERSITIES OF THE FUTURE

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Introduction

Last year, the U.S. Congress passed, and the president signed into law, the most sweeping changes in agricultural policy since the 1930s. The 1996 farm bill and its Freedom to Farm provisions position the U.S. food and agricultural sector to capture the potential growth in world markets. In the future, the ability of this industry to capitalize on trade opportunities will depend less on subsidization by the government and more on gains in efficiency and productivity--which can only be achieved if this country has a strong agricultural research base. To be competitive in this new era requires major breakthroughs in science, and this mandates a strong public research base to provide the fundamental science underlying these advances. Given the long lead time necessary from basic research to development of a new technology (about 7-10 years), that effort must begin now. The National Research Council (NRC), in its previous reports on agricultural research, has strongly recommended the need for a competitive grants program. This concept has been adopted by USDA and codified by Congress in the 1990 farm bill as the National Research Initiative (NRI). However, funding for the NRI has fallen drastically short of the \$500 million annually envisioned for this program and authorized by Congress. Without aggressive expansion in funding, a significant portion of the benefits of new science and technology will go unrealized and so, in turn, will the promise of a competitive agricultural industry envisioned in the 1996 farm bill.

Beyond fully funding this fundamental program is the importance of ensuring the conduct and quality of agricultural education and research and thus, the land grant system. Land grant colleges of agriculture (LGCAs), initiated by the Morrill Act in 1862, historically have been entrusted with these functions and supported by public funds to carry them out. However, many questions have been raised as to whether LGCAs have positioned themselves to meet the challenges of the 21st Century.

The NRC, under guidance provided by its Board on Agriculture, undertook a study of the land grant system as a result of two main observations. First, the client base for food and agricultural research and education has changed dramatically as the nation's economy has developed and its population has shifted to cities and suburbs, and the policy issues have shifted accordingly. Second, the land grant system is defined not only by its distinctive heritage, but also by a set of institutional arrangements unique within higher education in the United States. These arrangements

have changed little since the system's early years despite major changes in the food and agricultural system. The institutional arrangements include:

- A federally legislated mandate to embrace a three-part mission of making education accessible to students of ordinary means, conducting scientific research to underpin teaching programs, and extending research findings to off-campus users to ensure that science serves people.
- A federal-state partnership that produced at least one land grant college in every state and territory.
- A federal funding mechanism that distributes research funds and extension funds to LGCAs based on the state or territory's share of total farm and rural population.
- A network of separate--but not equally well supported--historically Black land grant colleges.

In addition to changes in agriculture and its role in society and the economy, new developments in science and science policy and the federal funding environment motivated the NRC study of, and recommendations for, land grant universities. The study was sponsored by funds provided to the NRC mainly from the W.K. Kellogg Foundation and, to a lesser extent, by the U.S. Department of Agriculture.

The NRC Committee Process

NRC studies are conducted by volunteers with relevant experience and expertise. Twenty-one individuals were convened under the oversight of the Board on Agriculture. These people were balanced for age, gender and ethnicity; geographic location; and disciplinary expertise. They were participants in the land grant system--administrators and faculty with teaching, research, and extension expertise--as well as representatives of public interest groups, state government, agribusiness and the nonagricultural science community.

The study was divided into three stages. First, information was collected, reviewed and assessed on the LGCAs and their operating environment, and expert opinions were solicited from observers of, and participants in, the land grant system. The NRC published this historical review and collection of public data in *Colleges of Agriculture at the Land Grant Universities: A Profile*.

During the second stage of the study, public forums were held at land grant colleges. The forums were important means to garner public input on the relationship between college activities and public needs and priorities. In the third phase,

information was synthesized and integrated from the first two phases and a consensus report, *Colleges of Agriculture at Land Grant Universities: Public Service and Public Policy*, was published by the NRC in 1996.

Conclusions and Selected Recommendations

The consensus report concluded that a national science and education infrastructure that underpins continued advances in the food and agricultural system, and federal support of that system, remains squarely in the national interest. It also concluded that although the land grant system has served the nation well, there is need for change in four principle areas:

- The LGCA system must increase its relevance to contemporary food and agricultural system issues and concerns. It must also continue to develop programs that include a wider array of students, faculty and clientele of diverse backgrounds and perspectives.
- The system must organize its programs and projects more efficiently and more in keeping with regional and multistate requirements of many modern food and agricultural system problems. There is a need for a new geography for the land grant system.
- The system must reinvigorate its commitment to the linkages among teaching, research and extension in order to fulfill its mandate of conducting science in service of society.
- The system must enhance its accountability to the public and its reputation for quality in the science community.

Twenty recommendations were developed in support of these key themes. Several address the teaching, research or extension components individually, and other recommendations cut across these components. A significant number recommend refinements in federal policy as a means of reorienting incentives and signals in the LGCA system. Several of these recommend changes in federal policy. The recommendations are aggregated below:

Involving the Stakeholders. LGCAs have a responsibility, based on their philosophical roots and legislative mandate, to be relevant and accessible to the general public and particularly to citizens of ordinary means. However, many of today's food and agricultural system beneficiaries, such as urban and suburban residents and environmentalists, have little knowledge of, or connection to, many of the LGCAs. Enhancing these connections does not mean abandoning farmers. It

means building a broad constituency for programs that respond to and enhance complementarity among the nation's multiple goals for its food and agricultural system. Enhancing connections to both farm and nonfarm residents is an outcome crucial to extending the colleges' relevance into the 21st Century.

In order to enhance these connections, the report's first recommendation is that in setting program priorities that guide resource allocation, LGCA should garner effective input from a wide variety of stakeholders. In fact, receipt of USDA-administered funds--including those allocated by formula, special grants and competitive grants--should be contingent upon the demonstration of such input.

Creating a New Geography. Seventy-six institutions in 50 states, six territories, and the District of Columbia comprise the 1862 land grants and the historically Black or 1890 land grants. If the land grant system is to adopt a research and education agenda that responds to the priorities of consumers and the many specialized needs of diverse producer groups, then it must realize organizational efficiencies by reducing duplication and strengthening multi-state and multi-institutional partnerships that build upon the specializations of individual institutions.

In addition, the nature of contemporary food and agricultural system issues calls for regional or multi-institutional efforts. Many natural resource and environmental issues, such as watershed management, cross state lines. Many consumer issues, such as nutrition and disease, know no political boundaries. In fact, they may be endemic to similar populations located in spatially separated parts of the country. Even within the farm sector, production issues are often pertinent to producers in a region made up of all or parts of several states. In recognition of the importance of regional or other multi-state and multi-institutional approaches, coupled with the need for federal funds to provide incentives for such partnerships, the report recommends that significant shares (25 percent or more) of USDA-administered funds for teaching, research and extension should be used to provide incentives for regional centers, consortia, programs and projects that effectively integrate and mobilize multi-state and multi-institutional resources.

Integrating Teaching, Research and Extension. LGCA administrations, faculty appointments, budgets, and federal land grant legislation are structured along the lines of teaching, research and extension. Although it is the historical commitment to its three-part mission that has distinguished the LGCA, the separate administrative and funding structures too often hinder integration of the three functions and their programs. The different statuses implicitly, if not explicitly, assigned to each function by the university community contribute to the separateness.

The integration of teaching, research and extension is valued for several reasons. Research-extension linkages, when they work well, spawn a two-way flow of insights and information that enhances the relevancy of research and uses research findings where they are most valuable to the public. Strong research-extension linkages

help ensure that outreach programs reflect the most up-to-date scientific knowledge. The integration of teaching, research and extension is of special value to students because it offers an academic experience that involves the students in both the process of scientific discovery and public service. To put a renewed emphasis on an integrated tripartite mission, the report recommends that federal formula funds for research and extension be combined into a single allocation. Further, 50 percent of the combined funds should be used to support programs, projects and activities that explicitly integrate teaching, research and extension or, alternatively, the work of multiple disciplines.

Enhancing Accountability to the Public. It is recognized that USDA-administered research funding differs from other research and development funding in the much smaller percentage allocated to individuals and projects on the basis of merit and competition. This difference is because of the relatively large share of agricultural research conducted intramurally by USDA, and the use of formula funds and congressionally-designated grants in allocating extramural funds to institutions. Arguments can be made for and against both formula-based funding and competitive grants. However, some of the early reasons for formula funding of state experiment stations, such as the need to draw each state into agricultural research and the site-specific nature of agricultural research, carry less weight today. Presently, most states provide far more financial support than is required to match federal dollars; and many types of food and agricultural research, such as nutrition, food safety and biotechnology, have little or no location specificity. Other arguments for formula funds, such as the support they provide for structural linkages between research and extension that respond to local, state and regional needs, and for certain applied research projects that require long-term continuity, remain quite compelling.

Despite its uniqueness, agricultural research needs to enhance quality, accountability and equity through greater use of competitive grants. The report reaffirms previous NRC reports and recommends that the federal partner should increase its use of competitive grants to fund projects and individuals on the basis of merit as determined by peer review. Greater use of competitive grants in relation to formula funding and Congressional earmarks will enhance quality and accountability, and lessen the perception that experiment station researchers are insulated from competition with the rest of the research community.

The federal government should increase competitive funding of food and agriculture projects. The funding level for competitive grants should be no less than the \$500 million authorized by Congress for the National Research Initiative in Agriculture, Food and the Environment. Recognizing fiscal constraints, options for increasing the share of federal support for competitively-awarded peer-reviewed research include:

- Directing funds to research from other USDA budget categories, particularly as a means of reinvesting savings on agricultural subsidies.
- Transferring to competitive grants programs a portion of the funds distributed to experiment stations by formula and special grants.
- Drawing on USDA intramural noncompetitive research funding.

A two-tier review similar to that of the National Institutes of Health should be used at the federal level to guarantee that public benefits, as well as scientific merit, guide the selection of research proposals. To those who would criticize a reallocation of funds from formula and intramural funding, it needs to be pointed out that the scientists affected by such a reallocation can apply to the NRI for funding since all scientists are eligible for these funds.

Nonetheless, a continued role exists for formula funding, particularly in supporting linked teaching, research and extension. The report recommends, however, that new formulas be designed and implemented by which food and agricultural research and extension funds are allocated within the land grant system. The current formulas are outdated in relation to modern food and agricultural constituencies. These formulas were generated in an era when a much higher percentage of the nation's population was rural and farm-based, and the nation's agricultural interests were dominated by concerns with domestic crop production and food security. Today, many issues of concern to the U.S. public, such as diet and health, families and youth at risk, and food safety are not specific to farm production regions, suggesting the need to rethink formulas for both research and extension. In revising the formulas, consideration should be given to variables such as states' proportionate contributions to total population, relative poverty rates, or shares of cash receipts from farm and food marketings as appropriate reflections of the LGCA system's broadened contemporary customer base.

Federal legislation requires that state governments match federal formula-based contributions to research conducted at experiment stations located at 1862 institutions and, as noted earlier, states contribute far more than their matching requirements. However, no such requirement applies to federal contributions to research based at the 1890 institutions. Aside from the obvious inequity among institutions within the land grant system, this discrepancy in federal funding requirements also means that the clientele of the 1890 institutions are less likely to receive adequate research and education attention. The 1890s have been uniquely focused on issues, problems and needs of African Americans and other ethnic minority groups, small-scale and limited resource farmers, and low-income rural and urban families. Thus, the report recommends that the federal government require that states match federal formula funds going to the historically Black 1890 institutions in the same manner as is

required for the 1862 institutions. This recommendation is meant to enhance the vital role of the 1890s as providers of access to research and education to under-represented segments of our society.

Looking to the Future

The land-grant system has served the nation well, but changes are needed that reflect modern realities, challenges and opportunities. The system must increase its relevance to contemporary food and agricultural system issues and concerns; reinvigorate its commitment to teaching, research and public service; organize its programs and projects more efficiently and more in keeping with regional and multi-state requirements of many food and agriculture system problems; and enhance its accountability to the public.

Their historical commitment to public service distinguishes the LGCAs. The tripartite tradition of teaching, research and extension at land grant colleges is a unique institutional base on which to erect the structure of knowledge that can assure a competitively, socially and ecologically sustainable food and agricultural system. It is that unique base of support adapted for the challenges of the 21st Century that will continue to make this segment of our nation's research system as vital and important as its historical past.

References

National Research Council. *Colleges of Agriculture at the Land Grant Universities: A Profile*. Washington DC: National Academy Press, 1995.

_____. *Colleges of Agriculture at the Land Grant Universities: Public Service and Public Policy*. Washington DC: National Academy Press, 1996.