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Chairman Harkin, Ranking Member Chambliss and Members of the Committee thank you for the opportunity to testify today on such a vital topic--- the future of agriculture research. I am William Danforth, former chancellor of Washington University and now chair of the board of the Donald Danforth Plant Science Center both in St. Louis, Missouri. I have been involved in biomedical research for over fifty years and in plant science for the last dozen years.

I believe that, despite its enormous potential, agricultural research is today under appreciated, under funded, and not managed to make best use of the nation's scientific talent. We know what needs to be done to correct this problem. For over thirty years at least five separate scientific panels have argued for more competitive, merit-based grants, but traditions are hard to change and their recommendations have mostly been ignored.

Thanks to Chairman Harkin, Senators Bond and Lugar among others, I was asked to chair a task force to conduct a review of agriculture research and evaluate the merits of establishing one or more National Institutes focused on the disciplines important to the progress of food and agriculture science. I ask that this task force report be included in the record of today's hearing. The final recommendations of the task force are embodied in the National Institute for Food and Agriculture Act introduced last year by Chairman Harkin, Senator Bond, Senator Lugar, Senator Coleman and others. In the House, similar legislation was introduced by Chairman Peterson.

The task force conclusions were:

1. Continued agricultural innovations are essential
  - a. Past innovations growing out of agricultural research and education have given us food that is plentiful, cheap and safe. The Green Revolution by tripling production per acre has stopped Asian famines and saved the world from environmental disaster.
  - b. Innovations must continue, for we face serious challenges, including
    - i. Keeping American farmers successful in the face of international competition, thereby ensuring the profit growth of America's farmers and ranchers.
    - ii. Developing cost effective bio-energy,
    - iii. Conserving water by increasing drought resistance in plants,

- iv. Improving human nutrition,
- v. Countering the epidemic of obesity,
- vi. Strengthening food safety,
- vii. Protecting the environment,
- viii. Preventing the spread of diseases among animals and from animals to humans.

2. Modern research into the fundamental nature of farm animals and plants is an essential part of meeting these challenges. Fortunately the tools are there. New understandings and technologies from cell biology, molecular biology and genetics are as applicable to plants and farm animals as they are to human cancers.

- a. Advances in fundamental understanding have already fortified crop protection through insect and drought resistance as well as significant contributions to healthier, more productive animals.
- b. The future is very promising.

3. America already knows how to manage and fund fundamental research. The National Institutes of Health (NIH) and the National Science Foundation (NSF) have long managed fundamental research that has practical benefits. They just invite scientists to submit competitive proposals to meet national priorities. Grants are awarded to the best proposals as judged by the confluence of scientific merit and national need.

- a. Thus, the NIH and the NSF have learned to blend political with scientific decision-making to achieve the best outcomes.
- b. This system that works in practice is in keeping with the American tradition of competitive free markets.

4. Agricultural research needs more money. It has long been badly under funded, especially considering its great national importance.

- a. The NIH spends almost \$15 for research for every \$1 spent by the USDA. The NIH awards about \$150 in competitive, peer reviewed grants for every \$1 so awarded by the USDA.
- b. For the last twenty years the growth in agricultural research has averaged around one percent compared with six percent for the NIH.
- c. Grants are smaller, of shorter duration and carry lower overhead than do those from NIH and NSF. They are, therefore, less attractive to scientists and to administrators of scientific institutions. Thus, scientists with agricultural interests are tempted to go to NIH or NSF, perhaps being less focused on agricultural problems.
- d. Critical reports of scientific panels that have called for more peer-reviewed competition have been largely ignored. Consequently federal policy makers are less confident that USDA research money will be well spent. This fact may help account for the chronic under-funding.

5. Changes in the traditional management of fundamental agricultural research are now necessary. When agricultural research was young, intelligent lay people understood such things as contour plowing, irrigation, improved seeds, etc. Moreover needs of Florida were different from those of Minnesota and those of Iowa. Thus it made sense for funding decisions to be argued out in the political arena. Now, however, the intelligent lay person cannot judge the quality of research in modern genetics, molecular biology, proteomics, etc. One needs to bring in scientists to help as does the NIH and the NSF.

6. Our proposals for the National Institute for Food and Agriculture are narrow and focused.

- a. They are designed to expand and enhance USDA's fundamental agriculture research that is so necessary to future down-stream research.
- b. The fact that fundamental agricultural research can be done anywhere and is not tied to any region of the country led us to hope that greater reliance on scientific decision making about the quality and importance of research projects might be acceptable.
- c. The National Institute for Food and Agriculture Act does not touch existing research authorities. Rather it separated the new area so it might develop its own scientific culture. It is independent and additive. Our charge did not include considering larger restructuring nor were we competent to do so.
- d. We recommended new money that would not compete with the ongoing programs for which we have respect. Furthermore, I believe mandatory money is essential because fundamental research is the foundation seed for future generations of American agriculture. To every extent possible we must be vanguards of research funding to shield it from changing economic conditions and budget whims. Recognizing that resources are tight the task force still emphasized the importance of the research and underscored its chronic under funding. The recommended funding amount for the first year operation of the proposed institute would be approximately 0.2 percent of the USDA budget.

7. Finally, the challenges are too great to delay any longer. If nothing is done in this time of global competition, America will continue to lose its competitive edge to cheaper land and low cost labor, nor will we capitalize optimally on our opportunities for bio-energy, or to protect our health and environment in a changing world. A parallel could be drawn using U.S. Energy Policy where until recently we failed to act for thirty years. If we do not act to enhance agricultural research now, our cost of production will continue to rise, our environmental quality will suffer and future farm program spending will escalate.

8. Therefore, Mr. Chairman, we strongly recommend the adoption of the National Institute for Food and Agriculture Act in the Research title of the 2007 Farm Bill. This legislation has enjoyed the support of several key agriculture groups including the American Soybean Association, the National Pork Producers Council, the National Farmers Union, the National Corn Growers Association and the National Chicken Council among many others. This small but critical investment on fundamental agriculture research will reap significant returns for farmers and ranchers and achieve solutions to many problems our society will confront in the decades ahead.