



# Agriculture, Food, Nutrition and Natural Resources R&D Round Table

## Research Partnerships Yield Greater Societal Returns

Amid historic federal deficits and ongoing budget austerity, the ability to leverage maximum benefits from public spending on research and development is crucial. With world food demands expected to double over the next 40 years and increased competition for natural resources, agricultural research and development (R&D) must be utilized to its fullest potential. Research partnerships are an important tool to leverage the relative strengths of multiple contributors—whether federal, state or private—for maximum and often diverse benefits.

*The Agriculture, Food, Nutrition and Natural Resources R&D Round Table*, which convened March 15, 2011, in Washington, D.C., addressed the multiple benefits of R&D collaborations. The program included leaders from eight collaborative projects—selected from 61 projects submitted—who shared best practices and lessons learned. The collaborative research agendas ranged from mapping and marketing bovine genomics to forestalling aquifer depletion in the High Plains.

Research collaboration saves lives—reducing the incidence of Salmonella in Mexico, where food borne disease is the principal cause of mortality among preschoolers—and enhances food safety where crop grouping research assures the availability of pest control products necessary to provide a safe and abundant food supply. The common refrain among all presenters was the synergy to be gained from coupling diverse institutional strengths and capacities in projects that might involve a handful of research collaborators or more than 100.

Keynote speaker Shere Abbott of the President’s Office of Science and Technology Policy, reiterated President Obama’s position that science and technology are central, not just relevant, to “winning the future.” The cross-cutting foundations of strength in science and technology—collaborative R&D—are to be nurtured systematically rather than applied ad hoc to challenges and crises.

USDA Under Secretary for Research, Education, and Economics Catherine Woteki noted that robust agricultural and natural resources R&D enterprises are essential to address the world’s most critical problems. Woteki emphasized that at USDA, the federal government’s primary food and agriculture R&D agency, there is additional emphasis on taking advantage of expanded partnerships throughout the federal government, as well as with universities, state agencies and the private sector. The value of collaborative R&D was echoed by Jane Silverthorne of the National Science Foundation, who cited six key benefits: coordination of activities at all levels, sharing of knowledge/expertise, exposure to diverse perspectives, leveraging scarce resources, building on long-term investments, and developing a shared vision for the future.

In general, the eight research collaborations highlighted at the March 15 round table were predicated on a grand purpose, one that excited principal investigators, attracted diverse funding sources, and benefited a wide breadth of human populations. Some featured projects had multiple purposes. Sequencing the bovine genome, for example, enabled farmers

to predict the genetic merit of animals at birth, and greatly enhance the efficiency of milk production. But corollary benefits included the ability to engineer purebred North American bison from rancher-salvaged hybrid herds, and to recapitulate and study the 10,000-year evolution of cattle with genotypes alone. Similarly, the project to measure and lower the incidence of Salmonella in Mexican feedlots principally benefits Mexican consumers, but also facilitates the harmonious trading of meat between the United States and Mexico, which is significant and mutually beneficial.

Another common theme voiced by presenters was the inclusion of diverse institutions or professions in a common endeavor. The National Science Foundation (NSF), for example, partnered with the Bill and Melinda Gates Foundation on a project called BREAD—Basic Research to Enable Agricultural Development. For another project focused on increasing the efficiency of photosynthesis, NSF partnered with a United Kingdom-based biotech council. Another collaborative project, the Ogallala Aquifer Program, harnesses the expertise of hydrologists, economists, behavioral scientists and educators to safeguard rural communities in multiple states from water scarcity by identifying ways to more efficiently utilize the largest source of U.S. freshwater.

Some research programs, like the National Food and Nutrient Analysis Program (NFNAP), are inherently governmental. Its goal—monitoring nutrient intake to maximize the genetic potential of all human populations and reduce the risk of diet-related disease—is both complex and manifestly altruistic. The project's stakeholders and institutional partners are numerous and diverse—Indian Health Service, Centers for Disease Control, National Institutes of Health, American Association of Cereal Chemists, and National Institute of Standards and Technology. The program must constantly demonstrate its agility to keep pace with food product introductions. NFNAP has examined 1,500 food products

and inventoried up to 140 nutrients, but the growing diversity of ethnic foods and the constant discovery of new bioactive substances in foods pose ongoing challenges.

Two projects spotlighted at the round table shared the same focus—watershed stewardship or restoration—but from different perspectives and at different scales. USDA's Conservation Effects Assessment Project enlists the expertise of partners like NASA for remote sensing and USDA's Agricultural Research Service for measures of soil vulnerability to rate the effects of various practices on watershed health. The goal is to determine if prescribed field-level practices have dividends at the watershed level. By contrast, the Integrated Landscape Assessment Project (ILAP), a two-year effort funded with stimulus money which created or retained 50 jobs, is more grassroots in nature. ILAP takes a more prospective approach to watershed management by surveying wildlife inventories, fire/fuel conditions, and vegetation cover to help land managers make informed restoration decisions.

In summarizing the day's discussions, Edward Hiler, representing the Riley Memorial Foundation, noted that the United States has historically enjoyed an ample food supply. At one time, complacency clouded the need for agricultural, food, nutrition and natural resources R&D investments. But the magnitude of the challenges facing U.S. and world agriculture today—including a population that is expected to increase by 50% by 2050 and growing competition for natural resources—has brought new attention to the importance of R&D. Hiler noted that nearly 150 years ago, the Morrill Land-Grant Acts established the institutional capacity to address agricultural crises. He added that based on the value of expanded partnerships highlighted in the day's program, society would be well served by leveraging that capacity as part of expanded partnerships throughout the broad R&D community.



The *Agriculture, Food, Nutrition and Natural Resources R&D Round Table* was primarily organized by the four organizations above, with the support of the Research, Education and Economics agencies of USDA.