



ERS Research Program on the Economics of Sustainability

The Economic Research Service (ERS) conducts research on economic issues and policies that affect the economic and environmental sustainability of agricultural production. Decisions made by farm operators are shaped by market conditions, public policies, and the specific characteristics of individual farms and households, and those decisions will affect sustainability. Although farm operators have clear incentives to consider the direct impacts of production on the well-being of their households, weaker incentives exist to consider the unintended impacts that may occur farther away. ERS research that informs sustainability describes patterns and trends in land, water, biological resources, management practices, and commercial input use; reports on the condition of natural and other resources used in the agricultural sector; and describes public policies and economic factors that affect productivity, resource use, conservation and environmental quality in agriculture.

Agricultural Productivity and R & D. Advances in agricultural productivity have led to abundant and affordable food and fiber throughout most of the developed world. Public and private agricultural research has been the foundation for much of this growth and development. Currently, new demands for safer, healthier, and more convenient foods, natural resource conservation, environmental protection, and animal welfare are changing the mix of the agricultural research portfolio. ERS economists are quantifying the extent and sources of productivity growth, and investigating the role of the public and private sectors in developing new technologies to achieve a more sustainable agricultural sector.

Adoption of Sustainable Production Systems. Farmers combine land, water, commercial inputs, labor, and their management skills to produce food and fiber. To sustain production over time, farmers must make a profit and preserve their resources. Increasingly, farmers are facing pressures to adopt more environmentally friendly practices that encompass critical aspects of crop production, including pest management, nutrient management, soil management, and water management. The use of sustainable production systems can lead to economic and environmental sustainability. ERS research examines the critical role of economic and environmental factors in the adoption of management practices and technologies, including the use of conservation tillage, integrated pest management, precision farming, nutrient testing, and biotechnology.

Conservation Program Incentives. Agricultural production relies heavily on natural resources, and that production can have impacts on the environment and ecosystem health. The ERS conservation economics research program conducts economic research

on the efficiency, effectiveness, and equity of policies and programs directed toward improving the environmental performance of the agricultural sector. Areas of special emphasis include programs affecting conservation practice adoption, land retirement programs, incentives to participate in a broad range of USDA conservation programs, and programs to establish markets for ecosystem services.

Organic and Locally Produced Foods. As consumer interest in organic foods continues to grow, many farms and firms are specializing in growing, processing, and marketing an ever-widening array of organic products. U.S. producers are turning to organic farming systems as a potential way to lower input costs, decrease reliance on nonrenewable resources, capture high-value markets and premium prices, and boost farm income. ERS is examining the economic and environmental impacts of organic production and marketing in the U.S. Ongoing activities include research on the adoption of certified organic farming systems across the U.S., and analysis of consumer demand and prices. ERS is also studying the increasing consumer interest in products that are locally grown or grown using particular practices. This research will strengthen understanding of producer and consumer participation in the emerging markets for locally grown food.

Bioenergy and Agriculture. Markets for renewable energy sources are gaining momentum, spurred by volatile fuel prices, environmental concerns, and pressure to attain energy security. Deriving bioenergy from plant materials is among the fastest growing renewable energy technologies. For transportation fuel, corn-based ethanol is by far the largest source of bioenergy in the United States, followed by biodiesel. ERS bioenergy research focuses on domestic and global crop and livestock markets; economywide, regional, and household effects of increased bioenergy production; natural resource, environmental, and rural community impacts; and implications for food prices.

Global Climate Change and Agriculture. Agriculture is both a source and a sink of greenhouse gases (GHG). As a contributor to GHG emissions, agriculture is linked directly to atmospheric concentrations of these gases through basic soil-plant-animal processes. Increased GHG concentrations in turn impact agriculture and other sectors of society because they can promote rapid and undesirable changes in climate. Similarly, agriculture can also sequester carbon in soils, thus offsetting GHG emissions. Recognizing the dual role of agriculture as both a source and sink of greenhouse gases, ERS research focuses on assessing economic behavioral responses of farmers to mitigation options, analyzing the economic impact of mitigation options on domestic and global land and water use, and evaluating adaptation by farmers to a new climate regime through use of alternative technologies.