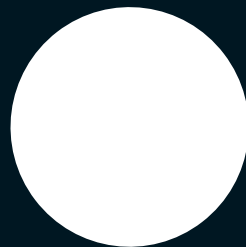
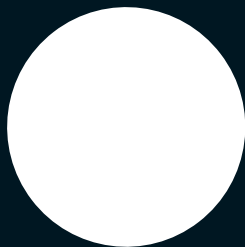
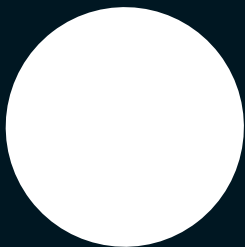
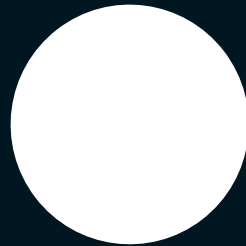
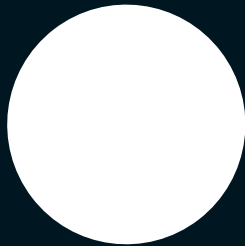
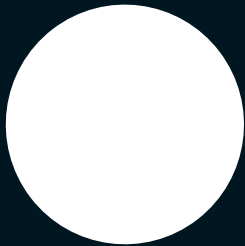
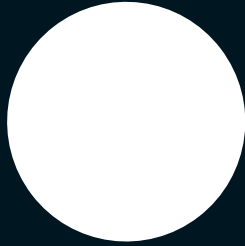
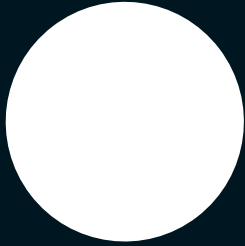


Economic Research Service

Roots in Agriculture, Future in the World



40 Years of Service

U.S. Department of Agriculture's
Economic Research Service

Roots in Agriculture, Future in the World

Celebrating 40 Years of Service





40 Years of Service

I n t r o d u c t i o n

The food production system in the United States has enabled consumers to enjoy a bountiful supply at minimal expense. The relatively small share of expenditures devoted to food—and that food’s assurance of safety—allows for a **higher standard of living** than in many countries throughout the world.

U.S. agriculture’s productivity is the result of decades-long planning, investment, and research. The United States Department of Agriculture’s (USDA) **Economic Research Service** (ERS) has contributed significantly to this ongoing work. In its research, ERS provides not only facts, but also expert economic analysis of many critical issues facing farmers, agribusiness, consumers, and policymakers. ERS expertise has helped these stakeholders conduct business or formulate policy related to agriculture, food, natural resources, and rural America.

With **growing demands** on natural resources, more discriminating consumers, mounting global competition, and emerging threats to food safety, the U.S. food system and the rural economy must continually be analyzed and improved. In this pursuit, ERS provides research in five emphasis areas that complement the USDA’s **five major strategic goals**:

- A competitive agricultural system
- A safe food supply
- A healthy and well-nourished population
- Harmony between agriculture and the environment
- An enhanced quality of life for rural Americans

In **40 years of serving** its constituents, ERS has made noteworthy contributions to agricultural policy in the United States. ERS research has helped policymakers and others make difficult decisions that change the lives of Americans and others around the globe. This book highlights some of ERS’ key achievements and future research endeavors working toward an ever-improving agricultural system.



A Competitive Agricultural System



The agricultural production system is highly competitive in the global economy

In the last century, **mechanization** and greatly improved

seed varieties drove huge gains in U.S. agriculture by freeing up workers and resources for other sectors. Today,

advances in agriculture are much more incremental, but still require attention and investment.

The agricultural marketplace is **more global** than ever, and U.S. producers must look not only to the

skies for planting signals, but also to trade negotiations, marketing trends, and environmental structures.

In recent years, changes in the rules of trade, shifts in domestic policy, and new

developments in technology have altered the competitive landscape of **global agriculture**

and the challenges facing American farmers. **ERS research focuses** on these and other economic

issues affecting the U.S. food and agriculture sector's competitiveness, including factors related to performance,

structure, risk and uncertainty, marketing, and trade.

ERS made farm classification schemes policy-relevant

For decades, the traditional way of classifying farms into different groups was to separate them according to the value of the products they sold. However, ERS analysis demonstrated that farms exhibit remarkable diversity within sales classes. For example, many “low sales” farms are commercial, though they are relatively low-earning enterprises with full-time farming operators. Others in this category are fairly wealthy “hobby farmers,” and some are poverty-stricken part-time farmers. All of these groups differ tremendously in the issues they pose to policymakers, and in the policy options that meet their needs.

ERS developed a farm classification system that bases the grouping, or typology, of farms on multiple factors—the primary occupation of the farm operator, the type of business organization characterizing the farm, and household income and asset position, as well as the classic measure of size. The ERS typology recognizes that farm households differ according to their goals and stage of life, and that farms and their households differ in how they allocate labor and other resources to farm and nonfarm earning and leisure activities. The multifaceted ERS farm typology is proving to be invaluable in targeting technical, financial, and educational assistance programs to particular kinds of farmers and in fine-tuning policy to recognize farm diversity.

Selected publications:

Hoppe, R. (ed.). *Structural and Financial Characteristics of U.S. Farms: 2001 Family Farm Report*, AIB-768, U.S. Dept. Agr., Econ. Res. Serv., May 2001.

Hoppe, R., and J. MacDonald. *America's Diverse Family Farms: Assorted Sizes, Types, and Situations*, AIB-769, U.S. Dept. Agr., Econ. Res. Serv., May 2001.

Hoppe, R. “Farm Households Are Often Dual-Career,” *Rural America*, Vol. 16, Issue 2, U.S. Dept. Agr., Econ. Res. Serv., Summer 2001, pp. 41-51.

Hoppe, R., J. Johnson, J. Perry, and D. Banker. “Graphically Speaking: A New Farm Typology For a Diverse Ag Sector,” *Choices*, 1st Quarter 2001, pp. 24-25.

Newton, D., and R. Hoppe. “Financial Well-Being of Small Farm Households Depends on the Health of Rural Economies,” *Rural America*, Vol. 16, Issue 1, U.S. Dept. Agr., Econ. Res. Serv., May 2001, pp. 2-11.

For current information about U.S. small farms, see the Farm Structure Briefing Room at: <http://www.ers.usda.gov/briefing/FarmStructure/>

ERS studies farm policy

U.S. farm programs influence production decisions and can consequently distort prices, production, and trade. ERS researchers examine various program/policy options and project the economic consequences of each.

As crop and revenue insurance gained prominence as policy features, ERS focused on farmers’ exposure to price and market risk and the relative merits of risk management strategies. Now, as non-traditional farm businesses—retirement, residential, niche, organic—become more prevalent, the “farm safety net” must be recast. ERS research on the economic circumstances of all farm households extends policy focus beyond crop insurance and commodity payments. A new ERS farm typology, derived from such measures as off-farm income and production specialty, is motivating policymakers to rewrite the one-size-fits-all policies.

“Decoupling” has been a central theme of U.S. agricultural policy reform, and a concept integral to World Trade Organization (WTO) regulations limiting producer supports. Claims that decoupled policy instruments, such as direct payments, have little effect on production or trade are increasingly controversial. In fact, there is not much empirical evidence of the effect of these payments on farm-level decisions or on the farm sector. ERS plans to research what factors determine the degree of decoupling, how U.S. policies compare with other countries, and what effect current producer supports have on global agricultural markets and trade.

Selected publications:

Gundersen, C., M. Morehart, L. Whitener, L. Ghelfi, J. Johnson, K. Kassel, B. Kuhn, A. Mishra, S. Offutt, and L. Tiehen. *A Safety Net for Farm Households*, AER-788, U.S. Dept. Agr., Econ. Res. Serv., Oct. 2000.

Harwood, J., R. Heifner, K. Coble, J. Perry, and A. Somwaru. *Managing Risk in Farming: Concepts, Research, and Analysis*, AER-774, U.S. Dept. Agr., Econ. Res. Serv., Mar. 1999.

Makki, S., and A. Somwaru. *Asymmetric Information in the Market for Yield and Revenue Insurance Products*, TB-1892, U.S. Dept. Agr., Econ. Res. Serv., Apr. 2001.

Westcott, P., and J.M. Price. *Analysis of U.S. Commodity Loan Programs with Marketing Loan Provisions*, AER-801, U.S. Dept. Agr., Econ. Res. Serv., Apr. 2001.

Young, C.E., and P. Westcott. *The 1996 U.S. Farm Act Increases Market Orientation*, AIB-726, U.S. Dept. Agr., Econ. Res. Serv., Aug. 1996.

ERS projects commodity supply and demand amid rapid change

An emerging middle class in developing countries, greater product differentiation among domestic consumers, variations in the structure of commodity markets, and policy-induced changes in producers' supply response all affect fundamental market relationships. ERS researchers examine these relationships and provide an analytical base for the USDA's market analysis and projections activity. In addition, ERS analysis has influenced changes to other private/public sector models of commodity market behavior.

ERS continues to monitor supply response following agricultural policy reform, both in the United States and in countries like Brazil, Argentina, Russia, the countries of the European Union (EU), and China—all major forces in global agricultural markets. As a result, ERS has a much improved understanding of the supply-side dynamics of U.S. and global food and agricultural markets.

In addition, higher incomes, urbanization, other demographic shifts, improved transportation, and consumer perceptions regarding quality and safety are changing global food consumption patterns. Therefore, ERS researchers are comprehensively reassessing the demand-side dynamics in global food and agricultural markets.

Selected publications:

Calvin, L., and R. Cook (coords.). *U.S. Fresh Fruit and Vegetable Marketing, Emerging Trade Practices, Trends, and Issues*, AER-795, U.S. Dept. Agr., Econ. Res. Serv., Jan. 2001.

Lin, W., P. Westcott, R. Skinner, S. Sanford, and D. Ugarte. *Supply Response Under the 1996 Farm Act and Implications for the U.S. Field Crops Sector*, TB-1888, U.S. Dept. Agr., Econ. Res. Serv., Aug. 2000.

Mathews, K., W. Hahn, K. Nelson, L. Duewer, and R. Gustafson. *U.S. Beef Industry: Cattle Cycles, Price Spreads and Packer Concentration*, TB-1874, U.S. Dept. Agr., Econ. Res. Serv., Apr. 1999.

Regmi, A. (ed.). *Changing Structure of Global Food Consumption and Trade*, Agricultural and Trade Report Series, WRS-01-1, U.S. Dept. Agr., Econ. Res. Serv., May 2001.

Westcott, P., and L. Hoffman. *Price Determination for Corn and Wheat: The Role of Market Factors and Government Programs*, TB-1878, U.S. Dept. Agr., Econ. Res. Serv., July 1999.

ERS monitors global food security...

The ERS research program on global food security has been a longstanding complement to the U.S. foreign food assistance mission, providing critical insight into the nature, scope, and root causes of global food insecurity. Annual monitoring reports are used in the allocation of U.S. food assistance to foreign countries. ERS created individual profiles of the food deficit countries—including analyses of distribution, infrastructure, and domestic policy issues—that helped frame the U.S. response to the 1996 World Food Conference goals. ERS continues to provide material that informs policymakers regarding most major global food security decisions.

...and offers options for improvement

Currently, ERS research is focused on evaluating low-income countries' ability to produce and import food, as well as national and international policies that can help improve global food supply and access. Understanding the link between agricultural productivity and resource quality, particularly as they relate to land and labor, is a critical part of the research program. Since most food deficit countries are exporters of agricultural commodities, issues of market access under

WTO provisions are increasingly important, because these countries need export earnings to finance food imports. ERS' global food security program is expanding to address food access issues, such as income equality and price variations, international safety net options (such the role of food aid), and food import insurance schemes.

Selected publications:

Shapouri, S., and S. Rosen (eds.). *Food Security Assessment: Why Countries Are at Risk*, AIB-754, U.S. Dept. Agr., Econ. Res. Serv., Aug. 1999.

Shapouri, S., and S. Rosen (coords.). *Food Security Assessment, International Agriculture and Trade Report Series, GFA-12*, U.S. Dept. Agr., Econ. Res. Serv., Dec. 2000.

Shapouri, S., and S. Rosen (coords.). *Issues in Food Security*, AIB-765, U.S. Dept. Agr., Econ. Res. Serv., Apr. 2001.

Trueblood, M., S. Shapouri, and S. Henneberry. *Policy Options to Stabilize Food Supplies, A Case Study of Southern Africa*, AIB-764, U.S. Dept. Agr., Econ. Res. Serv., June 2001.

ERS helps to strengthen trade negotiations...

A new round of trade talks in the WTO has increased attention on levels of protection remaining in global agricultural markets. ERS research on agricultural trade and trade policy has advanced U.S. negotiating positions in the Uruguay Round, NAFTA, and many bilateral disputes. Longstanding research anticipated the effects of EU enlargement, China's accession to the WTO, and the integration of Central/Eastern Europe economies with world and regional markets on U.S. agriculture.

ERS also conducts research on the intersection of trade and environmental issues, including how trade liberalization may affect the environment and how environmental policies may direct trade.

...and defines the stakes in global agricultural negotiations

ERS recently quantified the costs of global protection in agricultural markets and the potential benefits of their full elimination—\$56 billion. That work also provided a detailed profile of global agricultural tariff structures, and trade negotiators now understand that tariffs on food and agricultural products constitute the most significant barrier to increased market access for U.S. products.

Additionally, ERS will study the implications of a Free Trade of the Americas Agreement for U.S. agriculture, including an assessment of the degree to which NAFTA has fostered an integrated North American market for several agricultural products.

Selected publications:

Burfisher, M. (ed.). *Agricultural Policy Reform in the WTO: The Road Ahead*, AER-802, U.S. Dept. Agr., Econ. Res. Serv., May 2001.

Burfisher, M., and E. Jones. *Regional Trade Agreements and U.S. Agriculture*, AER-771, U.S. Dept. Agr., Econ. Res. Serv., Nov. 1998.

Gibson, P., J. Wanio, D. Whitley, and M. Bohman. *Profiles of Tariffs in Global Agricultural Markets*, AER-796, U.S. Dept. Agr., Econ. Res. Serv., Jan. 2001.

Normile, M. (ed.). *Agriculture in the WTO*, International Agriculture and Trade Report, WRS-98-4, U.S. Dept. Agr., Econ. Res. Serv., Dec. 1998.

Skully, D. *Economics of Tariff-Rate Quota Administration*, TB-1893, U.S. Dept. Agr., Econ. Res. Serv., Apr. 2001.



Our website offers more information on competitive agriculture.
Please see: <http://www.ers.usda.gov/Emphases/Competitive/>



A Safe Food Supply



The U.S. food production system is safer and more secure

The U.S. food production system is one of the **safest in the world**. Inspection procedures and regulations in food production and handling have helped assure that Americans have food that is safe to eat. Foodborne illness and other **food safety concerns**, however, continue to present challenges to the global food system. Public awareness of the health risks from foodborne illness has increased, and these concerns are leading to proposals for new regulations governing food products. These proposals include labeling foods containing **genetically modified ingredients**, labeling foods with the country of origin, and requiring food manufacturers to provide traceability of the foods they sell.

Unsafe food—and efforts to prevent it—impose an economic burden on society.

ERS provides analyses of the **economic issues affecting the safety** of the U.S. food supply, including the effectiveness and equity of alternative programs designed to protect consumers from unsafe food.

ERS conducts pioneering research on the economics of food safety

Each year, 76 million cases of illness are caused by microbial pathogens (bacteria, parasites, viruses) in food, resulting in as many as 325,000 hospitalizations and 5,200 deaths. ERS analysts provided the first comprehensive estimate of the costs to society from unsafe food. Beginning in the early 1990s, ERS estimated the costs of foodborne illness caused by several major pathogens, including two types of *E. coli*, *Salmonella*, *Campylobacter*, and *Listeria monocytogenes*. ERS estimates (as of 2000) that the cost of foodborne illness from these five pathogens is \$6.9 billion annually.

Selected publications:

Buzby, J., T. Roberts, C. Lin, and J. MacDonald. *Bacterial Foodborne Disease: Medical Costs and Productivity Losses*, AER-741, U.S. Dept. Agr., Econ. Res. Serv., Aug. 1996.

Buzby, J., and T. Roberts. *Estimated Annual Costs of Campylobacter-Associated Guillain-Barre Syndrome*, AER-756, U.S. Dept. Agr., Econ. Res. Serv., July 1997.

ERS studies the economic consequences of food safety policies

ERS researchers estimated not only the cost of foodborne illness to society, but also the benefits of improving food safety and preventing foodborne illness. In 1994, ERS worked with the USDA's Food Safety and Inspection Service (FSIS) to provide a preliminary cost/benefit analysis of the proposed Hazard Analysis and Critical Control Points (HACCP) Pathogen Reduction Rule, designed to modernize and strengthen meat and poultry inspection. A more complete analysis of the final Rule, published in 1996, showed that the benefits of the Rule would far outweigh its cost. ERS research has subsequently been used by FSIS to support cost/benefit analyses of other rules and regulations, such as the recently announced rule to prevent contamination of ready-to-eat foods by *Listeria monocytogenes*.

In 1998, ERS received a special supplemental appropriation to study the benefits of safer food, and cooperative research is underway with Harvard University and the University of Wyoming to develop more comprehensive, nationwide estimates of the benefits of improving food safety.

Selected publications:

Buzby, J., P.D. Frenzen, and B. Rasco. *Product Liability and Microbial Foodborne Illness*, AER-799, U.S. Dept. Agr., Econ. Res. Serv., Apr. 2001.

Crutchfield, S., J. Cooper, and D. Hellerstein. *Benefits of Safer Drinking Water: The Value of Nitrate Reduction*, AER-752, U.S. Dept. Agr., Econ. Res. Serv., July 1997.

ERS studies how to assign values to life

Efforts to reduce the health risks of unsafe food may prevent premature deaths. However, when conducting cost/benefit analysis of these efforts, it is difficult to place a dollar value on saving a human life. To rectify this problem, ERS examined several approaches to evaluate policies that affect health and safety and found that the usefulness of each approach depends on the nature of the health risks being considered. This study formed the starting point for economists to discuss how to value health risks from unsafe food and to continue to move toward a consensus.

ERS also developed a methodology for using value-of-life estimates to account for the age at which death occurs. This methodology has been used to estimate the value of preventing premature death from unsafe food. It also has been used to measure the benefits of preventing death through healthier diets.

Selected publications:

Kuchler, F., and E. Golan. *Assigning Values to Life: Comparing Methods for Valuing Health Risk*, AER-784, U.S. Dept. Agr., Econ. Res. Serv., Nov. 1999.

ERS researches the economic incentives for food safety

ERS is studying how private market incentives can work along with Federal health and safety regulations to improve the safety of the Nation's food supply. Firms may choose to control food-borne pathogens by implementing one of several strategies. Strategies include improving management procedures to control pathogens all along the food chain, exerting more control at one key location (such as preventing contamination by screening incoming products or installing a pathogen "kill" step such as pasteurization), or investing in research and development for new equipment or management systems. This research will explore how firms respond to policies like the HACCP/Pathogen Reduction rule and how private incentives for safer food affect adoption of new technologies.

Selected publications:

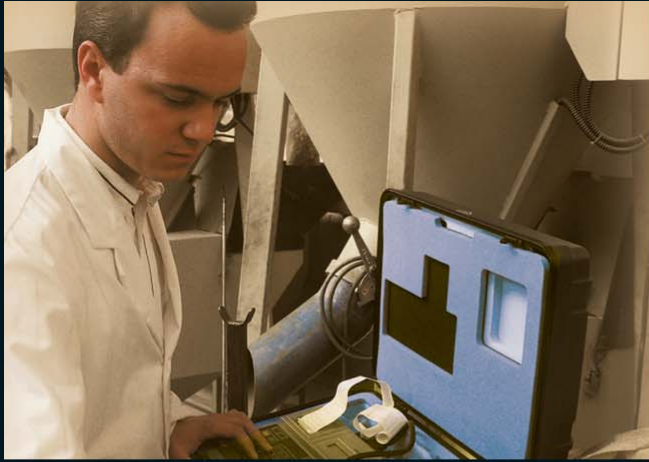
Crutchfield, S., J. Buzby, T. Roberts, M. Ollinger, and C. Lin. *An Economic Assessment of Food Safety Regulations: The New Approach to Meat and Poultry Inspection*, AER-755, U.S. Dept. Agr., Econ. Res. Serv., July 1997.

MacDonald, J., F. Kuchler, J. Buzby, F. Lee, and L. Aldrich. *User Fee Financing of USDA's Meat and Poultry Inspection*, AER-775, U.S. Dept. Agr., Econ. Res. Serv., Mar. 1999.



Our website offers **more information** on food safety.

Please see: <http://www.ers.usda.gov/Emphases/SafeFood/>





A Healthy, Well-Nourished
Population



The Nation's population is healthy and well nourished

Food is both a **pleasure and a necessity**, but perhaps most importantly, **food provides endless variety**. Americans, now more than ever, demand variety and abundance, quality and reasonable prices, convenience and good taste, and availability. The challenge for the food system is to **give consumers what they want today** and anticipate what they need tomorrow.

Improving nutrient intake is a goal of all modern societies. A healthy and well-nourished population is more productive and able to focus on the provision of goods and services associated with a highly developed nation. The challenge for food and agricultural policymakers is to ensure that all Americans have access to a **healthy and nutritious food supply**, regardless of their incomes. ERS is recognized as a national leader in the study of food programs and policies, poverty and well-being, trends in food and nutrient intake, food markets, and the economics of diet and nutrition.

ERS focuses on the food system

In less than three generations, the American food system has been completely restructured. Today, a network of specialized food processors, refiners, manufacturers, wholesalers, and retailers transform agricultural and marine products into the items that households purchase. This food marketing system provides a wide array of options: households can purchase a complete ready-to-eat dinner or the dinner's assorted ingredients—which themselves are preprocessed and packaged for enhanced safety and convenience.

A healthy, well-nourished population relies on a food system that responds to consumer preferences and uses economic resources efficiently. ERS examines changes in the organization, technology, and production costs of food markets and how these changes affect farm prices, food prices, and product qualities. ERS analysis of the food sector's industrial organization, such as consolidation of firms, contributes to a better understanding of how changes in prices affect consumer choices and firms' production decisions.

ERS leads food assistance research...

A healthy, well-nourished population is dependent not only on the processing and delivery of nutritious foods, but also on access to food for households that are nutritionally at risk. Even though agricultural and commercial advances have resulted in abundant food at ever-lower prices, some households still face obstacles in securing a diet that sustains an active, healthy lifestyle.

During the 1960s, many national food programs were created or expanded to address the nutritional needs of the Nation's poor. The USDA now spends over \$30 billion annually on 15 food and nutrition assistance programs designed to improve the nutrition, well-being, and food security of needy Americans. ERS addresses the research needs of these programs, conducting both internal and external research to provide critical information to the Administration, Congress, program managers, policy officials, clients, the research community, and the public.

...and provides insight on food and nutrition issues

In 1900, American households relied primarily on local food production, and the predominant nutritional problem was low intake of calories, vitamins, and minerals. Today, American consumers enjoy a year-round abundance of nutritious and affordable foods. With this prosperity, however, comes new challenges. In recent years, the focus of nutrition and health policy has shifted, because many Americans now over-consume high-calorie/high-fat foods. In fact, 4 of the top 10 causes of death in the United States are associated with poor diets. Focusing on solutions requires understanding consumer behavior and the factors influencing food choices. These factors include demographics, income, prices, and nutrition knowledge and information. ERS is concentrating its efforts on understanding today's consumers and the trends that will influence what they consume tomorrow.

Selected publications:

Blaylock, J., J. Variyam, and B. Lin. *Maternal Nutrition Knowledge and Children's Diet Quality and Nutrient Intakes*, FANRR-1, U.S. Dept. Agr., Econ. Res. Serv., Oct. 1999.

Frazao, E. (ed.). *America's Eating Habits: Changes and Consequences*, AIB-750, U.S. Dept. Agr., Econ. Res. Serv., May 1999.

Kaufman, P., C. Handy, E. McLaughlin, K. Park, and G. Green. *Understanding the Dynamics of Produce Markets: Consumption and Consolidation Grow*, AIB-758, U.S. Dept. Agr., Econ. Res. Serv., Aug. 2000.

Lin, B., and E. Frazao. *Away-From-Home Foods Increasingly Important to Quality of American Diet*, AIB-749, U.S. Dept. Agr., Econ. Res. Serv., Jan. 1999.

Ollinger, M.E., J. MacDonald, and M. Madison. *Structural Change in U.S. Chicken and Turkey Slaughter*, AER-787, U.S. Dept. Agr., Econ. Res. Serv., Sept. 2000.

Wilde, P., P. Cook, C. Gundersen, M. Nord, and L. Tiehen. *The Decline in Food Stamp Participation in the 1990s*, FANRR-7, U.S. Dept. Agr., Econ. Res. Serv., June 2000.

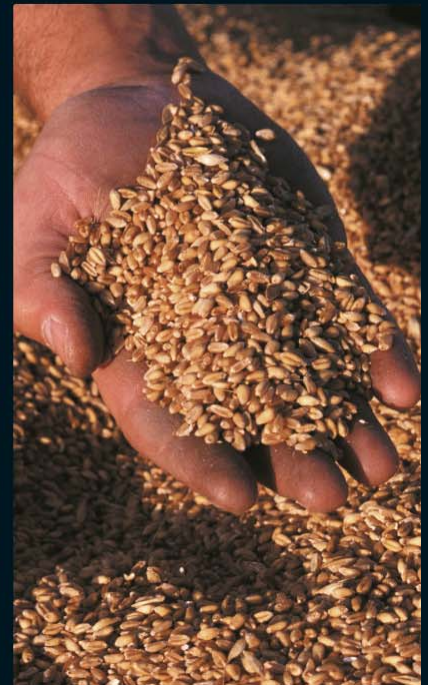


Our website offers *more information* on a *well-nourished* population.

Please see: <http://www.ers.usda.gov/Emphases/Healthy/>



Harmony between Agriculture
and the Environment



U.S. agriculture and the environment are in better harmony

Although the United States has become a more **urban nation** over the last 40 years, it still remains a **largely agricultural land**. In 1997, farms accounted for 49 percent of all land in the contiguous 48 States. Farms provide **rural landscape amenities** and wildlife habitat, but agricultural production has also resulted in soil erosion, nutrient and pesticide runoff, and wetland loss.

In recent years, there has been increasing demand for environmental quality.

Understanding the links between farm economics and the use of natural resources is critical to fostering greater harmony between agriculture and the environment. **ERS provides high-quality**, objective, and informative research and analysis on agri-environmental topics and helps policymakers find ways that **agricultural competitiveness** and economic development can coexist with the environment.

ERS surveys the advance of agricultural biotechnology...

The rate of biotechnology development and adoption continues to accelerate, with naturally colored cotton, anti-cancer tomatoes, and bananas containing a diarrhea vaccine all being developed. Other commodities are bred to withstand disease, insects, and herbicides, thereby increasing yields to keep pace with a burgeoning and increasingly prosperous world population. Farmers must weigh the immediate prospects of higher yields and reduced input costs against uncertain world acceptance of biotech products. A food marketing system, already struggling to keep up with niche and value-added products, now faces demand for systems and processes that differentiate biotech from nonbiotech products.

Surrounding biotechnology are legal, ethical, environmental, and economic issues. ERS focuses on economic issues, including the rate of and reasons for adoption of biotechnology by farmers and the effect of adoption on costs and farm performance. ERS also addresses marketing, labeling, and trade in biotechnology products. Variety approval processes, labeling requirements, and expressed market demand for nongenetically engineered crops could contribute to the transformation of the global food marketing system.

...and monitors those hoping to profit

Intellectual property rights and market concentration in the agricultural input industries are intertwined areas that are shaped by public policy, and these areas are researched and analyzed by ERS. Large biotech firms have merged with seed companies to obtain sources of germplasm to spin off genetically modified seed varieties and to secure outlets for delivering the new products. Concentration in the input industry raises questions about the direction for future agricultural research. Determining the role of public research, and its interaction with the private sector, is critical to the efficient and equitable advance of agricultural biotechnology.

Selected publications:

Caswell, M., K. Fuglie, and C. Klotz. *Agricultural Biotechnology: An Economic Perspective*, AER-687, U.S. Dept. Agr., Econ. Res. Serv., May 1994.

Fernandez-Cornejo, J., and W. McBride. *Genetically Engineered Crops for Pest Management in U.S. Agriculture*, AER-786, U.S. Dept. Agr., Econ. Res. Serv., May 2000.

Shoemaker, R., J. Harwood, K. Day-Rubenstein, T. Dunahay, P. Heisey, L. Hoffman, C. Klotz-Ingram, W. Lin, L. Mitchell, W. McBride, and J. Fernandez-Cornejo. *Economic Issues in Agricultural Biotechnology*, AIB-762, U.S. Dept. Agr., Econ. Res. Serv., Mar. 2001.

ERS improves design of land retirement program...

The concept of highly erodible land, adapted for policy at the national level by ERS economists, was key to implementing the Conservation Reserve Program (CRP) in the 1985 farm bill. After the 1990 farm bill, ERS went one step further in devising the "Environmental Benefits Index" (EBI), which is now used to select CRP bids to gain the greatest benefit for each taxpayer dollar. Subsequent ERS research estimated that use of the EBI increased annual recreation and water quality benefits from the CRP by \$370 million. ERS economists also devised the soil quality-adjusted rental rates that better reflect the true opportunity cost of enrolled lands, paying less to relatively unproductive land and allowing more productive land to be bid into the CRP.

...demonstrates the appeal of wetlands...

Having demonstrated that much cropland converted from wetlands was unprofitable and could be restored at relatively low program cost, ERS analysts helped in implementing the Wetlands Reserve Program. Subsequent ERS research showed that changes to Swampbuster provisions would result in increased wetland conversion, reducing benefits from wetlands such as improved water quality, groundwater recharge, flood retention, and fish and wildlife habitat.

...and proposes multi-pronged conservation strategies for next farm bill

Research in the 1980s showed that the offsite benefits of soil conservation and water quality improvement activities far exceeded onfarm benefits, affecting a strategic shift in agri-environmental incentives programs. The globalization of agricultural trade, consolidation of the food industry, and growing scarcity of water resources have all magnified and multiplied the environmental hurdles faced by U.S. agriculture.

ERS illustrated key tradeoffs in the design of agri-environmental ("green") payment programs that might reconcile environmental goals with the traditional income and distributional goals of farm policy. ERS research found that programs that are targeted, flexible, and coordinated work best. In the future, the agency will look at multi-instrument policies (coordinated land retirement and incentive payments for working farmland) and the potential for expanding compliance mechanisms.

Selected publications:

Agricultural Resources and Environmental Indicators, 2000-2001.
<http://www.ers.usda.gov/Emphases/Harmony/issues/arei2000/arei2000.htm>

Claassen, R., L. Hansen, M. Peters, V. Breneman, M. Weinberg, A. Cattaneo, P. Feather, D. Gadsby, D. Hellerstein, J. Hopkins, P. Johnston, M. Morehart, and M. Smith. *Agri-Environmental Policy at the Crossroads: Guideposts on a Changing Landscape*, AER-794, U.S. Dept. Agr., Econ. Res. Serv., Feb. 2001.

Feather, P., D. Hellerstein, and L. Hansen. *Economic Valuation of Environmental Benefits and the Targeting of Conservation Programs: The Case of the CRP*, AER-778, U.S. Dept. Agr., Econ. Res. Serv., Apr. 1999.

Heimlich, R., K. Wiebe, R. Claassen, D. Gadsby, and R. House. *Wetlands and Agriculture: Private Interests and Public Benefits*, AER-765, U.S. Dept. Agr., Econ. Res. Serv., Sept. 1998.

ERS examines water quality

Agricultural pollution (such as sediment and nutrient runoff) is a prime contributor to the Nation's water quality problems. ERS routinely surveys producers' choices of water, nutrient, pest, and soil management practices to address such problems. Especially urgent is work on the water quality effects of animal waste from confined feeding operations that have grown larger and more geographically concentrated in recent years. ERS recently conducted a national overview of this waste management problem and evaluated potential solutions (transporting manure for crop needs or as an energy feedstock) to excess nutrients produced onfarm.

ERS work on animal waste management is being extended to include impacts on air quality, odor, and the generation of greenhouse gases responsible for global climate change. Since nitrogen losses from cropland and livestock production may contribute to hypoxia (low oxygen levels) in the northern Gulf of Mexico, ERS was recruited as part of an interagency team studying the problem for the White House Office of Science and Technology Policy. Nutrient runoff contributes to a variety of coastal and estuarine water quality problems that are also a focus of ERS research.

Selected publications:

Agricultural Resources and Environmental Indicators, 2000-2001.
<http://www.ers.usda.gov/Emphases/Harmony/issues/arei2000/arei2000.htm>

Caswell, M., K. Fuglie, C. Ingram, S. Jans, and C. Kascak. *Adoption of Agricultural Production Practices: Lessons Learned from the U.S. Department of Agriculture Area Studies Project*, AER-792, U.S. Dept. Agr., Econ. Res. Serv., Jan. 2001.

Gollehon, N., M. Caswell, M. Ribaud, R. Kellogg, C. Lander, and D. Letson. *Confined Animal Production and Manure Nutrients*, AIB-771, U.S. Dept. Agr., Econ. Res. Serv., June 2001.

Ribaud, M., R. Horan, and M. Smith. *Economics of Water Quality Protection from Nonpoint Sources: Theory and Practice*, AER-782, U.S. Dept. Agr., Econ. Res. Serv., Dec. 1999.

Ribaud, M., R. Heimlich, R. Claassen, and M. Peters. "Least-Cost Management of Nonpoint Source Pollution: Source Reduction Versus Interception Strategies for Controlling Nitrogen Loss in the Mississippi Basin," *Ecological Economics*, 37(2001):183-197.

ERS improves assessments of agricultural impacts from global climate change...

Over the last 10 years, ERS has spearheaded research on the agricultural impacts of greenhouse gases (GHG) in the atmosphere. The ERS modeling approach is unique, because it examines the impact of GHG accumulation through both induced climate change (changes in temperature and precipitation) and direct effects of carbon dioxide fertilization. It also incorporates farm-level adaptations (e.g., switching crop and livestock varieties) and is global and captures shifts in comparative advantage. This modeling framework illustrates that prior modeling approaches overstated the impact of global climate change on the agricultural sector.

...and evaluates and compares potential agricultural solutions

ERS is evaluating how the agricultural sector might respond to economic incentives to mitigate GHGs and what effect mitigation would have on net emissions, other environmental outcomes, commodity prices and output, and farm income. ERS is focusing on

carbon sequestration through cropland management and land use changes. In the future, ERS will evaluate options for reducing methane emissions through alternative management of manure and enteric fermentation, as well as options for reducing energy emissions by substituting biofuels for fossil fuels.

Selected publications:

Darwin, R., M. Tsigas, J. Lewandrowski, and A. Ranases. *World Agriculture and Climate Change: Economic Adaptations*, AER-703, U.S. Dept. Agr., Econ. Res. Serv., June 1995.

Kane, S., J. Reilly, and J. Tobey. *Climate Change: Economic Implications for World Agriculture*. AER-647, U.S. Dept. Agr., Econ. Res. Serv., 1991.

Reilly, J., and M. Anderson (eds.). *Economic Issues in Global Climate Change: Agriculture, Forestry, and Natural Resources*. Westview Press, Boulder, CO. 1992.

Schimmelpennig, D., J. Lewandrowski, J. Reilly, M. Tsigas, and I. Parry. *Agricultural Adaptation to Climate Change: Issues of Longrun Sustainability*, AER-740, U.S. Dept. Agr., Econ. Res. Serv., June 1996.

U.S. Department of Agriculture. *Economic Analysis of U.S. Agriculture and the Kyoto Protocol*. USDA Report to Congress (co-authored by M. Anderson, R. House, J. Lewandrowski, M. Peters, H. McDowell, and R. Darwin). 1999.



Our website offers **more information** on **harmony** between agriculture and the **environment**. Please see: <http://www.ers.usda.gov/Emphases/Harmony/>



Enhanced Quality of Life
for Rural Americans



Economic opportunity and quality of life for rural Americans are enhanced

In the last century, **rural America** has undergone some profound changes.

Manufacturing and service employment have replaced farming and other

natural resource-based activities as the backbone of most rural economies. Some of what was once rural land

has become urbanized as populations increased and commuting patterns changed. Rural America has become

more **tightly integrated** into national and global economies even as it has become more diverse.

ERS has attempted to document the ongoing evolution of rural society and has

assessed the strategies used by Federal, State, and local governments to shape the **social and economic**

changes affecting rural America. In recent years, ERS has supplemented its use of Census and other secondary

data with surveys of farm operators, rural manufacturers, and housing program participants to better understand

the **behavior of key decisionmakers** in rural communities.

ERS studies rural population and migration patterns

ERS has studied rural demography since the 1930s and was the first to discover the reversal of the rural-to-urban migration pattern in the early 1970s. For many Americans, the appeal of major urban areas diminished and the attractiveness of rural and small-town communities increased. Natural amenities such as climate, topography, and access to open water make many rural communities attractive as residences. ERS research brought a new understanding of the dynamics of rural demography and cemented ERS' leadership in policy-relevant analysis of population change and migration, race, the elderly, education, and sources of economic growth in rural areas.

As 2000 Census data become available, ERS will be at the forefront of analysis on changing patterns of population and migration in rural areas. An early observation from the 2000 Census is the dramatic increase in the number of Hispanics in rural areas over the last decade. ERS will assess the reasons for this increase and its implications for the labor force, housing needs, and well-being of immigrants and their communities.

Selected publications:

Beale, C. "A Century of Population Growth and Change," *FoodReview*, Vol. 23, No. 1, Jan.-Apr. 2000, pp. 16-22.

Gibbs, R. (ed.). *Rural America: Special Issue on the Rural South*, Vol. 15, No. 4, Feb. 2001.

McGranahan, D. *Natural Amenities Drive Rural Population Change*, AER-781, U.S. Dept. Agr., Econ. Res. Serv., Oct. 1999.

Rogers, C. *Changes in the Older Population and Implications for Rural America*, RDRR-90, U.S. Dept. Agr., Econ. Res. Serv., Dec., 1999.

Swanson, L. "Minorities Represent Growing Share of Tomorrow's Work Force," *Rural Conditions and Trends*, Vol. 9, No. 2, Feb. 1999, pp. 9-13.

ERS measures of rurality and diversity take hold

Rural America is a diverse collection of communities with their own set of resources, opportunities, and challenges. Since the early 1980s, ERS has developed and updated classifications of rural counties that capture the broad patterns of economic and social diversity that are meaningful for developing public policies and programs. These classifications, or typologies, identify areas based on population size, proximity to a metropolitan area, degree of urbanization, population of the largest city, commuting patterns, primary economic activity, and policy relevancy. These typologies have been widely used and recognized by university researchers, policy analysts, and public officials as invaluable analytical and policy tools. They are often used to determine eligibility and assess the effectiveness of Federal programs designed to enhance the quality of life for rural Americans.

For more information see ERS' Measuring Rurality Briefing Room at <http://www.ers.usda.gov/briefing/Rurality/>

ERS analyzes rural development policy

ERS has a long history of assessing the impact that various public-sector strategies have on the growth and development of rural communities. In the 1960s, ERS evaluated the impact of the Nation's "War on Poverty" on rural development. In the 1980s, the agency analyzed the performance of the farm and nonfarm sectors of the rural economy, looking at factors such as education, capital and labor markets, and infrastructure to assess rural America's prospects and guide policy development. The USDA was assisted by ERS research as it developed the Rural Empowerment Zone and Enterprise Community Program and evaluated the impact of its housing, business, and community assistance programs.

The distinctive character of many rural areas, especially their less diverse economies and relatively sparse populations, often presents unique challenges to rural workers, businesses, and communities attempting to improve their competitive positions. ERS analyzes how this distinctiveness affects rural development and seeks to understand how public sector actions can alleviate problems or reinforce strengths. ERS research on rural education, labor markets, job skills, housing, public infrastructure and services, and Federal spending provides the information needed to design programs fostering sustainable rural economic development.

Selected publications:

Gale, H.F., D. McGranahan, R. Teixeira, and E. Greenberg. *Rural Competitiveness: Results of the 1996 Rural Manufacturing Survey*, AER-776, U.S. Dept. Agr., Econ. Res. Serv., Mar. 1999.

Kusmin, L., and R. Gibbs. "Less Educated Workers Face Limited Opportunities to Move Up to Good Jobs," *Rural America*, Vol. 15, No. 2, May 2000, pp. 32-42.

McGranahan, D. "New Economy Manufacturing Meets Old Economy Education Policies in the Rural South," *Rural America*, Vol. 15, No. 4, Feb. 2000, pp. 19-28.

Mikesell, J., L. Ghelfi, P. Salant, G. Wallace, and L. Whitener. *Meeting the Housing Needs of Rural Residents: Results of the 1998 Survey of USDA's Single Family Direct Loan Housing Program*, RDRR-91, U.S. Dept. Agr., Econ. Res. Serv., Dec. 1999.

Reeder, R. (ed.). *Rural Conditions and Trends: Federal Programs*, Vol. 11, No. 1, U.S. Dept. Agr., Econ. Res. Serv., May 2000.

ERS examines Federal tax and credit policies and farm structure

Since the early 1980s, ERS has played a major role in determining the USDA's position on all Federal tax proposals of significance to the farm sector. The agency assesses the impact of Federal income, self-employment, and estate and gift taxes on food prices, farm business organization and operations, the distribution of wealth

among farmers, patterns of farm ownership, and control of farm assets, especially farmland. ERS research was essential in assessing the consequences of various proposals leading up to the Tax Reform Act of 1986, and has played a similar role in subsequent revisions. As a result, ERS is well known among Federal policymakers as a key source of information on the consequences of Federal tax changes on the agricultural sector.

Recognizing the importance of credit as a tool for delivering Federal support to the farm sector and the broader rural economy, ERS has conducted a longstanding research program on agricultural and rural financial markets and programs. Since the 1940s, ERS and its predecessor agencies have hosted the National Agricultural Credit Committee, a group of government and industry representatives that exchanges information on agricultural credit market developments. In addition, ERS' annual report on agricultural finance is a well-regarded source of information on major agricultural lenders' financial performance, including the USDA's credit programs. Over the years, ERS has assessed how Federal credit programs affect farms and other rural businesses, leading to changes in the USDA's and other organizations' programs.

Selected publications:

Collender, R.N. (coord.). *Issues in Agricultural and Rural Finance*, AIB-724, U.S. Dept. Agr., Econ. Res. Serv., Sep. 1998.

Collender, R.N., and S. Shaffer. *Local Bank Office Ownership, Deposit Control, Market Structure, and Economic Growth*, TB-1886, U.S. Dept. Agr., Econ. Res. Serv., May 2000.

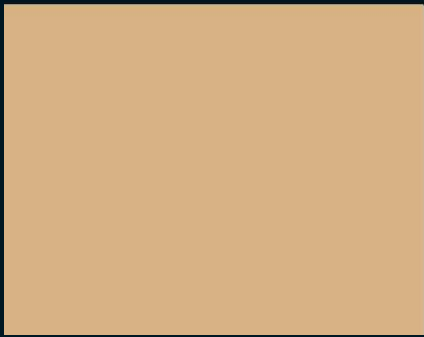
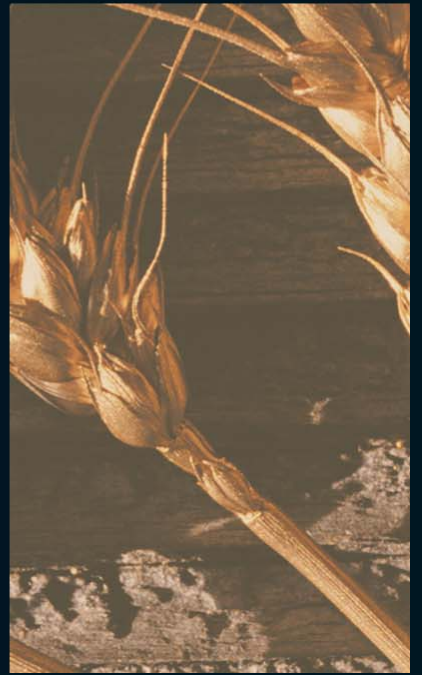
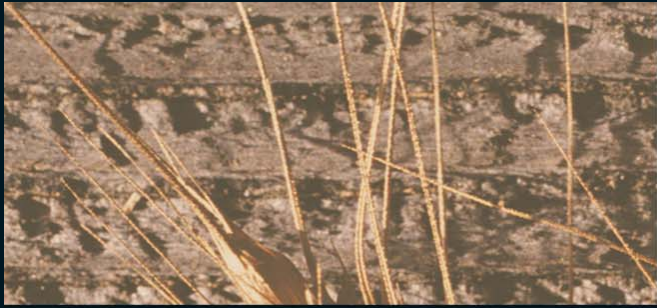
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Durst, R., and J. Monke. *Effects of Federal Tax Policy on Agriculture*, AER-800, U.S. Dept. Agr., Econ. Res. Serv., Apr. 2001.

Stam, J., and D. Milkove (coords.). *Agricultural Income and Finance, Situation and Outlook Series*, AIS-76, U.S. Dept. Agr., Econ. Res. Serv., Feb. 2001.



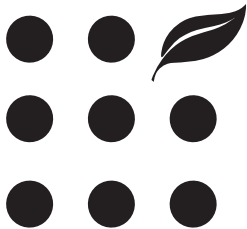
Our website offers more information on enhanced quality of life
Please see: <http://www.ers.usda.gov/Emphases/Rural/>



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