

# *The Influence of Science on Policy Decisions (Including Lobbying Efforts for Research Dollars)*

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## **Grand Challenges for Food and Agriculture**

Critical issues facing agriculture include delivery of human health care, reduction in hunger, and increasing energy supply, all in a sustainable manner with minimal negative impact on the environment. These issues require science-based, cross-cutting and multi-disciplinary solutions. The United Nations (U.N.) predicts world population will exceed 9 billion by mid-century and has called for a 100 percent increase in world food production by 2050 (U.N., 2007). According to the U.N., this doubled food requirement must come from virtually the same land area as today. The U.N. Food and Agriculture Organization (FAO) further states that 70 percent of this additional food must come from the use of new and existing agricultural technologies (U. N., Food and Agriculture Organization, 2002). Less recognized is the prediction that there will be one billion Americans in the United States in 2090 (Bureau of Census, 2009) a tripling from today's population of 330 million. Therefore, our nation must be cognizant of food security just like the rest of the world. Therefore, the need for scientific research and innovation through new technologies is essential for the future of *all* citizens, communities and natural resources. People worldwide do and will continue to benefit from modern agriculture and new technologies through enhanced quality of life and health, and through more affordable and sustainable supplies of food, feed, fiber, fuel and industrial products.

## **Science and Policy**

The scientific basis for policy decisions in the U. S. government is critical and must continue to be the guiding principle based on the historical and undeniable societal benefits which support enhanced public health by providing safe, affordable food. Early in his administration, President Obama stated that "Science and the scientific process must inform and guide decisions of my Administration on a wide range of issues, including improvement

of public health, protection of the environment, increased efficiency in the use of energy and other resources, mitigation of the threat of climate change, and protection of national security" (White House, 2009). Agriculture contains sectors that are among the most heavily regulated in the world. These regulations, whether it is the livestock, crop, animal health, meat and poultry or food industries, form the basis of one of the safest food supplies in the world, for which Americans spend less than 10% of their disposable income.

A review of the public messages indicates that the current administration supports science. President Obama's statement is one on which we can all agree: "Science is more essential for our prosperity, our security, our health, our environment, and our quality of life than it has ever been." In his first year in office, President Obama committed to a major increase in investments in research, declaring at the annual meeting of the National Academy of Sciences that the United States will "devote more than 3 percent of our GDP to research and development." In fact, in the administration's FY 2011 budget request, President Obama has asked Congress to boost science spending next year across the federal government. A summary of the budget request (Mervis, 2010) notes that the U. S. Department of Agriculture's National Institute for Food and Agriculture (NIFA) would boost the size of its competitive program by 64% to \$429 million. In addition the Environmental Protection Agency's research program would increase by 4.9%. The increases come on the heels of a recognition of the grand challenges and criticism that food and agricultural sciences have been starved for resources (Roberts et. al, 2009; Stokstad, 2009). Major increases in funding for food and agricultural research, extension and education must be a part of the President's vision for our nation's future.

## **Is Science Enough?**

Skeptics are looking for a new pathway to move the policies that concern consumers. Critics are stating that use of science as the foundation of our governmental policy making is stale and push for consideration of emotional non-factual issues. The question becomes "Is science enough?" Policy making and decisions are not guided

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by science alone. But we recognize that sound objective policy is effective and productive when it is the result of the essential science. Governmental policy must continue to be based on the principles of validated science. Those principles are that first, the identity and authenticity of scientific measurements must be verifiable within a defined range of precision. In other words, we must be able to demonstrate unequivocally that we have measured what we claim to have measured and that we know the margin of error on our measurements. Secondly, measurements and observations must not be confounded by extraneous factors and influences known to corrupt their accuracy and precision. In other words, we must be able to demonstrate that our measurements are taken under well-controlled conditions. Thirdly, the measurements and observations must be replicable in independent hands. In other words, other scientists using the same or similar methods must be able to repeat the results. These tenants of validated science are essential to policy decisions. Science alone is not enough but that does not mean to abandon it; rather to continue to have science as the platform and build additional considerations as justified. Different from other countries around the world, scientific decision – making has been essential to warding off precautionary approaches which simply serve to stifle consumer health and welfare, innovation and overall social benefit. Indeed in spite of the administration’s support of science, several policy proposals and proposed regulations are not science-based and give the appearance of taking a precautionary stance.

### **Food and Agricultural Research, Extension and Education**

Federal funding for food and agricultural research, extension and education represents a top national priority and a necessary long-term national commitment. Food and agricultural research, extension and education to date have helped provide the United States with a food and agricultural system that consistently produces high quality, affordable food, natural fiber and other products, while at the same time creating jobs and income, helping reduce the trade deficit, sustaining important strategic resources and providing many valuable aesthetic and environmental amenities to the public. Most importantly, research programs train young scientists of the future. A significant consistent investment in public funding for food and agricultural research conducted through programs of the U.S. Department of Agriculture (USDA) in the Agricultural Research Service (ARS), the National Institute of Food and Agriculture (NIFA), the Economic Research Service (ERS) and the National Agricultural Statistics Service (NASS) is critical to the continued discovery of new pest management solutions toward production of improved, healthful and safe foods that will feed the global population of the future.

Public investment in research is a wise investment. An analysis by the International Food Policy Research Insti-

tute of 292 studies of the impacts of agricultural research and extension published since 1953 (Austin et al., 2000) showed an average 81 per cent annual rate of return on public investments in ag research and extension. More recently, such investments are demonstrated to yield tremendous returns, according to a USDA Economic Research Service (ERS, 2007) that showed the average social rate of return to public investment in agricultural research is nearly 50 percent. Because USDA research programs deliver highly valuable technologies at low cost, increased funding for key competitive grants and for intramural research is essential.

### **Leveraging Research Dollars**

In addition to USDA research, it is essential that there be coordinated programs across Departments. As noted by the National Academy of Sciences (2004) and the National Agricultural Biotechnology Council (2009), food and agriculture is a full partner in human health. Cutting edge research programs, integrated across departments and through collaborative funding schemes, will leverage scientific expertise and funding toward solving food and agricultural problems.

Private funding has increased above public funding (USDA, ERS, 2010). Most agree that publicly financed research is a necessary complement to private sector research. Private funding plays a vital role in bringing a new crop protection product to market. A recent report on research and development for the crop protection industry reported nearly a 40% increase in investment expenditure over the past decade in the discovery, development and registration of new pest and disease prevention product in the U.S. and Europe (CLA and European Crop Protection Association, 2010). These data point to the need for coordination of research in public-private partnerships which assure that research is prioritized, development occurs, and products are relevant to American farmers and the environment.

### **The Future of Food and Agriculture Through Research – Who’s Involved**

Federal funding for food and agricultural research has been essentially flat for over 20 years (USDA, ERS, 2009). Public funding of agricultural research in the rest of the world during the same time period has outpaced investment in the United States. The research, extension and education title of the Farm Bill represents the nation’s signature federal investment in the future of the food and agricultural sector. Other Farm Bill titles depend heavily upon the Research Title for tools to help achieve their stated objectives. The Research Title in the 2008 Farm Bill established the new NIFA in USDA to maximize efficiency and productivity throughout USDA’s research programs. The next Farm Bill must continue to review and enhance organizational aspects of the research structure, methods for research priority-setting, and technology transfer if the

rising concerns of global health, hunger and environmental impact are to be solved.

The American Meat Science Association should continue to be involved! The Administration, Congress, many stakeholder organizations in the food chain, the university system, scientific societies and others support scientific policy making and increased funding for food and agricultural research. One way to get involved is to join the National Coalition for Food and Agricultural Research (N C-FAR, NC-FAR) is a nonprofit, nonpartisan, consensus-based and *customer-led* coalition that brings food, agriculture, nutrition, conservation and natural resource stakeholders together with the food and agriculture research community, serving as a forum and a unified voice in support of sustaining and increasing public investment at the national level in food and agricultural research, extension and education. Through education and outreach efforts, N C-FAR seeks to sustain and enhance federal funding for food and agricultural research, extension and education to help bring about research outcomes that provide a range of major public benefits.

The grand societal challenges of the future will not be overcome unless we invest in viable food and agricultural research, extension and education programs. There are some new alignments for the future which may be positive. Recently there has been a shift in U. S. policy on global food security. On May 20, 2010, the Obama administration announced a new program called Feed the Future (Department of State, 2010), signaling a shift in U.S. foreign policy in the wake of the 2008 food crisis it wants to spend at least \$3.5 billion over the next three years to help potentially 60 poor nations feed themselves. The initiative, the budget for most of which has yet to be approved by Congress, would be a break from the recent past in which the U.S. has largely helped hungry nations by spending roughly \$2 billion annually to donate U.S.-grown food, a strategy that has aided U.S. farmers and shippers. Such a shift in policy will require research and development. It will require coordination among the public and private sectors. The new initiative

must benefit both global consumers as well as the U. S. farmer and food industry. In the future, we must balance consumer interests and an understanding of the benefits of modern agriculture, with increased public funding for research, extension and education that is leveraged to provide significant outcomes for farmers and consumers. Science-based policy supported by research solutions is an essential foundation to our future.

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