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Land Retirement and Working-land Conservation Structures A Look at Farmers' Choices

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- Roughly 37 percent of farm operators had retired cropland from production or had working-land conservation structures in place in 2001. Of these, 36 percent received conservation payments.
- Operators of smaller retirement and lifestyle farms are more likely to retire farmland.
- Operators of larger farms are more likely to adopt conservation measures that are compatible with farm production.

Operators of all types and sizes of farms have adopted conservation-compatible farming practices and installed conservation structures. Many farmers do so for sound business reasons—to protect the productive capacity of their farmland, to reduce seed, fertilizer, and other input costs, or to save time and labor. However, the costs of conservation practices that primarily create off-site benefits to society—in the form of cleaner air, improved water quality, and a healthier ecosystem—often pose significant barriers to their adoption by farm operators. To encourage these efforts, USDA provides technical and financial support to farm and ranch operators through a diverse set of conservation programs that either retire environmentally fragile land from production or encourage the adoption of conservation-



friendly farming practices. Recent ERS research suggests that farms and farm households that install working-land conservation structures (such as contour strips or grass waterways) often differ from those that retire farmland. Therefore, as working-land program budgets increase, the mix of farms participating in USDA's conservation programs may change.

The effectiveness of a conservation program depends on the choices farm operators make because adoption of conservation practices is voluntary. But, despite the importance of farmers in determining environmental outcomes, relatively little is known about those who adopt conservation practices and participate in USDA's conservation programs, and why they do so. A recent study by ERS found that household characteristics and

operator attributes such as age, gender, educational attainment, household size, and dependence on off-farm income affect the types of conservation efforts farm operators are likely to engage in, as well as the types of conservation programs they are likely to find appealing (see box, "An Array of Conservation Programs Is Available to Farmers"). For example, older farm operators and those focused on a nonfarm occupation are less likely to install working-land conservation structures than younger farm operators whose primary occupation is farming. As a result, programs supporting a wide array of alternative conservation practices are most likely to match the interests of a wide range of farmers.

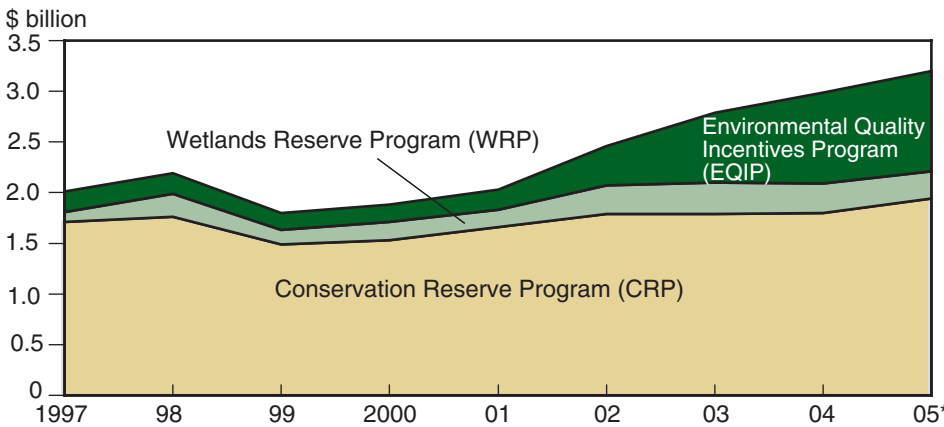
Different Conservation Structures Are Used by Different Types of Farms

Farm practices that are potentially compatible with USDA's conservation goals fall into three broad categories: (1) adopting farm management practices,

such as conservation tillage; (2) installing working-land structures, such as grass waterways; and (3) retiring land from agricultural production. While a high percentage of farms have adopted one or more conservation-compatible farm management practices (see the February 2006

issue of *Amber Waves*), the focus here is on working-land structures and land retirement. These two types of practices account for most of the conservation payments that farmers receive and their adoption is likely to depend more on conservation program subsidies than the adoption of new farm management practices.

Working-land conservation program budgets have been expanding recently, but land retirement programs still account for most conservation spending



*Estimated
Source: ERS analysis of USDA's Office of Budget and Program Analysis data.

USDA's 2001 Agricultural Resource Management Survey (ARMS) provides data on characteristics of farm businesses and households that have installed a select group of conservation practices, with or without the financial support of conservation programs. About 37 percent of farm operators had retired whole farmland fields from production; dedicated farmland to wildlife habitat; or installed grass waterways, filter strips, and riparian buffers (trees planted along stream banks) as of 2001. Each of these vegetative structures can reduce unwanted environmental impacts of cultivation and, when farm operators install them on environmentally

An Array of Conservation Programs Is Available to Farmers

Efforts to mitigate unwanted environmental side effects of agricultural practices are not new. For more than a century, the Federal Government has managed programs to curtail soil erosion caused by farming. Earlier conservation efforts focused on the onsite benefits of reducing soil erosion. But in recent decades, USDA has broadened its emphasis to include water and air quality improvement and wildlife habitat protection. The following programs support these goals by reimbursing farmers and farmland owners for eligible conservation practices.

- The **Conservation Reserve Program (CRP)** was authorized by the Food Security Act of 1985 to retire environmentally sensitive land from agricultural production for 10-15 years. In return for an annual rental payment and partial reimbursement for the cost of establishing and maintaining approved groundcover, program participants agree to take enrolled land out of production and plant grasses, trees, and other conservation-cover crops. Since 1996, farmers have also been allowed to enroll land through a continuous sign-up program focused on developing riparian buffers and other working-

land conservation structures. On roughly 35 million acres of enrolled cropland in 2004, farmers and landowners received \$1.8 billion in cost-share and rental payments from the CRP.

- The **Wetlands Reserve Program (WRP)** was first implemented in the early 1990s to retire and restore wetlands that had been converted to cropland. The Farm Security and Rural Investment Act of 2002 (the 2002 Act) authorized enrolling slightly over 2 million acres in WRP.
- The **Conservation Reserve Enhancement Program (CREP)** was initiated in 1997. This Federal-State partnership targets farmland for retirement in specific geographic areas to achieve local conservation goals. Nearly 600,000 acres have been enrolled in CREP, which is administered through the Conservation Reserve Program.
- The **Environmental Quality Incentives Program (EQIP)** provides financial and technical assistance to help participants adopt conservation practices on eligible agricultural land. EQIP is a working-land program that shares with farmers the

costs of installing approved structural practices (grassed waterways, riparian buffers, etc.) or of implementing conservation management practices (integrated pest management, fertilizer management, etc.). Funding for EQIP increased substantially under the 2002 Act, from roughly \$200 million annually in the early part of the decade to \$1.3 billion in 2007. By statute, at least 60 percent of EQIP funds go to livestock producers, including large confined-livestock operations.

- The **Conservation Security Program (CSP)** was authorized in the 2002 Act to support continuing conservation practices on working lands. In 2004, the first year of the program, 2,200 farmers received \$35 million for conservation practices on roughly 2 million acres of working land.

Other conservation programs administered by the Federal Government include the Farm and Ranch Lands Protection Program, the Conservation Technical Assistance Program, the Grassland Reserve Program, the Wildlife Habitat Incentives Program, and Agricultural Management Assistance.

sensitive land, they can be eligible for support from USDA's Conservation Reserve Program. The installation of grass waterways, contours, and riparian buffers also qualifies farmers for Environmental Quality Incentives Program support because these structures offer larger environmental benefits when integrated into the activities of farms producing crops and/or livestock for sale.

Significant differences across farm types are evident in both adoption of conservation practices and participation in conservation programs. Of the farms that had one or more conservation structures in place in 2001, over half had planted whole fields to conservation cover (grasses, legumes, etc.), while another third had installed working-land structures, such as riparian buffers. Operators of retirement and lifestyle farms, which are generally smaller and whose operators are less engaged in farming as an occupation, are more likely to adopt land retirement practices than operators who report farming as a primary occupation. In contrast, larger farms are more likely to install working-land structures than smaller farms. Households operating farms with higher sales rely more on income from farming, and their operations are large enough that investments in land improvements pay off. In addition, farms retiring land from production are more likely to participate in a conservation program than farms installing working-land conservation structures.

What motivates decisions to retire farmland or to install working-land conservation structures? Certainly, environmental factors (such as the erodibility of farmland) and financial considerations (such as profitability, or costs associated with changing a practice) play major roles. But other factors are also likely to influence farm operator decisions.

Using economic modeling techniques, ERS measured the associations between

individual farm, operator, and household attributes and the adoption of conservation practices, holding other factors, such as environmental conditions, constant. Farms that had retired whole fields from production had a significantly higher share of retired farm operators, a higher level of conservation program payments, and a smaller share of production from high-value crops (vegetables, fruits, and nursery products) than farms that had not retired land and had not installed conservation structures. Differences abound between farms that retired whole fields and those that installed grass waterways, filter strips, and other structures compatible with working land. Farms that installed working-land conservation structures were generally larger grain farms that received lower conservation payments. These farms had operators who were more likely to consid-

er farming their primary occupation, slightly younger, and less reliant on off-farm income than farm operators who retired whole fields from production.

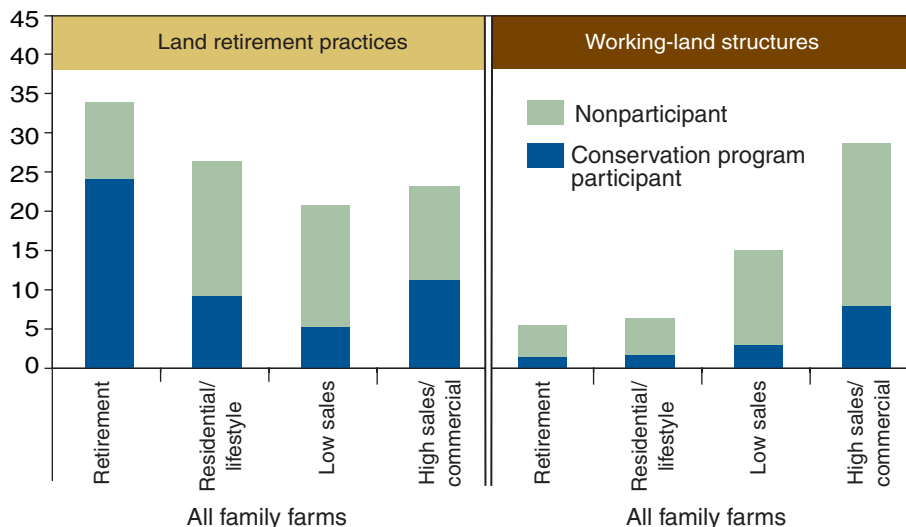
While conservation program participants are reimbursed for some of the costs of installing one or more conservation practices on their farmland, many farm operators not enrolled in a conservation program and, thus, not receiving payments, have retired land or installed conservation structures for other reasons. On the other hand, while eligibility rules determine whether a farm operator can participate in a conservation program, the operator's business and personal goals determine whether or not eligible land is enrolled.

Who Participates in Conservation Programs?

Among all farms that had retired land from production or had working-land con-

Retirement and residential farmers are more likely to retire land, while high-sales farmers are more likely to install working-land conservation structures with or without program support

Percent of farms in each type



Notes: The bottom portion of each bar represents farms that have conservation structures in place and that currently receive conservation funding. Farm types are: Retirement farms (small family farms—those with sales less than \$250,000/year—whose operator is retired); Residential-lifestyle farms (small family farms whose operator reports a nonfarm business as primary occupation); Low-sales farms (family farms whose operators report farming as primary occupation, with sales less than \$100,000/year); High-sales farms (family farms whose operators report farming as primary occupation, with farm sales between \$100,000 and \$250,000/year, and all family farms with sales exceeding \$250,000). Nonfamily farms are excluded. Source: Prepared by USDA, Economic Research Service using data from USDA's 2001 Agricultural Resource Management Survey, Costs and Returns Report.

Larger Farms More Likely To Use Conservation Structures Than Smaller Farms

Larger farms are often perceived to behave differently than smaller farms, and agricultural pollution is sometimes viewed as a “big-farm” problem. While this study has not analyzed either the level or the source of environmental problems from the agricultural sector, the observed patterns of participation in conservation efforts raise doubts about the general validity of this notion.

Conservation practices adopted by farmers and ranchers often vary by size of farm, but both large and small farms have adopted conservation-compatible practices and participate in USDA’s conservation programs. Working-land conservation practices appeal more to farms focused on agricultural production. These tend to be larger operations producing most of the Nation’s farm commodities. Alternatively, farm households with resources more focused on off-farm activities find land retirement more appealing. These operations tend to be smaller, lower production farms that control roughly 25 percent of the Nation’s farmland.

Simply examining the proportions of large and small farms that have adopted conservation practices ignores the fact that large farms generally control more land and thus are more likely to encompass environmentally sensitive parcels of land in need of special treatment. To adjust for this, ERS researchers tied the rate of increase in conservation program participation to farm size.

Looking only at farm operations that produce crops or livestock, a 1-percent increase in farm size (as measured by acres of cropland operated) is associated with more than a 1-percent increase in the *probability* of participating in CRP to retire land. The decision to install conservation structures on CRP land is largely unaffected by farm size. But, once a farm operator decides to participate, a 1-percent increase in farm size is associated with more than a 1-percent increase in the *amount of land* enrolled. The evidence suggests that as farms grow in size, they are likely to install more conservation structures or plant more native grasses, legumes, or trees under the provision of the CRP, even after adjusting for the amount of land they control.

conservation structures in place in 2001, roughly 36 percent received conservation payments. In general, of the farms that have adopted these conservation practices, smaller operations participate in conservation programs at a higher rate than larger operations. Program choice, however, varies by farm size, with small farms participating more heavily in land retirement programs and larger farms participating more heavily in working-land programs (see box, “Larger Farms More Likely To Use Conservation Structures Than Smaller Farms”).

A different pattern emerges, however, for farms that continue producing a farm commodity while receiving conservation payments versus those that cease production. About half of farms participating in conservation programs do not produce farm commodities—these are overwhelmingly small farms that have chosen to rent their farm assets to the government, through conservation program enrollments, and to other farm operators rather than continue producing commodities themselves. Among farms producing crops and/or livestock for sale, high-sales operations participate in both land-retirement and working-land programs at higher rates than other farms.

Not surprisingly, farms participating in conservation programs but no longer growing crops or raising livestock tend to own a large portion of their land, their operators tend to be older, and the farm households tend to have fewer children and receive a higher percentage of income from nonfarm sources than other farms.

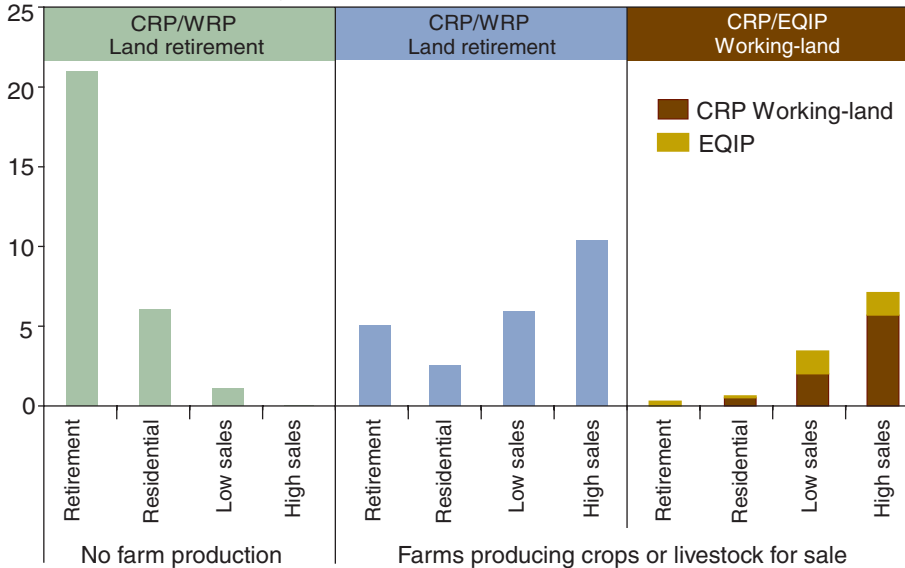
Among farmers still producing crops and/or livestock for sale, program participants tend to rent more of the land they operate, farm more cropland, have more children in the household, and rely less on off-farm income than nonparticipating farmers. In general, among participants who continue to focus on farm produc-



Lynn Betts, USDA/NRCS

Among farms that continue producing crops or livestock for sale, occupational farmers participate in conservation programs at a higher rate

Percent of farms in each type



Notes: Land retirement participants refer to farms that retire land from production or that install wildlife habitat structures. Working-land participants had installed one or more vegetative working-land structures, such as grassed waterways, contours, and riparian buffers. These data are based on type of program payment rather than on specific conservation practices and so differ slightly from the previous chart.

Source: Prepared by USDA, Economic Research Service using data from USDA's 2001 Agricultural Resource Management Survey, Cost and Returns Report.

tion, few major differences are apparent between those who retire land and those who have installed structures. Working-land program participants are more likely than land-retirement program participants to depend on revenue from high-value crops and to rent relatively more of the land they operate, both of which make land retirement less attractive. They also receive relatively more commodity program payments than working farms that retire land from production.

Participation Depends on a Variety of Factors

While environmental considerations are associated with the decision to participate in conservation programs, farm size, farm operator goals, and farm household characteristics also play a role. But not all conservation programs appeal to all farm operators who decide to participate. Over

half of the participants in land retirement programs take land out of production while curtailing their farming activity, perhaps to retire or to take advantage of off-farm activities. These participants have little incentive to participate in working-land programs. But land retirement need not signal retrenchment from agriculture. In many instances, farm operators focused on agricultural production enroll farmland in a land retirement program as a farm management strategy, perhaps to diversify their income.

Working-land programs seem to appeal especially to those who report farming as their primary occupation and can invest time and managerial oversight to incorporate new farming practices and conservation structures into their operations. And, as these farms grow in size, they may equip more of their farmland with working-land conservation struc-

tures. Thus, the importance of conservation programs in influencing conservation practice decisions varies by the type of program, practice, farm cost structure, operator skill, and household goals. This suggests that conservation programs offering a wide array of practice alternatives are most likely to match farmers' interests and enable USDA to meet program goals cost effectively. *W*

This article is drawn from . . .

Conservation-Compatible Practices and Programs: Who Participates? by Dayton Lambert, Patrick Sullivan, Roger Claassen, and Linda Foreman, ERR-14, USDA, Economic Research Service, February 2006, available at: www.ers.usda.gov/publications/err14/

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"Use of Conservation-Compatible Farm Practices Varies by Farm Type," by Dayton Lambert and Patrick Sullivan, *Amber Waves*, Vol. 4, Issue 1, February 2006, available at: www.ers.usda.gov/amberwaves/february06/findings/findings_re2.htm

Manure Nutrients Relative to the Capacity of Cropland Pastureland to Assimilate Nutrients: Spatial and Temporal Trends for the United States, by Robert L. Kellogg, Charles H. Lander, David C. Moffitt, and Noel Gollehon, NPS00-0579, USDA, Natural Resources Conservation Service and Economic Research Service, December 2000, available at: www.nrcs.usda.gov/technical/land/pubs/mantr.html

Contrasting Working-Land and Land Retirement Programs, by Marcel Aillery, EB-4, USDA, Economic Research Service, March 2006, available at: www.ers.usda.gov/publications/eb4/