



Conservation and the Environment

Executive Summary

June 2006

This is the second paper in a series that assesses general views advanced at the 2007 Farm Bill Forums held during 2005 by Secretary Mike Johanns, as well as additional issues that have emerged in recent months. This paper discusses natural resource issues, current conservation programs administered by USDA's Farm Service Agency (FSA) and Natural Resources Conservation Service (NRCS), and policy alternatives. The alternatives are possible approaches to address conservation and environmental issues on agricultural lands and are presented for public discussion.

Conservation and U.S. Agriculture

Non-federal agricultural and forest lands occupy 1.4 billion acres or about 70 percent of the contiguous United States. These lands provide strong agriculture and forest sectors, supply habitat that supports wildlife, filter groundwater supplies, regulate surface water flows, sequester carbon, and provide open space and scenic vistas that improve the quality of life for much of our population. Farming and ranching may also involve activities that can have negative environmental consequences on our natural resources, including water and air pollution, soil erosion, and loss of wildlife habitat. In addition, population growth and expansion of urban areas can lead to conversion to cropland to nonfarm uses and segmentation of the rural landscape.

While farmers and conservation programs have made progress in addressing these issues, new concerns continue to emerge as land use changes, population grows and becomes more mobile, technology changes, and research identifies relationships between farming and ranching practices and environmental indicators.

Federal Role in Leveraging Conservation

Historically, conservation programs focused largely on maintaining the productivity of cropland but also included watershed planning and flood prevention activities. Assistance mainly focused on vegetative, engineering, and crop management measures to control soil erosion.

Although there were significant conservation programs during the 1930s-50s, the current era of programs emerged with the 1985 Farm Bill, which established the Conservation Reserve Program (CRP), which provided incentives to put environmentally sensitive land into long-term conservation use, as well as conservation compliance provisions which tied eligibility for Federal farm price and income support and other

program benefits to soil and water conservation efforts. Succeeding Farm Bills expanded the scope and funding for conservation programs. The 2002 Farm Bill sharply increased funding for conservation on lands in commodity production, or "working lands." It authorized greater spending for several programs created under prior Farm Bills, including the Environmental Quality Incentives Program (EQIP), and it established new programs, such as the Conservation Security Program (CSP) and the Grassland Reserve Program (GRP).

Federal programs currently use four approaches to address conservation and environmental concerns on farm and ranch lands:

- (1) **Education and Technical Assistance**, which assists producers and others to implement conservation measures.
- (2) **Financial Incentive Payments**, which may be grouped under three objectives:
 - **Conservation on Working Farm, Ranch, and Forest Lands**—Incentive and cost-share payments to operators and owners of working lands and forests to implement conservation measures and systems.
 - **Conversion of Farm and Ranch Lands to Conserving Uses to Achieve Specific Environmental Benefits**—Annual payments for placing agricultural land into conserving uses to protect environmentally sensitive, prime, and unique lands.
 - **Protection of Agricultural Lands from Conversion to Other Uses**—The purchase of rights to certain land uses, such as development, in order to keep lands in agricultural and forest uses.
- (3) **Conservation Compliance**, which requires farmers to undertake conservation activities to remain eligible for price and income support payments and other USDA program benefits.
- (4) **Regulatory Requirements**, which result from Federal laws, such as the Clean Air Act, Clean Water Act, and Endangered Species Act. USDA programs assist producers in meeting the regulatory requirements under these laws and avoiding further regulatory action in the future.

Federal Cost of Conservation Programs and Distribution of Assistance

Key Programs. In FY 2005, USDA funding (NRCS program obligations plus CRP outlays) for conservation programs, including technical assistance, reached \$4.7

billion, up from \$3.0 billion in FY 2001, reflecting the 2002 Farm Bill's historic increase in conservation program funding. Four programs account for the bulk of conservation payments to producers (see additional programs in the paper):

(1) CRP including the Conservation Reserve Enhancement Program (CREP), a Federal-State partnership to further local conservation goals, provided \$1.8 billion in rental, cost-share and other payments on 35 million acres in 2005. CRP enrollment is limited to 39.2 million acres. Nearly 800,000 acres are enrolled in the CREP.

(2) Wetland Reserve Program (WRP) restores and preserves wetlands that have been converted to cropland. At the end of 2005, WRP enrollment was 1.7 million acres, much of it in long-term or permanent easements. Producers participating in WRP received \$161 million in payments in 2005.

(3) EQIP provides financial and technical assistance to install or implement conservation practices on eligible agricultural land. Sixty percent of EQIP funds must be targeted at practices relating to livestock production. In 2005, \$444 million was paid to producers participating in EQIP.

(4) Conservation Security Program (CSP) provides payments for ongoing stewardship and incentives for producers to adopt additional conservation practices on their farming operations. Participants receive payments that increase as additional resource concerns are addressed on larger portions of their farm operation. In 2004, the program's first year, eligibility was limited to 18 watersheds, with 2,200 farmers enrolling about 2 million acres. In 2005, 12,800 farmers in 220 eligible watersheds enrolled 10.2 million acres. In 2006, enrollment is in an additional 60 watersheds. Producers received \$206 million in CSP payments in 2005.

Conservation Technical Assistance. Conservation Technical Assistance (CTA) provides expertise, assistance, information, and training to help people protect natural resources. In FY 2005, the CTA program level was \$696 million, including \$52 million obligated for the Technical Service Providers (TSP) program, where more than 2,500 TSPs have been certified to assist landowners with conservation projects.

Distribution of Conservation Program Payments.

Conservation assistance to producers may be characterized using several measures:

(1) By Geography. The spatial distribution of conservation payments primarily reflects the CRP, as two-thirds of conservation payments went to producers participating in the CRP in 2005. CRP enrollment is concentrated in the Plains and western Corn Belt where cropland is prone to wind erosion. Compared with CRP, EQIP assistance tends to be somewhat more heavily concentrated in the Western States, reflecting the distribution of cropland and the

eligibility of livestock producers for assistance under EQIP.

(2) By Farms Receiving Payments. The 2004 Agricultural Resource Management Survey (ARMS) data indicate that 15 percent of all farms received conservation payments in 2004. Conservation payments averaged \$5,330 per farm, 4 percent of gross cash farm income, on farms receiving a conservation payment. Government payments under all farm programs averaged \$13,262 per farm for farms that received conservation payments, with conservation payments accounting for 40 percent of the total.

(3) By Commodity Specialization. Commodity specialization is determined by the one commodity or group of commodities that makes up at least 50 percent of a farm's total value of production. About 25 percent of cash grain and soybean farms and nearly 40 percent of other field crops farms received conservation program payments in 2004. About 10 percent or less of farms specializing in livestock production received conservation payments. For farms receiving conservation payments, livestock and crop producers received similar average payments. In 2004, per farm conservation payments for beef cattle farms averaged \$6,244 per farm; poultry, \$5,068; hogs, \$3,062; and dairy, \$4,618. Per farm conservation payments averaged \$5,462 on cash grain and soybean farms and \$5,033 on other field crop farms that received conservation payments.

(4) By Farm Typology. In 2004, 14 percent of rural residence farms, 16 percent of intermediate farms, and 24 percent of commercial farms received conservation payments. Conservation payments are especially important to rural residence farms even though the portion receiving payments was less than other categories. Conservation payments accounted for 79 percent of all government payments and 23 percent of gross cash income on rural residence farms that received conservation payments. Conservation payments were nearly one-half of all government payments going to intermediate farms receiving conservation payments, accounting for 7 percent of gross cash income. For commercial farms receiving conservation payments, the payments represented 16 percent of government payments but only 1 percent of gross cash income.

Rural residence farms also accounted for the largest share of conservation payments, receiving 49 percent of total conservation payments in 2004. Nearly 60 percent of CRP payments go to rural residence farms.

(5) By Farm and Household Income. In 2004, farms with net cash farm incomes of less than \$10,000 received 45 percent of conservation payments and accounted for 63 percent of farms receiving conservation payments. In contrast, farms with net cash farm incomes of \$100,000 or more received 14

percent of conservation payments and accounted for 9 percent of farms receiving conservation payments. Farms with household incomes of \$200,000 or more received 11 percent of conservation payments and accounted for 10 percent of farms receiving conservation payments.

Conclusions on the Performance of USDA Conservation Programs

Conservation and Environmental Benefits. Several key environmental measures indicated progress toward achieving environmental goals:

Soil erosion. Between 1982 and 2003, erosion on U.S. cropland fell from 3.06 to 1.75 billion tons per year, a drop of 1.3 billion tons per year, or 43 percent, with conservation compliance, CRP, EQIP and its predecessor programs, and changing production practices as the major factors.

Wetlands. Wetland losses have steadily declined since the mid-1950s, dropping from 593,000 acres per year during 1954-74, to 26,000 acres per year during 1992-1997. During 1997-2003, agriculture experienced a net gain of more than 260,000 acres, with WRP and CRP the major contributors to wetland restoration and enhancement and swampbuster reducing wetland conversion.

Wildlife habitat. Federal conservation programs, have made major contributions to establishment of wildlife habitat and enhancement, including increases in grassland bird and waterfowl populations on CRP land that were in serious decline in the 1970s and 1980s and in Western State populations of pheasant, big game elk, mule deer, white-tailed deer, and pronghorn antelope.

Livestock. With 60 percent of EQIP funds devoted to animal agriculture, a key goal has been the establishment of site-specific comprehensive nutrient management plans to assist producers in meeting regulations that deal with potential air and water quality problems from animal waste.

Water quality. Improving water quality is a fundamental objective of conservation programs. Quantifying improvements from programs is difficult because there are multiple sources for nutrients, sediment, and other pollutants in water. Soil erosion reduction increases water quality benefits. For CRP, the annual water quality benefit of reduced sediment loads has been recently estimated to be \$266 million. Water quality benefits can also be attributed to the conservation compliance, EQIP, and other programs to the extent they have reduced sediment, nutrient, and pesticide runoff. Swampbuster and WRP also contribute significantly to water quality because wetlands filter sediment and nutrients from runoff from cropland before it reaches streams or lakes.

Air quality. Air quality concerns associated with agricultural production include odors, ozone

precursors, ammonia, particulate emissions, and greenhouse gases. Addressing these concerns is an area of increasing emphasis in USDA's conservation programs. Technologies such as anaerobic waste digesters supported by EQIP can significantly reduce odors associated with large animal feeding operations and result in lower methane emissions. In 2003, USDA started an effort to target greenhouse gases through conservation programs and estimates that these efforts will result in an additional 12 million metric tons of carbon reductions by 2012.

Key issues for future programs. Despite progress, challenges remain and new issues continue to emerge where agricultural conservation can play a role including: excess nutrients in many rivers, streams, and lakes; hypoxia in the Gulf of Mexico, Chesapeake Bay, and elsewhere; concerns over water availability for agriculture, environmental, and urban use; declines in soil condition in many areas; invasive species; endangerment of native species; rising greenhouse gas concentrations in the atmosphere; and the environmental implications of increased interest in renewable energy from agricultural lands.

Program Costs and Distribution of Program

Assistance. Main conclusions related to program spending are: (1) funding for conservation programs is up sharply under the 2002 Farm Bill, mainly due to expanded programs on working lands, (2) financial and technical assistance are fairly evenly distributed by farm size, (3) payments relative to the size of the farming operation tend to be much larger for small, rural residence farms than on larger farms, and (4) financial assistance varies based on geography, environmental context, and the individual conservation program.

Key issues for future programs. Competition for available funds suggests a growing need to find more efficient ways to design and deliver programs. Consolidating and simplifying programs, as well as refining natural resource priority concerns, are ways to improve efficiency. A further movement toward working lands programs could shift assistance toward intermediate and commercial farms. That may make conservation programs more effective in addressing some problems, such as nutrient runoff, because these farms control such a large share of agricultural land and livestock production. It may also mean that the distribution of participation and payments across farms would be less uniform, at least in terms of payments per farm.

Economic and Market Effects. Conservation programs help avoid or minimize potential production risks. There may be effects on farm income and commodity markets if programs induce changes in crop or livestock production. For example, crop production is reduced under programs that put large amounts of land in conserving uses, increasing crop prices. Local

economies may also be affected as additional acreage is enrolled lowering crop production and input purchases, but increased conservation payments may be invested locally and support the economy. Providing environmental goods and services may also generate recreation or tourism. A 2004 study found that the negative effects of the CRP on rural economies tend to be small and transitory. Conservation compliance may also reduce the effective level of support received by some producers from other programs, but research suggests that conservation compliance has been effective in reducing soil erosion.

Key issues for future programs. Conservation policy needs to balance the economic viability of producers and their communities with environmental quality. The need for balance raises questions about the mix of policy tools used to encourage better environmental performance by producers. In addition, the emerging private markets for greenhouse gas offsets and mitigation banks suggest that conservation programs could become more efficient by incorporating activities that use or facilitate environmental market mechanisms, such as credit trading, mitigation banking, and green labeling. More effective implementation may also be achieved using market mechanisms, such as auctions and bidding.

WTO Implications of Conservation and Environmental Programs. World Trade Organization (WTO) criteria classify domestic farm programs by their level of production and trade distortion. For conservation or environmental program payments to have “green box” status (non-trade distorting and exempt from WTO reduction commitments), they must be part of a clearly-defined government environmental or conservation program. Payments must be limited to the extra costs or loss of income involved in complying with the program.

Payments may also qualify as green box if they are part of a program that removes land or other resources from marketable agricultural production for a minimum of three years (permanently for livestock). Payments must not require or specify production of marketable agricultural products.

Key issues for future programs. For conservation programs that involve a payment that exceeds the costs or income foregone in complying, or does not put land into conservation use for the long term, conservation payments may still be “green box,” if they are decoupled income support, meaning not related to production, prices, or factors of production after a base period.

Generalized Alternative Approaches to Current Programs

Four alternatives to current Farm Bill conservation programs are considered that would address some of the

issues for future programs raised in the previous section. These approaches are not specific Farm Bill proposals that are being advocated. Neither are they mutually exclusive. Instead, they are presented to help focus public discussion for the 2007 Farm Bill.

Although there are many ways to structure programs to increase environmental benefits, implementation of conservation-based performance goals would increase program effectiveness. USDA has been developing tools to estimate program-induced changes in nutrient runoff and leaching, greenhouse gas emissions, irrigation water savings, and certain wildlife populations. These measures could be used to provide performance-based conservation program compensation and provide a means to measure USDA progress towards national conservation goals.

Alternative 1: Improve Existing Conservation Programs. This alternative includes four changes that could help improve the effectiveness and efficiency of current conservation programs. The modifications include: (1) improve targeting by making greater use of watershed and landscape approaches where problems exist; increase the use of payments based on performance; and where cost-share or other payments are used, increase use of market mechanisms, such as auctions, or bidding; (2) consolidate programs and delivery mechanisms that share common purposes and program incentives; (3) balance conservation investments among programs and purposes with attention to the tradeoff between working lands and conservation use programs; and (4) enhance contributions to energy management and alternative energy sources. These changes could improve the allocation and use of conservation resources in areas with natural resource problems. More conservation benefits per program dollar may be obtained by basing payments on performance targets rather than past actions or specific practices, but this may cost more. A single financial assistance program would allow program implementation to be sensitive to local needs and allocate funding to conservation purposes and mechanisms that can create the greatest environmental benefit. The above modifications would not likely have significantly different commodity market effects from current programs, unless the balance between rental programs and working lands programs changed sharply.

Alternative 2: Provide “Green Payments” to Enhance Environmental Benefits and Provide Income Support. So-called “green payment” programs have been suggested as an alternative way to provide income support to producers in a manner that is consistent with WTO constraints, while providing substantial environmental benefits. The government would create a market for environmental gains, and if the payment a producer receives exceeds the cost of the conservation activities, the producer would have income supported, by

“producing” the gains. Green payments could encourage additional new conservation actions by producers. Since payments can exceed the cost or what the producer is willing to accept, the cost of obtaining environmental benefits would likely exceed a more targeted program aimed at specific environmental performance with competitive bidding or cost-based payments. WTO consistency is another concern, as green payments are not necessarily green box. If green payments are green box because they compensate producers for only cost or income foregone, there is no income support. If the green payments exceed costs or income foregone, then to be green box, the payments must be decoupled income support. However, to be decoupled income support, the payments must not be related to input use, and it is usually by changing input use that conservation payments achieve environmental gains. Thus, if the actions or practices taken by the producer are unconstrained under the program in order to ensure WTO consistency, the environmental gains may be limited.

Alternative 3: Encourage Private Sector Markets for Environmental Services. New private sector environmental markets could complement or potentially replace existing federally supported conservation efforts. Actions that could develop these markets include: (1) generate demand for environmental goods and services by authorizing USDA and regulatory agencies to cooperate to ensure that environmental goods produced by agriculture can be used to offset regulatory requirements on other sectors; (2) authorize the development of consistent standards for estimating environmental goods and services provided by agriculture and forestry, including standards for data quality, verification, reporting, and estimation methods; (3) foster emerging markets by authorizing provision of investment capital, such as loans and grants, to stimulate markets. Firms could meet regulatory obligations by purchasing pollution or emission offsets from lower-cost providers and achieve pollution reductions at lower costs to society. Agricultural operations could earn income by providing offsets in cases where they are either not subject to regulatory requirements or can exceed the required environmental performance.

Alternative 4: Expand Conservation Compliance or Establish a Standard of Care. This alternative would strengthen the link between price and income support, and perhaps other programs, and environmental benefits by expanding conservation compliance requirements. For example, to receive price and income program support, producers could be required to control soil erosion on all cropland, adopt some aspect of nutrient management, or meet the same soil and water quality conservation requirements as under CSP Tier I, which require the producer to address soil and water quality to a minimum level of treatment on part of the farm.

Compliance programs do not require additional funding other than technical assistance; however, farmers are likely to incur costs that are not offset by payments under cost share programs like EQIP. Moreover, these costs are not likely to be evenly distributed across producers.