The United States Department of Agriculture (USDA) has supported some research, education and extension related to organic agriculture for several decades, with significant increases in recent years, particularly since The Organic Foods Production Act (OFPA) established the National Organic Program (NOP) in 1990. Final rules for implementing this legislation came out in 2000 and nationwide organic standards for certification under a national organic label were first established in 2002. The sale of certified organic products has continued to grow ever since.

**REE Agency Activities on Organic Agriculture**

Research, Education, and Economics (REE) conducts or funds the vast majority of organic agriculture research, education and extension at USDA. REE consists of four agencies: our intramural (research-conducting) agency the Agricultural Research Service (ARS), our extramural (research-funding) agency the National Institute for Food and Agriculture (NIFA), and our two economic and statistical agencies: the Economic Research Service (ERS) and the National Agricultural Statistics Service (NASS). Economic studies at ERS have expanded USDA’s and the American public’s understanding of the fast growing organic market for consumers and export. The current work by NASS on the 2012 Agricultural Census will increase data on organic products and their distribution chain. NIFA programs have helped to fund long-term research trials as well as specific topics such as major focus on disease and weed problems, nutrition and water relationships, effects on natural resources, and economic and marketing needs. ARS conducts organic farming research to understand the scientific basis of biological and physical processes that naturally regulate soil fertility and pests, emphasizing whole-system preventive solutions.

Due to support from USDA stakeholders and partnerships with the Land-Grant institutions and between USDA agencies, funding for research more than doubled from 2005 to 2010. Between 2002 and 2010, the REE mission area contributed over $275 million and over 2400 projects in support of organic research. Along with the growth in funding has come increasing interest in the role that organic agriculture may play in addressing the major agricultural challenges of our times.

**Agricultural Challenges**

To be innovative in approaching current and emerging agricultural scientific issues and to plan for future USDA research and education to help solve domestic and global challenges, USDA has developed the REE Action Plan. The Action Plan addresses seven goals: food security, climate and energy needs, sustainable use of natural resources, nutrition and childhood obesity, food safety, education and science literacy, and rural prosperity and rural-urban interdependence. There is currently work going on in many of these areas that relates to organic agriculture, especially gaining knowledge related to ecologically-based systems that are inherent in the practice of organic agriculture.
**Food security.** There will be nine billion people on the planet to feed during this century. The challenge will be to be able to grow, distribute, and store food to meet the needs of this increased level of population. USDA is supporting research on-farm that emphasizes the observation of, experimentation with, and innovation for working organic farms, including animal and crop production issues. Feeding the world is going to be done by a combination of local, regional and national and/or global agriculture. Organic agriculture needs to be expanded as part of this effort. Organic farming practices offer much interest as we look at food security. In particular, we are looking at how some organic practices contribute to drought resistance in a crop, the role of cover crops and rotation, and how organic practices can potentially enhance high yields on small to medium size acreage.

**Energy and climate.** While neither USDA nor the organic community is trying to develop organic biomass products as a primary product, we are aware that some of the cutting-edge development of bioenergy is being developed, or adopted by organic processors and farmers. As an example, compost from an organic processor in the Northwest is producing enough electricity from fruit and vegetable byproducts in a Biogas Plant to make their production facility self sufficient while also supplying electricity to approximately 1100 homes. This process complements the efforts of the organic community to be models of greater sustainability.

One of our 2010 priorities was to evaluate carbon sequestration and other environmental services in organically managed systems. Building soils is fundamental to organic agriculture. There is much to be learned about the character and retention capabilities of these soils, including their potential for drought resistance. Research supported by NIFA funding and collaborative efforts of ARS and university scientists and farmers has led to pioneering systems and methods for organic no-till practices.

**Sustainable use of natural resources.** Our primary science priorities with respect to natural resources are water management—for both quantity and quality—and landscape-level conservation. In 2009, NIFA combined funding from its Organic Transitions program and its Integrated Water Quality Program to fund studies to improve understanding of the effects of organic farming practices and systems on water quality and/or water quantity.

**Food safety.** Both NIFA and ARS are looking at organic production practices and food safety, in particular in developing organically allowable post-harvest handling and processing practices to increase food safety, as well as the shelf-life of fresh products. This includes evaluation of pre-harvest and post-harvest methods to reduce potential contamination of organic crops and products by toxins or bacteria.

**Innovative Actions to Solve Problems**

This paper mentions only a small number of the many research projects underway via NIFA funding and at ARS research sites. The economic research, census, and statistical surveys of ERS and NASS will continue to contribute to our understanding of the extent these practices are in use, and the impacts they have on our agricultural economy. The work of each of these agencies is further described in companion papers in this volume.

REE has also collaborated with the Agricultural Marketing Service in leading the USDA Organic Literacy Initiative, which developed informational materials and two training modules on organic agriculture for USDA employees and the general public (1). This effort will help ensure that the USDA workforce becomes even better able to develop and apply the best scientific knowledge to benefit the organic industry and society as a whole.

**Literature Cited**