

ARS National Research Program on Agricultural System Competitiveness and Sustainability

All of the Agricultural Research Service's research is fundamentally concerned with sustainability. New production methods that damage the environment, even if they raise yields or profits in the short term, are not productive in the long run. Yet greater consumption by a growing world population will place even greater demands on the resources on which we depend for food, fiber, renewable energy, clean air and water, and other ecosystem services.

It has been reported that 85 percent of Earth's land surface has been disturbed by human activities. Here in the United States, for every new person added to our population, 1.7 acres of land comes under development. In Pennsylvania and New York alone, there has been an 80 percent reduction in the number of farms since 1965.

Right now, much of the food for U.S. consumers is transported great distances, and more than half of our food is imported. So are many of the inputs—petroleum, nitrogen, and potassium fertilizers—used to produce our agricultural commodities.

To face these challenges, ARS is using its nationwide network of 1,200 scientists to find ways to produce more with less. Research that has sustainability as its primary focus is part of the agency's national program on Agricultural System

Competitiveness and Sustainability (#216). In addition, many other ARS scientists are working in interdisciplinary teams to find the most profitable, productive, and responsible ways to manage our natural-resource base so agriculture can be more sustainable.

New genetic lines of crops are being developed that yield well under moisture-stressed conditions and produce greater nutrition per unit of land farmed. New resource-efficient agricultural systems are being designed to best take advantage of natural processes to control pests and recycle nutrients through use of crop rotations, cover crops, manure, and compost. These practices can also reduce our dependence on petroleum-based agricultural chemicals.

Advanced computer information systems are being created that will guide precision management so producers will not overuse inputs in hopes of increasing yield. More advanced computer models will make it possible to plan the adjustments agricultural producers will need to make as climate patterns shift and consumption demands change.

ARS research is helping to make the many small changes to the way agriculture is conducted that will lead to significant large benefits to the environment and the world.

■ = States Where **ARS** Conducts Research Directly Related to Sustainability

