

Sliced Bread Or New Coke?

New product introductions are always risky. The launch of this new magazine is risky, too. But the risks are worth taking. Consolidating the trio of venerable Economic Research Service periodicals into one web-linked publication may generate anxiety on the part of some long-time readers, but it provides a platform for serving our familiar audience in a more up-to-date way and a means to reach new readers. By way of introduction to the magazine, let me share with you the thinking that led us to this new venture.

It's not about us As researchers, we recognize we are true "supply-siders." We like to write long manuscripts and we want you readers to want to read them. But readers today expect timely information in manageable pieces. You have let us know you want reader-friendly formats both in print and on the web. We have tried to design this magazine with the reader, not the writer, in mind. We make every effort to avoid jargon and to write simply and concisely.

To illuminate—not report—the news of the day It's not our intent to report the news—rather, we relate ERS research to current events. While we plan as best we can, there is no guarantee that the publication of an economic research report exactly coincides with the headlines. Issues come and go. We believe we can improve the usefulness of our research by highlighting its relevance to contemporary events through the magazine.

An end to balkanization In publishing three magazines, we were compartmentalizing our readers. Certainly many have broad interests, but who wants to read three magazines from one Federal agency? And some parts of the ERS program weren't really well covered by the existing magazine spread—much of our work on natural resources, for example. By moving to a single magazine and linking to related material on our website, we can provide breadth but also continue to provide depth to readers with special interests.

Into the electronic fold The three periodicals were conceived at a time when mailing out hard-copy publications was our main means of communicating with the large non-academic segment of our audience. But with the advent of the Internet—and particularly the re-engineering of the ERS website in January 2001—the relationship with our audience changed dramatically. With electronic technologies, we can reach more people and deliver more products in a more timely way. It is time to bring our magazine publishing into the electronic fold, to take advantage of the richness of the ERS website. While hard copy issues will appear five times a year (February, April, June, September, and November, in sync with policymaking and market events), the e-zine is updated more frequently.

I'm hoping that you will find *Amber Waves* an engaging and useful addition to the portfolio of sources that provide information and economic analysis about food, farm, natural resources, and rural community issues. Please let me know your thoughts (soffutt@ers.usda.gov). The best thing since sliced bread? That is our sincere aspiration!

**Susan E. Offutt, Administrator
Economic Research Service**

FEATURES

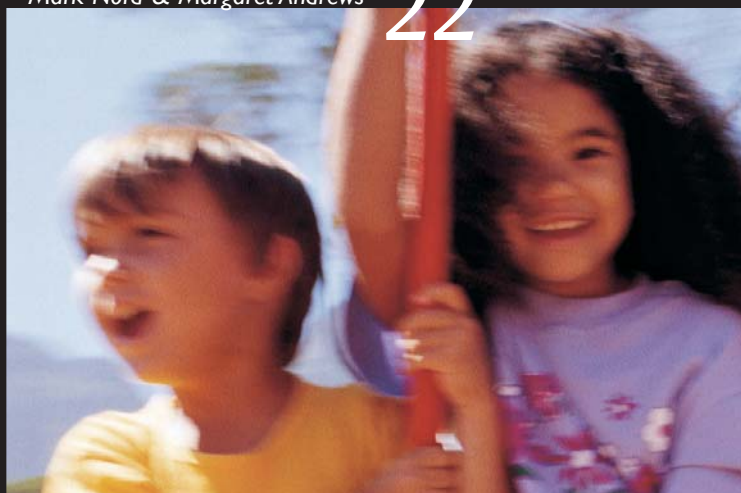
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AMBER WAVES

At the beginning of the 21st century, rural America comprises 2,305 counties, contains 80 percent of the Nation's land, and is home to 56 million people.

Household food security—access at all times to enough food for active, healthy living—is taken for granted by most Americans. The struggle to avoid overeating is a more common American experience than the struggle to put enough food on the table.

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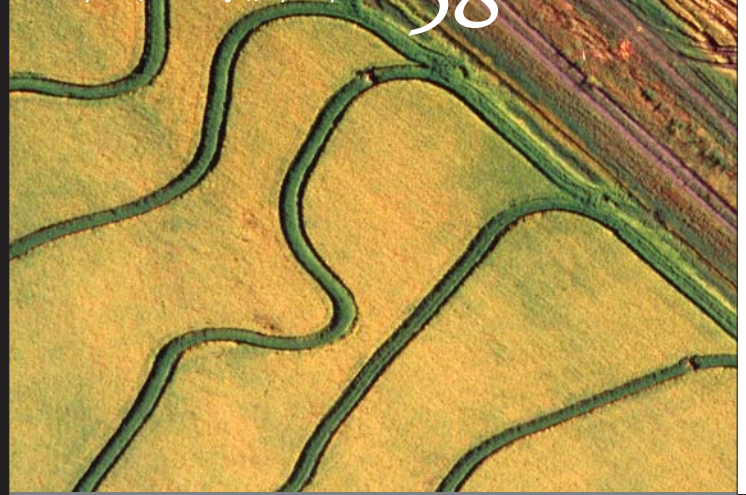
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Ever-growing numbers of livestock and poultry per farm and per acre have increased the risk of water pollution.

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Nearly all industrial countries provide subsidies to their farmers, often for the purpose of maintaining income from farming or reducing income variability.

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Step inside the ERS offices, meet a few of our researchers, and learn about their work and accomplishments



Is Japan Ready for Competition in Its Ag Markets?

About 40 percent of Japan's food supply is domestically produced by an agricultural sector that receives substantial support from the government. Japan's support—at about \$23,000 per full-time farmer and almost \$10,000 per hectare of farmland—is among the highest of any country. The Japanese government argues that this support is necessary for the economic, environmental, and cultural well-being of rural areas and for the nation's food security. Critics argue that such support deters other countries from entering Japan's agricultural markets, weakening domestic and international competition and raising prices for Japanese consumers.

Imposing tariffs (taxes) on foreign agricultural products is Japan's major form of support. Removal of these "border barriers" would significantly reduce consumer food prices in Japan. Measured by the difference between domestic and import prices, border barriers provide as much as \$42 billion a year of support to agriculture. Not surprisingly, products that are subject to negligible tariffs comprise a large share of imports. More surprising is that a significant portion of imports arrives despite high tariffs.



Photo courtesy of Ministry of Agriculture of Japan, by Shigeki Nishikubo

Production of some commodities is so expensive that imports are profitable even with high tariffs.

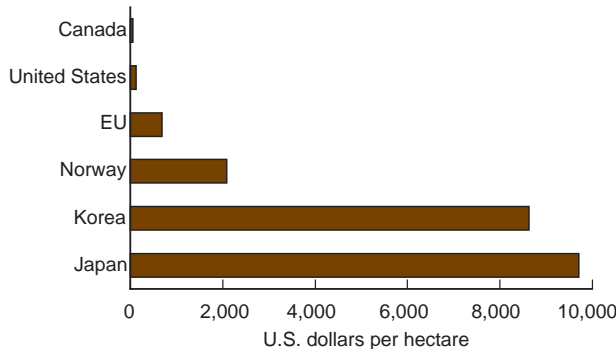
Internal policies, such as agricultural subsidies, are the other major form of support. In 1999, Japan's government spent almost \$26 billion in taxpayer funds on agriculture. Japan has been abandoning old policies that propped up market prices in favor of policies that compensate farmers when market prices decline and policies that improve marketing channels and farmland. Consumer prices for rice and other foods have been drifting down as government interventions in retail and wholesale marketing have ended. The government also wants to target payments to larger scale, specialized farms to lower costs. Progress in lowering farm costs and consumer prices, however, has been slow.

Reforms in internal farm policies have marginal impact as long as border barriers are high. Current World Trade Organization negotiations on agricultural trade may impose lower limits on border measures and similar policies. Lower limits mean that Japan's agriculture would face more import competition, which would press its farm sector to lower costs by quickly restructuring itself. In theory, the government could compensate farmers for lost farm income by providing income support not linked to farming; however, Japan's high government deficits would make increasing domestic spending difficult. Japan's consumers, and its economy as a whole, stand to benefit from lower food prices—perhaps more so than consumers in any other country. Nevertheless, Japan's resistance to strong trade liberalization in agriculture is based on the realization that its current agricultural structure is not compatible with sharply reduced barriers against imports. **W**

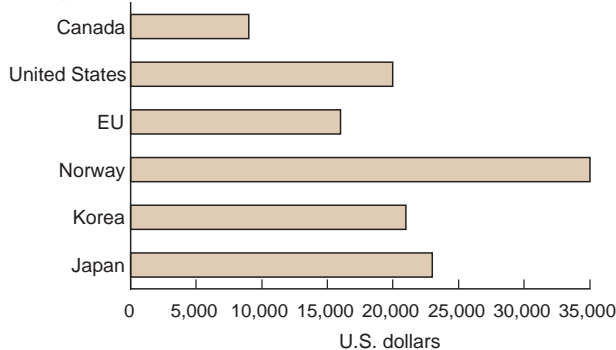
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For more information, see *Commodity Policies of the U.S., EU, and Japan—How Similar?* by Anne Efland, Mary Anne Normile, Edwin Young, and John Dyck, *Agricultural Outlook*, AO-297, December 2002, available at: www.ers.usda.gov/publications/AgOutlook/Dec2002

Japan's support is high per hectare of farmland. . .



. . . And per full-time farmer



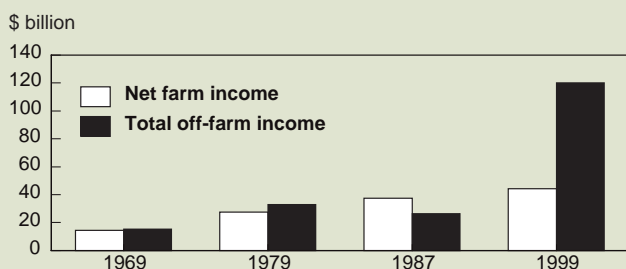
Source: Producer support estimates for 2001 in *Agricultural Policies in OECD Countries: Monitoring and Evaluation, 2002*, Organization for Economic Cooperation and Development.

The Economic Well-Being of Farm Households

Even as farming has changed markedly over the past century, so, too, have farm households changed—both in the way they farm and in the extent to which they participate in and identify with nonfarm activities, such as off-farm work and investment opportunities. Conventional wisdom has been slow to recognize this evolution.

Traditional assessments of the economic well-being of the farming population focused on farm income. Earnings from farming, however, are low for most farming households, and farm households have increasingly turned to nonfarm-related sources of income. A more accurate assessment of the well-being of those farming today would incorporate farm households' income from farm

Farm household dependence on off-farm earnings is increasing



Source: USDA, Economic Research Service, 1999 Agricultural Resource Management Survey (ARMS) and *Economic Indicators of the Farm Sector*, various issues. Off-farm income from 1969, 1979, 1987, 1997 Censuses of Agriculture, U.S. Department of Commerce.



Photo by Joel Sartore, Grant Heilman Photography

and off-farm sources. Wealth—as reflected by farm and nonfarm assets—and its role in shaping farm household consumption also need to be considered in any assessment of household well-being.

Most farm households participate in nonfarm activities and earn a major portion of their income from off-farm employment. (Actual income levels vary with household characteristics, including age, education, and family size.) Off-farm employment raises and stabilizes farm household income. In fact, when both farm and off-farm activities are considered, the average farm household has higher income, wealth, and consumption levels than the average U.S. household. Nonetheless, about 6 percent of farm households remain disadvantaged, having lower average income and wealth than the average U.S. household. **W**

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For more information, see *Income, Wealth, and the Economic Well-Being of Farm Households*, by Ashok Mishra, Hisham El-Osta, Mitchell Morehart, James Johnson, and Jeffrey Hopkins, AER-812, July 2002, available at: www.ers.usda.gov/publications/AER812/ See also the ERS Briefing Room on Farm Income and Costs: www.ers.usda.gov/Briefing/FarmIncome/

GLOBAL HUNGER AT ITS ROOTS

At the World Food Summit in 1996, leaders from 186 countries set an ambitious goal: to halve the number of hungry people (from about 800 million) by 2015. But progress to date has been slow, and the recent drought in eastern and southern Africa has cut food production and rural incomes sharply in these regions, underscoring the urgency of meeting the Summit's goal.

The World Food Summit aimed to reduce hunger by focusing on its roots: poverty, low agricultural productivity, environmental degradation, poorly designed government policies, and, increasingly, AIDS. These underlying causes are interrelated in many ways. Ironically, most hungry people live in rural areas, where food is produced. But a variety of factors combine to limit their productivity, incomes, and wealth—and thus their ability to produce or acquire food.

The productivity of farming systems is eroded in some areas by inappropriate land management practices. In Sub-Saharan Africa, for example, fertilizer use is well below levels applied in other regions, and soil fertility is declining. As a result, crop yields are stagnant in many Sub-Saharan African countries despite investment in yield-increasing technology. This situation could worsen because of the spread of AIDS, which threatens the health, productivity, and lives of working-age people, the most economically important segment of the population.



FAO Photo

Government policies in low-income countries sometimes exacerbate these problems. Investment in these countries is often low and doesn't always reach rural areas. Farmers are often poorly connected to urban markets because of the lack of roads. This isolation raises the price of inputs (such as fertilizer), limits market participation, prevents the rural poor from taking advantage of economic growth, and increases income disparities between urban and rural areas. Additionally, lack of investment in rural social services, including education, health care, and social safety nets, creates a cycle of poverty and hunger that contributes to low productivity in the future.

Short-term production shocks and political instability further intensify hunger. Poor countries faced with such shocks must focus their policies and resources on dealing with short-term emergencies, thereby constraining progress toward a long-term, sustainable reduction in hunger. The current drought-induced famines that threaten millions in eastern and southern Africa illustrate the gravity of this problem.

Because of these problems, ERS estimates that the number of hungry people in low-income developing countries has actually increased in recent years, to 1.1 billion in 2002. Reversing this trend and restoring progress toward the World Food Summit's goal will require increased efforts to encourage appropriate policies, political stability, and investment in both infrastructure and people. **W**

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For more information, see *Food Security Assessment*, by Shahla Shapouri, Stacey Rosen, Birgit Meade, Michael Trueblood, Margaret Andrews, Mark Nord, and Suresh Persaud, GFA-14, February 2003, available at: www.ers.usda.gov/publications/GFA14/ See also the ERS Briefing Room on Global Food Security: www.ers.usda.gov/Briefing/GlobalFoodSecurity/

Hold the Fries: Older Americans and Food Choices

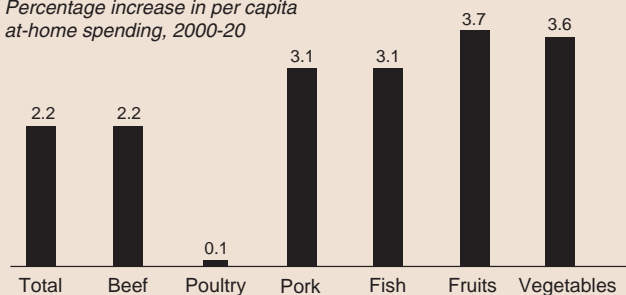
Increases in average life expectancy and the aging of the baby boom generation are combining to push the share of older people in the U.S. population to historically high levels. The population age 60 and older is predicted to rise from 16 percent in 2000 to 23 percent in 2020. The share of children, by comparison, is expected to drop by 3 percentage points, and the share of adults age 20-59 will drop by 4 percentage points.

Older Americans are less active than younger people, eat less food, dine out less, and have distinct food preferences. These characteristics, in light of population trends, will affect how much Americans spend on food and the types of foods they eat. ERS conducted an extensive study to understand how population growth, income growth, and shifts in other demographics—including aging—will affect U.S. food spending and consumption in 2020. The predicted net effect of all these trends is to increase per capita spending on food away from home by 8.1 percent from 2000 to 2020. By contrast, age-related factors alone, including lower earnings, reduced mobility, more time to prepare meals, and likelihood of eating lunches at home rather than at work, are predicted to reduce per capita spending on food away from home by 1 percent. The age factor will, however, boost at-home food spending by 2.2 percent per person, partially because older people may buy smaller portioned, more expensive products and may have their groceries delivered. These food-at-home purchases also reflect the change in preferences that occurs as people age—older Americans tend to spend more on fruits, vegetables, pork, and fish to eat at home.



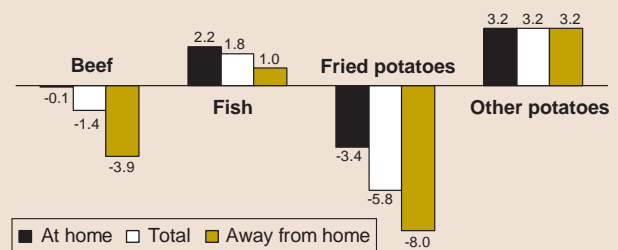
An aging population will drive up spending on at-home foods

Percentage increase in per capita at-home spending, 2000-20



Older Americans favor baked potatoes over fries

Percentage change in per capita consumption, 2000-20



Food consumption—in terms of amounts and types—also changes as people age. Though older Americans will spend less on food away from home, they will consume more fish and potatoes other than french fries, both away from home and at home. Older people also eat more vegetables at home. Overall, the age factor alone is predicted to reduce total per capita consumption of fried potatoes, beef, poultry, cheese, sugar, grains, and tomatoes. \mathcal{W}

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In addition to examining the aging of America, these reports look at how rising incomes, higher educational attainment, improved knowledge of diets and health, growing popularity in eating out, and a more racially and ethnically diverse population will shape future U.S. food spending and consumption.



Food Stamps and Child Poverty

In 2000, 8.8 million children received food stamps, making the Food Stamp Program a significant component in the well-being of children in many low-income households. To shed light on the efficacy of food stamps in helping households meet basic needs, ERS researchers added the value of food stamp benefits to household income and then measured the effect on child poverty rates. This “food stamp effect” reduced the number of children in poverty in 2000 by 4 percent, lifting about 500,000 children out of poverty. Such reductions in child poverty are limited by the structure of the Food Stamp Program, where the value of benefits declines as a household’s income increases. Although the Food Stamp Program is not designed to reduce child poverty, food stamps do augment the purchasing power of poor households and can improve the well-being of people living in poverty. Augmenting income with the value of food stamp benefits has the effect of reducing child poverty by 20 percent or more. The analysis of the depth and severity of poverty reveals that the Food Stamp Program plays an important role in improving the welfare of children in low-income households. \mathcal{W}

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For more information, see *Issues in Food Assistance—How Do Food Assistance Programs Improve the Well-Being of Low-Income Families?* by Joshua Winicki, Craig Gundersen, and Dean Jolliffe, FANRR-26-9, October 2002, available at: www.ers.usda.gov/publications/fanrr26/fanrr26-9/

RURAL AMENITIES: A KEY REASON FOR FARMLAND PROTECTION

While conversions of farmland to urban uses represent less than 0.1 percent of U.S. farmland per year, local farmland losses continue to cause concern and motivate growing public support for farmland protection. The Federal Government, all 50 States, many local jurisdictions, and over 1,200 land trusts and nonprofit conservation programs seek to maintain more land in farming uses than would otherwise be the case.

Measures used to protect farmland include zoning, preferential tax assessments, agricultural districts, right-to-farm laws, and purchase of development rights (PDR) programs. Currently, 19 States and 41 local jurisdictions operate PDR programs, which pay farmers to give up rights to develop their land. To date, State PDR programs have spent nearly \$1.4 billion to protect 922,000 acres of farmland, while local PDR programs have spent \$604 million to protect an additional 214,000 acres. At the Federal level, the 2002 farm bill authorized more than a tenfold increase in funding for the Federal Farm and Ranch Lands Protection Program from about \$53 million spent during 1996-2001 to \$597 million authorized for 2002-07. Through 2001, the Federal program had helped protect about 108,000 acres.

ERS analysts found various objectives mentioned in the authorizing legislation for State farmland protection programs, including protecting "rural amenities," local food supplies, water and air quality,

and natural resource jobs, and reducing urban sprawl (36, 30, 29, 23 and 18 States, respectively). Rural amenities include open space, scenic views, rural agrarian character, and wildlife habitat that are enjoyed through viewing or recreation, depending upon the degree of access permitted. The presence of "natural amenities," such as varied topography, trees, bodies of water, and temperate climate in rural areas, may contribute to rural amenities. (Another finding in this issue—"The Roots of Rural Population Loss"—discusses natural amenities in a different context.)

States and counties use several criteria to select land parcels for preservation in PDR programs. Of 13 programs examined by ERS, 10 assigned the most weight to lands with high-quality soils often used for crop farming. Nine PDR programs assigned the second-most weight to larger farms or blocks of farms, a strategy that favors clustering of farming-related amenities. Five programs favored a "least cost" strategy, which can result in a more scattered pattern of protected land, or in protection of lands distant from urban centers. These differences in strategies reflect different objectives but also highlight the difficult decisions faced by policymakers and program managers.

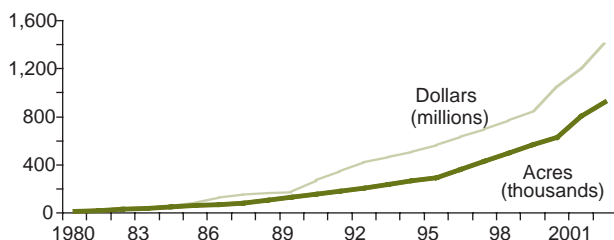
ERS also found that State farmland protection measures are generally tied to State-specific circumstances, such as the amount of land remaining in agriculture, types of agricultural industries, and lands in parks, forests, and other protected areas. While parks and protected lands provide many rural and open-space amenities, State legislators and the people they represent believe farmland, too, provides unique and valuable attributes worth protecting. **W**

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For more information, see *Farmland Protection: The Role of Public Preferences for Rural Amenities*, by Daniel Hellerstein, Cynthia Nickerson, Joseph Cooper, Peter Feather, Dwight Gadsby, Daniel Mullarkey, Abebayehu Tegene, and Charles Barnard, AER-815, November 2002, available at: www.ers.usda.gov/publications/aer815/

See also the ERS Briefing Room on Land Use:
www.ers.usda.gov/Briefing/LandUse/

Cumulative expenditures and acreage in State PDR programs have recently jumped



PDR = Purchase of Development Rights.

Source: American Farmland Trust. Data for some years are interpolated.

ORGANIC AGRICULTURE: GAINING GROUND

Organic agriculture is expanding rapidly in the United States, as consumer interest continues to gather momentum and new organic production and marketing systems evolve. In the wake of USDA's implementation of national organic standards in October 2002, continued growth in the industry is expected.

USDA's organic rules incorporate an ecological approach to farming that has evolved over the last half-century. Farmers developed rigorous standards and management-intensive production systems for organic farming during this period. Before USDA implemented its national organic standards, many States and most organic distributors required third-party certification to ensure that organic farmers adhered to organic production standards. USDA's new rules make certification according to the national standards mandatory.

Despite the time, costs, and effort required to meet these stringent requirements, farmers and ranchers added a million acres of certified organic land for major crops and pasture between 1997 and 2001, doubling organic pasture and more than doubling organic cropland for major crops. Total certified organic cropland and pasture now encompasses 2.3 million acres in 48 States (see map on page 49.) Organic livestock, which require access to organic pasture, have had a boost in production since USDA lifted restrictions on organic meat labeling in the late 1990s.



Photo courtesy of Organic Valley Family™ of Farms

Similarly, consumer demand for organic goods rose throughout the 1990s—20 percent or more annually—and that pace has continued. Organic products are now available in nearly 20,000 natural food stores and 73 percent of conventional grocery stores,

and account for approximately 1-2 percent of total food sales in the U.S. In 2000, for the first time, more organic food was purchased in conventional supermarkets than in any other venue. Farmers' markets and other direct-market venues, which are especially popular among organic producers, have also grown in number over the last decade. Organic farmers are also finding ways to capture a larger segment of the consumer food dollar through onfarm processing, producer marketing cooperatives, and new forms of direct marketing, including agricultural subscription services.

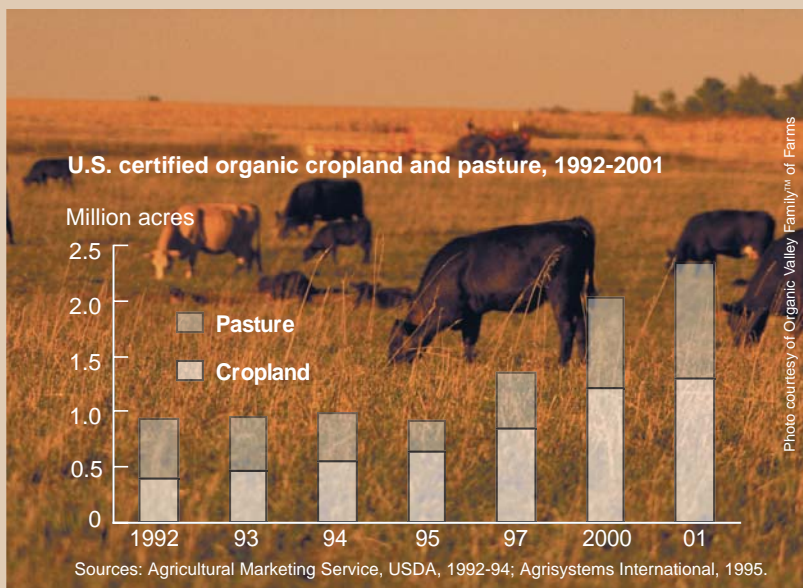
The growth of the organic industry has caught the attention of Federal policymakers. The Farm Security and Rural Investment Act of 2002, for example, contains several first-time research and technical assistance provisions to assist organic crop and livestock producers with production and marketing. The "USDA Organic" label, issued in October 2002, may enhance consumer awareness of organically grown products and facilitate further growth in the organic farm sector.



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For more information, see *Recent Growth Patterns in the U.S. Organic Foods Market*, by Carolyn Dimitri and Catherine Greene, AIB-777, September 2002, available at: www.ers.usda.gov/publications/aib777/

See also the ERS Briefing Room on Organic Farming and Marketing: www.ers.usda.gov/Briefing/Organic/



FINDINGS

THE ROOTS OF RURAL POPULATION LOSS

One in four nonmetropolitan (nonmetro) counties lost population between 1990 and 2000. Many of these counties have been losing population for decades. Over half of "farming-dependent" counties, where farming accounted for at least 20 percent of earnings in 1987-89, had fewer residents in 2000 than in 1990. The 565 farming-dependent counties represent

about a quarter of all nonmetro, or rural, counties, but they comprise nearly two-thirds of the counties with population losses of over 5 percent in 1990-2000.

Declining farm employment is often cited as the reason that these counties have been losing population. But recent ERS research suggests that the drawback for such counties is less their agri-

culture than their remoteness and thin settlement, together with a lack of natural amenities. Natural amenities, including varied topography, lakes and ocean shore, sunny winters, and temperate summers, are a magnet for population and tourism.

Optimal conditions for most types of farming—flat and unbroken land, wet winters, and hot, humid summers—are not usually associated with the natural amenities that attract new residents. Thus, counties with low scores on the natural amenity scale tend to have extensive cropland but little recreation and second home development.

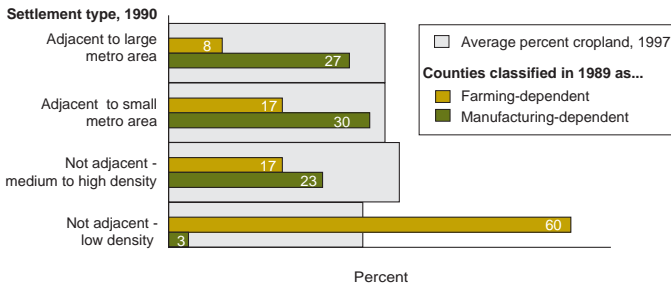
Young adults tend to move away from thinly settled, remote rural counties. Without natural amenities, these counties did not attract enough young families and retirees in the 1990s to make up for the loss of young adults. Over 80 percent lost population in 1990-2000. In contrast, only a small proportion of counties with very high amenity scores lost population.

Some poorly situated counties did gain population in the 1990s, often thanks to industrial agriculture, new Native American casinos, recreation and retirement around lakes, and new prisons.

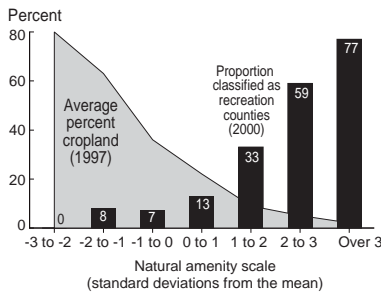
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For more information, see "Understanding Rural Population Loss," by David A. McGranahan and Calvin L. Beale, in *Rural America*, Vol. 17, No. 4, Winter 2002, available at: www.ers.usda.gov/publications/ruralamerica/ra174/

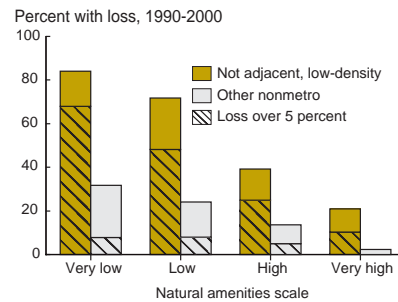
County dependence on farming correlates with rural isolation...



And a lack of natural amenities...



Which lead to population loss



Note: Amenity scale categories "low" and "high" are within a standard deviation of the mean.

Rural Welfare Reform: What Have We Learned?

Since passage of the Personal Responsibility and Work Opportunity Reconciliation Act (PRWORA) of 1996, welfare and food stamp caseloads have declined substantially, employment and earnings of single mothers have increased, and poverty rates of single mothers have fallen. Despite the high marks, there are signs that not all areas of the country are benefiting equally from the legislation.

Specifically, rural outcomes of welfare reform may be different from urban outcomes. Employment in rural areas is more concentrated in low-wage industries, unemployment and underemployment are greater, poverty rates are higher, rural residents have less formal education, and work support serv-

ices, such as paid child care and public transportation, are less available. These barriers suggest that welfare reform may be less successful in moving rural low-income adults into the workforce, off of welfare, and out of poverty.

According to results from national studies, welfare reform outcomes did not differ greatly between rural and urban areas. However, when national-level findings are disaggregated by State and by rural and urban areas within States, a less positive picture emerges. Several studies of individual State welfare programs have shown consistently smaller changes in welfare caseloads, employment, earnings, and poverty in rural areas than in urban areas. In Minnesota, for example, improvements in the employment and earnings of



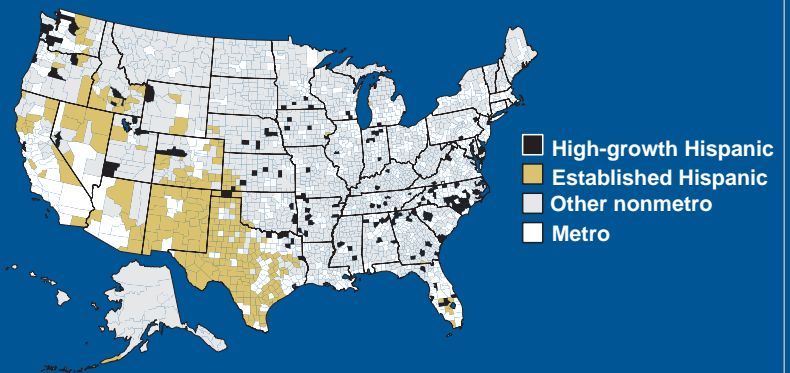
Hispanics Find a Home in Rural America

Hispanics are the fastest growing segment of the American population, and this growth is especially striking in rural America. The 2000 census shows that Hispanics accounted for only 5.5 percent of the Nation's nonmetro population, but 25 percent of nonmetro population growth during the 1990s. Many counties throughout the Midwest and Great Plains would have lost population without recent Hispanic population growth. Among nonmetro counties with high Hispanic population growth in the 1990s, the Hispanic growth rate exceeded 150 percent, compared with an average growth rate of 14 percent for non-Hispanics. Moreover, Hispanics are no longer concentrated in Texas, California, and other Southwestern States—today nearly half of all nonmetro Hispanics live outside the Southwest.

Residential segregation is an important measure of assimilation, because it reflects the ability of newcomers to integrate socially and economically with the native population. ERS researchers evaluated segregation patterns in metro and nonmetro America using 1990 and 2000 census population data to calculate the Dissimilarity Index, an established measure of relative population distribution between two groups. Nationally, the Hispanic population is clearly more dispersed throughout regions, States, and counties than ever before, the result of migration patterns changing from destinations in the Southwest to those in the South and Midwest. Decreases in the Dissimilarity Index between Whites and Hispanics across all nonmetro U.S. counties reflect this growing dispersion. However, at the neighborhood level, a different picture emerges. Residential segregation increased over the decade, with the largest increases occurring in nonmetro counties experiencing high Hispanic population growth. While neighborhood-level segregation in U.S. metro counties exceeded that of high-growth nonmetro counties in 1990, the reverse was true by 2000.

Rural population growth and increasing residential segregation have significant implications for economic development and socioeconomic inequality. Hispanic population growth in rural areas often coincides with revived economies from expanded manufacturing, increased recreation and tourism, and growing retirement destinations. However, relatively sudden

High-growth Hispanic counties are mostly in the South and Midwest



Source: Prepared by ERS using data from the U.S. Census Bureau.

influxes of ethnic-minority, low-wage workers and their families can overwhelm rural school systems, depress local wages, increase demand for social services, and contribute to income inequality and residential segregation. The extent to which Hispanic immigrants integrate spatially within a community directly affects their interaction with the community as well as native attitudes toward ethnic and racial diversity. If Hispanic neighborhoods become increasingly segregated, they will likely experience declining access to retail centers, growing dependence on government assistance, underfunded schools and social services, and transportation barriers to employment. Future population shifts, low-wage job availability, skill upgrading, and State and community-level support programs will affect the degree to which Hispanics assimilate in rural America. \forall

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For more information, see the ERS Briefing Room on Rural Population and Migration: www.ers.usda.gov/Briefing/Population/

welfare recipients due to welfare reform were smaller in rural areas than in urban areas, and were not as lasting. The smaller effects in rural areas result from differences between State programs in terms of how eligibility, benefits, and work requirements are determined, as well as rural-urban differences in job opportunities, availability of critical work supports, and characteristics of welfare recipients. As seen in county-level studies, the poorest and most remote rural areas experienced fewer successes in reducing poverty and moving former welfare recipients into the workforce on a lasting basis. For example, 360 nonmetro (or rural) counties have had poverty rates of at least 20 percent in every decade since 1960. These areas have a disproportionate number of economically vulnerable residents and have weaker local economies than other rural places, making successful welfare reform more difficult to achieve.

As Congress considers reauthorization of PRWORA, the policy debate will focus on many critical issues, such as funding levels, time limits and sanctions, child care, and the adequacy of provisions for future economic downturns. Study results on welfare outcomes provide a strong empirical base to better comprehend the importance of rural and urban diversity in welfare policy design. \forall

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For more information, see *Issues in Food Assistance—Reforming Welfare: What Does It Mean for Rural Areas?* by Leslie A. Whitener, Greg J. Duncan, and Bruce A. Weber, FANRR-26-4, June 2002, available at: www.ers.usda.gov/publications/fanrr26/fanrr26-4/



ARMS data highlight trends in cropping practices

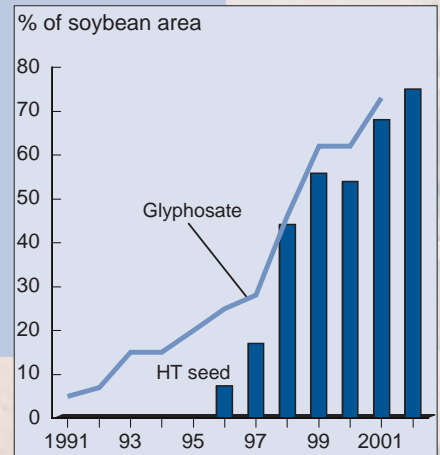
Since 1996, U.S. farmers have responded to a number of industry-altering changes, including lower crop prices, the availability of genetically engineered seed, and environmental incentives embodied in farm legislation. How have these shocks affected farming and conservation practices used by farmers? USDA's Agricultural Resource Management Survey (ARMS) provides a new source of information about production and conservation practices on sample fields in major field crop producing States. Data from 1996 to 2000 show significant trends beginning to emerge, which may have implications for environmental quality.

C.S. Kim, 202-694-5545, ckim@ers.usda.gov, and William Quinby, 202-694-5548, quinby@ers.usda.gov. See *Crop Production Practices* data at: www.ers.usda.gov/Data/cropproductionpractices/

Genetically Modified Soybeans

HT seed and glyphosate herbicide use soared...

Use of herbicide-tolerant (HT) soybean seed has enabled farmers to use glyphosate herbicides that are effective in controlling weeds during crop growth.

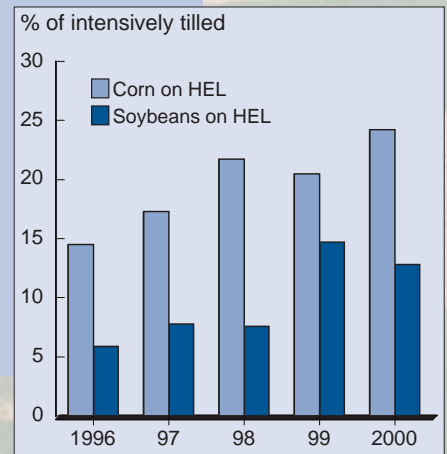


Tillage

Intensive tillage increased on highly erodible land

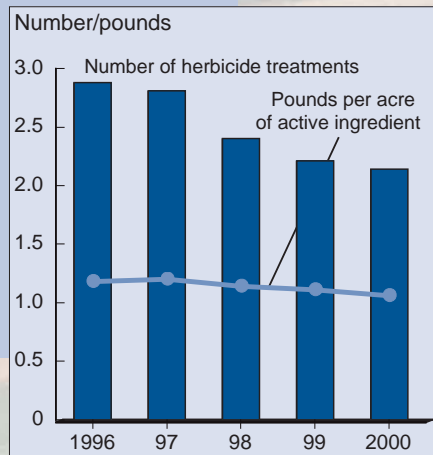
More highly erodible land under intensive tillage reverses a previous trend toward soil-conserving tillage.

Intensive tillage requires less management and may be perceived by farmers as less risky.



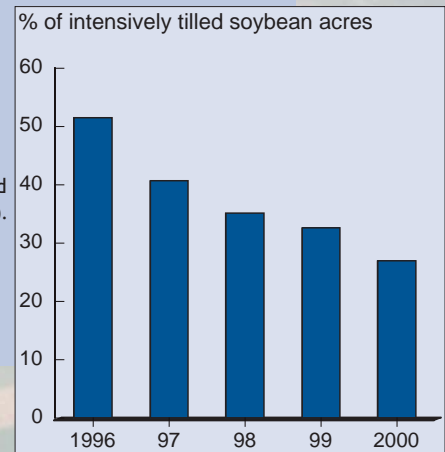
...while overall herbicide use decreased on soybeans...

With soybean producers relying more on glyphosate herbicides, the number of herbicide treatments has declined. The annual per-acre average of all herbicide active ingredients also declined. Adopting HT soybean varieties has allowed producers to switch to herbicides that are more effective at lower rates of use per acre.



...and cultivation for soybean weed control dropped.

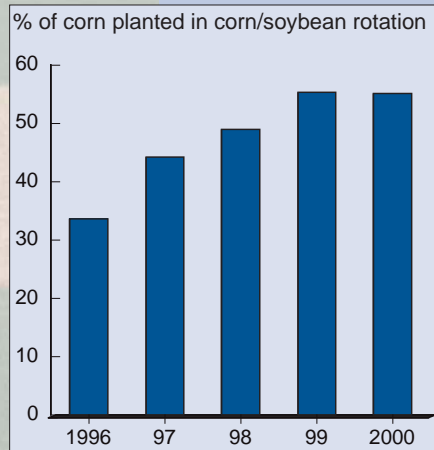
The use of glyphosate herbicides during soybean growth allowed farmers to reduce cultivation for weed control, especially on intensively tilled soybeans (i.e., soybeans planted on land plowed or tilled so as to leave little or no crop residue, one-fourth of planted acreage in 2000).



Crop Rotation

More corn/soybean rotation in the Northern Plains and Lake States

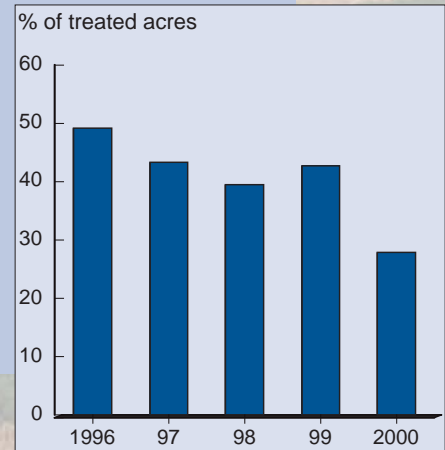
Rotating corn with soybeans increased in regions where continuous corn production had been the norm. Adding soybeans to the rotation may reduce use of nitrogen fertilizers and insecticides.



Nutrient Management

Broadcasting nitrogen fertilizer without incorporation has declined

Where nitrogen is applied to soybeans (about one-sixth of soybean area in 2000), broadcasting without incorporation is down from 49 to 28 percent of treated acres. This trend substantially reduces the risk of nitrogen runoff to surface waters.



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AMBER WAVES

Photo courtesy of USDA



F E A T U R E

Rural America Opportunities and Challenges

FEBRUARY 2003

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AMBER WAVES

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At the beginning of the 21st century, rural America comprises 2,305 counties, contains 80 percent of the Nation's land, and is home to 56 million people. It is a collage of people and places—a diverse mix of races, ethnic groups, terrain, climate, amenities, businesses, and institutions. No one industry dominates the rural landscape, no single pattern of population decline or growth exists for all rural areas, and no statement about improvements and gaps in well-being applies to all rural people. Some rural areas have shared in the economic progress of the Nation, while others have not. The opportunities and challenges facing rural America are as varied as rural America itself (see box, "Defining Rural Areas").

Farming no longer anchors the rural economy as it did through the mid-20th century. Today, seven out of eight rural counties are dominated by manufacturing, services, and other employment not related to farming. Despite these changes, rural and farm communities are becoming increasingly interdependent. Job growth in agricultural areas is now more likely to come from rural industries related to farming than from farming itself. Industries involving agricultural inputs, processing and marketing of agricultural goods, wholesale and retail trade of agricultural products, and agribusiness have increased their presence in rural communities.

Farm households themselves rely more on the local economy. Farm business income has played an increasingly smaller role in determining the well-being of farm households (see "The Economic Well-Being of Farm Households," p. 5). More than half of all U.S. farm operators work off-farm, with 80 percent working full-time jobs. Nearly 90 percent of total farm household income in 1999 originated from off-farm sources. The health of the rural economy and the effective operation of rural labor markets are of crucial importance to the

Defining Rural Areas

Policy discussions about conditions in rural America often refer to "nonmetropolitan areas." Metropolitan areas are defined by the Office of Management and Budget to include core counties with one or more central cities of at least 50,000 residents or with an urbanized area of 50,000 or more and total area population of at least 100,000. Fringe counties (suburbs) that are economically tied to the core counties are also included in metropolitan areas. Nonmetropolitan (nonmetro) counties are outside the boundaries of metropolitan areas and have no cities with 50,000 residents or more. The terms "nonmetro" and "rural" are used interchangeably in this article.



Today, rural economies draw heavily from three basic assets: natural amenities for tourism and retirement; low-cost, high-quality labor and land for manufacturing; and natural resources for farming, forestry, and mining.

continued economic well-being of both farm and rural households.

Today, rural economies draw heavily from three basic assets: natural amenities for tourism and retirement; low-cost, high-quality labor and land for manufacturing; and natural resources for farming, forestry, and mining. Rural economies are both diversified and diverse, so tried-and-true economic development strategies applied nationwide may be less successful now than 40 years ago. Prosperity for today's rural communities requires educational upgrades to reflect changing market conditions and innovative marketing of natural amenities and other income-generating strategies to attract people and jobs.

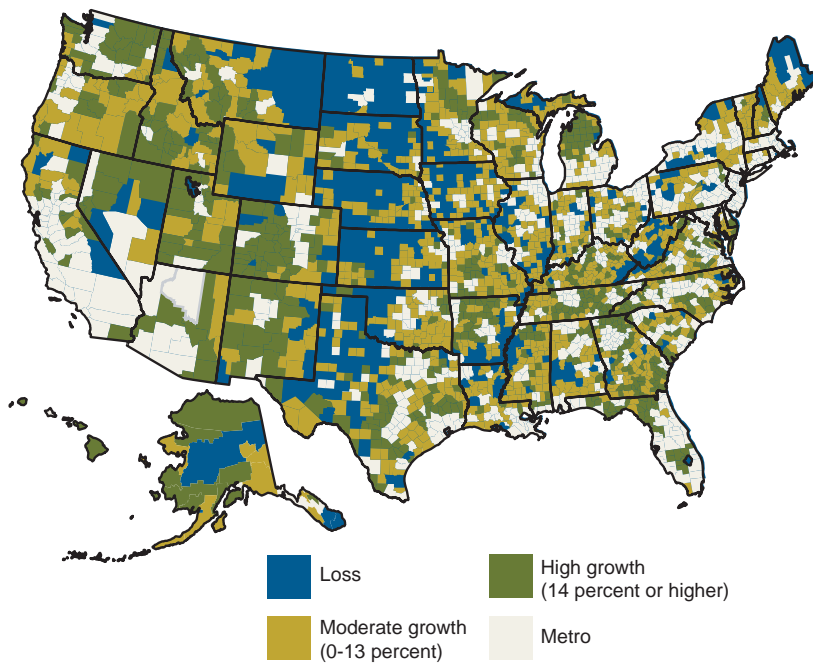
Rural Population Rebounds . . .

For most of the 1990s, rural America enjoyed widespread population growth, rebounding from slower growth in the 1980s. The nonmetro population grew by over 10 percent from 1990 to 2000, versus 3 percent in the previous decade. Nonmetro growth slowed after mid-decade, but continued to outpace growth in the last decade.

Many rural areas are thriving. Boosted by both high immigration and high birth rates, the rural West grew by 20 percent, twice the national average. The South continued to attract residents, and with the West, accounted for over three-quarters of rural population growth during the 1990s. Moderate climates, scenic features, and other natural amenities like lakes stimulated rapid population growth in parts of the Rocky Mountain West, the southern Appalachians, and the upper Great Lakes. Much of this population growth stemmed from the immigration of retirees. High population growth in the rural South resulted partly from urban sprawl, especially around large metro areas like Atlanta. As urban areas expanded, more rural areas were encompassed in commuting zones.



Population change varies widely across rural America
Nonmetro population change, 1990-2000



However, these population gains were not universal. Though the Great Plains as a whole achieved some population growth, stemming the 1980s exodus, the majority of Great Plains counties continued to lose people due to declining agricultural employment and the lack of jobs in other industries. Population loss occurred as well in some low-income rural areas such as the

Appalachian coalfields and the lower Mississippi Valley.

Changes in the Hispanic and elderly populations underlie many of these regional population patterns. Hispanics are increasingly settling in rural America (see "Hispanics Find a Home in Rural America," p. 11). According to the 2000 census, Hispanic growth rates exceeded 60

percent in rural counties during the 1990s, higher than any other racial/ethnic group. This growth is not just in the traditional settlement States in the Southwest. Almost half of all nonmetro Hispanics now live outside these States. In many places, new Hispanic settlement patterns are contributing to the revitalization of small towns; in others, the rapid growth is perilously straining community resources.

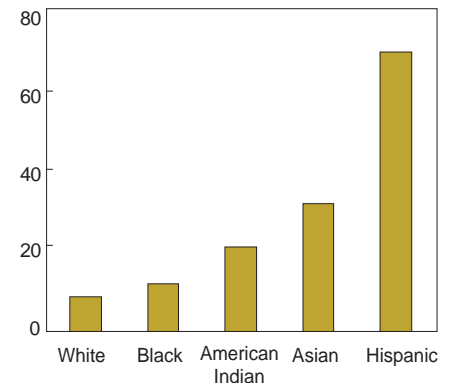
The older population grew rapidly in rural areas of the West and Mid-Atlantic regions, attracted largely by retirement. In the rural areas of the Great Plains, Corn Belt, and lower Mississippi Delta, however, the growth of the older population slowed and in many places stopped altogether. This pattern reflects the small size of the cohort now reaching age 65, a cohort that was depleted by many leaving rural areas for the cities in the 1940s or by others giving up farming in the 1950s.

... But Rural Employment Fluctuates

Rural areas as a whole shared in the Nation's economic prosperity in the late 1990s. By the end of the decade, the non-metro unemployment rate had fallen to its lowest level since 1973. Employment continued to expand and real earnings increased through the decade.

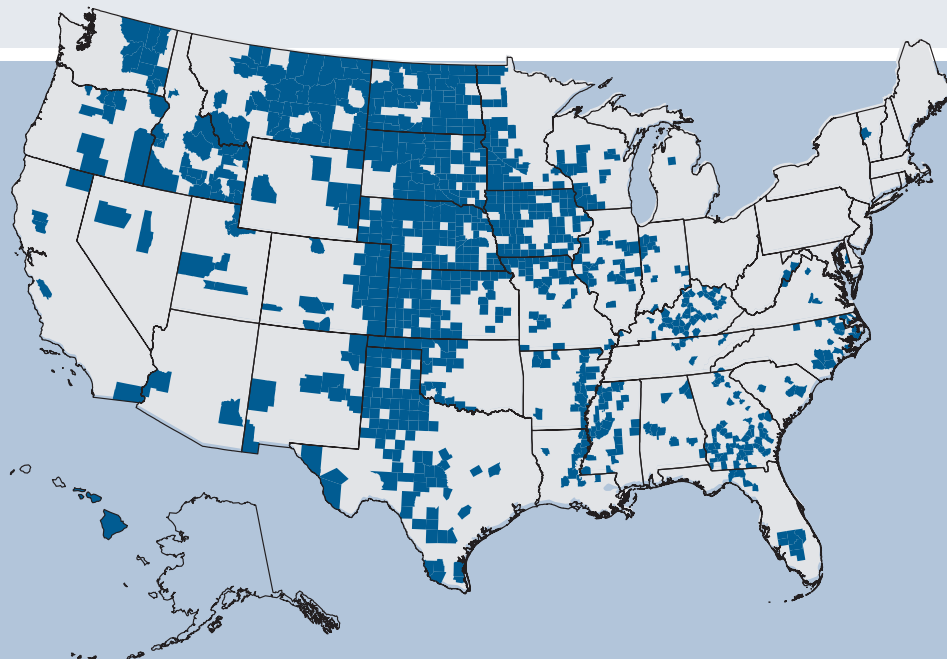
Hispanics are the fastest growing racial/ethnic group in rural America

Percent population change, 1990-2000



Farm earnings are growing less important to rural economies

In 1969, farming accounted for 20 percent or more of earnings in 935 nonmetro counties. . .



Then, in late summer 2000, the manufacturing industry experienced a downturn. By March 2001, the longest U.S. economic expansion on record ended, and the economy slipped into recession. The labor market continues to be soft, with high unemployment rates and slow job growth. The impact of this recession in rural areas has been mild compared with earlier recessions, but the manufacturing downturn has hurt rural areas more than urban areas, particularly in textile and apparel industries in the South.

Nonmetro employment declined 0.6 percent from 2000 to 2001, while metro employment remained steady. Much of the rural South experienced job losses during this period, fueled by the recent manufacturing downturn. Areas of the Northwest continued to wrestle with declining employment in timber and other natural resource industries. Some parts of

the Great Plains showed small employment gains from 2000 to 2001, but maintaining the population base, improving off-farm job opportunities, and providing public services continue to be long-term challenges for many of these traditional farming areas.

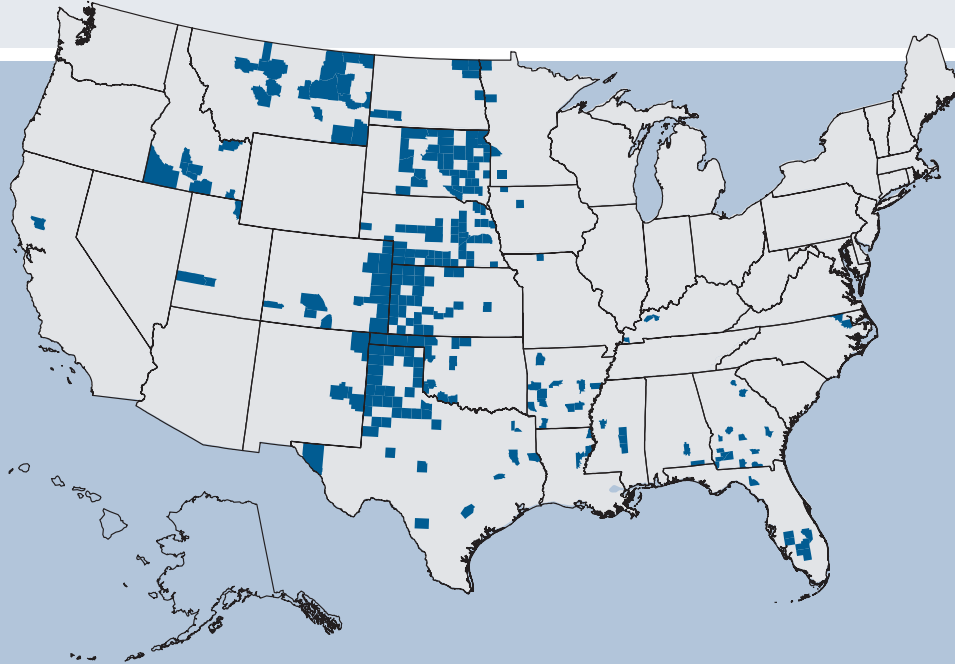
Land, Labor, and Recreation Form the Rural Asset Base

The rural economy, once dependent on farming, forestry, and mining, is now more diverse. Manufacturing, services, recreation, retirement, and other nonfarm activities, all in varying concentrations, underpin different regions as befits their resources. In 1969, 935 rural counties depended on farming for 20 percent or more of their total earnings. Thirty years later, 262 counties were farm dependent. This economic diversity means that nonmetro areas are variously affected by glo-

bal, macroeconomic, and financial events, resulting in different labor market conditions. For example, trade liberalization is favorable to areas manufacturing aircraft (a U.S. export), but is of less help to communities producing apparel or footwear that must compete with lower cost products.

While rural America's time-honored assets are natural amenities, natural resources, and low-cost labor and land for manufacturing, most rural jobs are not directly related to these assets. Rural jobs are increasingly in consumer services such as retail trade, education, health care, and other services primarily for local residents. Yet, consumer services cannot thrive without agriculture, recreation, manufacturing, and even commuting, activities that bring money into the community. In contrast, urban areas draw from a different asset base and tend to specialize in more information-intensive

...versus just 262 nonmetro counties in 1999



activities, particularly producer services. This sector includes legal, financial, research, and business services, and has grown rapidly in recent decades.

Natural amenities, though, are the trump card for rural areas. Rural counties scoring high on the ERS natural amenities scale—counties with varied topography, relatively large lake or coastal areas, warm and sunny winters, and temperate summers—have tended to grow much more rapidly than other rural counties (see “The Roots of Rural Population Loss,” p. 10). Although natural amenities do not ensure rapid growth, recreation has been one of the fastest growing rural industries.

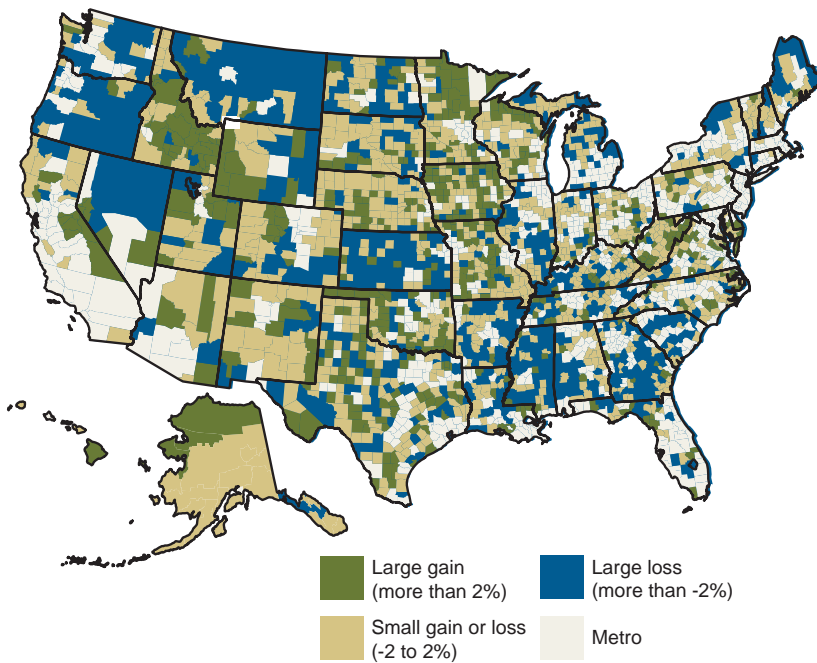
Manufacturing has traditionally located in rural areas to take advantage of lower labor and land costs. Since the late 1980s, some manufacturers, competing on the basis of low-cost production, shifted their production overseas. Other manufac-

turers took advantage of new technologies and management practices and began to compete on the basis of product quality. This shift resulted in a need for more highly skilled labor, so manufacturing moved to rural areas with better schools and fewer high school dropouts. Such changes in strategy were reflected in a shift in the location of manufacturing employment. Manufacturing jobs grew by about 7 percent in low-education counties during the 1980s, reflecting the search for lower labor costs. In the 1990s, the pattern reversed and low-education areas lost jobs, as manufacturers sought a more highly skilled labor pool. Areas with high rates of high school completion are found largely in the Great Plains and parts of the rural West, and these areas have been most attractive to employers. Areas with the lowest rates of high school completion are found throughout the rural South.

Rural areas were initially settled for their rich cropland or extensive mineral deposits. However, natural resources industries, particularly agriculture and mining, yielded lower total earnings in 2000 than they had a decade earlier. Employment in agriculture and mining has a long history of decline, and areas dependent on these industries have lost population. Using amenities to attract population and employment could restore these areas, but the very qualities that constitute good farmland—flat landscapes with abundant rain—often provide few natural amenities. However, recreation is not the only option for farming areas. The population in farming areas tends to be highly educated, which is attractive to manufacturers. Between 1989 and 1997, manufacturing jobs grew by over 13 percent in farming counties, compared with 2 percent in other nonmetro counties.



Job losses highest in rural South and Northwest
Nonmetro employment change, 2000-2001



What's Next?

Recent rural economic trends suggest two major emphases for enhancing rural development opportunities. First, today's youth, regardless of where they ultimately live and work, will need an unprecedented

level of education and technical skills to compete in the increasingly high-skill "new economy." Only 17 percent of rural adults age 25 and older had completed college in 2000, half the percentage of urban

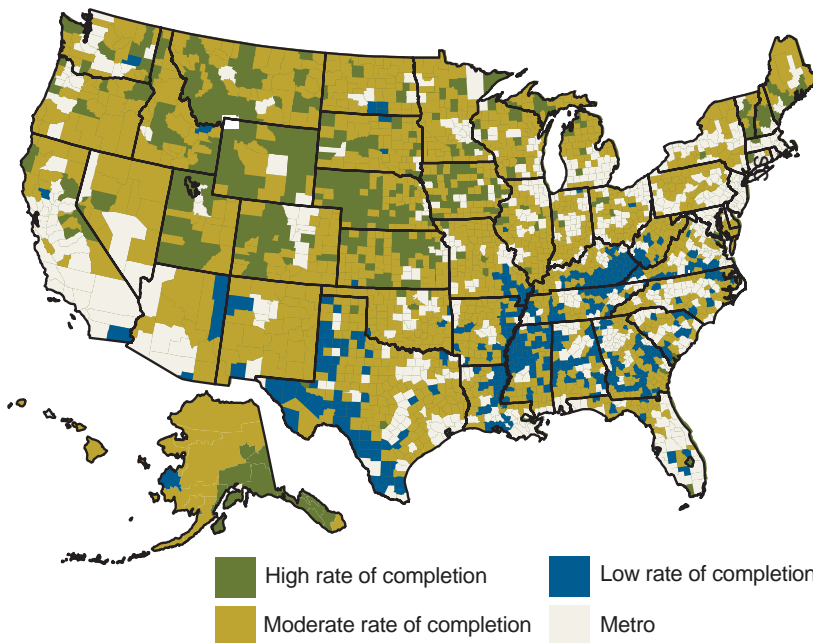
adults. Moreover, the rural-urban gap in college completion has widened since 1990.

In the past, many rural areas hosted industries that required a reliable pool of low-wage workers. Today, a labor force with low education levels poses a challenge for many rural counties seeking economic development. Employers are now more attracted to rural areas offering concentrations of well-educated and skilled workers, and low wage levels are no longer sufficient to attract businesses. Rural areas with poorly funded public schools, few good universities and community colleges, very low educational attainment, and high levels of economic distress may find it hard to compete in this new economy. All of these are major obstacles to the educational progress of local youth and to local development efforts.

Second, rural economic health and vitality depend on innovative ways to generate income. Jobs are declining and incomes are eroding in rural areas that depend on natural resource-based industries, such as farming and mining. Those areas that can adopt innovative income-generating strategies to build on their assets, diversify their economies, attract new businesses, and sustain their successes will likely thrive in the global economy. Many rural areas have successfully built on their assets and taken on new roles—providing labor for a diversity of industry, land for urban and suburban expansion, sites for prisons, and natural settings for recreation, retirement, and enjoyment. Enhancing rural communities as places to live, retire, and vacation may improve not only the quality of life for existing residents, but also the possibility of attracting new businesses and residents. These rapidly growing areas can help sustain their successes by ensuring that the changing demand for essential services and infrastructure is adequately met.



Much of the rural South is characterized by low formal education
Nonmetro high school completion among adults age 25 and older, 2000



Recognizing the diversity of rural America is a key component of any strategy to enhance the economic vitality of rural communities. Rural diversity means that there is no single recipe for rural prosperity. Opportunities and challenges facing rural America vary by com-

munity and region. Farming communities in the Great Plains face different problems—with different solutions—than do poor areas of the Mississippi Delta, or counties in California’s Central Valley. Rural diversity means that traditional farm programs play an increasingly limited role

in improving the prosperity of all rural Americans. The most effective rural policies for the 21st century will recognize the increased importance of nonfarm jobs and income as the main drivers of rural economic activity.

Rural diversity means that some areas have shared in the economic progress of the Nation while others have not. During the 1990s, the U.S. economy enjoyed an unprecedented period of economic growth, but at the end of the decade, almost 200 rural counties had sustained poverty rates of 20 percent or more for the last 40 years.

Rural diversity also means that rural community issues are often most effectively addressed at the local and State level. Programs designed to tailor assistance to local needs and improve program and service delivery work best at the local level, while the Federal Government can have an important coordinating role. Broad regional approaches have also proven to be effective in fostering economic development and facilitating service delivery. Efforts to enhance the economic opportunities for rural Americans call for unique partnerships among the spectrum of American institutions, including different levels of government, the business community, public advocacy groups, and local organizations. *W*

For more information...

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Putting Food on the Table

Household Food Security in the United States

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Household food security—access at all times to enough food for active, healthy living—is taken for granted by most Americans. The struggle to avoid overeating is a more common American experience than the struggle to put enough food on the table. However, some American households do have difficulty at times getting enough food for all members.

An annual nationally representative food security survey, last conducted in December 2001, indicated that nearly 9 out of 10 U.S. households were food secure throughout the entire year. However, 11.5 million households (10.7 percent of all U.S. households) were food insecure at some time during the year. "Food insecure" means that the household did not always have access to enough food for active, healthy living for all household members because they lacked money or other resources for food.

Most food-insecure households obtained enough food to avoid hunger, in some cases by relying on a few basic foods and reducing variety in their diets, participating in Federal food assistance programs, or getting emergency food from community food pantries. But in 3.5 million households (3.3 percent of all U.S. households), one or more household members were hungry, at least some time during the year, because they couldn't afford enough food. Hunger, as measured by this survey, refers only to involuntary hunger that results from not being able to afford enough food.

Those hungry only because they were dieting to lose weight, fasting for religious reasons, or just too busy to eat were excluded from the count.

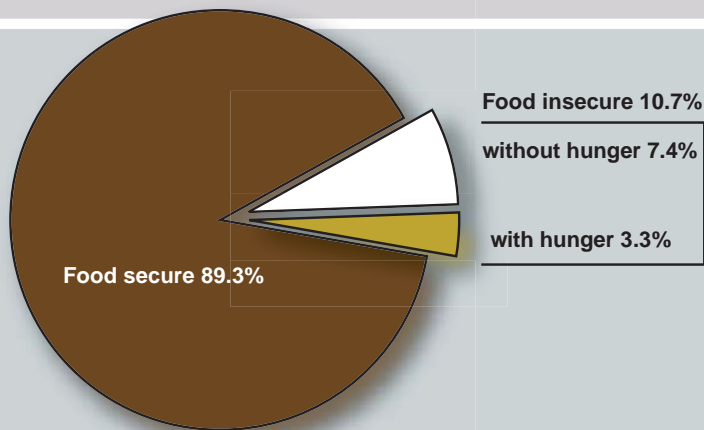
Children—especially younger children—were almost always shielded from hunger even in households where adults were sometimes hungry because they lacked money for food. Only 211,000 households (0.6 percent of households with children) reported food access problems so severe that any children in the household were hungry at any time during the year.



Only a small proportion of food-insecure households suffer food hardships frequently or chronically, although most do experience food insecurity as a recurring condition, not just as a single episode. Households in the food security survey are classified as food insecure even if they underwent just a single short spell of food insecurity during the year. As a result, annual rates of food insecurity and hunger are much higher than the incidence of these conditions on any given day. ERS research has estimated, for example, that the prevalence of hunger on a typical day is about 13-18 percent of the annual rate. So on a typical day in 2001, about 500,000 of the 108 million households in the Nation included a member who was hungry because the household could not afford enough food.

Data for these statistics come from a food security survey conducted annually for USDA by the U.S. Census Bureau. The survey asks a nationally representative sample of about 50,000 households how much they spend on food, whether they used various public food assistance programs, and whether their household was consistently able to get enough food to meet the needs of all household members. Households are classified as food secure, food insecure without hunger, or food insecure with hunger based on their responses to 18 questions about behaviors, experiences, and conditions known to characterize households that are having trouble meeting their food needs (see box on the food security questions, p. 28). Hunger among children is measured by a subset of the 18 questions that ask specifically about the conditions and experiences of children. The food security survey is a key component of the national nutrition monitoring system, a collaboration among several Federal agencies that measures and monitors food access, food intake, and the nutritional status of the U.S. population.

Most U.S. households were food secure throughout the year in 2001



Source: Prepared by ERS using data from the Current Population Survey Food Security Supplement, December 2001.

Food Security Is Linked to Income and Household Composition

Since food insecurity and hunger, as measured by USDA, must result from insufficient household resources, it follows that food security depends greatly on income. In 2001, food insecurity was five times more prevalent in households with annual incomes below the poverty line (\$17,960 for a family of two adults and two children) than in households with incomes above that range. Even so, almost two-thirds of households with incomes below the poverty line managed to remain food secure throughout the year, while some households with annual incomes well above the poverty line were food insecure at times. This reflects, in part, the influence of other factors on food security: the stability of income and employment; local costs of food, housing, and other basic needs; receipt of food assistance and other noncash assistance; health of household members; ownership of assets; family stability; and household management skills.

Food security also depends considerably on household structure and composition. Food insecurity was least common among households consisting of two or more adults with no child present (6.0 percent) and households that included an elderly person (5.5 percent). Single mothers with children registered the highest rate of food insecurity (31.9 percent), while married couples with children (10.7 percent) were at the national average. These differences result in part from income differences associated with household composition, but even when the effects of income are accounted for, single mothers with children are more likely to be food insecure than married couples or single fathers with children, and households with elderly members are less likely to be food insecure than those without elderly. Rates of food insecurity were higher among Black and

Food insecurity rates were highest for single mothers with children and for Black and Hispanic households



Source: Prepared by ERS using data from the Current Population Survey Food Security Supplement, December 2001.

Hispanic households (21.3 percent and 21.8 percent) than among White non-Hispanic households (7.6 percent), reflecting primarily the lower incomes and higher poverty rates of these groups.

Food insecurity is somewhat concentrated geographically and in large urban centers. Households located in central cities and nonmetropolitan areas had higher rates of food insecurity than did households in suburbs and other metropolitan areas outside central cities. Food inse-

curity was more prevalent in the South and West than in the Northeast and Midwest.

Food Security Improved During the Economic Expansion of the Late 1990s

The U.S. Government has set a goal for the Nation—expressed in the Department of Health and Human Services' Healthy People 2010 objectives—of reducing the prevalence of food insecurity from 12 percent (as measured in 1995) to 6 percent or

less by 2010. Initial progress toward this objective was encouraging. Between 1995 and 1999, food insecurity declined by 1.7 percentage points and the prevalence of hunger fell 1.2 percentage points. These improvements reached almost all regions and types of households, and were largest for some of the more food-insecure groups, especially single women with children and Black and Hispanic households.

As the economy entered a recession in 2001, however, food insecurity and hunger increased, slowing or reversing progress toward the Healthy People 2010 objectives. From 1999 to 2001, the prevalence of food insecurity rose by 0.6 percentage point and the prevalence of hunger rose by 0.3 percentage point.

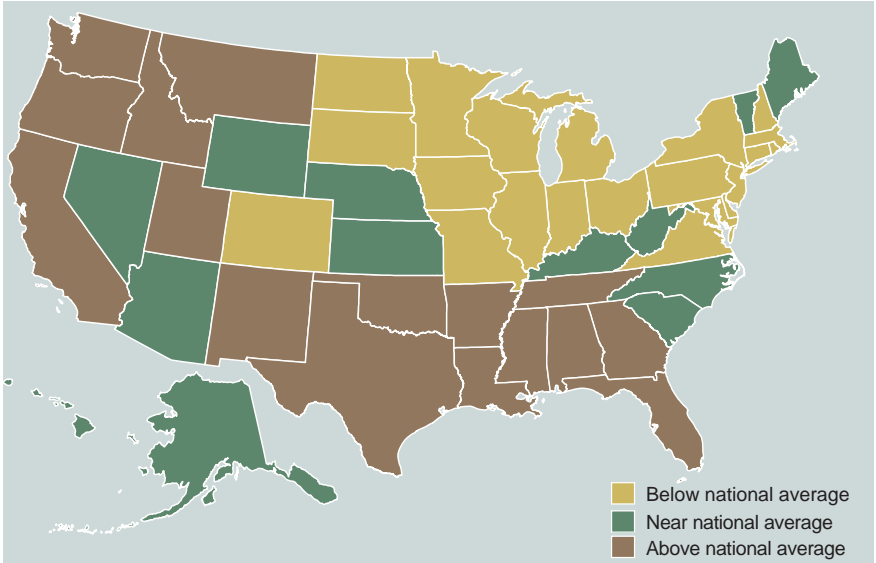
Food-Insecure Households Spend Less on Food ...

Food-insecure households spend less on food than food-secure households. To compare food spending across households of different sizes and age-gender mixes, ERS researchers express the amounts households reported they usually spent for food as ratios to the cost of USDA's Thrifty Food Plan, a national standard for a nutritious diet at low cost (see box on the Thrifty Food Plan). For example, the cost of the Thrifty Food Plan for a family consisting of two adults and two children ages 2 and 4 was \$91.10 per week. In 2001, the typical (median) food-secure household of this type spent 35 percent more than this amount, or about \$123 per week, while the typical food-insecure household spent just 2 percent more than the cost of the plan, or about \$93 per week.

... And Are More Likely To Use Food Assistance

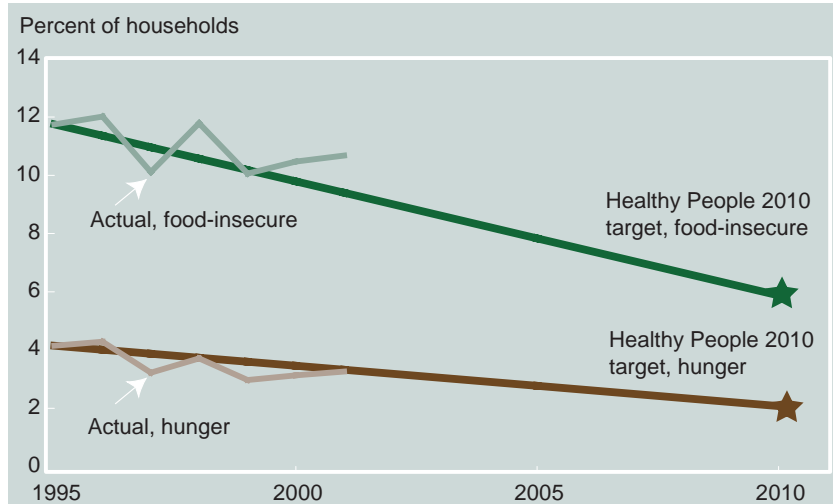
When households with limited resources are unable to buy enough food, they often turn to Federal food assistance programs or emergency food providers in

Food insecurity was generally lower in the Northeast and Midwest, 1999-2001



Note: Food security data for 3 years were combined to provide more reliable statistics at the State level. Source: Prepared by ERS using Current Population Survey Food Security Supplement data from April 1999, September 2000, and December 2001.

Recession slowed progress on improving food security



Note: Comparisons of rates should be made across 2-year or 4-year periods rather than from one year to the next. Measured rates include a seasonal effect on alternating years due to collection of data in different months. Source: Calculated by ERS based on data from Current Population Survey Food Security Supplement data.



Food budgets for food-insecure households run 24 percent less than for food-secure households

Food security status	Median weekly food spending relative to the cost of the Thrifty Food Plan
	<i>Ratio</i>
Food secure	1.35
Food insecure	1.02
Without hunger	1.02
With hunger	1.01
All households	1.32

Source: Calculated by ERS using data from the December 2001 Current Population Survey Food Security Supplement.

their communities. About half of food-insecure households received assistance from one or more of the three largest Federal food assistance programs during the month prior to the December 2001 food security survey. The largest share of food-insecure households was reached by the National School Lunch Program (33.4 percent), followed by the Food Stamp Program (25.1 percent) and the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) (13.4 percent).

Community food assistance programs such as food pantries, emergency kitchens, and homeless shelters also tend to the food needs of low-income households. In 2001, some 3 million households (2.8 percent of all U.S. households) obtained food from food pantries at least once during the year. Most of these households used food pantries sporadically, although 20 percent reported using them in almost every month. Food-insecure households were 21 times more likely than food-secure households to have obtained food from a food pantry, and food-insecure households reg-

istering hunger were more than twice as likely to have used a food pantry as those that were food insecure without hunger.

But what of the large majority of food-insecure households, even those with hunger, that did not use a food pantry at any time during the previous year? In some cases, there was no food pantry available or the household did not know if one was available. Among food-insecure households that did not use a food pantry, 28 percent reported that there was no such resource in their community, and an additional 19 percent said they did not know if there was. Nevertheless, even among food-insecure households that knew there was a food pantry in their community, only 30 percent availed themselves of it.

Searching for the Connections: Causes and Consequences of Food Insecurity

Monitoring the incidence of food insecurity is only a beginning. Understanding its causes and consequences is also critical for assessing the threat that food insecurity poses to health and well-being and for improving policies and programs to reduce the prevalence and severity of food insecurity.

USDA's Thrifty Food Plan Quantifies a Low-Cost Diet

The Thrifty Food Plan was developed by USDA in 1975 to serve as a national standard for a nutritious diet at low cost. The plan specifies recommended quantities of 32 categories of foods for each of 12 categories based on age and gender of household members. These recommendations match observed food-purchasing patterns of low-income households in the United States as closely as possible while meeting current nutritional guidelines at a low cost. The cost of the Thrifty Food Plan for each age-gender category is calculated based on national-average food prices and adjusted monthly for price changes observed in the Bureau of Labor Statistics' Consumer Expenditure Survey. Food plan costs are totaled across the members of a household and then adjusted for economies of scale based on the number of persons in the household. Details of the Thrifty Food Plan, including food lists and menus, are available from USDA's Center for Nutrition Policy and Promotion (www.usda.gov/cnpp/FoodPlans/TFP99/Index).

How Food Secure Is Your Household?

These are the food security questions you would be asked if your household was selected by the Census Bureau for the annual food security survey. Mark your answers and see where your household would show up in the annual statistics.

Here are several statements that people have made about their food situation. For these statements please indicate whether the statement was often true, sometimes true, or never true for your household in the last 12 months.

Mark 1 response in each row

"We worried whether our food would run out before we got money to buy more."	Often true	Sometimes true	Never true
"The food that we bought just didn't last and we didn't have money to get more."	Often true	Sometimes true	Never true
"We couldn't afford to eat balanced meals."	Often true	Sometimes true	Never true
In the last 12 months, did you or other adults in your household ever cut the size of your meals or skip meals because there wasn't enough money for food?	Yes		No (skip next question)
(if yes to previous question) How often did this happen?	Almost every month	Some months but not every month	In only 1 or 2 months
In the last 12 months, did you ever eat less than you felt you should because there wasn't enough money to buy food?	Yes		No
In the last 12 months, were you ever hungry but didn't eat because you couldn't afford enough food?	Yes		No
In the last 12 months, did you lose weight because you didn't have enough money for food?	Yes		No
In the last 12 months, did you or other adults in your household ever not eat for a whole day because there wasn't enough money for food?	Yes		No (skip next question)
(if yes to previous question) How often did this happen?	Almost every month	Some months but not every month	In only 1 or 2 months

Now add up responses you marked in the shaded columns. _____

If your score is:

0-2 Your household was food secure throughout the entire year.

3-5 Your household was food insecure at some time during the year, but without hunger.

6-10 Your household was food insecure with hunger at some time during the year.

Note: An additional eight questions are asked about food conditions of children if there are any in the household, and appropriate adjustments are made in the scoring.

Much is already known about the root causes of food insecurity—low and unstable income, unemployment and unstable employment, disability, family disruption, and lack of community and extended family support—but much also remains unknown. To what extent do economic and food assistance programs buffer against food insecurity? Are there holes in the social safety net that leave people without enough food? If so, where? What barriers prevent food-insecure households from participating in programs that could reduce their food insecurity? How do government and community food programs work together, and where are they redundant?

Less is known about the consequences of food insecurity. Of course, most people consider food insecurity itself to be undesirable—at least at the more severe level of resource-constrained hunger—whether or not it leads to other problems. And it is known that food insecurity has deleterious effects on nutrition, health, weight, and children's psychosocial development and learning. But research into these relationships has, so far, established only their general outlines. Much work remains to assess the extent to which food insecurity affects these conditions, to explore other suspected consequences of food insecurity, to find out how the severity and duration of food insecurity affect its consequences, and to understand the mechanisms through which food insecurity leads to negative outcomes.

ERS supports data collection, conducts research, and funds studies by universities and private research organizations to further understanding of these issues. In addition to sponsoring the annual food security surveys in conjunction with the Census Bureau, ERS provides funding and technical support for several other Federal, State, and special population surveys that collect information on

Just over half of food-insecure households received help from USDA's food assistance programs in November 2001

Program	Households that participated in programs in November 2001 ¹	
	Food-insecure households	Food-insecure-with-hunger households
	Percent	
One or more of the three largest Federal food assistance programs	51.5	51.1
Food stamps	25.1	28.5
Free or reduced-price school lunch	33.4	30.0
Special Supplemental Nutrition Program for Women, Infants, and Children (WIC)	13.4	10.3
None of the three programs	48.5	48.9

¹ Analysis is restricted to households with annual incomes less than 185 percent of the poverty line. Source: Calculated by ERS using data from the December 2001 Current Population Survey Food Security Supplement.



Photo courtesy of Corporation for National and Community Service

food security. Among these are major Federal surveys focusing on health, nutrition, education, child development, and welfare programs. The same food security measure described in this article—based on households' own reports of their food-

related behaviors and conditions—is used consistently across all of these surveys, ensuring comparability and maximizing the potential for combining research results from multiple studies.

A healthy, well-nourished population is a national objective as well as a key resource for achieving other national objectives. Food security does not guarantee health and good nutrition, but it is difficult for families to prepare healthy, nutritious meals without consistent access to enough food. Food security monitoring and research are, therefore, important elements of the Nation's health and development strategies. The work of USDA and its partners in the food security measurement project—collecting food security data, assessing and refining food security measurement methods, monitoring food security, and investigating the causes and consequences of food security and food insecurity—informs the economic policies and the safety-net programs that promote the food security of all Americans. **W**

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F E A T U R E

MANAGING MANURE

VOLUME 1 • ISSUE 1


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AMBER WAVES

New Clean Water Act Regulations Create Imperative for Livestock Producers

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Nutrients from livestock and poultry manure are key sources of water pollution. Since regulations for livestock and poultry operations under the 1972 Clean Water Act were first developed, operations in general have become more concentrated and specialized. Ever-growing numbers of livestock and poultry per farm and per acre have increased the risk of water pollution, with manure being disposed of in ways not adequately addressed in the original regula-

tions. In 2001, the Environmental Protection Agency (EPA) proposed new regulations that would compel operations with the largest number of animals to manage their manure according to a nutrient management plan. These regulations were signed by the Administrator of EPA on December 15, 2002, and are expected to be implemented in 2003.

The new regulations were called for in the Unified National Strategy for Animal

Feeding Operations, developed jointly in 1999 by USDA's Natural Resources Conservation Service and EPA. The Strategy outlined USDA and EPA actions to minimize water quality and public health impacts from improperly managed animal manure. Much of the Strategy's focus was on the largest animal feeding operations. For smaller operations, a nutrient management plan would be recommended but not required.



State-of-the-art lagoon waste management system, located in Georgia, for a 900-head hog farm. This facility is completely automated and temperature controlled.

Photo by Jeff Vanuga, NRCS, USDA



Water sample taken from the lagoon in a filtering system in Taylor County, Iowa.

Photo by Tim McCabe, NRCS, USDA

Hog Production Exemplifies Industry Changes

Hog production provides a good example of how economic factors can change animal industry structure and practices, and how these changes might affect the environment. During the 1990s, the average number of hogs per operation increased and many new operations broke away from the traditional crop-livestock farm setting. Growth in the number of hogs per farm was driven by technological and organizational innovations that enabled producers to realize economies of size and lower production costs, but also resulted in much more manure to handle, store, and dispose of properly. The increase in intensity and size of operations resembles what happened to poultry farming in the 1950s and 1960s, and what is currently happening to lesser degrees in dairy and feedlot beef production.

Technological Innovations. In the past 20 years, improved breeding and genetics have resulted in pigs that produce leaner meat more appealing to consumers. Improvements in health, reproductive management, housing, and environmental management increased the number of pigs that reach market weight per breeding sow. Pigs born and weaned per litter increased by 8 and 12 percent between 1992 and 1998. Meanwhile, improvements in feed and nutrition reduced the amount of feed required to achieve a particular gain in weight. The feed efficiency of U.S. hog production improved by more than 20 percent

between 1992 and 1998. The increase in profits obtainable with these new technologies and practices has been the driving force behind their adoption. Consequently, average production costs per hundred-weight of gain were about 16 percent lower in 1998 than in 1992.

Organizational Innovations. New technologies and practices promise greater profits, but their implementation can require significant capital. Through contract arrangements and other organizational innovations, growers are better able to access the capital needed for such innovative technologies and to garner economies of size. As a result, marketing and production contracts now pervade the hog industry. Marketing contracts between large producers and processors typically specify that the producer will deliver a certain quantity of hogs at a certain time. Production contracts are between a contractor, typically a large producer or processor, and a grower. Under the terms of production contracts, the contractor provides management services, feeder pigs, veterinary services, and other inputs. The grower provides land, facilities, and labor.

Larger, More Specialized Operations. Until the late 1980s, hogs were typically raised from farrow (birth) to finish (ready for slaughter) on a crop-livestock farm, where feed was grown largely on the farm. All phases of production were contained on one operation. Today, hogs are increasingly produced on large, specialized operations that buy most feed and use the latest technologies to reduce production risk.

Between 1994 and 2001, the number of U.S. hog farms dropped by 60 percent, from over 200,000 to just above 80,000. Total U.S. hog inventories, though, remained at about 60 million head. Consequently, the share of the hog/pig inventory on operations with 2,000 head or more increased from 37 percent in 1994 to nearly 75 percent in 2001. The largest oper-

ations, with 5,000 head or more, housed half of hog inventories in 2001.

Increasing hog numbers were not matched with increasing acreage. The largest operations average 16.7 hogs per acre, compared with only 1.4 hogs per acre for small operations. The hog industry is trying to come to grips with too many animals on too few acres. Spreading manure on nearby land is the primary disposal method. If manure is spread at an appropriate rate, crops will assimilate most of manure's nutrients. When manure nutrients exceed crop uptake, nutrients and organic matter build up in the soil and can pollute water resources through runoff or leaching.

Accompanying this rapid growth in hogs per farm has been increasing specialization. The farrow-to-finish operations with fewer than 1,000 hogs/pigs that were common in the 1970s and 1980s fell from 78 percent of all hog farms in 1978 to 35 percent in 1995. The large-scale, commercial operations that emerged in the 1990s often specialize in one phase of production (see sidebar).

Regional Concentration. As hog operations grew in size and became more specialized, they also clustered regionally to facilitate the transportation of animals among facilities in the supply chain, often linked by contracts. Hog production has

historically been concentrated in Corn Belt States where an abundant supply of corn provided a relatively cheap source of feed. But now new regional concentrations have emerged in the Southeast and the Southwest. These producers have been able to compete with traditional Corn Belt producers by implementing new technologies more quickly and fully from scratch rather than by upgrading existing production facilities and management skills, as would occur in the Corn Belt. Some States, such as North Carolina, offered financial incentives to attract new industries. Hog inventories there more than tripled between 1989 and 1997, compared with a 5-percent increase nationwide.

Manure Rich. The average amount of cropland operated by U.S. hog producers dropped by 20 percent from 1992 to 1998 as producers increasingly favored purchased feed over farm-grown crops. As a result, large, specialized operations—with an average of 16.7 hogs per acre of cropland on the farm versus 1.4 hogs for small operations—are mostly unable to reasonably dispose of manure nearby. The crops receiving manure on large farms cannot generally assimilate the manure's nutrients. An estimated 51 percent of nitrogen and 64 percent of phosphorus—both potentially harmful to water quality—in manure from confined hog operations nationwide



Photo courtesy of USDA

Specialized Hog Operations

Farrow-to-weanling operations raise pigs from birth to a weanling weight of about 10-20 pounds.

Farrow-to-feeder pig operations raise pigs from birth to weaning, when they are sold or removed under contract at a weight of about 30-80 pounds.

Weanling-to-feeder pig operations obtain weanlings (10-20 pound pigs) from outside the operation and then feed them to a feeder pig weight of about 30-80 pounds.

Feeder pig-to-finish operations obtain feeder pigs from outside the operation and then finish them to a slaughter weight of 200-250 pounds.



Liquid manure from a hog feeding operation in northeast Iowa is applied to cropland.

Photo by Tim McCabe, NRCS, USDA

Photo by Jeff Vanuga, NRCS, USDA



Large hog operations have little land per animal

Number of hogs per operation	Average hogs/acre
Fewer than 750	1.41
750-2,500	5.00
More than 2,500	16.67

Source: 1998 Hog Agricultural and Resource Management Survey, USDA.

exceeds onsite crop needs. And most of that excess occurs on large farms. The largest 2 percent of U.S. hog farms control only 2 percent of land on hog farms but produce 53 percent of the total excess nitrogen in hog manure and half the total excess phosphorus.

The Bigger Picture: Not Just Hogs

The manure problem goes beyond hogs to cattle, dairy, and poultry as well. The number of animals per acre of available cropland and pastureland controlled by confined operations increased 60 percent between 1982 and 1997. Many livestock and poultry operations do not use all of the land they do have for spreading manure. Manure is heavy and costly to transport, so producers often apply more manure than crops can use on fields nearest the production facility. With larger livestock and poultry farms, increasing numbers of animals per acre, and regional clustering, water

quality problems have arisen in some areas.

The U.S. Geological Survey identifies confined animal feeding operations as a significant factor behind poor water quality in several areas of the country. Manure lagoon spills or leaks have occurred recently in a dozen

States. In 1995, a lagoon break on a large hog operation in Jacksonville, NC, spilled more than 20 million gallons of waste into the New River, causing a massive fish kill. Maryland and North Carolina officials cited nitrogen and phosphorus from poultry and hog manure as a contributor to recent outbreaks of the toxic dinoflagellate *pfisteria*.

Nutrient Management Plans Proposed

Under the 1972 Clean Water Act, animal feeding operations over a certain size (2,500 hogs, 1,000 beef cattle, 700 dairy cows, 100,000 chickens) are designated concentrated animal feeding operations (CAFOs) subject to the National Pollutant Discharge Elimination System (NPDES) permit program. The permits specify a level of treatment for each pollutant at its source.

However, a major shortcoming of this program with regard to manure nutrients was its focus solely on the animal confinement area, presuming that manure nutrients removed from that area would not be excessively applied to crops or land and potentially cause water quality problems elsewhere.

EPA and USDA addressed this shortcoming in the Unified National Strategy for Animal Feeding Operations, which has played a large part in EPA regulatory updating. The Strategy is based on a national performance expectation that each animal feeding operation should develop and implement a technically sound, economically feasible, and site-specific comprehensive nutrient management plan for properly managing the animal manures produced at the facility, including onfarm application and off-farm disposal. The Strategy states that land application is the most desirable method of utilizing manure because of the value of the nutrients and organic matter. Each operation's nutrient management plan would be tailored to address its individual needs and practices, including the nutrient assimilative capacity of the crops being grown on available land. The plan would be based on either nitrogen or phosphorus, depending on local conditions. Under EPA's new regulations, CAFOs

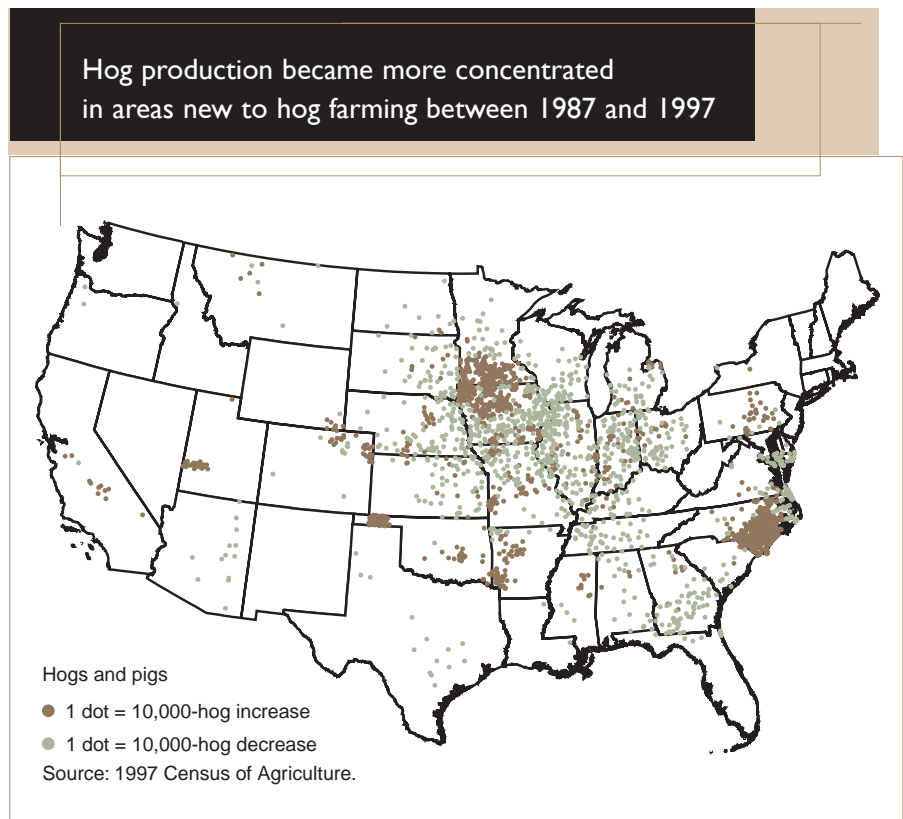
Manure nutrients exceed assimilative capacity for 2-5 percent of U.S. counties

Percentage of county assimilative capacity	Nitrogen availability		Phosphorus availability	
	Counties	Percent	Counties	Percent
Less than 25	2,755	90	2,351	77
25 - 50	140	5	382	12
50 - 100	87	3	185	6
Greater than 100	68	2	152	5
Total	3,070	100	3,070	100

applying manure to land must develop and implement a nutrient management plan. Other animal feeding operations would be encouraged to develop and implement plans voluntarily.

Developing and implementing nutrient management plans that limit manure nutrient application to crop needs would entail widely varying costs among farms. Manure application limits would likely cause large animal facilities to seek and use more land for spreading manure or to find alternative use technologies. These operations would have to absorb added costs from developing a nutrient management plan, testing manure for nutrients, hauling manure longer distances, and applying manure to more land. For example, the average large hog operation (>2,500 head) in the Mid-Atlantic States would have to increase the amount of land used for spreading from 69 acres to 398 acres in order to meet a nitrogen-based application standard. The additional cost of meeting the standard could range from \$1,450 to \$32,500 per operator per year, depending on the willingness of landowners not producing livestock to accept manure. For operations with adequate land onsite, the additional cost of compliance is not likely to be prohibitive. Costs might increase greatly if land off the farm is needed for manure application.

Regional differences in land use would greatly affect manure management costs if land off the farm has to be found for spreading manure. For example, ERS analysis suggests that the average cost of complying with a nitrogen-based plan for large hog operations in the Mid-Atlantic region could be nine times higher per animal than in the Corn Belt. Large hog farms in the Corn Belt tend to have more land available for spreading, so that only 44 percent would have to spread off the farm, compared with 83 percent in the Mid-Atlantic. In addition, crop production is more prevalent in the Corn



Belt: about 70 percent of land in Corn Belt counties with confined hog facilities is suitable for spreading manure, versus 20 percent of land in the Mid-Atlantic. This means that hog operations in the Mid-Atlantic are more likely to have to transport manure longer distances to reach an adequate land base.

Finding enough land for spreading manure may be virtually impossible in some areas where animal concentrations are highest. In 68 U.S. counties (primarily in North Carolina, northern Georgia, Alabama, central Mississippi, western Arkansas, and California), manure nitrogen from all confined livestock and poultry operations is estimated to exceed the total nitrogen needs of the county's crop and pasture land. Many more counties (152) have county-level excesses of phosphorus, mainly in western Virginia, Delaware and eastern Maryland, eastern

North Carolina, northern Georgia and Alabama, central Mississippi, western Arkansas, and southern California. Competition among animal operations for available offsite land in these areas and others with relatively high concentrations of animals would increase the cost of manure disposal.

Who Pays, and How To Pay Less

Who should be responsible for the manure management when production contracts are used to coordinate phases of production? For example, large hog producers often establish production contracts with smaller growers to feed the hogs to market weight. The producer provides the pigs, management services, feed, and other inputs, while the grower provides the labor and facilities. The producer owns the animals, but the manure is produced at the grower's facility. Under EPA's new regula-

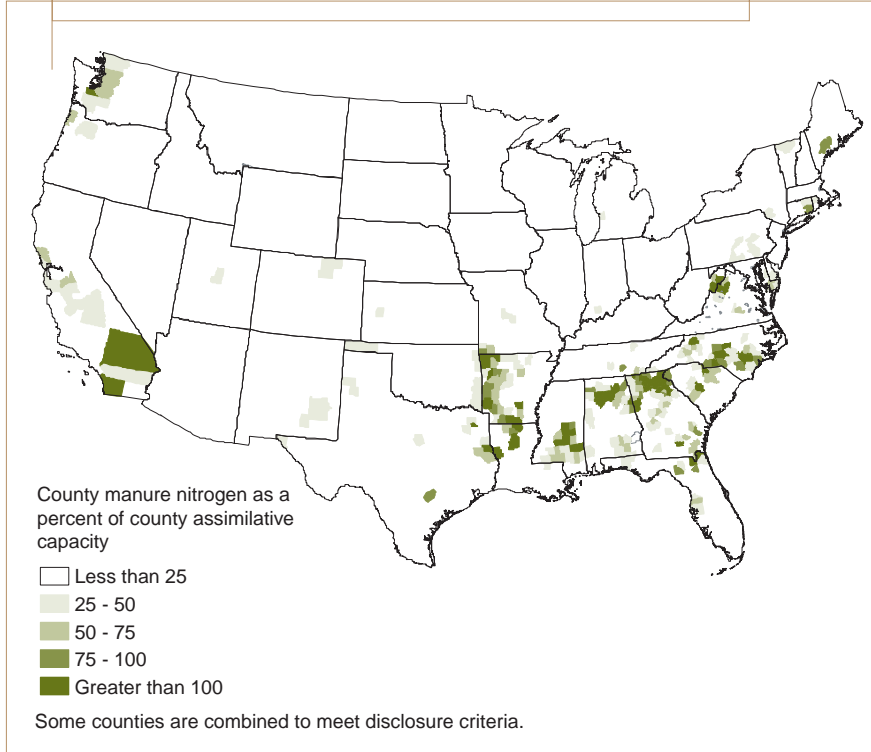
tions, the grower would be solely responsible for managing manure. However, some groups feel that charging both the contracting producer and the grower with manure management would better facilitate the changes needed to meet new requirements.

Land application alone may be insufficient to economically handle all generated nutrients in some areas, without changing the structure or scale of the local animal industry. Some emerging technologies could help with the disposal. Poultry litter is being turned into commercial fertilizer products in Virginia and Maryland. Manure nutrients in the form of commercial fertilizer can be more economically shipped than "natural" manure and are in higher demand (on golf courses, for example).

Livestock and poultry feed can be managed to reduce the nutrient content of manure, making it easier to follow a nutrient management plan. For example, some poultry and hog producers are using feed treated with the enzyme phytase to reduce the phosphorus content of manure by up to 45 percent.

Another emerging technology for using manure is energy production. A power plant in Minnesota currently burns poultry litter. However, the cost of producing energy from litter is estimated at three to four times the cost of conventional power generation. Under different economic conditions, manure use in power generation could be feasible where a high concentration of livestock or poultry provides a ready source of fuel.

68 counties have manure nitrogen exceeding county assimilative capacity, 1997



A fertilizer, energy, or industrial waste treatment facility could encourage even greater regional concentration of animal operations by simplifying the manure disposal problem. Depending on the cost of treatment, animal operations may find it cheaper to ship manure to such a facility than to spread it on land. Increased regional concentration of animal production could worsen odor and disturb neighboring communities, but water

quality problems would be mitigated as long as spills and storage failures were avoided.

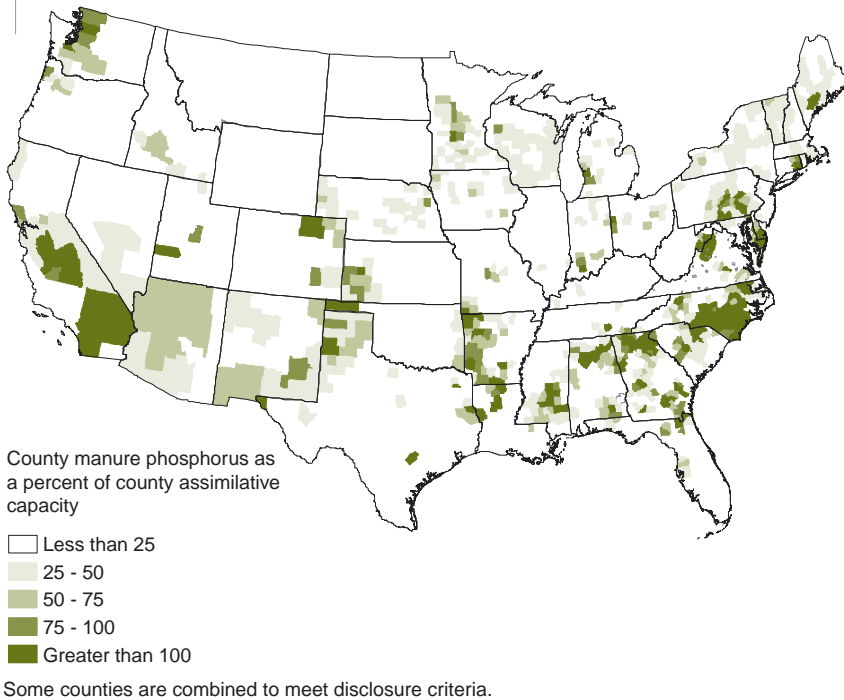
No Cheap Way Out

Economic factors have reshaped the animal sector, largely without influence from environmental regulation. Large, specialized facilities have emerged, linked by contractual arrangements to reap economies of size. These changes have also

USDA Assistance Available

USDA's Environmental Quality Incentive Program (EQIP), administered by the Natural Resources Conservation Service, can help CAFOs meet the manure application standards proposed by EPA. EQIP provides technical and financial assistance in developing nutrient management plans, cost-share payments for waste management structures, and incentive payments to assist crop and livestock producers with environmental and conservation improvements on the farm. The program even provides financial help to transport manure to off-farm locations. For more information, see www.nrcs.usda.gov/programs/eqip/

152 counties have manure phosphorus exceeding county assimilative capacity, 1997



escalated a manure management problem that earlier water quality regulations addressed inadequately.

Land application of manure nutrients is the most widely practiced method of disposal. USDA is advocating manure management practices that limit application rates to more closely match what the land an planted crops can assimilate. Implementing nutrient management plans will likely raise the costs of manure management, especially for large facilities with little land.

Such operations have four major response options if required to follow a nutrient management plan. One response is to find more land in the general area for spreading manure. Another option is to move operations to areas with more land

and lower regional animal concentrations. A third response is to find alternative feed and manure management practices that reduce manure nutrient content. Finally, operations can either sell or give manure to industrial processes if firms can be attracted to the area. Whether the additional costs of managing manure will significantly alter the current concentrated and integrated structure of livestock and poultry production remains to be seen. W

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Proper waste management on the farm for environmental protection.

Photo by Bob Nichols, NRCS, USDA

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F E A T U R E

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AMBER WAVES



USDA Photo, Ken Hammond

FARM PAYMENTS

Decoupled Payments Increase Households' Well-Being, Not Production

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Nearly all industrial countries provide subsidies to their farmers, often for the purpose of maintaining income from farming or reducing income variability. Traditionally, subsidies in the U.S. and elsewhere have linked payments to current prices and production so as to compensate producers more when market prices for key commodities are low. Such subsidies distort, or alter, the signals sent by market prices alone because, depending on the eligibility rules of specific programs, producers can garner more payments or reduce their revenue risk simply by producing more of the supported commodity.

In the 1996 Federal Agriculture Improvement and Reform (FAIR) Act, the U.S. revamped its farm support and introduced a farm payment that breaks the links between the amounts paid to farmers, their level of production, and market prices. The new support mechanism, called a Production Flexibility Contract (PFC), was a lump-sum cash payment to farm operators based on their historical participation in commodity support programs (see box on the PFC program, p. 42). PFCs have been called decoupled payments because of their implementation rules. They were fixed payments announced in advance for the duration of the FAIR Act (1996-2002). No decision by the farmer nor change in market prices could have altered the size of the lump-sum payment. PFCs transferred nearly \$36 billion to eligible producers over the 1996-2002

period, with an average annual payment per recipient household of about \$9,000.

When the FAIR Act was adopted, PFCs were expected to be the primary subsidy program for U.S. producers. However, the decline in market prices during the FAIR Act led to the increased use of marketing loan benefits that compensate producers for low prices. Moreover, low world commodity prices resulted in additional, ad hoc emergency government support to agriculture. These payments reduced the role of PFC benefits relative to total commodity program spending; PFCs ultimately accounted for only about one-third of total payments to farmers over the life of the FAIR Act.

Decoupled payments are being continued in the 2002 Farm Security and Rural Investment (FSRI) Act. Now called "direct payments," they are expected to amount to about \$5 billion annually and will expand beyond the traditional program crops (feed grains, wheat, rice, and cotton) to include historical production of oilseeds and peanuts. Other payments to farmers in the FSRI Act will be from

environmental programs and programs that are triggered by low market prices, including countercyclical payments and the marketing loan program.

The Debate Over Decoupled Payments

Decoupled payments have generated considerable international debate regarding the extent to which they distort production. Global trade rules currently do not place any limits on decoupled income support but further constraints on domestic support, which includes decoupled payments, are being discussed in the Doha Development Agenda, the new multilateral round of trade negotiations at the World Trade Organization (WTO).

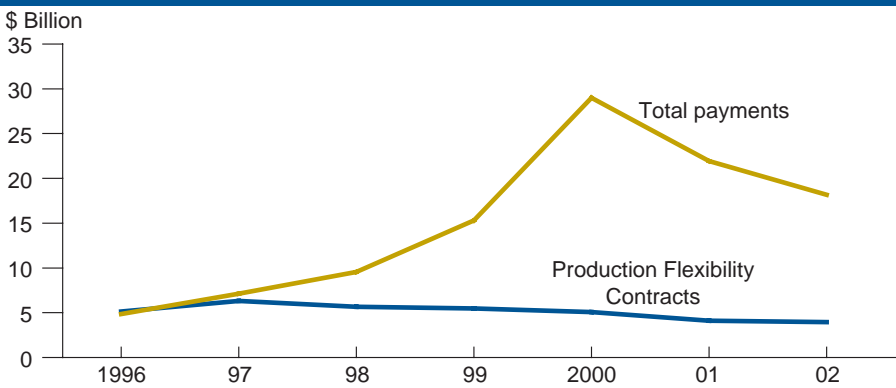
Economists consider lump-sum subsidies such as PFCs an efficient way to transfer income to targeted recipients. Their main advantage is that they do not distort market price signals such that farmers are encouraged to overproduce, which leads to lower market prices, higher farm program costs, and an inefficient allocation of national resources, often with spillover effects on world markets.

Although PFC payments do not distort price incentives for producers, they can still alter production decisions because payments increase farm operators' income, and the expectation of fixed, future payments increases their wealth. Increased income and wealth from PFCs, as from any other source of income, have lasting effects on households' decisions about how much to spend, save, and work. These household decisions can in turn change the supply of capital and labor in agriculture, and lead to changes in aggregate agricultural production. In order to assess the possible impacts that PFC payments have had on U.S. production, we need to know more about recipient households' spending, saving, and working decisions, and how these may change with increased income and wealth.

Photo by Ken Hammond, USDA



PFC payments accounted for one-third of total payments to farmers during the FAIR Act



Source: Farm Service Agency, USDA.

Households Receiving PFCs Spend More Than Other Farm Households

Consumption is often overlooked when assessing decoupled payments, but a household's allocation of its payment to consumption reduces the potential for the subsidy to go to its farm operation and perhaps distort production. Furthermore, a change in consumption—such as food/household supplies, rent, mortgage, and insurance—provides a measure of the subsidy's effect on farm household well-being.

For farm households participating in the PFC program, spending on household consumption averaged \$26,884 per year in 2001, compared with their average household income of \$59,620. (Taxes plus savings account for the remainder, but our data do not allow us to separate the two.) The level of current consumption varies across farm households both by income level (consumption shares of income decline as income

increases) and by the life-cycle model typical of other households. For example, older and younger recipient households consume more of their income, while middle-aged households (in their peak earning years) consume a smaller share.

Across most of the income distribution, farm households that received PFCs in 2001 consumed more than farm households with similar incomes not participating in the program. Among the lowest income farm households, recipients' median consumption expenditures (regionally adjusted to reflect cost-of-living differences) exceeded nonrecipients' by about \$2,500. Differences tended to be greatest in the middle of the income distribution, and there was no difference in spending at the highest income quintile, perhaps because the payments account for only a small share of their household income.

Expenditure patterns suggest that PFC payments allow recipients to consume more out of income and may allow them to draw down savings that they typically carry as a precaution against income shortfalls. While some expenditures can be curtailed, others must occur to maintain reasonable living standards. The spending gaps between PFC participants and nonparticipants suggest that the payments may help

sustain consumption levels during temporary shortfalls in income.

PFC Recipients Are Able To Increase Investments Across the Board

One concern about decoupled payments is that they may enable increased farm investment and lead to higher production levels. Data on the share of PFCs that is saved are not available. However, we do have data on PFC recipients' assets, which show how they allocate their savings among different types of investments.

Survey data from 1999 on PFC recipients' assets—which averaged \$768,710 per household—show that they manage diversified investment portfolios. An average of 70 percent is composed of farm assets and the remaining 30 percent is composed of off-farm assets. Farm assets include land, buildings, machinery, and inventories. Nonfarm assets include the operator's dwelling, stocks, bonds, retirement accounts, liquid savings, and other assets. Investment portfolios that are limited to the farm operation are far less prevalent today than in the past.

PFC recipients' diversified portfolios indicate that they exercise considerable choice in their investment decisions and likely seek to equalize expected asset returns, adjusted for risk and taxes. Theoretically, decoupled payments do not change market returns from farm production, and therefore they do not create incentives that encourage onfarm relative to off-farm investments. However, much more needs to be learned about recipient households' savings, and about how they invest an additional dollar of income saved.

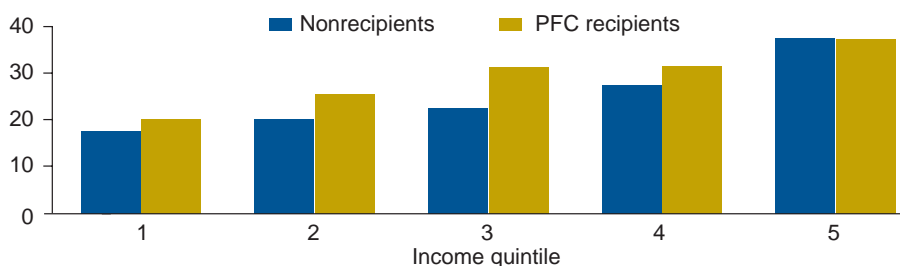
PFC payments may indeed lead to additional onfarm investment if they give some farmers the necessary liquidity or collateral to make investments that they could not make without the program. Farmers who cannot purchase inputs (a liquidity constraint), who cannot borrow money at a

Photo by Ken Hammond, USDA



PFC payment recipients generally spend more on their households

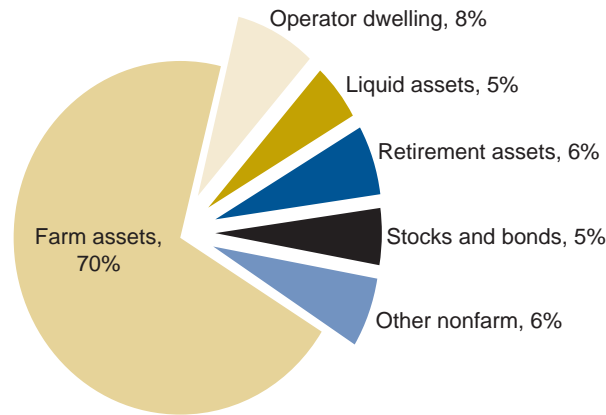
Spending per farm household, 2001 (\$1,000)



Note: Quintiles are constructed by dividing total income (farm and nonfarm) of all U.S. farm households into five equal-sized groups, with quintile 1 containing the lowest income households and quintile 5 containing the highest income households.

Source: Agricultural Resource Management Survey, 2001, USDA.

Farm households with PFCs allocate savings across an investment portfolio



Average assets \$768,710, 1999
Source: Agricultural Resource Management Survey, 1999, USDA.

competitive rate (a credit constraint), or who do not have enough land or equipment (a capital constraint) are likely to increase their farm investments if their incomes and land values are increased through PFC payments. For households operating under such constraints, increasing their incomes and land asset values is likely to increase their farm investment.

Categorizing farms according to high, medium, and low costs of production provides a rough estimate of farms with a high, medium, or low likelihood of facing such constraints because lenders factor costs

of production into their lending decisions. Survey data on PFC recipients' costs of production show that dollars invested per acre do not differ based on their cost structure, suggesting that at least in the aggregate, these constraints have not likely determined recipients' farm investment.

It is widely believed that the additional income and wealth of PFC recipients increases the level of risk they assume and the acres they plant. This presumed distortion rests on the belief that farmers are risk averse to begin with. Unfortunately, neither producers' exact risk thresholds nor the empirical relationship between wealth and risk tolerance are well understood. Furthermore, surveys show that PFC recipients use many market mechanisms, such as hedges and forward contracts, to reduce their risk exposure in their farm operation. Households with

Implementation of the PFC Program

Photo by Lynn Betts, NRCS, USDA



Implementation of the U.S. Production Flexibility Contracts program was relatively straightforward. Operators of base acres were given predetermined lump-sum payments. Base acres were fields previously enrolled in supply management programs for wheat, rice, corn, barley, oats, sorghum, and cotton. Payment amounts varied according to field-specific historical crop production and per acre yields. These implementation rules of the PFC program met the WTO's criteria for decoupled income support, in that payments were tax financed, eligibility was defined by a fixed base period, and payment levels were not dependent on current prices, factor use, or production.

The contracts allowed almost full planting flexibility, but some restrictions were placed on land use. Most important, the land could not be put to a nonagricultural use, such as residential or industrial. However, the land could be fallowed, converted from cropland to pasture or forest, or planted to any crop (except

diversified investment portfolios are also likely to adjust to changes in risk tolerance through reallocations of their whole portfolio. These strategies being used by PFC recipients to manage risk reduce the extent to which changes in risk attitude due to payments, if any, will be evidenced in their production levels or demand for inputs.

Payments Influence Labor and Leisure Choices

Only about a third of all households receiving PFCs devote all of their work hours to their farms, while over 40 percent devote at least four-fifths of their work hours to farm-related labor. For farm households receiving PFC payments, 9 percent work less than a fifth of their work hours on the farm.

Farm household members work less on the farm each year, due to both the "pull" of nonfarm work and the "push" from labor-

saving technology. Decoupled payments reinforce this trend because increased income and wealth typically allow households to increase their leisure and reduce their work hours. Consistent with this theory, preliminary analysis indicates that PFC payments have led to a slight reduction in households' onfarm work hours, between 1 and 1.5 hours per \$1,000 in payments. PFC recipients' labor and leisure choices have not been discussed much in farm program debates; however, they contribute to understanding whether PFC payments may affect production. If the downturn in labor comes from agricultural activities, it could decrease the household's agricultural production (unless labor-saving investments were substituted). For now, the implications of such lifestyle decisions have not been debated by trade partners, especially since the most plausible outcome (less

production) would tend to support world commodity prices.

Decoupled Payments Increase Land Values

The main impact of decoupled payments is likely on land values. In well-functioning markets, asset prices reflect expectations about the future returns from their ownership. The PFC program covered a fixed number of base cropland acres, established in 1996 when farmers enrolled in the program, and benefits did not require current production. The direct link between base acres and the known program benefits allowed the future stream of payments to be efficiently capitalized into land values.

Land values set by sales and rental markets can be examined to see whether they track commodity price trends. If these

for fruits and vegetables unless it was used that way in the past). Participants also had to comply with conservation and wetland provisions. Payments were made directly to operators of program acres, including tenants, not to landowners. In the case of share-crop tenancy, payments were split between tenants and landowners on the basis of the tenancy agreement. Program eligibility was transferable with the sale or lease of program acres.

Nearly all eligible producers signed up their qualified acreage, with over 211 million acres (99 percent of eligible acreage) enrolled in the program. Eligible acreage was about half of U.S. total cropped acres (434 million) at the time. Eligible households numbered about one-third of U.S. farm households.

Decoupled payments will be continued under the FSRI Act through 2007. Two key changes in the program are its expansion to include historical production of oilseeds and peanuts, and

base updating. The FSRI allows farmers to update their base acres from the 1981-85 planting history used in the FAIR Act to a more recent (1998-2001) production history or to keep their existing allotments. Yields associated with direct payments are kept unchanged, except for newly enrolled oilseeds and peanuts.

It has been argued that base updating alters producers' expectations of future changes in program eligibility criteria, which may influence current planting decisions. In theory, the impacts of such expectations will be partly evidenced in current land asset values, but some of the benefits may be expended on pursuit of future payment eligibility through current production choices. The large share of rented base acres diminishes the incentives for operators to act on expectations of future program benefits, which mainly benefit the landlord.

values diverge from prices, it suggests that land markets have additionally capitalized the present and expected future value of government payments. Data show that commodity prices have fallen since 1996 due to a number of factors, while land values have trended upward, consistent with land capitalization of payments. Land rent data, although more fragmented, follow the same trend as land values.

In addition to PFCs, other government payments to farmers that were correlated with current production and commodity prices, as well as development demand for cropland, likely contributed to the increase in land values since 1996. A simulation analysis of the PFC program, which can isolate the role of decoupled payments, showed that the decoupled payments by themselves account for an 8-percent increase in aggregate land asset values.

The Market for Payments: Land Owners Reap Most Benefits

PFC payments are paid to farm operators rather than farmland owners, with payment benefits split between the operator and owners in the case of crop-share rental arrangements. Most of the acreage enrolled in the PFC program is rented. In

1996, the last year for which base acreage tenure data are available, 59 percent of program acres were rented, significantly higher than rental rates for all farmland (42 percent), which includes base acres as well as other cropland, pasture, wetlands, woodlands, and range land.

Land markets for program base acres bring together current owners and potential operators and influence how PFC payments are distributed. If farm operators want to bid on base acreage for rent or purchase, they factor in both the returns from farming and the returns from controlling the right to a PFC payment. In turn, land owners operate, rent out, or fallow land so as to best maximize earnings or complement their lifestyles.

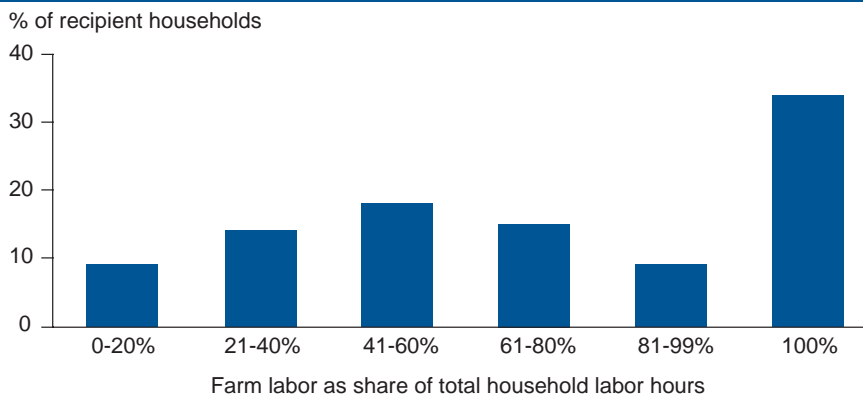
Not all operators can therefore be considered as true beneficiaries of the program, since competitive cropland rental markets work to pass through payments from PFC recipients who are tenants to the owners of base acres. Land rental arrangements can extend over several years or be as short as a single crop year, making rents more likely to reflect short-term expectations about commodity prices and government payments than the market price of land.

The ultimate beneficiaries of PFCs, then, are owners of program base acres. While many owners operate their own land, other owners operate only part of their total acreage (renting out the rest), and still other landowners do not operate their farms at all but rent their acreage to others to farm. Our knowledge about ownership patterns of program acres is incomplete. However, data on ownership of aggregate U.S. cropland show that only 35 percent of rented acres are rented from one active farmer to another, while 65 percent are rented from nonfarming landlords. While these data suggest that a large share of benefits ultimately leave the farm sector, many of these nonfarming landlords have a relationship to farming in that they are retired farmers, widowed spouses, or heirs. Nonfamily corporations or other types of business organization own less than 10 percent of rented farmland.

Some contend that land capitalization reduces the competitiveness of U.S. producers by inflating the cost of land for those who must rent as well as those seeking entry. However, operators' receipt of the payments compensates for higher land costs. Renters and new buyers who receive PFCs are largely no worse off than if the programs didn't exist at all, as long as their subsidy expectations continue to be met.

The often-noted concentration of PFC payments among large farms, then, should be examined more closely to see how tenure patterns may affect the distribution of net benefits. Farm households with sales above \$250,000 participating in the program account for 20 percent of recipient farms but received 56 percent of total PFC payments in 2001, suggesting that decoupled payments underwrite the largest, more efficient, operators. However, commercial farms rent 61 percent of the acreage that they operate. Consequently, up to three-fifths of their payment benefits may have ultimately passed through to

PFC recipient households vary in the total hours they work on the farm



Source: Agricultural Resource Management Survey, 2001, USDA.

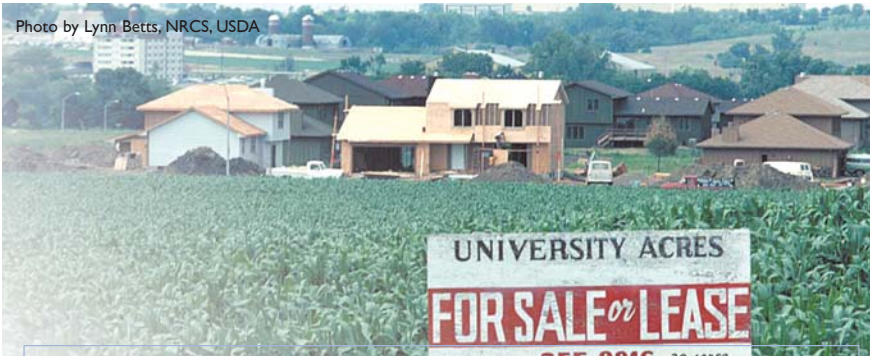
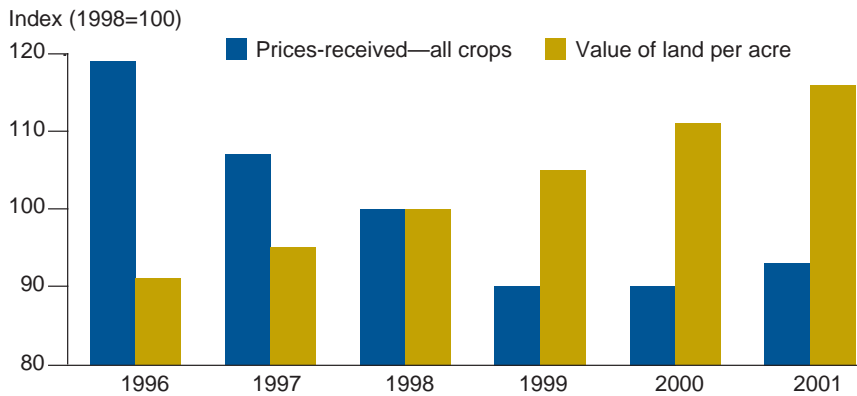


Photo by Lynn Betts, NRCS, USDA

Crop prices trended down and flattened over 1996-2001, but the cost of buying cropland went up over the same period



Source: USDA, National Agricultural Statistics Service, USDA.

landowners in the form of higher rent, largely counteracting the effects of payment concentration among large farms.

Intermediate farms also rent a large, but lesser, share of their acreage—52 percent. These farms, with annual sales of under \$250,000 and a full-time operator, account for 48 percent of participant farms and 36 percent of all PFC payments. They likely retain more of the payments than do larger farms. Finally, farms with less than \$250,000 in sales but with a part-time operator account for 32 percent of participating farms but receive only 8 percent of PFC payments. They rent 46 percent of the acres they operate, and so also likely pass

through to landowners some of their program benefits.

Decoupled payments clearly increase the well-being of the operators who receive them, but only when they are owners of base acres. Otherwise, land markets allow a pass-through of payments from operators to landowners, via modified rental arrangements. Despite uncertainty over future policy, land values already reflect the market's expectations about future program benefits.

Conclusion

The experience of the U.S. with decoupled payments has much to offer to the ongoing Doha round negotiations of the WTO. In March 2003, countries will agree

on new and perhaps different objectives (known as modalities) for further agricultural policy reform. While still too early to predict which modalities will emerge, the impacts of domestic farm support on international commodity markets will remain a key point of contention among the parties. (See "Is Japan Ready for Competition in Its Ag Markets?" on p. 4.) U.S. decoupled payments seem to demonstrate how to support farmers with minimal distortion of production. Because the payments are lump-sum cash payments to households, they do not directly influence recipients' resource allocation or production levels. Rather, their impacts are evidenced in households' consumption, savings and investment, and labor/leisure choices as their income and wealth increase. For U.S. PFC recipients, these choices today include a range of farm and nonfarm labor and investment prospects. The primary consequence of lump-sum payments has been an improvement in the overall well-being of recipient households that own base acres, where well-being is defined broadly to encompass income, wealth, and consumption, as well as how people choose to spend their time. \mathcal{W}

For more information...

U.S. Department of Agriculture, Economic Research Service. *Decoupled Payments: Household Income Transfers in Contemporary U.S. Agriculture*, AER-822, February 2003. Mary E. Burfisher and Jeffrey Hopkins, editors, with contributions by Mary Ahearn, Robert Collender, Joe Dewbre, Xinshen Diao (International Food Policy Research Institute), John Dyck, Anne Effland, David Harrington, Robert Hoppe, Penelope Korb, Shiva Makki, Ashok Mishra, Mitchell Morehart, Michael Roberts, Terry Roe (University of Minnesota), Agapi Somwaru, Monte Vandever, Paul Westcott, and C. Edwin Young.

Updates of *Agricultural Outlook's* statistical tables are just a click away at www.ers.usda.gov/publications/AgOutlook

Farm, Rural, and Natural Resources Indicators

	1990	1995	2000	2001	2002	2003	Annual percent change		
							1990-2000	2001-02	2002-03
Cash receipts (\$ billion)	169.5	188.0	193.7	202.8	193.5f	200.5f	1.3	-4.6	3.6
Crops	80.3	100.8	94.1	96.4	97.6f	101.6f	1.6	1.3	4.0
Livestock	89.2	87.2	99.6	106.4	95.9f	98.9f	1.1	-9.9	3.2
Direct government payments (\$ billion)	9.3	7.3	22.9	20.7	13.1f	17.6f	9.4	-36.6	33.7
Gross cash income (\$ billion)	186.9	205.9	230.4	238.5	222.5f	234.9f	2.1	-6.7	5.6
Net cash income (\$ billion)	52.7	52.5	58.4	59.7	46.3f	51.3f	1.0	-22.5	11.0
Net value added (\$ billion)	80.8	74.8	92.1	90.9	76.5f	90.8f	1.3	-15.9	18.7
Farm equity (\$ billion)	702.6	815.0	1,022.3	1,059.0	1,086.6f	1,099.7f	3.8	2.6	1.2
Farm debt-asset ratio	16.4	15.6	15.3	15.4	15.7f	16.0f	-0.7	1.7	2.2
Farm household income (\$/farm household)	38,237	44,392	61,947	64,117 p	62,515 p	65,095 f	4.9	-2.5	4.1
Farm household income as a percentage of U.S. household income (%)	103.1	98.8	108.6	110.2 p	na	na	0.5	na	na
Nonmetro-Metro poverty gap (%)	3.6	2.2	2.6	3.1	na	na	-3.2	na	na
Cropland harvested (million acres)	310	302	312	308 p	na	na	0.1	na	na
USDA Conservation Program Expenditures (\$ bil.) ¹	3.0	3.5	3.4	3.7	3.5 q	na	1.3	-5.4	na

Food and Fiber Sector Indicators

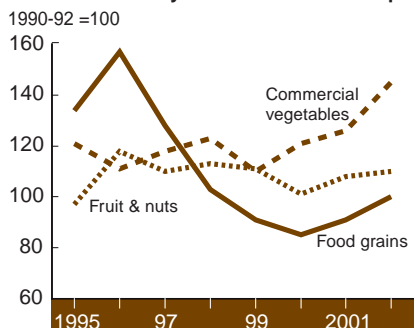
U.S. gross domestic product (\$ billion current) ²	5,803	7,401	9,825	10,082	10,619f	11,206f	5.4	5.3	5.5
Food and fiber share (%)	15.1	14.2	12.6	12.3	na	na	-1.8	na	na
Farm sector share (%)	1.4	1.0	0.8	0.7	na	na	-5.4	na	na
Total agricultural imports (\$ billion) ¹	22.7	29.8	38.9	39.0	41.0	43.0f	5.5	5.1	4.9
Total agricultural exports (\$ billion) ¹	40.3	54.6	50.7	52.7	53.3	57.0f	2.3	1.1	6.9
CPI for food (1982-84=100)	132.4	148.4	167.8	173.1	176.1 p	na	2.4	1.7	na
Personal expenditures on food as a percentage of disposable income (%)	11.6	10.6	10.1	10.2	10.2 p	na	-1.4	0.0	na
Share of total food expenditures for at-home consumption (%)	54.9	53.7	53.1	53.3	52.6 p	na	-0.3	-1.3	na
Farm-to-retail price spread (1982-84=100)	144.5	174.5	210.3	215.4	221.2 p	na	3.8	2.7	na
Total USDA food and nutrition assistance spending (\$ billion) ¹	24.9	37.9	32.6	34.2	37.8	na	2.7	10.6	na

f = Forecast. p = Preliminary. q = 2002 Administration request. na = Not available.

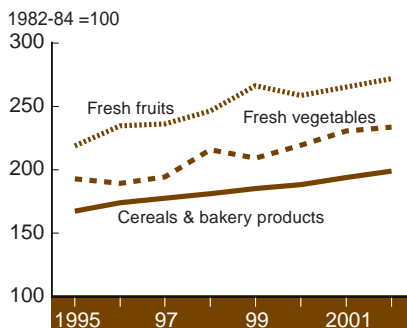
¹ Based on October-September fiscal years ending with year indicated.

² Forecasts for 2002 and 2003 based on August 2002 forecasts from the Office of Management and Budget.

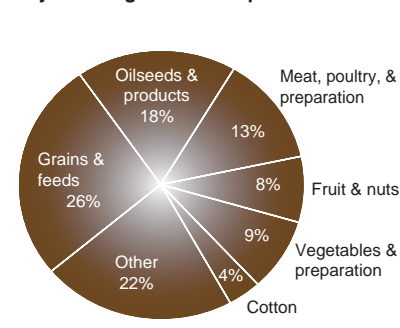
Prices received by farmers: Selected crops



Consumer Price Index: Selected foods



Major U.S. agricultural exports in 2002



For a complete list of data sources and contact persons, see www.ers.usda.gov/AmberWaves

Behind the Data

Estimating Per Capita Domestic Use of Head Lettuce

- Domestic use of head (largely iceberg) lettuce is a proxy measure for actual consumption. Because annual consumption surveys are prohibitively expensive, indirect estimates of consumption are calculated to capture basic national consumption patterns and trends.
- Per capita (per person) domestic use does not directly measure what individuals eat, but is an estimate of the amount of raw commodity supplied to each person, based on the best available data.
- Analysts rely on domestic use data for such tasks as monitoring the Nation's food supply, studying the nutritional well-being of Americans, interpreting consumption trends among commodity groups, and conducting food demand research.
- Head lettuce includes iceberg, butterhead, Boston, and Bibb lettuces.
- Calculating per capita domestic use for fresh-market vegetables such as head lettuce is straightforward. U.S. imports are added to domestic production to arrive at total supply. U.S. exports are subtracted to yield net domestic use. Domestic use is divided by the July 1 estimate of U.S. population (including military) to arrive at the per-person proxy for consumption.
- Head lettuce accounts for 72 percent of all lettuce produced in the United States. In 2001, U.S. consumers had at their disposal 6.9 billion pounds (24.2 pounds per capita) of head lettuce. This included head lettuce sold in retail stores and various food service outlets such as restaurants and school lunches. It also included various bagged fresh-cut products.
- On average, more than 99 percent of all head lettuce consumed in the United States comes from domestic sources.

U.S. fresh-market head lettuce—Supply, use, and price

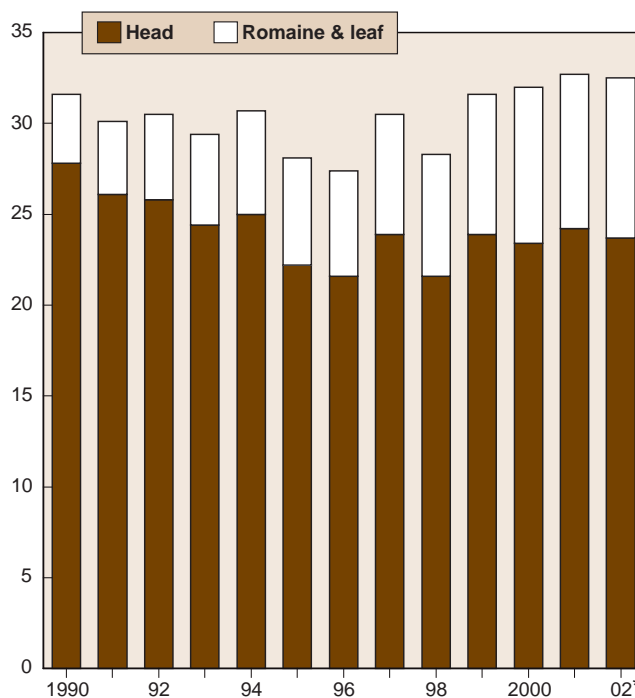
Item	Units	2000	2001	2002f
Harvested area ¹	Acres	184,900	193,600	194,500
Per-acre yield ¹	Cwt	377	375	370
Production ¹	Mil lbs	6,963	7,251	7,200
Imports ²	Mil lbs	32	46	98
Total supply	Mil lbs	6,995	7,297	7,298
Exports ²	Mil lbs	374	379	405
Domestic use	Mil lbs	6,621	6,918	6,893
U.S. population ³	Thou.	282,489	286,362	290,288
Per capita use	Pounds	23.4	24.2	23.7
Season-average price:				
Current dollars ¹	\$/cwt	17.40	17.60	19.00
Constant 1996 dollars ⁴	\$/cwt	16.28	16.08	17.12
Share of supply exported	Percent	5.3	5.2	5.5
Share of use imported	Percent	0.5	0.7	1.4

f=ERS forecast.

¹Source is NASS, USDA. ²Source is Census Bureau, U.S. Department of Commerce. ³July 1 estimate, including military population overseas. Source: Census Bureau, U.S. Department of Commerce. ⁴Deflated by the GDP implicit price deflator, 1996=100.

U.S. lettuce, all: Per capita use

Lbs/person

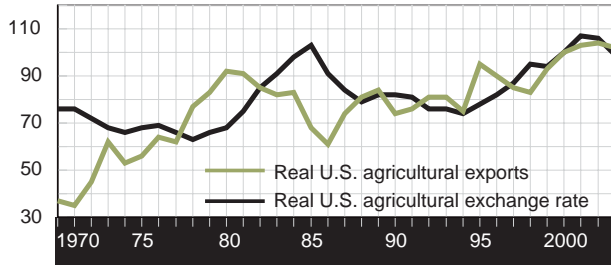


* 2002 is forecast.

Markets and Trade

Real U.S. agricultural exports are sensitive to changes in real dollar exchange rates

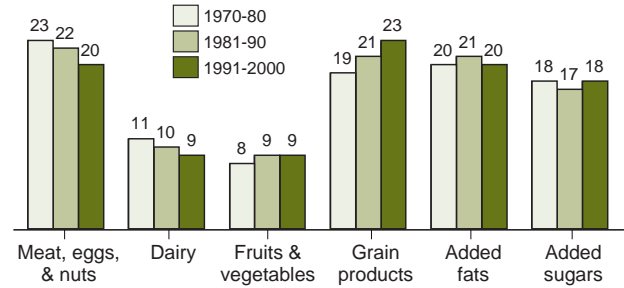
Index values, 2000 = 100



Note: 2002 numbers are estimates based on data through September 2002.
Source: ERS Agricultural Exchange Rate Data Set.

Diet and Health

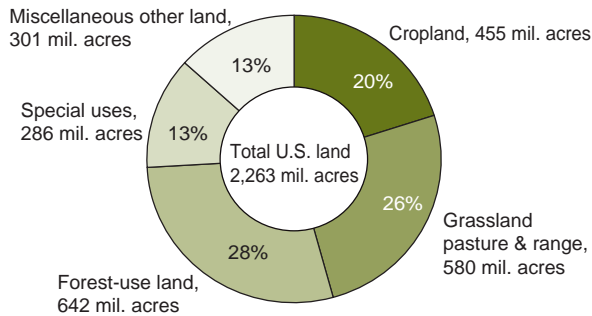
Percent of calories available from the U.S. food supply adjusted for spoilage and waste, by food group



Source: *A Dietary Assessment of the U.S. Food Supply: Comparing Per Capita Food Consumption with Food Guide Pyramid Serving Recommendations*. AER-772. December 1998. ERS, USDA.

Resources and Environment

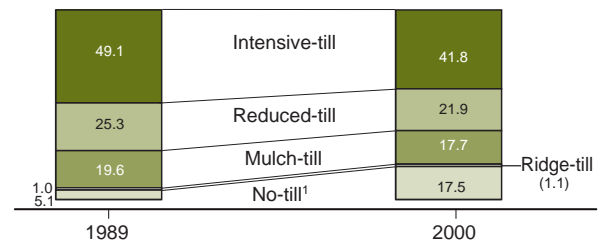
Cropland use accounted for one-fifth of total U.S. land in 1997



Source: *Major Uses of Land in the United States, 1997*. SB-973. ERS, USDA

U.S. cropland tillage has shifted toward soil-conserving no-till during the last decade

Percent of planted cropland



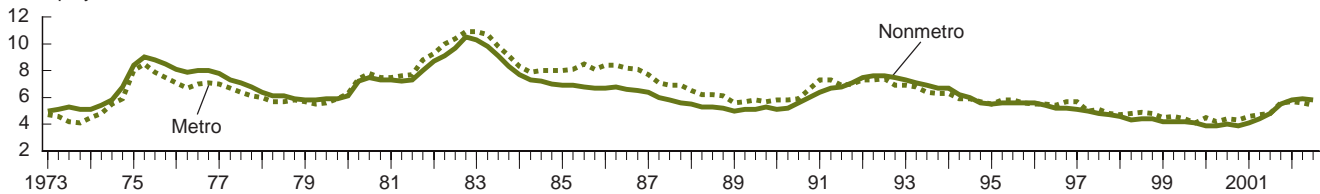
¹No-till planting leaves the soil undisturbed from harvest to planting, except for nutrient injection. Weed control is primarily with herbicides.

Source: Conservation Technology Information Center & AREI, Chapter 4.2 Soil Management and Conservation. ERS,USDA.

Rural America

Nonmetro and metro unemployment rates move together

Unemployment rate

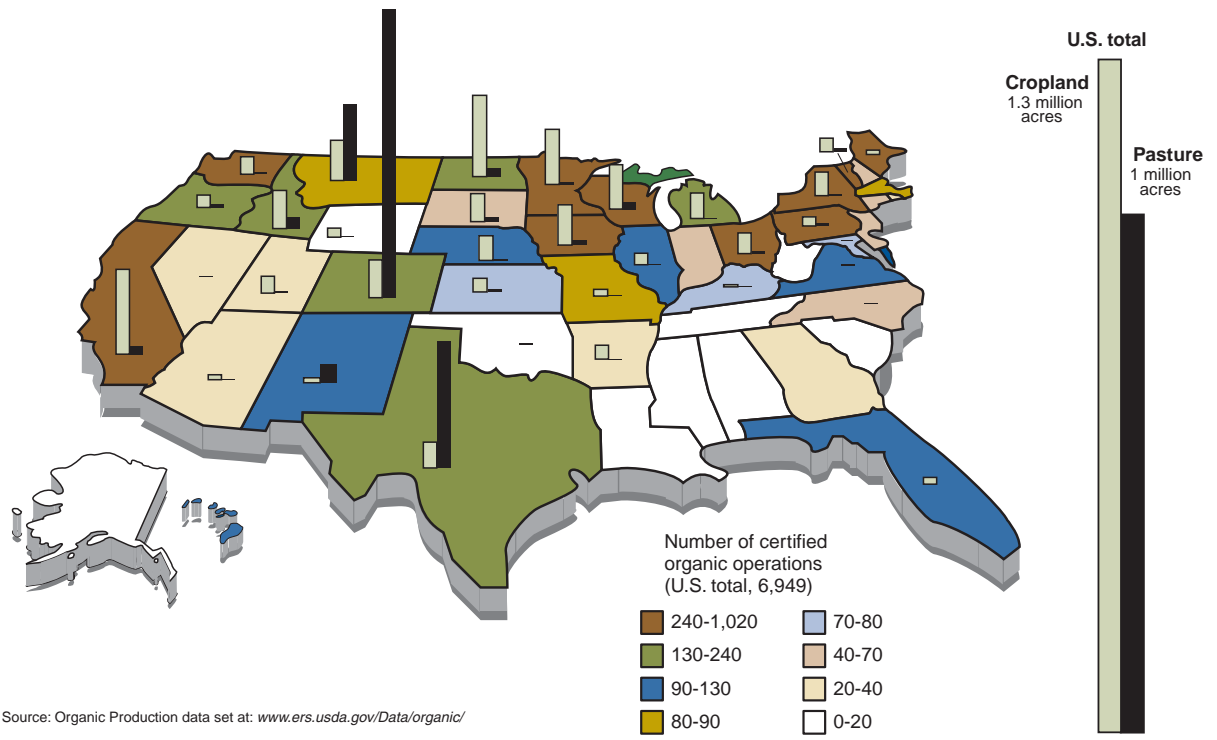


Note: Beginning 3rd quarter 1983 the metro-nonmetro definition is based on the Office of Management and Budget (OMB) June 1983 definition of Metropolitan areas. Beginning 1st quarter 1994 the metro-nonmetro definition is based on the OMB June 1993 definition of Metropolitan areas. For more information on the current definitions of metro and nonmetro areas, see <http://www.ers.usda.gov/briefing/Rurality/WhatsRural/>

Source: Bureau of Labor Statistics data seasonally adjusted by ERS.

On the Map

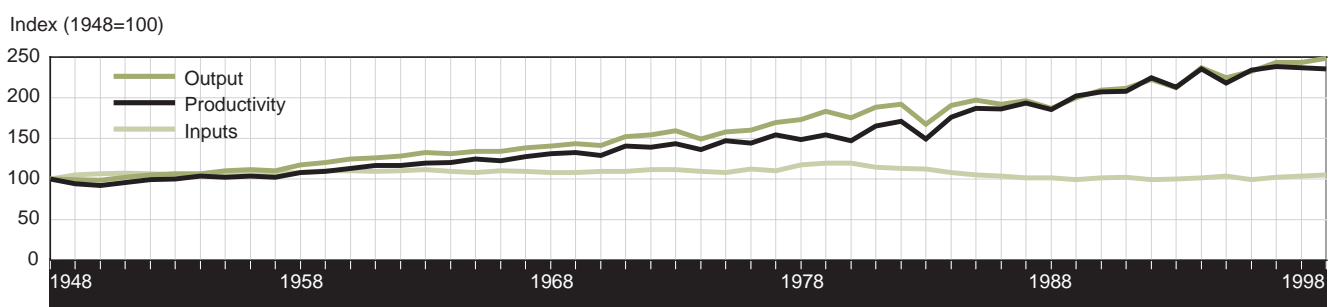
Certified organic acreage and operations, 2001. Farmers in 48 States dedicated 2.3 million acres of cropland and pasture to organic production systems in 2001. Over 1.3 million acres were used for growing crops. USDA lifted restrictions on organic meat labeling in the late 1990s, and by 2001, most of the States were raising certified organic livestock. While adoption of organic farming systems showed strong gains between 1992 and 2001 and the adoption rate remains high, the overall adoption level is still low—only about 0.3 percent of all U.S. cropland and 0.2 percent of all U.S. pasture was certified organic in 2001.



Source: Organic Production data set at: www.ers.usda.gov/Data/organic/

In the Long Run

Productivity continues to be the engine of growth in agriculture. The dominant source of economic growth for the aggregate economy has usually been growth in inputs to production. Agriculture turns out to be one of the few exceptions: productivity growth dominates input growth. Output growth equals the sum of contributions of the factors of production (capital, land, labor, intermediate inputs) and growth in productivity. Agricultural productivity growth averaged 1.68 percent from 1948 to 1999. However, the net contribution of all inputs to growth in output was less than one-tenth of one percentage point per year. Thus, growth in total factor productivity has been responsible for almost all of agriculture's output growth since World War II, an impressive record.



Source: Agricultural productivity in the United States data set at www.ers.usda.gov/data/agproductivity/

Activities

Do Changing Retail Markets Mean Higher Food Prices?

ERS has begun to use micro-level household and store scanner data to measure the effect of changing retail store formats on food prices. Increasingly, retail food markets are consolidating, leading to concerns that reduced competition will cause prices to rise. Counterbalancing this effect is the increased market share of warehouse and supercenter-type stores that often compete with standard supermarkets by offering lower prices and volume discounts. This project will also examine if, and to what extent, the changing landscape of retail outlets influences the CPI for food. **Ephraim Leibtag, eleibtag@ers.usda.gov**

How Does Fast Food Fare in Urban Areas?

ERS is examining whether access to fast food and fast food prices depend on where one lives. Some have argued that residents of "poor" or "minority" neighborhoods in urban areas pay higher prices and do not have reasonable access to food retailers. ERS researchers have collected prices of representative meals in the Washington, DC, metro area and are analyzing how cost and demand differences across the area affect the number of outlets and prices. **Hayden Stewart, hstewart@ers.usda.gov**

Five a Day?

ERS is working with the Division of Cancer Prevention and Control, Centers for Disease Control and Prevention to study the economic and demographic determinants of fruit and vegetable consumption. The collaboration will use data from USDA and CDC to classify fruits and vegetables by their

nutritional profile, by how they are prepared, and by where and when they are consumed. The study will also identify the characteristics of individuals who are more or less likely to follow their physicians' recommendations for increasing fruit and vegetable consumption, leading to better design and targeting of diet and health information campaigns. **Biing-Hwan Lin, blin@ers.usda.gov**

Why Are Contracts Increasing?

The growth in contracting between agricultural processors and producers has been contentious. Some have argued that these arrangements enhance market power of processors at the expense of independent farmers, while others argue that consumer demand can be targeted more efficiently. ERS is examining potential efficiency-enhancing motives for contracts in pork industries. In those markets characterized by investments in branding programs requiring specific genetics, complex carcass-merit grading programs, unobservable product quality attributes, and team production of quality attributes, contracting arrangements may be an efficient organizing tool. **Steve Martinez, martinez@ers.usda.gov**

Can We Protect Against Invasive Species?

Expanded international trade and travel is beneficial to the U.S. and global economies, but also facilitates movement of invasive, alien crop pests that threaten U.S. agricultural production and exports. ERS is cooperating with USDA's Animal and Plant Health Inspection Service (APHIS) to incorporate economics in decisionmaking and risk assessment for invasive pest issues. **Dennis Shields, dshields@ers.usda.gov**

Issues in Food Assistance

ERS hosted a conference, *Food Assistance Research: Recent Findings and Emerging Issues*, in February 2003, with the goal of identifying emerging needs in food and nutrition assistance research. The first day of the conference was devoted to child nutrition reauthorization and related research issues, while the second day focused on food stamps. **Mark Prell, mprell@ers.usda.gov**



What Impacts From Diverting Water From Agriculture?

ERS is analyzing the effects on irrigated agriculture in the western river basins of Federal decisions to reallocate water to protect endangered species. This work is being done in cooperation with the Bureau of Reclamation, and nine universities, including the University of California-Davis, Willamette University, University of Nebraska, Oregon State University, New Mexico State University, Washington State University, Colorado State University, Iowa State University, and George Mason University. USDA's Risk Management Agency funds the project. **Noel Gollehon, gollehon@ers.usda.gov**

Economics in the Farm Bill Conservation Title?

ERS economists are playing an integral role in shaping several key provisions of the Conservation Title. Roger Claassen (claassen@ers.usda.gov) is helping craft the new Conservation Security Program (CSP), a form of the program he analyzed in *Agri-Environmental Policy at the Crossroads: Guideposts on a Changing Landscape* (AER-794). Andrea Cattaneo (cattaneo@ers.usda.gov) is a key architect of the cost/benefit analysis for the new rule implementing the Environmental Quality Incentives Program (EQIP), revised and expanded in this Bill. Marlow Vesterby (vesterby@ers.usda.gov) is playing a similar role in the cost/benefit analysis of the Technical Service Provider rule, which governs how third parties can help farmers plan and implement conservation practices paid for by USDA conservation programs.

Understanding Market Segmentation

The U.S. grain and oilseed sector is moving away from production and marketing of generic commodities and toward more product differentiation and market segmentation. ERS and the Farm Foundation sponsored a conference, *Product Differentiation and Market Segmentation in Grains and Oilseeds: Implications for an Industry in Transition*, in late January 2003. The symposium explored the determinants of market segmentation and the implications for growers, handlers, processors, and consumers. **Aziz Elbehri, aelbehri@ers.usda.gov**

Meetings

High-Value Foods

ERS cosponsored a workshop, *Global Markets for High-Value Food*, with the Food Industry Center (University of Minnesota) and the Farm Foundation in February 2003. The workshop brought together researchers, business people, and policymakers to discuss global markets for high-value food products, such as fresh produce, meats, and processed products. Topics covered include global food market dynamics, consumers' changing preferences, innovations and changes in the supply structure, and government's role in high-value food markets. **Anita Regmi, aregmi@ers.usda.gov**

New Releases

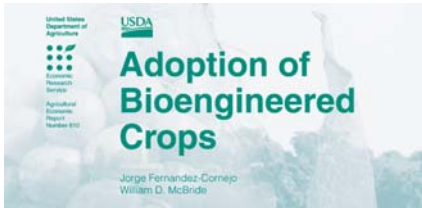
A Close Look at WIC

The Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) is the Nation's third largest food assistance program, with almost half of all infants and about a quarter of all children age 1-4 participating. *The WIC Program: Background, Trends, and Issues* (FANRR-27) presents a comprehensive background on the program—how it works, its history, program trends, and the characteristics of the population it serves. **Vic Oliveira, victorio@ers.usda.gov**

Vertical Coordination

Two recent ERS publications—*A Comparison of Vertical Coordination in the U.S. Poultry, Egg, and Pork Industries* (AIB-747) and *Vertical Coordination of Marketing Systems: Lessons From the Poultry, Egg, and Pork Industries* (AER-807)—reveal that several market characteristics prompt contracts and vertical integration to lower transaction costs. These characteristics are (1) investments that have considerably less value outside of their intended purpose, (2) costs of measuring output characteristics that are considerably larger than costs of measuring related inputs, and (3) an environment with high degrees of uncertainty related to market demand and supplies, as well as plans and strategies of trading partners. **Steve Martinez, martinez@ers.usda.gov**

Biotech Adoption Is Rapid, But Results Vary



Adoption of Bioengineered Crops (AER-810), showed that the rapid rise in adoption rates for Bt (insect-resistant) crop varieties will likely slow, but adoption of herbicide-tolerant crops will continue to grow over the next few years. Bt corn use and profits depend on infestations of pests like the European corn borer, which have subsided recently. Adoption of herbicide-tolerant varieties may be motivated more by convenience than by profits. Adopting genetically engineered (GE) crops results in an overall reduction in pesticide use, a plus for the environment. **Jorge Fernandez-Cornejo, jorgef@ers.usda.gov**

Weighing In on Obesity



The Winter 2002 issue of *FoodReview*, ERS' recently retired magazine of food economics, features ERS researchers "weighing in" on a critical public health issue—the growing epidemic overweight or obesity among Americans. The lead article takes a look at the American diet—typically too high in added sugars, refined grains, fats, and calories. Other articles look at the relationship between caloric intake and obesity, individuals' misperceptions about their weight status, the link between fruit and vegetable consumption and body weight, and the issues of cost effectiveness raised by Federal interventions to reduce obesity. **Rosanna Morrison, rosanna@ers.usda.gov**

Production Costs and Returns Updated with ARMS Surveys

The ERS series of reports, *Characteristics and Production Costs* (SB-974), uses data from USDA's annual Agricultural Resource Management Survey (ARMS) to examine how production costs vary among producers, while providing details on production practices and input levels, as well as farm operator and structural characteristics. Reports for corn, cotton, cow-calf, soybean, and wheat farms are available, with milk, sugarbeets, and rice on the way in 2003. **William McBride, wmcbride@ers.usda.gov**

Examining Exchange Rates

Cited as a key influence on agricultural trade, exchange rates are the subject of a new book, *Exchange Rate Volatility and International Trade* (Captus Press), sponsored by ERS and with contributions from several ERS researchers. The book examines the effects of exchange rate volatility on a wide array of products like beef, poultry, and soybeans and finds that the impacts depend on the level of protection and competition in markets. The underlying research, unlike most studies in either developed or developing countries, takes exchange rate risk into account. **Suchada Langley, slangley@ers.usda.gov**

Computer Use and Earnings

A new report, *Wage Premiums for On-the-Job Computer Use: A Metro and Nonmetro Analysis* (RDRR-95), shows that the wages of rural workers who use a computer on the job are about 6 percent higher than those who do not, after other job and worker characteristics are taken into account. This suggests only a limited role for computer literacy skills in enhancing the earnings of low-wage workers within their current occupations in rural areas. **Lorin Kusmin, lkusmin@ers.usda.gov**

The State of Hired Farmworkers

A new book, *The Dynamics of Hired Farm Labour: Constraints and Community Response* (CABI Publishing), includes 18 chapters discussing technical change and adjustment in agriculture, hired farm labor and community response, and farmworker health and safety. This work is an outgrowth of a conference on hired farm labor and rural communities held in October 1999 and co-sponsored by ERS and The Pennsylvania State University. **Jack Runyan, jrunyan@ers.usda.gov**

Rural America, Briefly



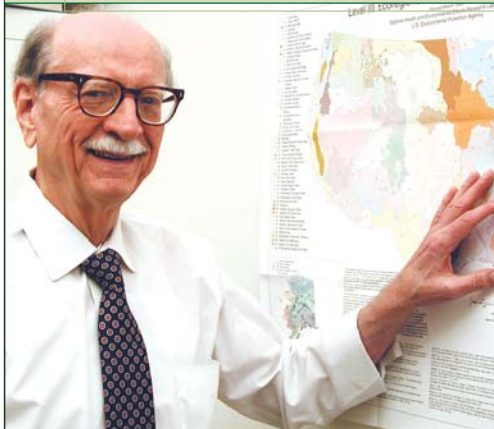
A new report, *Rural America at a Glance* (RDRR-94-1), provides the most current indicators of social and economic conditions in rural areas for use in developing policies and programs to assist rural people and their communities. The six-page report includes information on population trends from the recently released 2000 Census, the employment and earnings situation in 2001, and the latest poverty and food insecurity statistics. **Karen Hamrick, khamrick@ers.usda.gov**

Commodity Markets and Trade

ERS Outlook reports provide timely analysis of major commodity markets and trade, including special reports on hot topics. All reports are available electronically and can be found at www.ers.usda.gov/publications/OutlookReports.htm along with a calendar of future releases. **Joy Harwood, jharwood@ers.usda.gov**

See information on all new ERS releases at www.ers.usda.gov/Calendar/

Calvin Beale



If demography is destiny, as some historians would argue, then Calvin Beale, Senior Demographer at ERS, has had a strong hand in tracking the destiny of late-20th-century rural America. During a career spanning 56 years—most at USDA—Calvin has been at the forefront in analyzing population patterns, migration flows, and racial/ethnic composition of nonmetropolitan (rural) areas.

Calvin is widely acknowledged for pathbreaking research on the farm population, notably for tracing and explaining its rapid decline over several decades. He produced the first comprehensive report on Black farmers, chronicling the circumstances that helped generate a massive rural exodus by Blacks from 1920 to 1960.

A landmark contribution was Calvin's discovery of the U.S. nonmetro population turnaround in the early 1970s. His study was first to report that the decades-long stream of rural-to-urban migration had reversed.

Thirty years later, Calvin is mining recently released Census data to uncover new patterns of change. He was among the first demographers to note that an influx of Hispanic residents accounted for a quarter of all nonmetro population change in 1990-2000. In 2001, he and colleague Glenn Fuguitt documented the reversal of the longstanding trend

of Black migration from the South, linking the reversal to economic development in the rural South. Over the past 2 years, Calvin's research on the disproportionate placement of prisons in nonmetro areas has drawn national media attention.

Rural America is both vocation and avocation. Having once said, "You can't know what's going on in the country from behind a desk in Washington," Calvin has visited most U.S. counties. Along the way, he photographed over 2,000 county courthouses. A sample of the photos, worthy of a coffee-table volume, can be viewed at www.ers.usda.gov/Briefing/Rural/Photos. His firsthand observations and conversations with local officials and residents, combined with incisive analysis of data, have yielded precise readings of the rural population pulse.

In 1990 the Rand Population Research Center published *A Taste of the Country: A Collection of Calvin Beale's Writings*. Recognizing the book's continued influence, Penn State University Press reissued it in 2002. The year 2002 also saw Calvin honored by colleagues at an event sponsored by the Rural Sociological Society, the Population Reference Bureau, and the Annie E. Casey Foundation, for 50 years of contributions to research on population migration and to the field of rural demography.

Michael Roberts & Nigel Key



Michael Roberts (left) and Nigel Key

Two newly minted ERS researchers are also delving into Census data—to examine changes in farm structure and to explain farmers' production decisions. Nigel Key and Michael Roberts joined ERS a couple of years ago and have already received national professional recognition for their work in agricultural and resource economics. For Nigel, it was Honorable Mention in the American Agricultural Economics Association's 2001 competition for "Outstanding Journal Article" (on how costs associated with buying and selling affect farm household production decisions). That same year, AAEEA honored Michael for "Outstanding Dissertation" (on reconciling the behavior of nonrenewable resource prices with economic theory).

Nigel and Michael, both graduates of the University of California at Berkeley, are collaborating on research to clarify the role of risk in agricultural production choices. By merging county-level data on crop insurance participation with farm-level data from the Census of Agriculture, they can account for differences in production decisions at the regional and farm level that may have biased the findings of earlier studies. In another collaborative effort, they are exploring the relationship between program payments and structural changes in the farm sector, again using Census data to control for farm and locational variations.

Both these economists, report ERS colleagues, take a creative approach in tackling problems, posing questions, and locating the data that will best answer the questions.

Their collegial, unassuming manner, say co-workers, reflects a willingness to share ideas and learn from others. They are adept at working on diverse topics—Nigel's current research topics cover farm financial risk and manure management policies, while Michael's include farm contracting arrangements and conservation policy. Rarely reluctant to challenge long-held ideas, Nigel and Michael are enthusiastic explorers pursuing the stories behind the statistics. Future research and policy on risk and conservation will likely be shaped by their innovations.