Major and continuing gains are being made in the productivity of US agriculture and that in other countries. Many of these gains in productivity are based on new technology and the application of fundamental knowledge. These advances are improving the quality of life of many people. There is considerable evidence from economic studies in the United States that agricultural research has made major contributions to the improvement of productivity (reviewed by Fuglie and Heisey, 2007). Thus, it is clear that there has been a high “payoff from government investment in agricultural research” (Fuglie and Heisey, 2007). Moreover, there is marked spillover of the benefits of agricultural research across states boundaries (McCunn and Huffman, 2000). There are strong reasons to grow agricultural research. The recommended increase should be a balance of funding federal laboratories such as the USDA’s Agricultural Research Service (ARS), the availability of federal formula funds, funding for the states, federal competitive grants and in particular the National Research Initiative (NRI), congressional “earmarks” to address specific problems, issues, and challenges, and funding from industry and foundations to support specific projects and for endowments for research and extension centers, departments, chairs, and fellowships. Funding needs to address support for the following:

- Facilities (laboratory buildings, farms, etc.), information technology infrastructure and scientific equipment
- Scientific infrastructure of faculty, research scientists, support staff, and assistant ships
- Development of scientific tools such as databases, expression chips, and SNP chips
- Multi- and interdisciplinary research involving multi-investigator projects
- Individual investigator projects

The United States Department of Agriculture’s major competitive grants program is the NRI Competitive Grants Program, which is administered by the Cooperative State Research, Education, and Extension Service (CSREES). Proposals are subject to a rigorous peer-review process similar to that used by the National Science Foundation. All NRI proposals must include a justification of both their relevance to animal agriculture in the United States and to the program priorities. Beginning in fiscal year 2006, proposals were restricted to those that use agricultural animals (Mirando, 2007). Although the US Congress authorized the NRI at $500 million in 1990, less than $200 million have been appropriated, even in the best years.

Reeves (2007) concluded (on NRI funding for animal reproduction) that “The number of grants funded per year is approaching a low critical number, with an average of only 10 new grants funded per year. At the present funding level it will be difficult for even the best scientist to sustain a research career based only on USDA funding.” I would suggest that this latter statement pertains to virtually all poultry and livestock research. There is discussion as to the relative merits of formula funding vs. competitive grant funding of agricultural research. An evaluation of this question by a group of agricultural economists concluded that there are differences in outcomes between the two methods of funding based on “who sets the research agenda, the types of research discoveries that would be favored, distributional effects it would have across the states and regions, the payoff to society, and sustainability of future funding” (Huffman et al., 2006). They argued strongly and persuasively for a balanced increase in “federal formula and competitive grant funding for agricultural research” (Huffman et al., 2006). Without a competitive grants program, it is difficult to envision some of the great successes in the animal sciences, including the sequencing of the chicken genome. It is, however, argued by the same group of agricultural economists that there are high transaction costs in a peer-reviewed competitive grant program, with multiple proposals written but not funded (Huffman and Evenson, 2006). These costs are borne by the universities, with the costs disproportionately falling on those schools that are less successful in the competitions for funding.

Westendorf and colleagues in 1995 noted the increases in congressional earmarked grants for research and facilities in the USDA appropriation. This trend has continued. Some would question how this fits with the development of a coherent policy for agricultural research. Others argue, and very persuasively I think, that these earmarks facilitate long-term funding of multi-disciplinary research teams addressing critical focused areas.

Parenthetically, I will point to one of the critical lessons in life: the importance of being at the table or simply being
there (at the right time). An example is the following. Priorities for research on animal reproduction were recommended by over 75 stakeholders at a CSREES workshop at the Society for the Study of Reproduction meeting. The priorities were the following: 1) gonadal function/gamete production, 2) pituitary-hypothalamic functioning, and 3) embryo and conceptus development. These were considered in the development of the request for proposals (Mirando and Hamernik, 2006).

I recognize that this editorial is focused on the United States. However, I believe the “broad-brush stroke” principles apply throughout the world. There is analogous strong support for the importance of agricultural research globally (Aerni, 2007). Not only is the funding of agricultural research of critical importance, but also the areas that are funded. In a subsequent editorial, I will address the real possibility that we risk losing critical areas of our scientific infrastructure in key disciplines and sub-disciplines because of decisions made based on expediencies such as short- and medium-term availability of funds.

REFERENCES


Huffman, W., and R. E. Evenson. 2006. Do formula or competitive grant funds have greater impacts on state agricultural productivity? Am. J. Agric. Econ. 88:783–798.


