



Find the full report at
[www.ers.usda.gov/
publications/aer832](http://www.ers.usda.gov/publications/aer832)

Environmental Compliance in U.S. Agricultural Policy: Past Performance and Future Potential

Roger Claassen, Vince Breneman, Shawn Bucholtz, Andrea Cattaneo, Rob Johansson, Mitch Morehart

Farm commodity programs may have encouraged crop production on environmentally sensitive land in the 1970s and early 1980s. Although unintended, production incentives may have increased environmental damage associated with agricultural production and undercut the effectiveness of conservation programs designed to mitigate that damage. The 1985 Farm Act introduced compliance provisions as one way to counteract that influence. Compliance provisions require agricultural producers to implement soil conservation systems on highly erodible cropland and refrain from draining wetlands in order to remain eligible for benefits from selected Federal agricultural programs, including price support loans and income support payments.

What Is the Issue?

Is the threat of withholding Federal agricultural program payments enough to induce a change in farmers' conservation behavior? Since compliance mechanisms have taken effect, soil erosion on highly erodible cropland and wetland conversions for agricultural production have both declined sharply. Nonetheless, questions about the effectiveness of compliance mechanisms remain:

- ◆ What proportion of overall cropland erosion reduction is actually due to compliance? Would farmers have reduced cropland erosion even without the compliance incentive? Can the effect of the compliance incentive be separated from the effect of changing market prices, other policy incentives, and technological change?
- ◆ Similarly, are compliance mechanisms actually constraining wetland conversions for agricultural production? Or, does the decline in wetland conversion for agriculture reflect a decline in the profitability of such conversions?
- ◆ Would environmental benefits increase if compliance mechanisms were extended to address other environmental problems such as nutrient runoff and leaching?

What Did the Study Find?

A "before-and-after" snapshot suggests that annual soil erosion on U.S. cropland declined by 40 percent between 1982 and 1997. About a fourth of that reduction occurred on highly erodible cropland subject to compliance requirements. Erosion reductions were larger (in percentage

ERS is the main source of research and analysis from the U.S. Department of Agriculture, providing timely information on economic and policy issues related to agriculture, food, the environment, and rural America.

terms) on highly erodible cropland located on farms receiving government payments than on farms not receiving payments, suggesting that compliance mechanisms encouraged greater conservation effort.

However, erosion was also reduced on land not subject to compliance requirements, suggesting that other factors also played a role in reducing soil erosion. Farmers may have chosen to adopt soil conservation practices independent of the advent of compliance requirements. On some farms, conservation practices may have increased net returns to farming, so that soil erosion reductions were coincidental. Or, adoption of conservation practices may have been more widespread in areas where they were first shown to be profitable by producers responding to compliance requirements.

Potential penalties associated with compliance mechanisms may also be effective in keeping producers from expanding crop production onto highly erodible land or wetland. The value of participating in commodity programs on cropland already in production is greater than the economic gains of expanding production in many cases. Without compliance requirements, 7-14 million acres of highly erodible land and 1.5-3.3 million acres of wetland that are not currently being farmed could be profitably farmed under favorable market conditions.

Just as the potential loss of farm program payments may provide sufficient incentive for reducing soil erosion and preserving wetlands, those payments could be leveraged (via compliance mechanisms) to address fertilizer runoff and leaching from cropland. Most cropland with runoff and leaching potential is located on farms receiving farm program payments. Program payments on those farms may be large enough to spur farmers to adopt measures (nutrient management or buffer practices) to address these problems.

Compliance mechanisms may provide the best bang for the buck as a deterrent to environmentally damaging actions such as draining wetlands or plowing up highly erodible land (HEL) for crop production. Compliance sanctions are triggered only when a violation occurs. In contrast, using a subsidy program to achieve these same ends is likely to be difficult or expensive. The difficulty is in deciding which wetlands or non-cropped HEL are vulnerable enough to warrant protective subsidies. If that's too difficult, policymakers could opt to subsidize preservation of a significant share of these environmentally sensitive lands; an expensive alternative, indeed.

How Was the Study Conducted?

The primary sources of data used in this analysis are the National Resources Inventory (NRI) and the Agricultural Resources Management Survey (ARMS). Environmental indicators (e.g., erosion reduction, potential for nutrient runoff and leaching) are based largely on NRI data. The distribution of farms by commodity specialization and program payments is derived from the 1997 ARMS. Environmental indicators are linked spatially to farm-level economic data using a Geographic Information System.

NRI data (and other data for the nutrient runoff analysis) were used to estimate physical effects such as erosion reduction and the potential for nutrient runoff and leaching, the type of land on which these physical effects occurred (e.g., highly erodible cropland), and land-use changes that would have played a role. Linking these data to farms provided an estimate of the extent to which physical effects occurred on farms subject to compliance mechanisms.