

The apparent success of programs designed to reduce artificial incentives for creating cropland from environmentally sensitive or valuable lands, coupled with reduced market incentives for

conversion, is encouraging. We need to ensure that adequate amounts of cropland are available to meet domestic and world needs for food and fiber, while minimizing the sacrifice of important natural lands. ■

Agriculture That Fits the Environment: A Look Backward and Forward

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The search continues for an agriculture that fits the land as well as maintains it. Public opinion polls increasingly identify the environment as a major public concern.

Through legislation passed by Congress and signed by the President, this concern has been translated into action affecting numerous aspects of life in the United States—including life on the farm. Within the past decade, laws such as the Food Security Act of 1985, the Clean Water Act amendments of 1987, and the Conservation Program Improvements Act of 1990 (part of the 1990 farm bill) called for modifications in programs and development of new ones in USDA. The intent of the new laws is to ensure

that USDA's programs are compatible with our environmental objectives.

But, if we are to maintain environmental quality, we must have a mechanism and a source of knowledge to turn legislative intent into action on the land. Fortunately for the American public and American farmers, earlier concerns over soil and water conservation led to a system that helps producers farm efficiently while still meeting environmental objectives. Without the scientific research, the practical experience, and the development of institutions at the local, State, and Federal level, public concerns about the environment would be far more difficult to translate into action at the farm level.

Looking Backward

New crops, new climates, virgin soils, and new social and governmental systems influenced agriculture. Conversely, agriculture influenced the environment. It was not long before perceptive people could recognize that the meshing of agriculture with the environment of North America was not completely harmonious.

During the 18th and 19th centuries, Americans borrowed and developed methods for soil conservation. Growing concerns in the 20th century led to the development of Government programs to help farmers use the soil while at the same time reducing erosion. Starting in 1929, USDA focused on research, setting up experiment stations to test methods of soil conservation.

The Soil Conservation Act of 1935 established the Soil Conservation Service (SCS) to work with farmers. With the encouragement of President Franklin D. Roosevelt and USDA, States passed laws to allow farmers to create conservation districts. Since 1937, farmers, ranchers, and other landowners have created nearly 3,000 conservation districts and, all along, the SCS has had trained soil conservationists working with these local conservation districts and the farmers. It is this system—the experience, knowledge of land and resources, familiarity with the local landowners, and governmental institutions—that makes it

possible to shape on-farm management to meet national goals.

At the same time SCS was developing expertise in soil conservation, some developments in agriculture did not bode well for conservation. Part of the problem was the increasing specialization of agriculture. The mixture of cropland and livestock had allowed for many conservation techniques, such as using the steeper lands for pasture and hay, rotating crops, and interspersing close-growing crops into strip-cropping to retard runoff. But increasingly, American farms specialized in a few crops or in livestock.

USDA's commodity price support programs also affected soil erosion. For some time, people believed that some USDA programs had encouraged poor land use. In the 1930's, during a time of low prices for agricultural commodities, laws such as the Agricultural Adjustment Act of 1933 set up a system of price support payments to farmers. The payments were supposed to help maintain supplies and prices, thereby leveling out the peaks and valleys of prices and supplies of agricultural commodities. Fifty years later, critics of USDA programs held that these programs, including crop insurance, encouraged farmers to keep very erodible land in production. A larger issue involved fairness, and the feeling on the part of many

that farmers should use methods that conserved resources if they were to receive financial assistance.

Recent Legislation

The National Environmental Policy Act of 1970 addressed some USDA programs, but by no means all of them. Partly impelled by concern over agriculture's impact on the environment, Congress passed the Soil and Water Resources Conservation Act of 1977 (RCA). The act mandated a continuing appraisal of the Nation's soil, water, and related resources. From this information, USDA was to develop a long-term National Resources Program.

The second National Conservation Program was issued in 1988 and set priorities through 1997. It calls for reduced erosion and improved water quality, and encourages State and local governments to assume additional responsibility in soil and water conservation. The results from the studies, debates, and pilot projects started under RCA found their way into national farm legislation, first in the 1981 farm bill, and to a much greater extent in the Food Security Act of 1985.

The Conservation Reserve Program is intended to remove highly erodible land from production by paying farmers an annual rental for 10 years under a contract. The conservation provisions of the 1985 farm bill required that

farmers comply with these environmental objectives if they wished to continue to participate in certain other agricultural programs, such as commodity price supports, crop insurance, loans, and farm storage facility loans. Under the "Highly Erodible Land" provision, farmers had until 1990 to develop a conservation plan, approved by USDA and local conservation districts, and until 1995 to complete the implementation of the conservation plan.

Sodbuster, another part of the Highly Erodible Lands provision, was designed to discourage erodible land from being brought into production. If land had not been used for an annual crop during 1981-85, it could not be used for crop production unless acceptable conservation methods were used. The Swampbuster provision, officially titled "Wetland Conservation," was included to slow the conversion of wetlands to cropland. Farmers who converted wetland and produced agricultural commodities on it after December 23, 1985, the date of the act's passage, would be ineligible for certain USDA program benefits.

The Task of Making Laws Work

Within USDA, SCS has generally provided the technical assistance and advice while the Agricultural Stabilization and Conservation

Service (ASCS) has handled financial assistance.

Bringing the intent of the conservation provisions of the Food Security Act of 1985 from the halls of Congress to farm operations has required substantial work. This includes writing definitions, establishing rules and procedures, and giving the public time to offer opinions and suggestions.

The field staff in about 2,800 field offices has dealt directly with conservation districts and farmers. That work has kept SCS and ASCS busy during the past 5 years and will require most of the time of the SCS staff for the coming 4 years. After developing the criteria for defining highly

erodible lands, SCS field staff identified the highly erodible land with soil surveys and field examinations. The agency accelerated soil surveys to areas not already covered by the published soil surveys.

SCS and other Federal agencies, especially the U.S. Fish and Wildlife Service of the Department of the Interior, took the definition of wetlands in the farm bill and developed criteria for identification in the field. In 1988, SCS started making inventories of wetlands. In some areas where wetland inventoring has progressed, especially in the pothole region of the North-Central States, many farmers have appealed the designation of some of their lands



An Oklahoma family running for shelter during a storm in the 1930's. The Dust Bowl is an example of how America's agriculture practices have not always been harmonious with the environment.

Arthur Rothstein/USDA CEN-170

as wetlands for purposes of the Food Security Act, and local SCS employees in those areas must review these appeals.

The 1985 law required that farmers have a conservation plan by January 1, 1990, and that they fully implement it by January 1, 1995, in order to stay eligible for a variety of USDA programs. The task for SCS field staff was to formulate 1.3 million plans covering 135 million acres. Farmers and SCS now face a greater task than writing plans—designing and installing, by 1995, all of the conservation practices that have been agreed to in the plans.

New Role for SCS

The work associated with the Food Security Act of 1985 created a new, unaccustomed role for the agency and the field staff. Previously, SCS worked strictly on a voluntary basis. Now SCS must make decisions about whether farmers are complying with the law. A vast majority of farmers participate in farm programs to some extent and are affected by the law.

One method used to reduce erosion has been to take erodible land out of production. As a requirement for participating in Government price support programs started in the 1930's, farmers often had to set aside lands on an annual basis. The Soil



Diversified land use provides for conservation in many ways. Stripcropping, crop rotation, and pastures on steep slopes retard runoff and erosion on this farm in Carroll County, MD.
Tim McCabe/USDA 0981X1234-32

Bank of the late 1950's and early 1960's promoted a longer term shifting of cropland to trees or grass through contracts. The general criticism of these programs has been that the purpose of the price support programs was to reduce crop acreage rather than to conserve soil. In the case of the Soil Bank, the program was not aimed at the most erodible land; farmers could sign contracts and enroll any land they chose.

Under the Conservation Reserve Program (CRP), only land determined to be highly erodible was eligible. From the time of the sixth signup under the CRP in 1988, the criteria have been changed at intervals to allow the entrance of filter strips, floodplain scour lands, and finally wetlands into the program. These lands, however, constitute only a very small fraction of the acres allowed. As of 1990, landowners have enrolled 34 million acres in the CRP. SCS also gives advice on planting methods used to establish grasses and then checks to ensure that the work has been done properly.

Impact on Water Quality

Another concern related to agriculture has been the impact of agriculture on water quality. Part of the concern involves the sediment in water caused by erosion. The use of irrigation can lead to salinity problems. Dairying or raising livestock in a small

space, with many such operations concentrated within a watershed, can also cause water quality problems. One of the most complicated problems is determining the exact effect of agricultural chemicals such as nutrients and pesticides. While the first task is understanding the nature and the extent of the problem, there is then the challenge of devising practical remedial measures and getting landowners to use them.

One of the earliest efforts to understand the water quality problem came out of the Great Lakes Water Quality Agreement with Canada in 1972. In that agreement, USDA and the Canadians defined the problem and developed solutions.

During the 1970's USDA learned a great deal from the Rural Clean Water Program (RCWP), which included a number of pilot and demonstration projects. The projects tested the value of various methods as well as the feasibility of getting farmers to use them.

President George Bush's State of the Union message on February 9, 1989, included a major water quality initiative that pertained to the work of several agencies (see Chapter 12).

One of the most promising recent developments in water quality has been greater cooperation within USDA to give farmers advice on the use of agricultural chemicals at the same time that

they receive advice on soil and water conservation measures.

Since the 1960's, entomologists in the Extension Service, State experiment stations, and Agricultural Research Service have worked on integrated pest management systems. One of the objectives of these systems is to reduce the amount of chemicals used in insect control. At the same time, agronomists in these agencies have developed ways to use chemical nutrients so that there will be little runoff into surface water or seepage into the ground water.

SCS has worked with the Extension Service to develop recommendations in SCS's technical guides, usually one for each county, that will include information about where and when these chemicals can be used effectively, but in a manner that keeps movement to ground and

surface waters to a minimum. These same technical guides also provide the basic information on soil and water conservation measures. The promise is for a better environment through greater cooperation within USDA and, hence, greater service to farmers.

Looking Forward

Concern over the environment seems to be a constant and prominent feature on the political landscapes of both the recent past and the near future. Farmers and the State and Federal agencies with which they work will live in this climate of concern. But in a larger sense the recent legislation is part of a longer quest for agriculture that fits the environment, in which the impetus for adaptation is not a response to legislation but an acknowledgment of the forces of nature. ■

Conservation Tillage and Environmental Issues

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The research and development of conservation tillage began in the early 1930's in the United States but did not gain popularity until

the mid-1960's. Land users began accepting this practice in order to reduce soil erosion and to save fuel, time, and money, and by