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REPORT TO THE CONGRESS



BY THE COMPTROLLER GENERAL
OF THE UNITED STATES



LM10007

To Protect Tomorrow's Food Supply, Soil Conservation Needs Priority Attention

Department of Agriculture

The money and technical help the Department of Agriculture gives farmers to help control soil erosion could be used more wisely. Loss of topsoil reduces the productivity of the soil for present and future generations and contributes to the pollution of our air and water.

Agriculture should seek out and offer assistance to farmers with the most severe erosion problems and should give assistance priority to erosion control measures that provide critically needed, enduring soil conservation benefits.

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COMPTROLLER GENERAL OF THE UNITED STATES

WASHINGTON, D.C. 20548

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To the President of the Senate and the
Speaker of the House of Representatives

This report discusses the three major Department of Agriculture programs for assisting farmers in establishing enduring soil conservation practices needed to control erosion and preserve the topsoil necessary for crop production. These programs are the Conservation Operations Program and the Great Plains Conservation Program administered by the Soil Conservation Service and the Agricultural Conservation Program administered by the Agricultural Stabilization and Conservation Service. •

We made our review pursuant to the Budget and Accounting Act, 1921 (31 U.S.C. 53), and the Accounting and Auditing Act of 1950 (31 U.S.C. 67).

Copies of this report are being sent to the Director, Office of Management and Budget, and to the Secretary of Agriculture.

A handwritten signature in black ink, reading "Luther A. Stacks".

Comptroller General
of the United States

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ABBREVIATIONS

ACP	Agricultural Conservation Program
ASCS	Agricultural Stabilization and Conservation Service
COP	Conservation Operations Program
GAO	General Accounting Office
GPCP	Great Plains Conservation Program
SCS	Soil Conservation Service

D I G E S T

If the United States is to continue to meet its own food needs and help alleviate world food shortages, it must maintain its topsoil. Estimates of soil losses for 283 farms GAO visited on a random basis in the Great Plains, Corn Belt, and Pacific Northwest indicate that topsoil losses are threatening continued crop productivity.

Soil scientists estimate that annual soil losses must be limited to no more than 5 tons an acre in deep soils and 1 ton an acre in shallow soils to maintain soil fertility and productivity over time. According to Department of Agriculture technicians, about 84 percent of the 283 farms were losing over 5 tons an acre a year on cropland for which calculations were made. In addition, soil erosion was creating water and air pollution and highway maintenance problems. (See pp. 4 to 9.)

Agriculture's Soil Conservation Service and Agricultural Stabilization and Conservation Service administer technical and financial assistance programs--costing several hundred million dollars annually--designed to help farmers control erosion and preserve topsoil.

These programs have not been as effective as they could be in establishing enduring soil conservation practices and reducing erosion to tolerable levels.

CONSERVATION OPERATIONS PROGRAM

This Soil Conservation Service program provides technical assistance to help farmers develop conservation plans and apply conservation measures. For fiscal year 1977, \$214 million was appropriated for this program.

The Service has taken a passive approach in carrying out this program. It normally works with farmers who request advice and who volunteer to participate in the program, rather than systematically seeking out and offering assistance to those having the most severe erosion control problems.

Much of the Service technicians' time has been spent developing relatively elaborate conservation plans for individual farms. However, many of the plans GAO reviewed were outdated, forgotten by the farmer, or just not carried out or used in making farming decisions. Of the 2.3 million cooperators in the program, the Service had developed plans for 1.8 million. It did not routinely check with the farmers to encourage them to carry out at least the more important parts of the plans and to revise them as conditions changed. Followup visits were sporadic and generally not made unless requested. (See pp. 10 to 15.)

The amount of soil lost from erosion depends on various factors but, in a given area, program participants' soil losses should be expected to be consistently lower than other farmers' losses. This was not so for the 283 farms GAO visited. Also, most of the estimated soil losses for both groups were well above the maximum tolerable level. (See pp. 15 to 17.)

Farmers sometimes receive conflicting advice from the different Agriculture agencies administering farm-related programs. Greater coordination among the agencies could help avoid such situations. This also might better help promote farming practices that minimize soil erosion and preserve topsoil. (See pp. 17 to 25.)

Conclusions and recommendations

The Soil Conservation Service needs to

--realine its priorities,

--aggressively seek out farmers whose lands have critical erosion problems and educate

them on the necessity and benefits of applying needed conservation measures, and

--provide the necessary technical and followup assistance.

The Department needs to better coordinate its agencies' programs to provide consistent advice and assistance to farmers on soil conservation needs and concerns. (See recommendations on p. 26.)

AGRICULTURAL CONSERVATION PROGRAM

This Agricultural Stabilization and Conservation Service program channels Federal money to farmers and ranchers--sharing with them the costs of carrying out conservation practices on their land. Much of the Federal money is not being spent on critically needed soil conservation practices having the best payoffs for reducing erosion. For the 1977 program, \$190 million was authorized.

In recent years, less than half the program funds have been used for measures that are primarily oriented toward conserving the Nation's topsoil. Most of the money has gone toward measures that, although eligible for funding, are primarily production-oriented--thus financially benefitting farmers--or that result in minimal soil conservation. (See pp. 27 to 29.)

Installing drainage tile on cropland, for example, provides little erosion control but generally improves the productivity of land which otherwise suffers from too much water. On the other hand, installing terraces primarily conserves the soil and provides erosion control benefits by reducing the amount and speed of surface runoff on sloping cropland.

Iowa, the first State with a cost-sharing program for soil conservation, cooperated with the Service in providing cost-share funds to farmers for only 1 year. It stopped because it believed the Federal

program authorized too many production-oriented practices that would not achieve enduring conservation benefits and that generally produce a large enough economic return for landowners to finance on their own. (See pp. 41 and 42.)

Before 1976, practices selected for cost sharing by the counties and the States were subject to Agriculture's approval. The Department's 1976 and 1977 appropriations acts, however, eliminated its--and consequently the States'--authority to approve or disapprove practices the counties selected. The acts allowed the farmers and county committees a wider choice of practices for Federal cost sharing (including some that provided little in the way of enduring soil conservation benefits) and gave the county committees final approval authority. Sometimes counties approved and funded practices on the basis of popular demand rather than critical soil conservation needs. (See pp. 29 and 42.)

A new program element--long-term agreements--introduced in 1974 has met with mixed success. Some local Federal officials believed farmers did not want long-term contracts when they could obtain funding for similar practices under short-term contracts. (See p. 44.)

Conclusions and recommendations to the Department

Many critically needed conservation practices cannot compete with some of the popular practices which are eligible for assistance but which provide more tangible economic returns. Consequently, many important conservation needs may remain unmet. Greater progress in treating serious soil erosion problems could be made under this program if available funds were used first, and as often as practical, for high-priority, critically needed conservation practices which farmers ordinarily would not undertake without Federal assistance. Recommendations to this end are on page 45.

One bill introduced during the 94th Congress would have provided closer congressional oversight of the conservation programs. Another would have restricted the funding of production-oriented practices. Neither bill was enacted. (See pp. 43 and 44.)

RECOMMENDATION TO THE CONGRESS

If the Congress wants to stop the shift away from needed soil conservation practices and prevent the widespread cost sharing of practices that are oriented more toward stimulating agricultural production and financially benefiting farmers, it should place more emphasis on the funding of critically needed enduring conservation practices by limiting or prohibiting Federal spending for other kinds of practices currently authorized by law. (See p. 46.)

GREAT PLAINS CONSERVATION PROGRAM

This Soil Conservation Service program has not made satisfactory progress in alleviating soil erosion problems. It was authorized in 1956 as a special Federal effort to help combat the unique climatic hazards in the Great Plains. Farmers and ranchers, under 3- to 10-year contracts, are technically and financially helped to change crop systems and land uses to conserve soil and water. For fiscal year 1977, \$21 million was appropriated for the program.

Most of the 16 million acres of unsuitable cropland and badly depleted rangeland which were to be treated had not been treated, or had not been effectively treated, for soil erosion control. Service officials in four Great Plains States GAO visited did not think the program would reach its goals before it ended in 1981. (See pp. 47 to 49.)

As has been the case under the Agricultural Conservation Program, the Service has not always used this program's funds for cost sharing practices that will do the most good to alleviate soil erosion in the Great Plains. For example, although such practices as grazing management and reorganization of irrigation systems are allowed and funded under

the program, they do little to accomplish the program's major objective. (See pp. 49 to 52.)

Some of the land seeded into permanent vegetative cover under the program is being converted back to cropland at the end of its contract period. Some farmers said that higher crop prices would bring in enough money to offset the risk of excessive soil erosion caused by taking the land out of grassland. (See pp. 53 to 55.)

Agriculture provides a hedge against such risk by its crop disaster relief program--which can sometimes work at odds to conservation goals. In two of the cases GAO examined where established grassland was returned to cropland, farmers had poor yields because wind erosion damaged their crops. Both farmers had applied for and received Federal crop disaster relief payments from the Department. (See p. 54.)

Conclusions and recommendations

The program could do more to accomplish its primary goal if the Service systematically sought out and encouraged farmers with the greatest conservation needs to use the program and periodically contacted farmers with expired contracts and encouraged them to maintain grassland areas that had been seeded under the program and are highly susceptible to erosion. (See recommendations on p. 55.)

AGENCY COMMENTS

The Department agreed in general with GAO's recommendations and said it would make all reasonable efforts to implement them. (See pp. 26, 46, and 55.)

CHAPTER 1

INTRODUCTION

Soil erosion has been a continuing problem on the Nation's agricultural land despite many years of Federal technical and financial assistance to cope with the problem. This has caused increasing concern that continued erosion will lead to greatly reduced cropland productivity.

We made this review to

- determine how serious the cropland erosion problem is,
- evaluate the effectiveness of Department of Agriculture programs that are addressing the problem, and
- suggest program improvements to help protect the soil productivity of the Nation's croplands.

Our review covered 10 counties in 8 States located in the Corn Belt (Iowa, Illinois, and Wisconsin), the Great Plains (Texas, New Mexico, Kansas, and North Dakota), and the Pacific Northwest (Washington).

FEDERAL SOIL CONSERVATION PROGRAMS

For the past four decades the Department of Agriculture, through its Soil Conservation Service (SCS) and Agricultural Stabilization and Conservation Service (ASCS), has administered technical and financial assistance programs designed to help farm operators control erosion and preserve topsoil. We focused our review on the three programs which currently provide for such assistance: SCS's Conservation Operations Program and Great Plains Conservation Program, and ASCS's Agricultural Conservation Program.

The Conservation Operations Program (COP) was authorized in 1935 (16 U.S.C. 590a-590f). For fiscal year 1977, \$214 million was appropriated for this program, including \$172 million budgeted for technical assistance to landowners or operators for developing conservation plans and applying conservation treatments. Other program activities not reviewed by us include making soil surveys to determine land capabilities and conservation treatment needs, conducting snow surveys to develop streamflow and water supply forecasts in western States, and operating plant material centers to assemble and test plant species which show promise for use in conservation problem areas. The total funds appropriated for the program in 1977 represented 10,235

staff-years of effort, including 8,435 staff-years for technical assistance. SCS administers this program and the Great Plains Conservation Program through State, area, and field offices.

The Great Plains Conservation Program (GPCP) was authorized in 1956 (16 U.S.C. 590p) as a special program to help combat the unique climatic hazards in the Great Plains. Under this program SCS provides technical assistance and cost-sharing payments to farmers and ranchers in designated counties of 10 Great Plains States who carry out approved soil and water conservation practices. Contracts for financial assistance cover periods of 3 to 10 years. The Federal cost share for any one conservation practice cannot exceed 80 percent, and the Federal share under any one contract--which can cover several conservation practices--cannot exceed \$25,000.

The enabling legislation authorized Federal appropriations of up to \$150 million for cost sharing and provided the authority to enter into cost-sharing contracts through 1971. The Congress amended the law in 1969 to increase appropriation authority for cost sharing to \$300 million and extend the time for entering into cost-sharing contracts to December 31, 1981. For fiscal year 1977, \$21 million was appropriated for the program, including \$15 million budgeted for cost-sharing assistance and \$3.5 million for technical assistance.

The Agricultural Conservation Program (ACP), called the Rural Environmental Assistance Program from 1971 through 1973 and the Rural Environmental Conservation Program in 1974, was authorized in 1936 (16 U.S.C. 590g-590c, 590p(a), and 590q). The program is designed to encourage the application of enduring soil and water conservation practices on the Nation's farms by providing cost-sharing assistance under both annual and long-term conservation agreements with farmers and ranchers. The program authorizes the Government to pay 50 to 75 percent of the cost of carrying out approved conservation practices up to a maximum of \$2,500 per farmer. ASCS provides the cost-sharing assistance and administers this program through State and county committees. SCS provides technical guidance to the committees and the farmers for carrying out the conservation practices. The Department was authorized \$190 million for the 1977 program in the 50 States, Puerto Rico, and the Virgin Islands. About 580,000 farmers, ranchers, and woodland owners a year receive cost-share payments for performing approved conservation practices.

PROGRAM FUNDING FROM INCEPTION

As shown below, nearly \$15 billion has been used to fund the SCS and ASCS conservation programs since their inception.

<u>Program</u>	<u>Funding period</u>	<u>Program funding (note a)</u> (billions)
SCS:		
Conservation Operations Program	1935 to 1977	\$ 3.4
Great Plains Conservation Program	1956 to 1977	<u>b/.3</u>
ASCS:		
Agricultural Conservation Program	1936 to 1977	<u>c/11.1</u>
Total		<u>\$14.8</u>

a/The COP and GPCP amounts represent appropriated funds. The ACP amount represents appropriated funds from 1936 through 1943 and contract authorization from 1944 through 1977.

b/This amount includes funds for administrative expenses, technical assistance, and cost-sharing assistance.

c/This amount includes funds only for cost-sharing assistance. Funds for administrative expenses are included under other ASCS appropriations.

CHAPTER 2

SOIL EROSION--A CONTINUING PROBLEM

During appropriations hearings for the Department of Agriculture in March 1976, information was introduced indicating that perhaps the greatest single fault of mankind through the annals of recorded history has been his failure to preserve and protect the natural resources which provide the basic necessities of life--food, clothing, and shelter. Governments and people have not adequately recognized that the cost of food, clothing, and shelter has to be paid--not only by the consumer but by the land from which these necessities come. Yet the soil cannot be cultivated year after year unless its productivity is preserved.

Not only has soil erosion been depleting the Nation's valuable topsoil, but it has also been creating pollution problems and increasing public and private expenditures for cleanup and repair. The productive soil of the Nation's agricultural land must be maintained and protected if the United States is to continue to meet its domestic food needs and help alleviate world food shortages.

IMPORTANCE OF TOPSOIL

Topsoil is a valuable natural resource containing most of the soil organic matter and the nutrients required by plants for crop production. Its loss could have a disastrous effect on crop productivity, particularly where the topsoil covers a thick layer of sand, clay, or rock. Loss of topsoil will impair productivity to a much lesser extent in situations where subsoils with favorable physical and chemical properties extend to depths of several feet or more and sufficient quantities of fertilizers are added to the soil.

Soil scientists estimate that to maintain productivity over time, annual soil losses must be limited to no more than 5 tons per acre in deep soils and 1 ton per acre in shallow soils. Some soil scientists contend that it takes nature over 250 years to create an inch of topsoil; others say it takes 100 years. In either case, it is a very long time. Topsoil can be rejuvenated for agricultural production if plant nutrients are replaced by fertilizers and organic matter is added by roots and crop residues.

SOIL LOSS ESTIMATES FOR FARMS GAO VISITED

We made our review in the three principal agricultural regions identified by SCS as having significant soil erosion

problems--the Midwest (Corn Belt), Great Plains, and Pacific Northwest. We selected samples of farm operators in 10 counties located in 8 States to determine the severity of soil erosion on their cropland and to evaluate the effectiveness of the Department's programs in combating it.

We interviewed 283 farmers about their conservation and farming practices and obtained additional information from SCS and ASCS records to enable the Department's soil experts to compute estimated soil losses for parts of their cropland. These estimates, shown below, approximate the average annual soil losses that would likely occur over a period of years, based on the soil types, climatic factors, tillage practices, and conservation practices being applied.

Region, State, and county	In sample	Number of operators With estimated annual soil losses in various ranges				
		0 to <u>5</u>	5.1 to <u>10</u>	10.1 to <u>20</u>	20.1 to <u>40</u>	Over <u>40</u>
		----- (tons an acre) -----				
Pacific Northwest:						
Washington/ Benton	20	-	11	8	1	-
Washington/ Whitman	30	5	14	11	-	-
Great Plains:						
Kansas/Finney	35	1	23	2	9	-
New Mexico/ Roosevelt	28	2	7	9	10	-
North Dakota/ Burleigh	11	7	4	-	-	-
North Dakota/ Walsh	16	12	4	-	-	-
Texas/Gaines	39	1	-	2	5	31
Midwest:						
Illinois/Adams	36	-	6	16	9	5
Iowa/Webster	34	4	11	19	-	-
Wisconsin/ Grant	<u>34</u>	<u>12</u>	<u>15</u>	<u>5</u>	<u>-</u>	<u>2</u>
Total	<u>283</u>	<u>44</u>	<u>95</u>	<u>72</u>	<u>34</u>	<u>38</u>
Percent	100	15.6	33.6	25.4	12.0	13.4

As shown in the table, about 84 percent of the farmers in our sample had estimated annual soil losses of more than 5 tons of soil an acre annually. According to SCS, an annual soil loss of 5 tons an acre is the maximum acceptable level

which can occur without loss of productivity, and approximates the rate at which the soil is being rebuilt.

EFFECTS OF SOIL EROSION ON CROP PRODUCTIVITY AND THE ENVIRONMENT

Because soil erosion has been a frequent issue of major concern in the United States, much has been written about its effects on crop productivity and the environment.

- The Council for Agricultural Science and Technology reported in January 1975 that more than one-third of the U.S. cropland was suffering annual soil losses in excess of the limit at which soil productivity can be sustained over time. The report suggested that we are less effective in controlling erosion today on some lands with severe erosion problems than we were 15 years ago.
- An April 1972 Iowa State University research report stated that the United States was losing 4 billion tons of soil a year through water erosion, as compared to 3 billion tons in 1934. The report said that it would take a train of freight cars about 633,000 miles long to move 4 billion tons of soil--a train long enough to circle the earth 24 times. The report also said that today's farmers were losing an average of 12 tons per acre annually through water erosion, as compared to 8 tons in 1934.
- SCS reported that in June 1974 Iowa had experienced its worst spring for soil erosion in 25 years. It stated that many fields had soil losses of 40 to 50 tons an acre and that some steep, unprotected slopes lost as much as 200 tons an acre.

Most topsoil losses are caused by water erosion, although wind erosion is significant in arid and semiarid regions. Soil erosion not only depletes valuable cropland topsoil but also contributes to water and air pollution and increases public and private costs of cleaning up the environment. Agricultural experts estimate that less than 1 percent of the eroded soil reaches the oceans. Most of the silt and sediment accumulates in ditches and roadways, fields, streams, rivers, reservoirs, harbors, lakes, and ponds.

Effects of erosion on waterways

Soil erosion causes several detrimental effects to surface waters. Silt and sedimentation can restrict flow

in streams and drainageways, impair fish and wildlife habitats, reduce reservoir storage capacity, and reduce the quality and value of water for recreational or consumptive uses. Sediment also carries other water pollutants, such as pesticides and nutrients.

The January 1975 report of the Council for Agricultural Science and Technology estimated that soil erosion cost society \$83 million for dredging channels and harbors, \$50 million for reservoir sedimentation and flood plain overwash, and \$25 million for added maintenance and turbidity removal by industry and cities. The report did not state over what period of time these costs were incurred. It also estimated that, based on the 1974 market value of fertilizers, it would have cost at least \$1.2 billion to purchase the fertilizers needed to replace the nutrients lost through erosion that year.

We noted water pollution problems caused by cropland erosion in many of the States in our review. For example, Army Corps of Engineers officials told us that sediment deposits at the mouth of the Palouse River in the Pacific Northwest have lowered the river's conveyance capacity, hindered navigation, and may eventually ruin a Corps-constructed recreational marina. A Department of the Interior survey estimated that an average of 1.5 million tons of sediment is discharged at the mouth of the river each year. We were also told that silt accumulation at the mouth of another river in the area had completely filled a recreational bay and was threatening to disrupt industrial and other activities in a large reservoir.

Wind erosion problems

Air quality and aesthetics are damaged by wind-carried soil. The adverse effects of wind erosion in some States are significant. One county in our review reported that an average of 159,000 acres of crops were damaged each year from November 1970 to May 1974 because of wind erosion. This damage was sufficient to subject the soil to further erosion, and materially lower the yield or impair the productive capacity of several thousand acres of cropland. Some crops had to be replanted during the same season.

Another county reported that 220,000 acres of cropland were damaged by wind erosion one season and 116,000 acres of crops or cover were destroyed. Almost half the cropland in the county was classified as highly susceptible to this hazard.

Highway maintenance problems

Topsoil washed and blown off eroding croplands has clogged roadside ditches and drainage systems and obstructed highway traffic. Data provided by highway department officials indicated that one county in our review spent an average of \$364,000 a year for road and drainage maintenance costs resulting from soil erosion. We were told that another county in our review spent nearly \$75,000 from 1972 through 1974 for the direct labor needed to remove sediment from county roadside shoulders, ditches, and drains, and that when equipment and related maintenance costs were considered, the expense would be at least double that amount.

A third county in our review spent about \$75,000 annually to clean ditches along roadways. About \$45,000 of this was directly attributed to wind and water erosion from cropland. The county engineer said that at least twice as much needed to be cleaned. Officials in another county estimated that an average of \$75,000 to \$100,000 was spent each year clearing and repairing roads and drainage ditches damaged by wind and water erosion.

We were also told that blowing dust in some areas reduces visibility to the extent that highways are sometimes temporarily closed to traffic as a safety precaution. We did not attempt to determine the cost of this problem.

CONCLUSIONS

If the United States is to continue to meet its domestic food needs and help alleviate world food shortages it must maintain its topsoil--a basic requirement for crop productivity.

The rates of estimated soil loss revealed by our review, in combination with other reports, indicate that diminution of the Nation's agricultural productivity potential is possible. In addition, sedimentation resulting from soil erosion contributes to environmental degradation and pollution and leads to increased public and private costs.

The persistence of widespread and significant soil erosion after years of Federal efforts to assist farmers in controlling this problem indicates that changes are needed. Greater emphasis and more effective efforts, from Government and farmers alike, are needed to make sure that the

Nation, in an orderly progression over a period of years, carries out needed conservation practices on farmland susceptible to serious soil erosion. Specific improvements that we believe are needed in the various Federal programs are discussed in the following chapters.

CHAPTER 3

SHORTCOMINGS OF CONSERVATION OPERATIONS PROGRAM

IN COPING WITH SOIL EROSION

The Soil Conservation Service takes a passive approach in carrying out its Conservation Operations Program. It normally works with farm operators who request advice and who volunteer to become cooperators under the program, rather than systematically seeking out farms with severe erosion problems and offering assistance to the operators. Consequently, Federal technical assistance under COP is not being systematically directed toward areas identified as having the most critical erosion control needs. As a result, the program has not been as effective as it could be in helping farmers to control erosion and preserve topsoil on agricultural lands.

Much of SCS technicians' time is taken up developing relatively elaborate conservation plans for individual farms. Many of the conservation plans in SCS files were outdated, forgotten by the farmer, or just not carried out or used as a basis for making farming decisions. SCS did not have an effective system for following up on conservation plans to encourage carrying out at least the more important parts of the plans and for revising them as necessary to meet changing farming conditions and conservation needs.

SCS technical assistance is furnished primarily through field offices that are under the supervision of SCS district conservationists who assist farmers and ranchers through local soil and water conservation district boards--legal subdivisions of State governments that are managed by citizens familiar with local problems. Farmers and ranchers become cooperators--participants in SCS programs--when they agree with their local district board to carry out a conservation plan on their land. Department statistics show that there were about 2.3 million cooperators in COP as of June 30, 1975. This represents about 56 percent of all the farm and ranch operating units in the United States. SCS has developed conservation plans for about 1.8 million of the cooperators.

SCS NOT SEEKING OUT FARMERS WITH MOST SEVERE EROSION PROBLEMS

SCS has not systematically sought out and offered conservation planning assistance to farmers with the most

severe soil erosion problems. In the counties we visited, SCS assistance was generally directed to farmers who had requested technical advice and volunteered to become co-operators under COP. An SCS district conservationist told us that conservation plans are developed for cooperators on a first-come, first-served basis. Under such an approach, Federal technical assistance is not always timely directed to the areas where it will do the most good. This often results in SCS technicians spending a relatively large part of their time and effort helping farmers who do not have critical erosion problems.

For example, two of the four conservation districts in a county we visited had more severe erosion problems than the other two districts. However, only one-third of the 151 conservation plans that were to be developed for the county in fiscal year 1976 covered farms in the districts with the most severe erosion problems.

In another severe wind erosion area, only 3 of the 20 farmers we visited had soil conservation plans developed by SCS. The average estimated annual soil losses of the 20 farmers were more than double the maximum tolerable level recognized by SCS for sustaining the productivity of the land.

One of the district conservationists we talked to explained that, generally, only those farmers who showed up at the county office and indicated a desire for assistance were served. He said that he used this approach because he had insufficient data to determine the county's most critical conservation needs. Also, he said farmers are more likely to follow SCS-developed conservation plans if they volunteer for such assistance.

Some SCS district conservationists told us that manpower limitations and the considerable amount of time involved in developing conservation plans for farmers who visited their offices and requested such assistance had kept them from establishing a system for identifying and contacting all the farm operators in their districts who had severe soil erosion problems.

MUCH TIME SPENT IN PREPARING CONSERVATION PLANS

SCS technicians spend a lot of their time developing relatively elaborate conservation plans specifically tailored for individual farmers who sign cooperator agreements. According to SCS's resource conservation planning handbook, a conservation plan includes

- conservation plan maps;
- soil survey information (soil map, soil description, and interpretations);
- water, plant, animal, and other inventory and management information with needed interpretations and evaluations;
- record of decisions contributing to sound land use and conservation treatment;
- alternatives for sound land use(s) and conservation treatment for which conservation decisions have not yet been made;
- record of understanding as to cooperation between the cooperator and the soil conservation district, as applicable; and
- other information useful to the decisionmaker.

SCS recommends that its field technicians strongly urge each recipient (cooperating farmer) to allow SCS to develop conservation plans covering his entire farm.

The most recent information available shows that in fiscal year 1975 SCS spent \$50 million to prepare or revise 83,180 plans, for an average cost of \$597 per plan. This effort required the equivalent of about 2,300 staff-years. On the average, one person working full time for 1 year could prepare or revise about 36 plans--or one plan about every 6 workdays.

In two of the counties in our review, we found that SCS technicians spent about 35 percent of their time under COP preparing conservation plans and about 35 to 40 percent of their time in providing technical assistance for carrying out conservation measures. The district conservationist for one of the counties said that too much time was spent preparing plans, and that this time could be better devoted to working with more farmers. He also said that conservation plans would work well if they were not so formalized and detailed, and that the plans should be used to prescribe treatment for a farmer's problem erosion areas, rather than for the comprehensive management of his entire farm. He was particularly concerned about the time it took to prepare the elaborate maps that are included in each conservation plan.

The district conservationist in another county said that he and another SCS technician spend 20 and 50 percent of their time, respectively, preparing plans. He questioned the need for such elaborate plans and said that most farmers did not need to have them prepared in that much detail. He pointed out that the large amount of time spent in the preparation of plans was a factor that prevented SCS technicians from making more frequent contacts with farmers.

Other district conservationists maintained that, on many types of soils, conservation tillage is the most practical way to hold soil erosion within tolerable limits. Conservation tillage leaves a protective blanket of crop residue on the field to guard against erosion. Instead of plowing with conventional moldboard plows, farmers slice through the stubble to cut narrow slots in the earth, drop in seeds, and press the slots closed. Farmers can use conservation tillage to control soil erosion on most cropland with little or no formal planning assistance from SCS.

The results of a 1976 survey by the North Dakota Association of Soil Conservation Districts included similar views concerning conservation plans. One survey question asked whether written conservation plans should be eliminated and, instead, use made of available soil survey data, interpretations, and standard alternatives for each soil type and land use. Thirty of the 38 districts that replied answered "yes" to this question. An Association representative concluded from the survey that (1) detailed conservation plans are not needed if they are not requested, (2) only parts of the conservation plans are being used, (3) SCS should simplify the manual paperwork that goes into a plan, and (4) to sell conservation, more personal contacts should be made in the districts by SCS.

If the large amount of time and funds spent preparing conservation plans could be reduced, it would enable SCS to focus more of its resources toward particular areas having the most critical erosion control needs and toward particular soil conservation measures having the best payoff in terms of reducing soil erosion.

MANY CONSERVATION PLANS NOT USED

Although conservation plans outline needed actions to conserve and develop soil, water, plant, and wildlife resources, and include a timetable for doing these things, many cooperators were not using their plans in making farming decisions. Some farmers told us that their plans were of little value because they were outdated or unsuitable for their current farming operations. Others said

that they were not familiar with their plans or did not want to carry them out because of the costs involved in implementing recommended conservation measures. Conservation plans are not required to be carried out but farmers cannot obtain cost-sharing assistance unless they install approved conservation practices.

Of the 119 cooperators we visited who had plans developed by SCS, only 53, or 45 percent, were using them as a basis for carrying out conservation measures. The following examples show why more plans were not being used.

- About 87 percent of the cooperators we interviewed in one county said that they did not use their conservation plans in making farming decisions. Although many of them had changed their farming operations from raising livestock to raising corn and soybeans sometime after their plans were prepared, their plans still prescribed conservation measures for livestock operations. Some of the farmers did not even remember what conservation practices were recommended in their plans.
- The SCS district conservationist in another county estimated that 600 of the 625 conservation plans on file in his district were out of date. He said that most of the plans were more than 5 years old and were no longer appropriate because of changes in the amount and type of grain or livestock raised, changes in farming methods (such as the introduction of the minimum and no-till conservation practices), and changes in ownership and in the amount of acreage farmed. He told us that his goal was to revise and update plans within 5 years but that the time spent developing new plans and performing other activities had prevented him from keeping the plans up to date.
- A farmer in another county told us that he was provided a conservation plan 8 years ago when he was growing small grains and raising livestock. The plan was no longer useful because he had discontinued his livestock operation and started planting large acreages of potatoes and sugar beets which require different conservation measures. Of all the cooperators we interviewed in this county, only half remembered that they had signed cooperator agreements and none of those who received plans said they were using them anymore.

SCS guidelines state that a conservation plan should be revised or updated when the cooperator needs assistance in

planning for conservation objectives which are not reflected in the plan for that farm. SCS district officials said that conservation plans could not be updated in a timely manner because of the workload in preparing new plans and providing other types of technical assistance. They said that there would always be a large number of old plans on file because of these constraints and several estimated that about half of the plans in their files needed to be revised or canceled.

FOLLOWUP NEEDED ON CONSERVATION PLANS

SCS does not have an effective followup system for encouraging farmers to carry out the conservation practices recommended for their farms, and for providing any assistance that may be needed in implementing or revising conservation plans. Followup visits were sporadic and generally were not made unless assistance was requested by the farmer. For example:

--In one county SCS officials did not have any contacts during the last 4 years with about half the cooperators we interviewed. The SCS district conservationist told us that most followup visits were initiated by farmers, and that limited staffing prevented periodic followup with cooperators.

--The district conservationists in several counties told us that SCS technicians spend so much time preparing conservation plans or assisting farmers who requested help that they are unable to schedule followup visits on a systematic basis.

--The district conservationist in one county told us that SCS had not been able to adequately follow up on conservation plans of some of the farmers we interviewed because of workload problems and that this was a major reason why certain recommended conservation practices were not carried out.

SOIL LOSS EXPERIENCE OF COOPERATORS AND NONCOOPERATORS HAS BEEN MIXED

Soil losses from cropland erosion vary depending on such factors as the type of soil, slope of land, weather conditions, and farming practices. Although these factors can cause soil losses to be higher in some areas than others, it would seem reasonable to expect that, in a given area, farmers who were cooperators in COP would have consistently less soil losses than those who were noncooperators.

Our analysis of soil loss calculations for the 283 farm operators we visited showed that soil losses of cooperators were not consistently better than those of noncooperators in the same areas. Because we sampled farm operators on a random basis in each district or township, the conditions observed on their cropland should be a reasonably good indication of the situations on other farms in the particular areas.

As shown in the following table, the soil loss experience of most of the cooperators and noncooperators we interviewed were mixed. Moreover, most of the estimated soil losses for these operators--whether they were cooperators or noncooperators--were well above the maximum tolerable level for sustaining the productivity of the land.

County(ies) and State	Number of farmers in sample		Average estimated annual soil loss			
	Total	Coop- erators	Noncoop- erators	Coop- erators	Noncoop- erators	Differ- ence
	---(tons per acre)----					
Benton County, Washington	20	8	12	11	11	-
Whitman County, Washington	30	20	10	9	10	1
Walsh and Burleigh Counties, North Dakota	27	23	4	4	5	1
Finney County, Kansas	35	24	11	14	9	(5)
Gaines County, Texas	39	10	29	40	50	10
Roosevelt County, New Mexico	28	14	14	12	18	6
Grant County, Wisconsin	34	15	19	7	13	6
Adams County, Illinois	36	13	23	17	26	9
Webster County, Iowa	<u>34</u>	<u>16</u>	<u>18</u>	11	10	(1)
Total	<u>283</u>	<u>143</u>	<u>140</u>			

Our review did not conclusively show that farmers who became cooperators carried out more, or more effective, soil conservation practices. Because of the many different factors involved, it was difficult to determine exactly what

caused the differences in the estimated soil losses of cooperators and noncooperators. However, the amount of residue left on the land between crops and the total number of conservation practices carried out seemed to be major factors on the farms with lower estimated soil losses.

For example, in Finney County, Kansas, more cooperators than noncooperators usually tilled their land during the fall and had higher estimated soil losses. Although fall tillage assists in weed control and provides other advantages, it reduces protective residues and leaves fields more susceptible to erosion during the critical erodibility periods of winter and early spring.

In Gaines County, Texas, and Grant County, Wisconsin, cooperators had less soil losses than noncooperators. In Gaines County, more cooperators were using minimum tillage practices which left protective crop residue on the land, and in Grant County more cooperators had installed contour strips and other effective conservation practices, such as grass waterways and water diversions. Photographs of strip-cropping, a grassed waterway, and a water diversion are shown on pages 18 to 20.

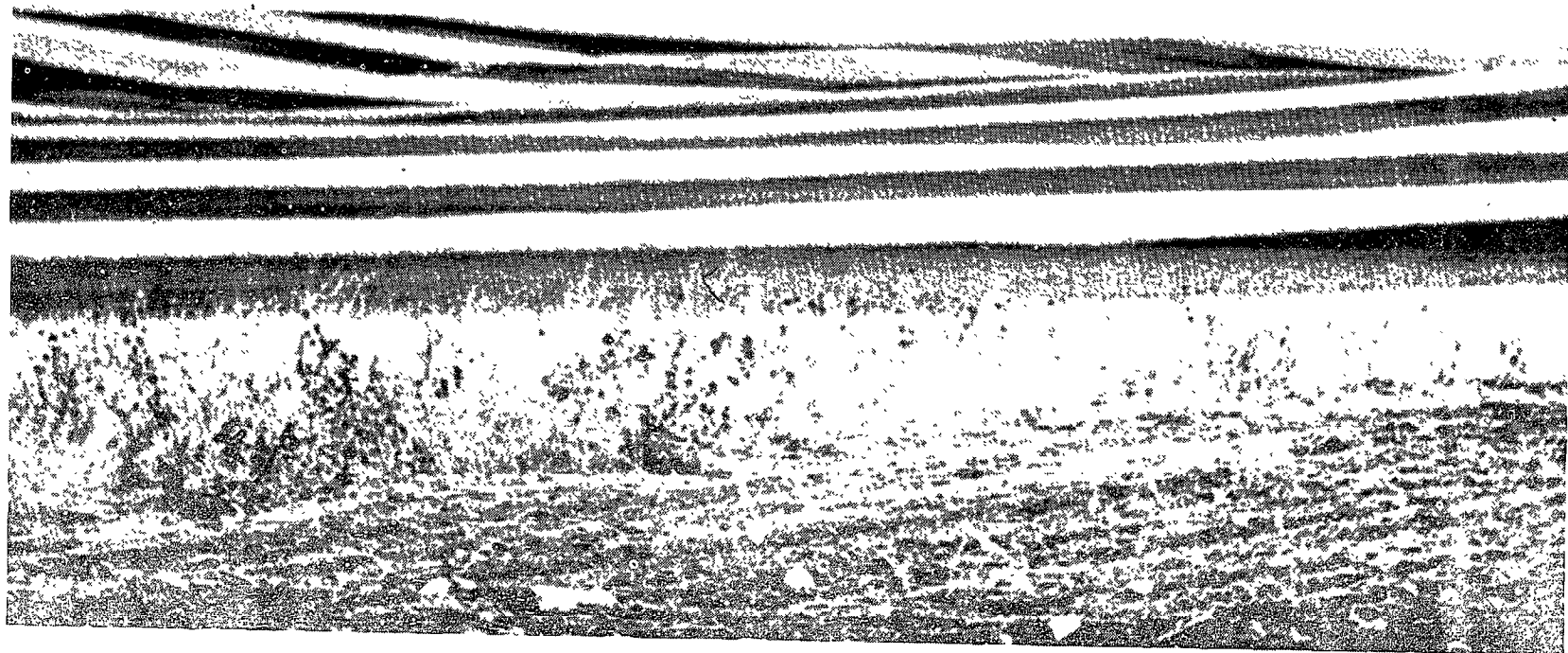
The results of our analysis suggest that SCS is not making as much progress as it could in encouraging farm operators to apply appropriate soil conservation measures on their cropland.

INTERAGENCY COORDINATION COULD BE IMPROVED

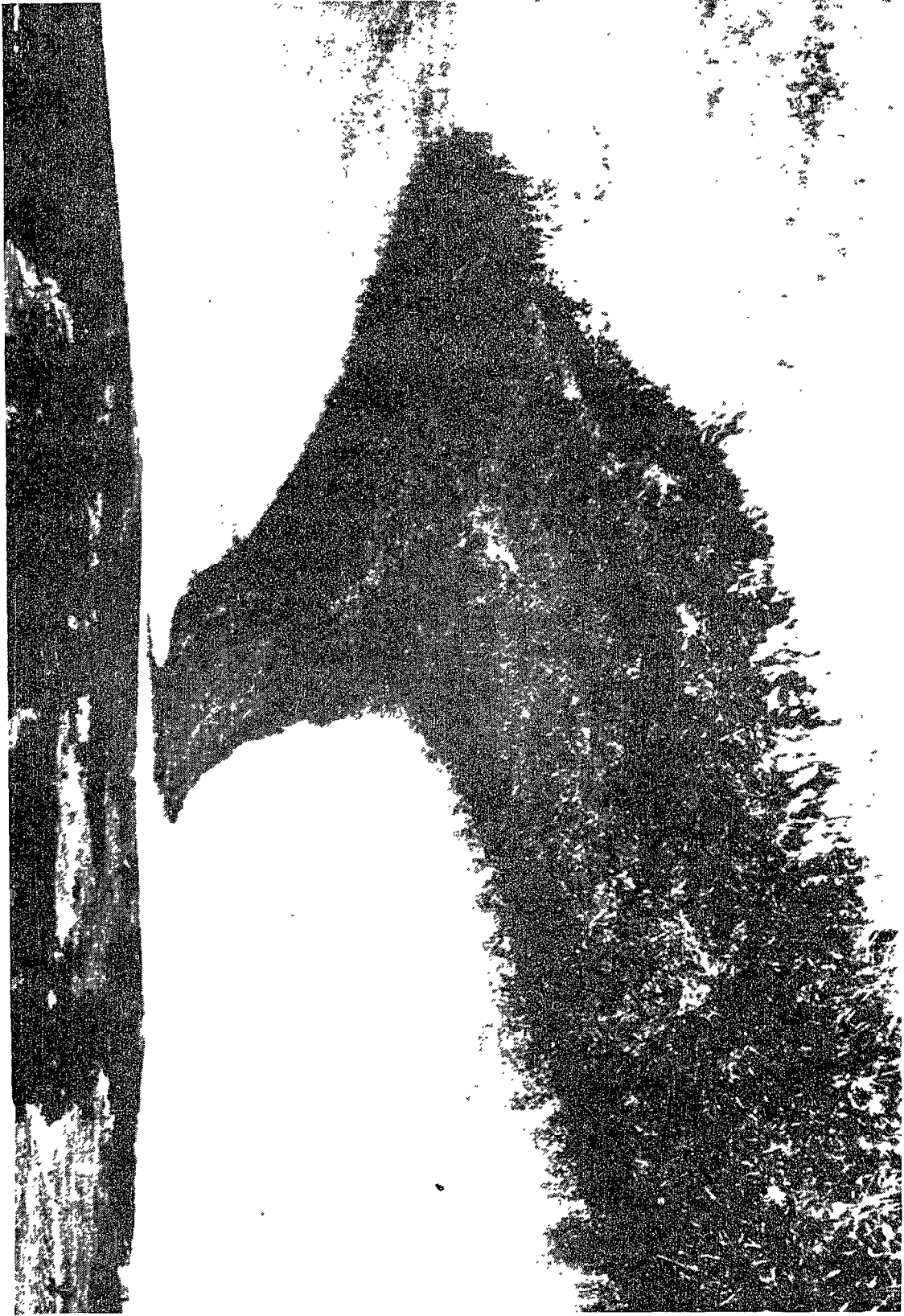
Several different agencies in the Department of Agriculture administer programs which provide benefits to farmers. Greater coordination among these agencies could avoid some of the conflicting advice that is sometimes given to farmers. It also might help to bring about better promotion of farming practices that minimize soil erosion and preserve topsoil. Some examples follow.

In a midwestern State, SCS conservationists recommended minimum tillage to control soil erosion problems, and included this method in the plans they developed for individual farmers in the county. The Extension Service's county agent, however, had been very reluctant to recommend minimum tillage because it can cause reduced yields and increase insect, disease, and weed control problems. He recommended the use of crop rotation and contour stripcropping.

In a Washington county, SCS conservationists recommended that winter wheat on fallow land (tilled land that is

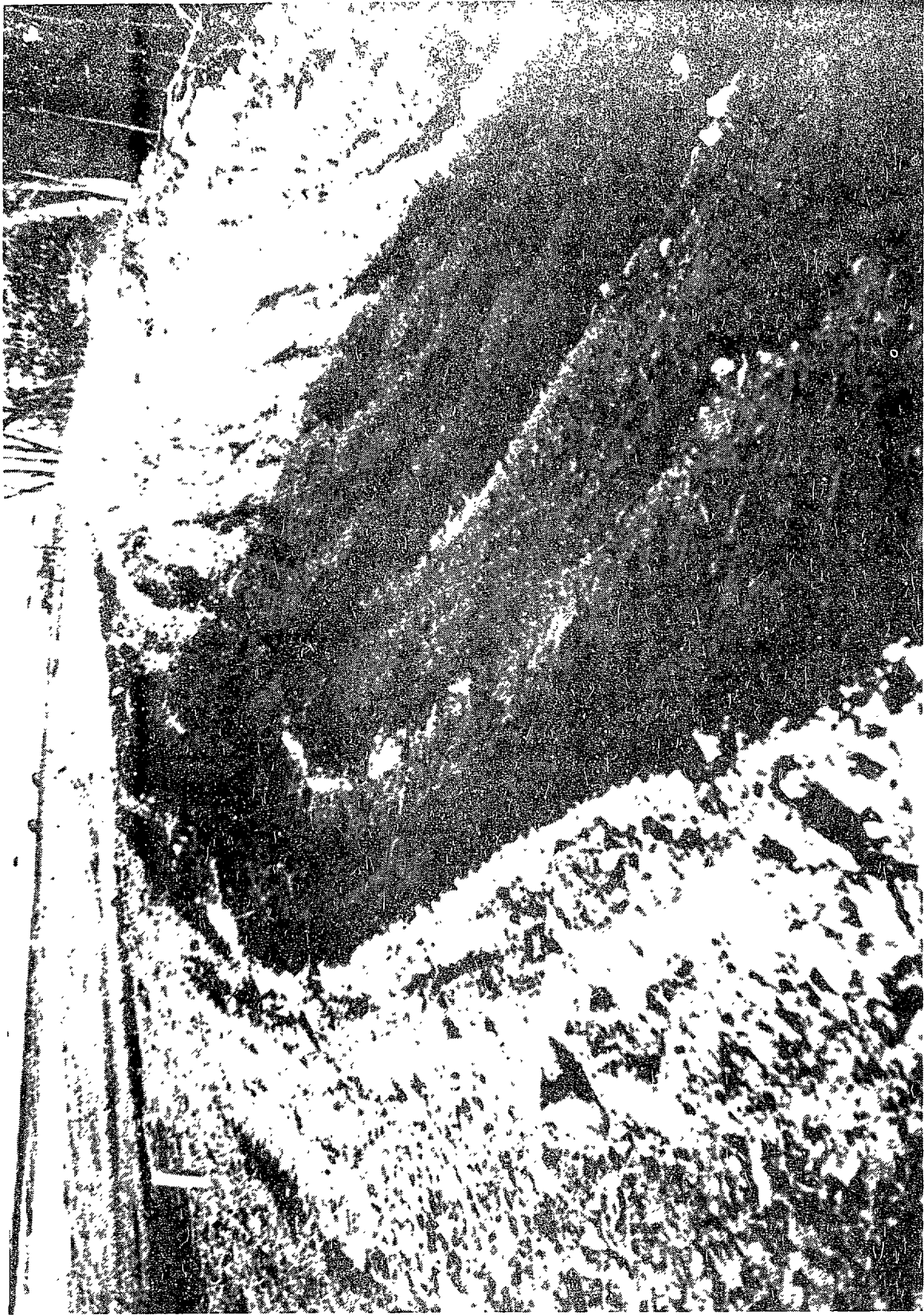


FIELD STRIPCROPPING--PROTECTS SOIL FROM WIND AND WATER EROSION



GRASSED WATERWAY -- SAFELY DISPOSES OF EXCESS SURFACE WATER RUNOFF.

SOURCE: SCS PHOTOGRAPH



WATER DIVERSION--INTERCEPTS RUNOFF AND DIVERTS EXCESS WATER TO PROTECTED OUTLETS

SOURCE: SCS PHOTOGRAPH

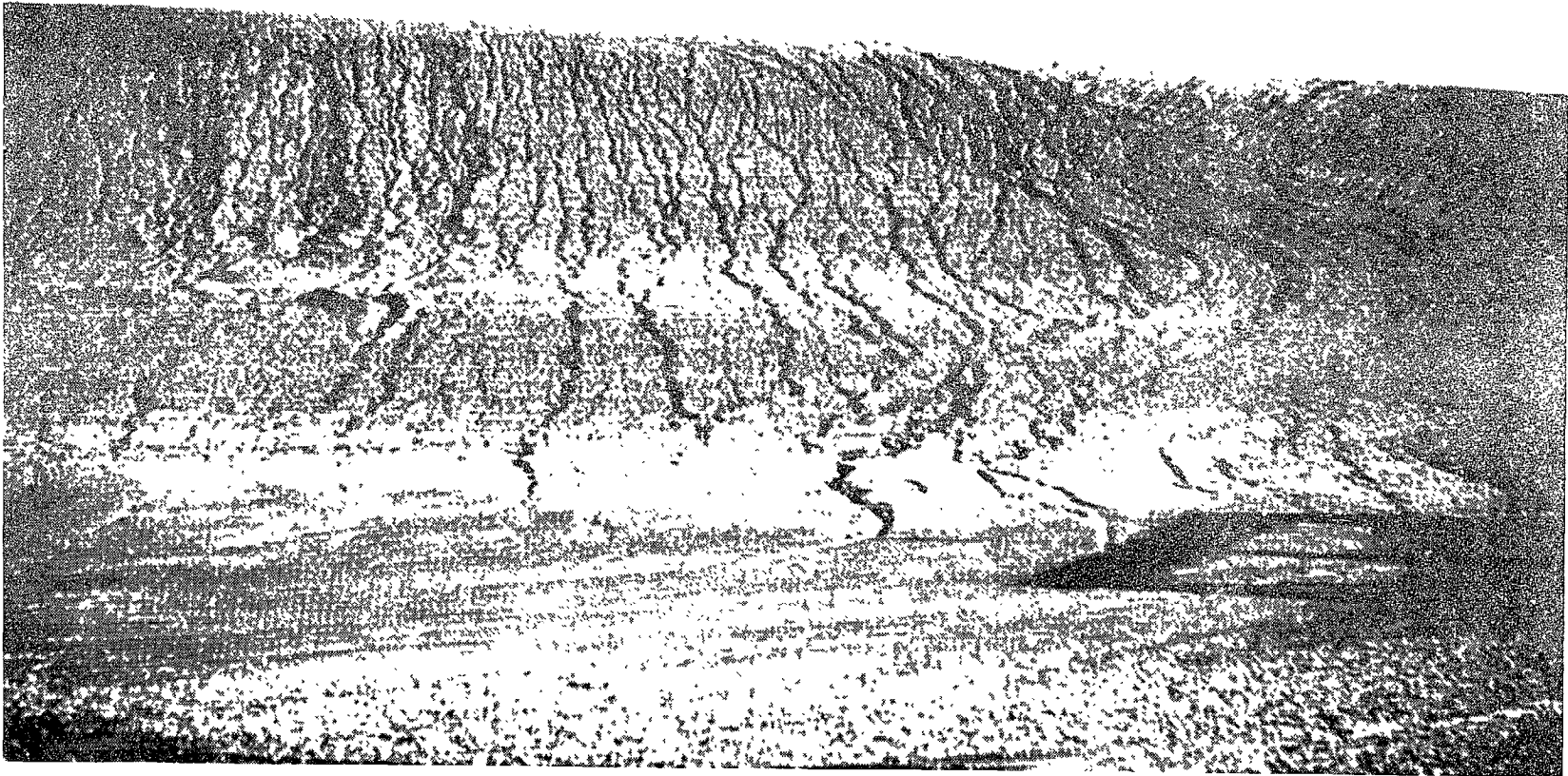
allowed to lie idle for a year to destroy weeds and conserve soil moisture) be planted before September 15 to allow time for enough root growth development to prevent the soil from eroding during the winter. However, the county extension agent told us that farmers who plant wheat before September 15 run an unacceptable risk of a wheat disease. Extension Service literature recommended that winter wheat be planted as late as possible to control this condition.

Cultivation of cotton, a soil depleting crop, is rapidly expanding in some Great Plains counties and is causing severe soil erosion problems on some marginally productive land. Federal law permits transfers of cotton allotments into these areas from places where erosion is not a serious problem. Until 1973, cotton allotments entitled farmers to direct price support; since 1974, they have entitled farmers to Federal payments for losses due to disasters or low-yield crop returns.

In Gaines County, Texas, where research studies showed cropland to be highly susceptible to wind erosion which is difficult to control and can cause serious problems, the number of acres under cotton allotments increased by about 60 percent (84,000 acres) during the 3 years ending in 1973. In 1974, when the direct price support provision was deleted from the program, the number of acres dropped back to near its 1971 level. Over the next 2 years, however, the number of acres under cotton allotments in the county again increased by more than 23 percent. SCS officials told us that much of this marginal land should not be used for cotton but should be in permanent vegetative cover and that, if cotton is grown, intensive conservation management is needed.

Our analysis supported these views. Of the 39 farmers in our Gaines County sample--most of whom were growing cotton--38 had estimated soil losses exceeding the 5-ton soil loss limit, according to soil experts' computations. The soil loss estimates for these farmers ranged up to 65 tons an acre annually and averaged about 48 tons an acre.

Former ASCS farm allotment programs encouraged Pacific Northwest farmers to use summer fallow (a farming practice which leaves cropland without any protective vegetation for an entire year) and discouraged some farmers from following the SCS-recommended practice of planting protective grass on critical soil erosion areas. Although summer fallow is a very erosive farming practice, it was considered a "conserving crop" under former allotment programs because it enabled the land to conserve moisture. Pictures from an SCS case study demonstrate the erosive effect of summer fallow on Pacific Northwest farmland. (See pp. 22 to 24.)



FIELD IN WASHINGTON IN 1944 WHERE SUMMER FALLOW WAS ALTERNATED WITH WINTER WHEAT. THE ANNUAL SOIL LOSS WAS 85 TONS AN ACRE.

SOURCE: SCS PHOTOGRAPH



SAME FIELD IN 1953 AFTER TWO CONSECUTIVE CROPS OF GRAIN WERE GROWN WITHOUT SUMMER FALLOW. SOIL LOSS THIS YEAR WAS ONLY 12 TONS AN ACRE.

SOURCE: SCS PHOTOGRAPH



SAME FIELD IN 1971 AFTER A YEAR OF SUMMER FALLOW. SOIL LOSS HAD INCREASED TO 120 TONS AN ACRE
SOURCE SCS PHOTOGRAPH I

Several farmers told us they had been financially penalized by the past allotment program because they had some land in protective grass rather than summer fallow when the program was introduced. Although current ASCS program guidelines preclude such penalties, some farmers told us they are reluctant to plant grass as recommended by SCS because they are afraid future programs may include a provision which would cause similar problems.

CONCLUSIONS

Although SCS has been providing conservation plans and technical assistance to farmers who request help through COP for several decades, the program has not been as effective as it could be in controlling soil erosion on agricultural lands.

SCS does not have a systematic outgoing approach for identifying and offering assistance to farmers who have the most severe erosion problems. Instead, it follows a passive approach of directing its technical resources toward as many farmers seeking advice and assistance as it can handle, regardless of the severity of their erosion problems. Devoting the time and effort of SCS experts to recipients who do not have the most serious soil erosion problems reduces SCS's capacity to focus on critical soil erosion problems on the Nation's cropland.

The time and effort spent by SCS technicians in developing conservation plans is not proportionate to the conservation benefits that result from them, and a redirection of work priorities should be made to enable them to spend a larger proportion of their time helping farmers identify and correct serious soil erosion problems.

SCS does not have an effective approach for monitoring farmers' progress in achieving the conservation objectives of their respective plans. A systematic followup is needed to promote the correction of serious soil problems that have been identified. Less than half of the cooperators we visited were using their plans as a basis for carrying out conservation measures.

SCS needs to realine its priorities, mount an aggressive effort to seek out farmers with critical erosion problems, educate them on the necessity and benefits of applying needed conservation measures, and provide the technical assistance and followup necessary to help and encourage them to carry out the practices.

Department of Agriculture agencies could better coordinate their programs, where appropriate and feasible,

to provide consistent advice and assistance to farmers on matters bearing on soil conservation needs and concerns.

RECOMMENDATIONS TO THE
SECRETARY OF AGRICULTURE

We recommend that the Secretary of Agriculture take the following actions to make COP more effective in controlling soil erosion on agricultural lands.

- Require SCS to direct its primary efforts under COP to systematically seek out and offer assistance to farmers in areas where soil erosion problems are the most critical. To the extent necessary and appropriate, the effort should be coordinated with locally governed soil and water conservation districts.
- Require SCS to tailor its soil conservation plan development to what is needed to address the more critical soil erosion problems of the farmers in the area and to avoid spending time and effort preparing elaborate and comprehensive management plans that may not be needed. Where the same general prescription of conservation practices applies to a large group of operators or the bulk of the district's operators, other techniques, such as mailings, news media articles, or group presentations, should be used as a means of outreach assistance.
- Require SCS to make followup visits to determine whether approved soil conservation plans are kept up to date and are properly carried out.
- Require that all Department agencies providing direct or indirect assistance to farmers coordinate their assistance and efforts, where appropriate and feasible, in a manner that would help promote farming practices which minimize soil erosion and preserve topsoil. In cases where major program objectives appear to conflict, the advice of appropriate congressional committees should be sought.

AGENCY COMMENTS

The Department said it concurred in the intent of our recommendations for improving COP and the need for better coordination among its agencies. It said SCS would carry out our recommendations within the limits of its manpower, budgeting resources, and institutional arrangements and that the Extension Service would make all reasonable efforts to coordinate with other agencies to eliminate or minimize giving inconsistent advice to farmers. (See app. I.)

CHAPTER 4
FEDERAL FINANCIAL ASSISTANCE UNDER
AGRICULTURAL CONSERVATION PROGRAM
COULD BE MORE EFFECTIVELY USED
TO CONTROL SOIL EROSION

Federal financial assistance is not being effectively directed toward critically needed soil conservation practices having the best payoff for reducing erosion. The direction of the Agricultural Conservation Program has shifted in recent years to providing proportionately more funding for practices which, although eligible for program funding, have only temporary erosion control benefits or which are oriented more toward stimulating agricultural production and financially benefiting farmers than toward conserving the Nation's topsoil resources. If such practices--which many other farmers carry out at their own expense--were made ineligible for cost-sharing assistance, the funds so conserved could be used for critically needed, enduring, erosion control practices.

ACP is the principal channel through which the Federal Government shares with farmers and ranchers the cost of carrying out conservation practices on their land to help maintain the productive capacity of American agriculture. The major objective of the program, as stated by the Agricultural Stabilization and Conservation Service which administers it, is to cost share with public funds the performance of enduring soil and water conservation measures on farmland that the farmer would not perform without cost sharing. This would thus assure that the public tax dollar is buying needed conservation beyond that which the farmer would do with his own resources.

The program is carried out in the field by State and county committees operating at 50 ASCS State offices and at 3,053 ASCS county offices. Each State committee is comprised of three to five members appointed by the Secretary of Agriculture, and the State director of the Agricultural Extension Service, ex officio. The county committees are under the direction of the State committee and are comprised of three farmers elected by the farmers in the county, and the county agricultural extension agent, ex officio. The Soil Conservation Service provides technical advice to the committees and to farmers for carrying out conservation practices.

SHIFT IN USE OF FEDERAL FUNDS AWAY FROM
NEEDED SOIL CONSERVATION MEASURES

In recent years, less than half of ACP's cost-share expenditures have financed measures that are primarily oriented toward soil conservation. Most of the money has gone toward measures that, although eligible for funding, are primarily production oriented or result in minimal soil conservation benefits.

Before 1976, 1/ State and county committees selected the practices to be cost shared under ACP, subject to the Department's approval. There were about 60 nationally approved practices eligible for cost sharing under ACP in 1970--including many that were primarily production oriented or that had minimal conservation benefits. In succeeding years ASCS consolidated some of these practices into broader categories and eliminated others in an effort to bring the program more in line with its objective of cost sharing enduring conservation practices beyond those which the farmer normally would accomplish with his own resources.

In a 1972 report to the Congress 2/ we recommended that ASCS eliminate low-conservation and production-oriented practices from ACP. The Department agreed, in general, with this recommendation and said that some temporary, production-oriented practices which we questioned had been eliminated from the program.

By 1974, the national list of eligible practices had been consolidated and reduced to 14. Drainage systems and liming cropland were two of the production-oriented practices that were eliminated. (See pp. 31 and 41 for a description of these practices.) Several temporary practices and other practices to beautify farmland were also eliminated. Despite these steps, however, the trend throughout the 6-year period was away from cost sharing primarily soil conservation-oriented practices. In October 1975, legislation was enacted which allowed all of the 1970 nationally approved practices to be eligible for cost sharing under ACP. (See p. 42.)

1/Change in procedure in 1976 is explained on page 42.

2/Greater Conservation Benefits Could Be Attained Under The Rural Environmental Assistance Program (B-114833, Feb. 16, 1972).

With ASCS's assistance, we grouped the various farming practices that are cost shared under ACP into 11 broad categories. We were told that only the practices falling under three of the categories--cover and mulching, erosion control, and contour and stripcropping--related primarily to soil erosion control. Some practices in the other eight categories, such as drainage, irrigation, and pollution abatement, also provided some indirect soil conservation benefits but such practices generally were related primarily to improving crop production and environmental controls. During the 6-year period from 1970 through 1975 the proportion of ACP cost-share assistance related primarily to soil conservation practices decreased from 59 percent to 45 percent.

CONSERVATION PRACTICES FUNDED MORE ON BASIS OF
POPULAR DEMAND THAN ON CONSERVATION NEEDS

We found that it really did not make much difference whether counties were allocated ACP funds based on their conservation needs or on their prior year's expenditures. In either case, the greater part of these funds was spent for practices which had only temporary erosion control benefits or which were oriented more toward stimulating agricultural production than toward conserving cropland topsoil. These practices, which generally benefit farmers financially, were in high demand but were not urgently needed for effective erosion control.

ACP cost-share funds were allocated to States based on ASCS estimates of the amount of money needed annually by each State for soil and water conservation. The estimates included costs for practices which do not provide appreciable conservation benefits, as well as for those that do provide enduring benefits. By law (16 U.S.C 590o), each State is to receive an annual allocation of appropriated funds proportionate to its conservation needs as shown by the estimates, except that a State's share may not be reduced by more than 15 percent from its share for the previous year.

In our 1972 report on ACP, we pointed out that, in determining each State's cost-share allocation, ASCS officials had limited the reduction to 1 percent. We said that this was unrealistic because it did not allow sufficient flexibility in making annual allocations proportionate to the conservation needs of each State. We recommended that ASCS allocate funds to States in proportion to their conservation needs by making appropriate adjustments as permitted by law. ASCS officials believe it would be unwise to significantly change a State's proportionate allocation of ACP funds and have not implemented the

recommendation. ASCS has generally limited any reductions to 2 percent or less a year. We believe, however, that more appropriate fund allocations to States and counties could help insure that ACP funds are used first to solve the most critical soil erosion problems.

Two States in our review have been allocating ACP funds to counties on the basis of each county's previous year's allocation and expenditures, rather than on its current conservation needs. The other six States generally considered each county's conservation needs in their funding allocations, although two States did not begin to do this until 1974 and 1975.

County committees generally assigned priorities to the practices for which Federal cost-share funds were to be spent but these priorities were frequently not followed. In some cases, practices designated by county committees as high priority or critically needed to control erosion received only a small percentage of the available funds, whereas other practices considered to be production oriented or of a temporary nature were approved by the committees and heavily funded on the basis of popular demand.

For example, during a 5-year period, 52 percent of ACP funds in one county was spent for installing drainage tile in wet cropland and only 27 percent was spent for critically needed erosion control practices, such as terracing and contour stripping. The SCS district conservationist told us that, in most instances, the tiling improved the productivity of the land but provided little erosion control.

In another case, about 80 percent of cost-share funds for a 5-year period was spent to reorganize irrigation systems and only 1 percent for stripcropping, even though the county and SCS had identified stripcropping as a critically needed farming practice to reduce wind erosion in areas of the county. Local ASCS and SCS officials recognized that the reorganized irrigation systems financially benefited the farmers but said that they were needed to reduce water runoff and chemical pollution in streams. The SCS district conservationist told us that stripcropping was needed for erosion control on 107,000 acres but was being practiced on only 7,000 acres.

During a 3-year period, one Great Plains county spent 54 percent of its ACP cost-share funds for reorganizing irrigation systems, and less than 1 percent for establishing permanent vegetative cover. The county committee had established permanent cover as a high-priority need for wind erosion control but said that farmers were more interested

in obtaining financial assistance to improve their irrigation systems. We were told that the priority designation for ground cover was changed from high to low in 1975 so that the funds that would otherwise have been reserved for that practice could be used for irrigation systems and other practices that were more in demand by farmers. The SCS district conservationist said that the program was being directed more toward satisfying expected popular demands than meeting county conservation needs.

In another case, about 85 percent of a county's 1975 funds was used for practices which were popular with farmers even though ASCS county officials considered the practices to be of a low priority for conservation needs. Most of the expenditures were for open ditch drainage systems which county officials considered to be primarily production oriented. On the other hand, needed conservation practices, such as windbreaks, stripcropping, stubble mulching, and permanent ground cover were not being carried out because of their poor acceptance by farmers.

During a 4-year period, another county that assigned priorities to its conservation practices spent between 54 and 79 percent of its funds for low-priority practices that were popular with farmers.

Three types of cost-shared practices which did not have appreciable conservation benefits but which did appear to have a sufficiently high economic return to provide an incentive for farmers to install with their own resources are discussed below. They involve drainage systems, irrigation systems, and liming cropland.

Installation of drainage systems

Much of the financial assistance under ACP has been directed toward helping farmers install drainage systems on wet cropland. About \$12.4 million, or about 10 percent, of 1975 ACP cost-share funds was used for three major kinds of drainage practices--permanent open ditch drainage systems, underground drainage systems, and land shaping or grading. Three of the eight States in our review spent between 14 and 17 percent of their 1975 ACP funds for these types of drainage systems; the other States spent 1 percent or less. One of the three counties had spent about half of its cost-share funds since 1971 for installing underground tile drains; another spent 81 percent of its 1973 funds and 74 percent of its 1975 funds for this purpose; and the third county spent three-fourths of its 1975 funds for drainage systems.

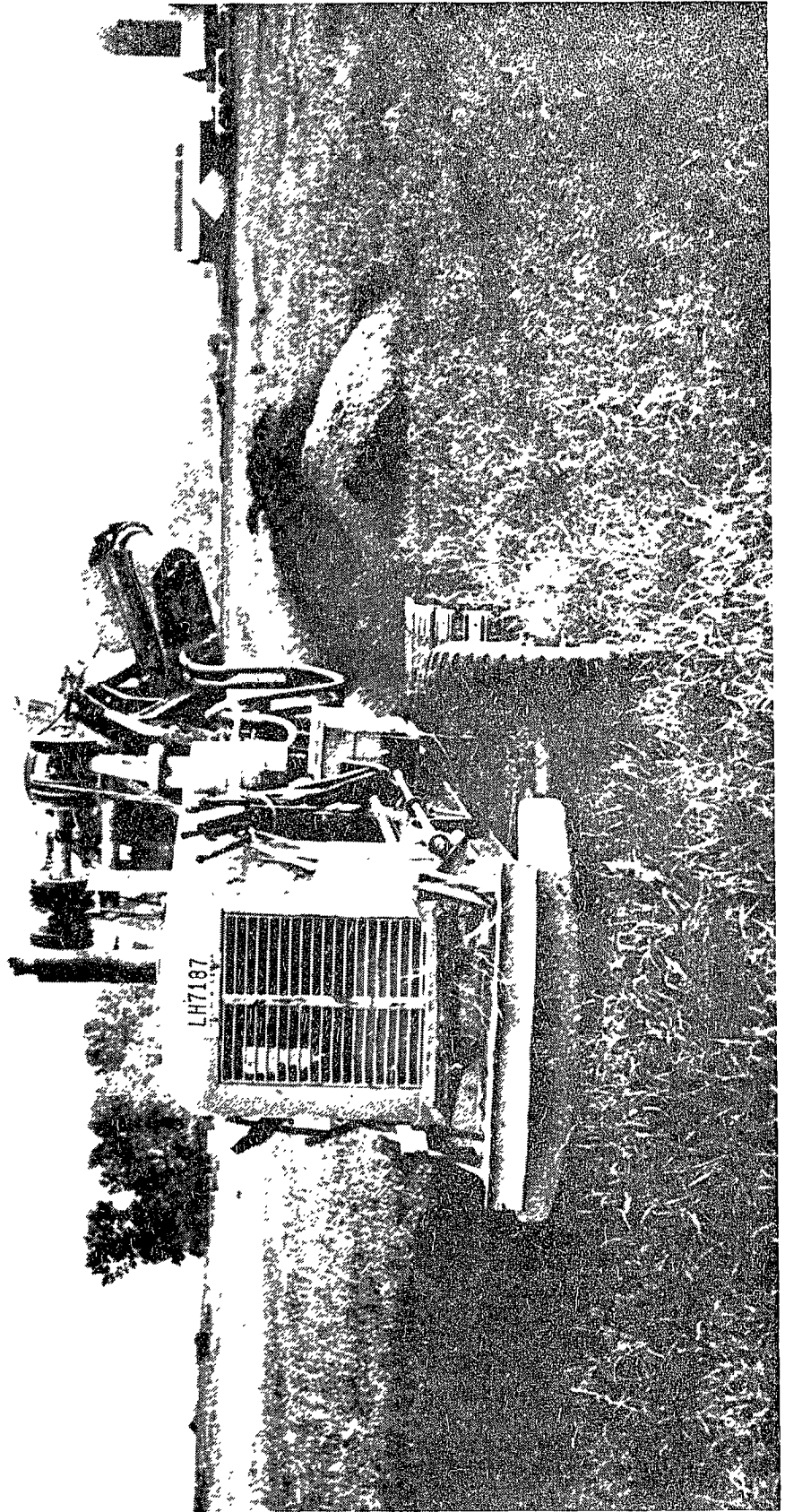
Tile-outlet drains are usually installed to remove excess water underground from fields where natural drainage is a problem. Drainage problems usually occur on relatively flat fields with gentle depressions. ASCS and SCS State and local officials and other agricultural authorities have described this practice as being primarily production oriented because it increases the productivity of cropland which otherwise suffers from excess wetness, and it pays for itself by providing economic benefits to farmers. The photograph on page 33 shows drainage tile being installed in a field which has minimal soil erosion problems.

According to a University of Minnesota Agricultural Extension Service research report, farmers generally install drainage systems on cropland for one or more of the following reasons: to farm wet areas previously unfit for cropping, to assure access to the fields, or to improve yields. The report concluded that the increased crop yields which result from tiling would provide a return on investment of 10 to 15 percent a year in a typical situation and could range as high as 35 percent. The photograph on page 34 shows a field with minimal erosion problems where a drainage system would greatly increase productivity.

An ASCS official told us that a large amount of drainage tile had been installed in one of the States in our review without Federal cost sharing because the farmers recognized the economic benefits which could be achieved through increased productivity of their croplands. He did not have documentation on how much tiling could be involved. The State committee disapproved the cost sharing of drainage systems in 1975 because it believed the practice was oriented more toward increasing a farmer's production potential than toward reducing the land's susceptibility to soil erosion.

An SCS district conservationist in another State estimated that 600,000 feet of drainage tile had been installed in a county in 1975 by farmers who obtained some cost-share assistance, while 200,000 feet had been installed by farmers who did not receive such assistance. He said that the cost-share payments generally amounted to only 6 to 10 percent of the total job cost and would not be a significant factor in a farmer's decision to install tile. An average of \$800 was paid to farmers who installed tiling in this county in 1974.

Of the 34 farmers we interviewed in this county, all but two had drainage tile on their cropland. Eight said that they had installed the tile without cost-sharing assistance and nine said that they had obtained such assistance. The others were not certain whether financial assistance had



INSTALLATION OF DRAINAGE TILE IN FIELD WITH MINIMAL EROSION PROBLEMS



AN IOWA FIELD WITH MINIMAL EROSION PROBLEMS WHERE A DRAINAGE SYSTEM WOULD GREATLY INCREASE PRODUCTIVITY

been provided or not. In many instances the tile had been installed before the farmers bought or rented the land. Almost all the farmers said that they would have been willing to install drainage tile with their own resources because of the potential economic return on such an investment.

County ASCS and extension officials in another location told us that many of the farmers who received cost-share assistance to install open ditch drainage systems would have done the work without such assistance because of the additional crop production which this permits. About 140 farmers in this county received financial assistance under ACP for installing drainage systems in 1975.

Reorganization of irrigation systems

Much of the financial assistance under the ACP and the Great Plains Conservation Program has been directed toward helping farmers reorganize their cropland irrigation systems. About \$15.3 million, or 12 percent, of the 1975 ACP funds and about \$18.6 million, or 12 percent, of all GPCP funds since inception of the program have been expended for irrigation systems.

Four of the eight States in our review spent between 8 and 69 percent of their 1975 ACP funds for reorganizing irrigation systems; the other four States spent less than 1 percent. These expenditures helped pay for such things as installing underground pipe for sprinkler systems, leveling land to permit more efficient use of irrigation water, developing systems to recover irrigation water runoff, and lining irrigation ditches to prevent the loss of water through seepage. Some of these practices were not eligible in every State, and some State-approved practices were not eligible in all the State's conservation districts.

While these practices may have some water conservation benefits, our review indicated that their greatest benefit is to increase a farmer's monetary returns through time and labor savings and through increased productivity.

Underground pipe

During the 5 years ended 1975, ASCS and SCS assisted in financing, designing, and installing about 1,144,000 feet of underground pipeline in two counties in our review. We were told that underground pipeline is generally installed to change irrigation systems on cropland from surface flooding systems and portable hand-moved sprinkler systems, to mechanized center-pivot and side-roll sprinkler systems. The

center-pivot system has a long boom which operates in a circular motion and can irrigate as much as 160 acres at a time. The side-roll sprinkler system hooks into underground pipe outlets and is moved across a field from one outlet to another on large motorized wheels. Photographs of these systems are shown on pages 37 to 39.

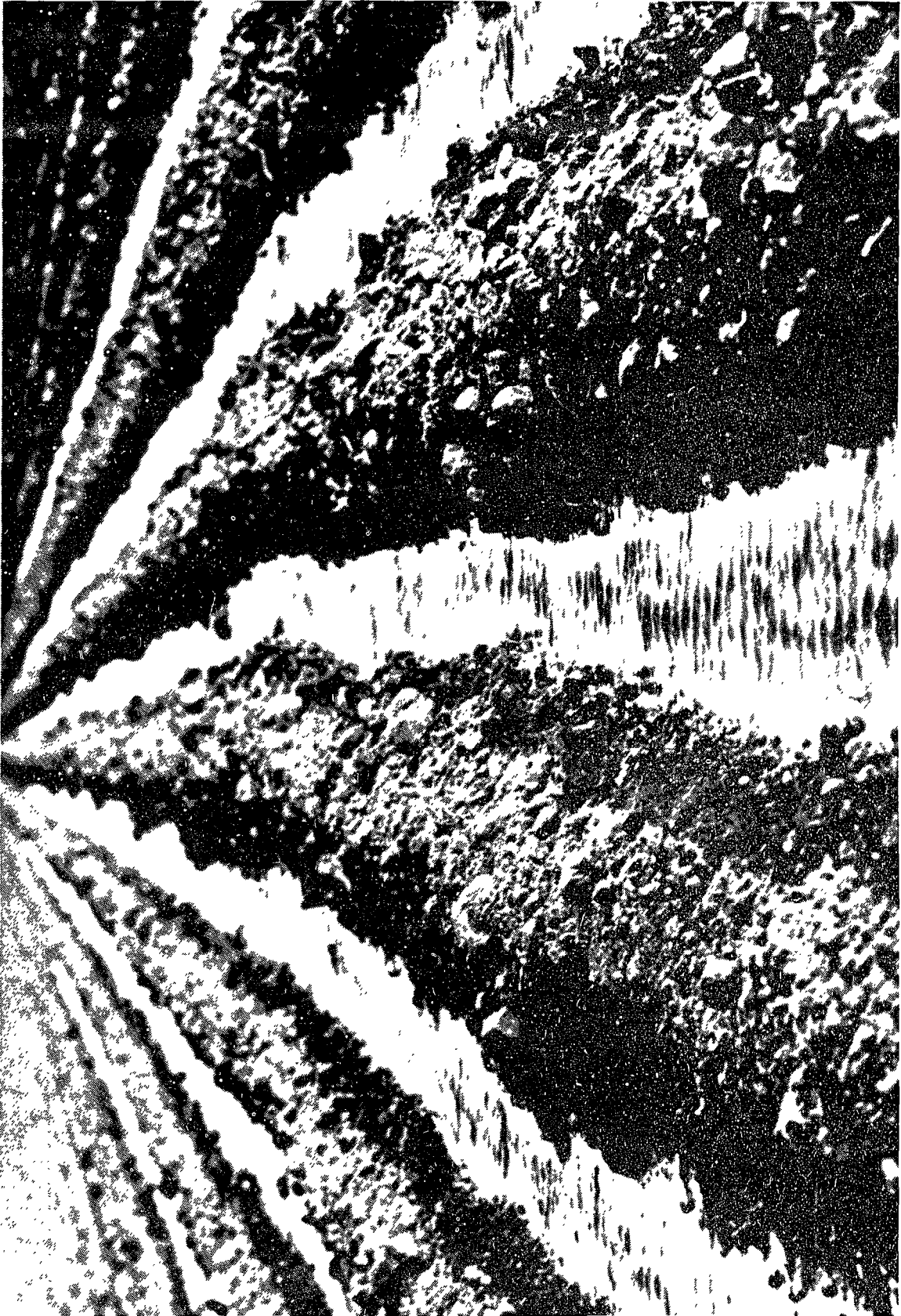
According to industry and local officials, the center-pivot and side-roll sprinkler systems save time and labor costs and distribute water more evenly--which some contend increases yields and conserves water. Some ASCS and SCS officials told us, however, that the amount of water saved by converting from an efficiently operated portable, hand-moved sprinkler system to a center-pivot or side-roll sprinkler system was not appreciable.

In this connection, we noted that several years ago the Department's internal auditors questioned the use of Great Plains Conservation Program funds for replacing surface pipeline with underground pipeline in instances where the irrigation system was reorganized for a farm operator's convenience and the soil and water conservation benefits were limited. SCS subsequently directed its State conservationists to require clear documentation of the reasons why cost-shared underground pipe was needed to conserve water and prevent erosion.

An SCS district conservationist told us that, in checking out proposed irrigation systems that are referred to him for technical determination under ACP, he would not sign off on a proposed installation of underground pipe to replace portable surface pipe unless it could be shown that a significant water savings would result. He said that he did not believe that such a savings would occur unless the existing surface pipe was deteriorated and leaking badly and that the major benefit of changing from one type of sprinkler system to another was the savings in time and labor.

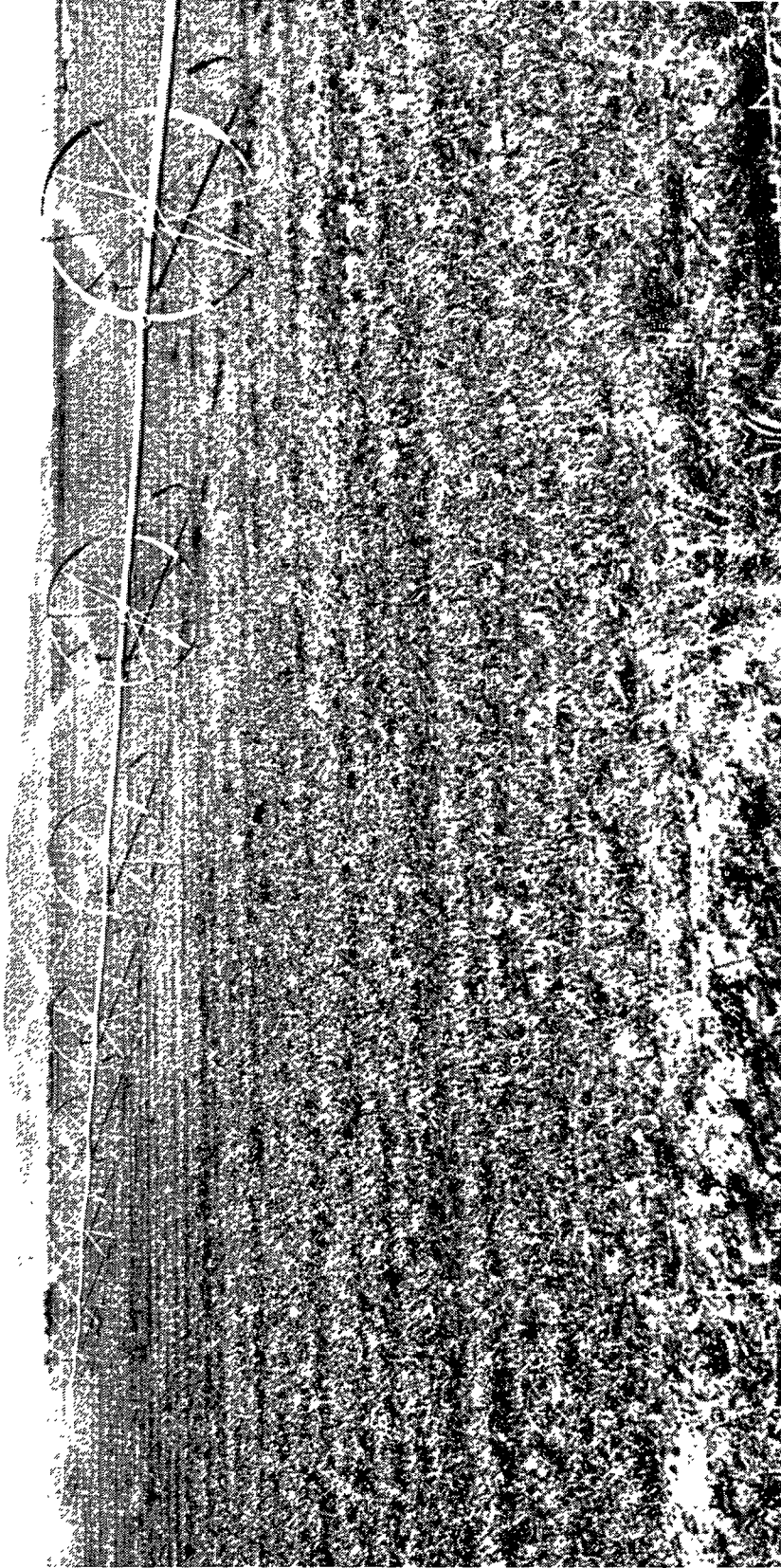
In one of our samples, all nine farmers who received ACP assistance for installing underground pipe said that they would have done it on their own if Federal assistance had not been available. In 1974 county officials discontinued cost sharing projects involving installation of underground pipe from wells to fields because they believed farmers should and would install such pipe with their own resources.

We asked representatives from several irrigation companies in three States to estimate the percentage of farmers who reorganize their irrigation systems without Federal cost-share assistance. Some estimated that only



FLOOD IRRIGATION

COURTESY OF HOLLAND DREVES REILLY, INC.,
OMAHA, NEBRASKA



SIDE ROLL IRRIGATION

COURTESY OF HOLLAND DREVES REILLY, INC.,
OMAHA, NEBRASKA



CENTER PIVOT IRRIGATION

COURTESY OF HOLLAND DREVES REILLY, INC.,
OMAHA, NEBRASKA

15 to 20 percent used cost shares and others estimated 50 percent or more. We were also told that center-pivot sprinkler systems generally cost at least \$45,000 to \$55,000 and that the underground pipe needed for the pivot systems pays for itself in 3 to 5 years through labor and fuel savings.

Land leveling

In one of the eight States we visited, ACP funds were being used to help pay for leveling irrigated farmlands. This practice was authorized on the basis that it conserved water and controlled erosion by reducing the slope of the land to SCS specifications. The practice results in more uniform water distribution and penetration which reduces water usage, increases crop production, and provides a direct monetary benefit to the farmer. Nine of the farmers we interviewed in the county received cost-share assistance for land leveling. Seven said that they would have eventually done this work with their own resources if Federal assistance had not been available.

We received varied opinions as to the benefits of this practice. Two agronomists said that the practice was primarily production oriented but could have some soil and water conservation benefits. An irrigation engineer estimated that the practice would pay for itself in 5 to 10 years. ASCS officials at the State level said that the practice was needed for conservation purposes but agreed that it also increases crop production.

Recovery and reuse of irrigation water

In the same State where ACP funds were used to help pay for land leveling, the development of systems for capturing and reusing water runoff from flood irrigation was also cost shared. In these systems, the water is recovered at the bottom of a field and pumped back to the same field or to an adjacent field from a collection sump or reservoir. Such systems also help to reduce pollution from chemicals (including those in fertilizers) contained in water runoff.

Irrigation equipment suppliers told us that such systems conserve water by permitting the recovery and reuse of between 10 and 25 percent of the water initially released. They also said that economic benefits are realized because the distance, cost, and energy of pumping the recovered water to the top of the fields are less than that of pumping water from the well or other initial source. One supplier estimated that this could result in as much as a 30-percent reduction in pumping time at the well. We also were told

that the recovered water is warmer than the well water and contains fertilizer nutrients--both of these aspects help to increase crop yields. The suppliers estimated that water recovery systems pay for themselves in 1 to 5 years.

Three of the farmers we interviewed received cost shares for water recovery systems. Two said they would have installed the systems without Federal assistance.

Application of lime or other eligible minerals to cropland

The application of agricultural limestone to cropland primarily improves production. According to available records, over \$7 million in 1975 ACP funds was spent for liming--accounting for over 6 percent of the total cost shares paid. (An ASCS official pointed out that agricultural limestone is often used to assist in establishing permanent vegetative cover--a conservation practice. Where this is needed and done, liming can be considered a soil conservation practice.)

In some States, much greater emphasis has been given to this practice than in other States. For example, New York and Missouri spent about 30 percent and 25 percent, respectively, of their 1975 ACP allotments for liming, whereas three of the eight States in our review spent between 2 percent and 10 percent for liming and the remaining five States did not fund the practice.

The State committee in one of the above five States disapproved the proposed cost sharing of this practice even though 23 of the State's 105 county committees requested it. The State committee determined that liming was primarily a production-oriented practice with only temporary benefits. However, under the liberalized 1976 program (discussed on pp. 42 and 43) which permits county committees to choose and approve their own practices, seven counties in this State had approved the practice for cost-share funding.

ASCS COST-SHARE PROGRAM CONSIDERED OUT OF LINE WITH STATE SOIL CONSERVATION PROGRAM

In July 1973, Iowa became the first State to begin financing a cost-share program for soil conservation. As of June 1976, the State had appropriated \$6.5 million for this purpose. Under the program legislation, landowners can receive a maximum of 50 percent of the cost of installing permanent conservation practices, such as terraces, erosion control structures, permanent vegetation on highly erodible

land, windbreaks, diversion structures for water runoff, and waterways.

In 1974, Iowa and ASCS agreed to cooperate in furnishing cost-share funds to farmers. The State was to provide up to 25 percent of the cost of a practice and ASCS was to provide up to 50 percent, making the maximum cost share 75 percent. The farmer was to pay for the remaining costs out of his own resources. This cooperative arrangement lasted only a year, however, and in 1975 the Iowa soil conservation districts generally reverted to operating the State program independent of ACP.

State officials said that this action had been taken because the ACP program authorized too many production-oriented practices that would not achieve enduring conservation benefits. They said that the real need for cost-share assistance was for practices that control erosion and endure over a long period, and that production-oriented practices, such as drainage tiling, water systems, and liming agricultural lands, produce a large enough economic return for landowners to finance such practices on their own.

LEGISLATIVE CONSIDERATIONS BEARING ON THE DEPARTMENT'S CONSERVATION PROGRAMS

Before 1976, practices proposed for ACP cost sharing were selected by the counties and the States, subject to approval by the Department. In this regard, the Department's 1975 appropriations act (Pub. Law 93-563, approved December 31, 1974) provided that ACP funds were available to aid agricultural producers

" * * * in carrying out farming practices approved by the Secretary under programs provided for herein * * *"

As discussed earlier in this report, the Department had eliminated or consolidated many of the approximately 60 practices that it previously had approved as eligible for cost sharing under the 1970 ACP program. Under authority provided by the Department, States could, and did, disapprove practices which, although eligible, were not considered to be priority conservation practices.

This approval system was changed by the Department's 1976 and 1977 appropriations acts (Pub. Law 94-122, approved October 21, 1975, and Pub. Law 94-351, approved July 12, 1976) which provided that ACP funds were available to aid agricultural producers

" * * * in carrying out approved 1970 farming practices to be selected by the county committees under programs provided for herein * * *"

The provision allows farmers and county committees a wider choice of practices for ACP cost sharing--including some that provide little in the way of enduring soil conservation benefits--and places final approval authority at the local level.

An ASCS headquarters official explained to us that this provision eliminated the Department's--and consequently the States'--authority to approve or disapprove practices selected by the counties for ACP cost sharing, and authorized cost sharing for all of the practices that had been eligible under the 1970 program.

During the hearings that preceded the appropriations acts, discussions indicated that cost-shared conservation practices should be selected at the local level because farmers know best what their land needs and what practices they would be willing to spend their own money for to cover part of the cost of carrying them out. As discussed in this chapter, however, cost-share assistance was, and still is being provided to farmers for practices which are oriented more toward stimulating agricultural production and financially benefiting the farmers than toward controlling soil erosion.

There has been some congressional recognition that Federal conservation programs should be redirected to bring them more in line with national needs and goals. For example, two bills, S. 2081 and S. 3299, were introduced during the 94th Congress. The first would have provided closer congressional oversight of the conservation programs; the second would have restricted the funding of production-oriented practices. However, S. 2081 was pocket-vetoed by the President in October 1976 and S. 3299 did not clear the Senate during the 94th Congress.

The oversight bill (S. 2081) was designed to improve the direction and coordination among existing conservation programs and to provide for more efficient and effective use of current resources in meeting agricultural conservation needs and correcting soil erosion problems. This bill provided a foundation for ongoing congressional oversight by requiring SCS appraisal of national soil and water resources, a report of the findings to the Congress, and a detailed statement of policy to be used in preparing SCS's budget requests.

S. 3299 would have amended the Soil Conservation and Domestic Allotment Act to reduce the number of practices eligible for assistance and funding under ACP and narrow the criterion which enables individuals to become eligible for such assistance. This proposed legislation would have emphasized the funding of enduring conservation measures, rather than production-oriented practices, and would have allowed assistance only to those who were unable to carry out the needed measures with their own resources. The possibility of future congressional action along these lines is uncertain.

OBSERVATIONS ON ACP'S LONG-TERM
AGREEMENT APPROACH TO COST SHARING

ASCS introduced a new element into its ACP in 1974 by providing for the cost sharing of conservation practices carried out under long-term agreements. This aspect of the program has met with mixed success in encouraging farmers to undertake needed conservation measures.

Under the new provision, farmers can enter into contracts with ASCS and agree to install and maintain recommended conservation practices scheduled over 3- to 10-year periods in accordance with conservation plans developed by SCS for their farms. These agreements guarantee that the cooperators will receive Federal cost-share assistance annually during the contract periods. In previous years, ASCS limited its ACP commitments to 1-year agreements.

In 1974 and 1975 a total of \$101.1 million--\$45.6 and \$55.5 million, respectively--was made available for long-term agreements. This represented 50 percent of the 1974 ACP funds and 40 percent of the 1975 funds. As of November 1975, only \$14.6 million (32 percent) of the 1974 funds and \$16.1 million (29 percent) of the 1975 funds had been committed under long-term contracts.

Several counties in our review received more applications for long-term assistance than they could fund, while others received few applications and consequently spent their uncommitted funds under ACP's annual agreement arrangement. ASCS and SCS officials in two counties that had very little response to the new provision told us that farmers did not want to commit their resources to long-term contracts when they could obtain funding assistance for the same or similar practices under short-term agreements. None of the 50 farmers that we interviewed in the two counties had signed long-term agreements. They generally said that they were not interested in, or had not heard of, the new cost-sharing arrangement.

CONCLUSIONS

ACP has not been as effective as it could have been in assisting farmers to carry out needed enduring soil and water conservation practices. In recent years, the program has been used more and more to finance production-oriented practices and other measures not essential for soil and water conservation. If greater progress is to be made in treating critical soil erosion areas under ACP, some redirection of program emphasis seems needed. Greater progress could be made if funding emphasis and priority were given to critically needed conservation practices which farmers ordinarily would not undertake without Federal assistance.

Current program legislation states that county committees may choose for cost-share funding any or all of the practices which had been approved for the 1970 program. Many critically needed practices cannot compete with some of the popular practices which are eligible for assistance but which primarily provide large financial returns instead of significant conservation benefits. Consequently, many critical conservation needs have not been met and may remain neglected.

RECOMMENDATIONS TO THE SECRETARY OF AGRICULTURE

To make ACP more effective in controlling soil erosion on agricultural lands, we recommend that the Secretary of Agriculture require ASCS to:

- Make a greater effort to convince the county committees that the conservation objectives of the program can be better achieved if available money is spent on critically needed soil erosion control practices, rather than on practices with unappreciable conservation benefits or on practices which primarily stimulate crop production rather than control soil erosion.
- Work closely with county committees to help them (1) identify, with the assistance of soil expert members of local program development groups, the most critical conservation needs in the area and (2) establish and implement a priority system that would channel funding assistance to the most critically needed practices which have the greatest long-term conservation benefits and which ordinarily would not be undertaken without Federal assistance.

AGENCY COMMENTS AND OUR EVALUATION

The Department (see app. I) said that it has long recognized the need to improve the effectiveness of ACP in meeting the Nation's overall conservation problems on farmland. The Department agreed with our recommendations for improving ACP, stated that it would attempt to implement them, and said that our report should be useful in helping it improve the program to more effectively meet soil and water conservation needs.

The Department said that, although our report concentrated on the effectiveness of the program in controlling soil erosion, congressional authority also mandates use of program funds to conserve water, wildlife, and woodland resources; and to combat agriculture-related pollution. It said that it has administered the program to include these objectives and believes a program evaluation should consider the success of the program in meeting all of its objectives. Because our report concentrated on a particular major problem area--the need for better Federal program administration to conserve the Nation's agricultural land--it does not include an evaluation of all of the activities authorized to be carried out under ACP and does not purport to provide an assessment of the total program.

RECOMMENDATION TO THE CONGRESS

The Congress should use the information presented in this chapter when considering legislation to protect the Nation's soil resources. The Nation's agricultural land must be protected and maintained if the United States is to continue to meet its domestic food needs and help alleviate world food shortages.

If the Congress wants to stop the shift away from needed soil conservation practices and prevent the widespread cost sharing of practices that are oriented more toward stimulating agricultural production and financially benefitting farmers, it should place more emphasis on the funding of critically needed enduring conservation practices by limiting or prohibiting Federal spending for other kinds of practices currently authorized by law.

CHAPTER 5

PROBLEMS IN MEETING OBJECTIVES

OF GREAT PLAINS CONSERVATION PROGRAM

The Great Plains Conservation Program has not made satisfactory progress in alleviating soil erosion problems on agricultural lands in the Great Plains. Much of the unsuitable cropland and badly depleted rangeland which the program was intended to treat had not been treated for soil erosion control. Some program funds are being used for practices which provide relatively little conservation benefits. Also, in some instances, vegetative cover which had been installed under the program was plowed back into cropland after farmers' cost-share contracts expired.

Two factors contributing to slow progress appear to be (1) lack of incentive (because of high crop prices and other reasons) for farmers to establish grassland or to maintain it after their GPCP contracts expire and (2) insufficient identification of farmers with high-priority conservation needs and encouragement of them to use the program.

GPCP was established in 1956 to assist farmers and ranchers in voluntarily making needed changes in their cropping systems and land uses to conserve the soil and water in the Great Plains. The program's legislative history emphasized the critical need for converting unsuitable cropland to permanent vegetative cover and reseeding badly depleted rangeland by 1971--later changed to 1981. It indicated that about 16 million of the 18 million acres of such land would be treated under the program.

In recommending passage of the bill which would authorize GPCP, the Department of Agriculture indicated that about 95 percent of program funds would be used for this purpose and about 5 percent would be used for installing certain range practices, such as livestock watering facilities.

Under the program, the landowner or operator is required to furnish a plan (developed with SCS assistance) for farming operations or land use which incorporates soil and water conservation measures considered practicable for maximum mitigation of climatic hazards and for protecting the farm, ranch, or other land from erosion and deterioration by natural causes. Approved conservation plans then form a basis for contracts under the program.

In 1969, the law was amended to provide that the landowner or operator may also include in his plan measures to enhance fish, wildlife, and recreation resources; promote economic use of land; and reduce or control agricultural-related pollution.

PROGRAM NOT ATTAINING
ITS PRIMARY OBJECTIVE

Soil Conservation Service reports show that, as of June 1975, only 4.3 million acres, or 27 percent of the 16-million acre goal, had been treated. Vegetative cover had been established on 2.4 million acres and 1.9 million acres of rangeland had been reseeded. We discussed the program's slow progress in a 1973 report to the Congress entitled "Progress in Meeting Important Objectives of the Great Plains Conservation Program Could Be Improved," (B-114833, June 28, 1973). This report pointed out that, based on past progress, not more than 8.3 million acres would be treated or brought under contract by the end of 1981, when authority to enter into contracts is due to expire.

Not only has emphasized activity been less than expected, but SCS summary data indicates a general decline in the acreages being treated annually since the 1973 report. As shown in the following table, 285,000 acres were established or reseeded to permanent vegetative cover in fiscal year 1973 as compared to only 181,000 acres in fiscal year 1975, a decrease of about 36 percent.

<u>Practice</u>	<u>Fiscal year</u>	<u>Acres established</u>	<u>Amount expended</u>	<u>Percent of total GPCP expenditures</u>
(000 omitted)				
Establishment of permanent vegetative cover	1973	167	\$1,607	17
	1974	140	1,444	13
	1975	84	1,083	11
Reestablishment of grasslands	1973	118	1,477	15
	1974	122	1,512	14
	1975	97	1,447	15

SCS officials in the four Great Plains States we visited mentioned a low level of farmer interest in the program. They were generally pessimistic about the possibility of achieving the program's objectives before its scheduled termination. In New Mexico, an official speculated that the State's conservation needs could not be met before the year 2000 and that only 33 to 50 percent would be met by the time the program terminated. In Texas, an official said that only about one-fifth of the conservation needs under GPCP had been met and that much of the remaining needs would never be met. An official in North Dakota estimated that only 50,000 acres of the 700,000 acres that should be established in permanent vegetative cover had been seeded. In Kansas, officials told us that the rise in grain prices and decline in cattle prices motivated farmers to keep marginal agricultural land in crops, rather than to plant vegetative cover that could be used for cattle grazing.

Greater emphasis should be placed on using funds to maximize achievement of program's conservation objectives

GPCP has helped farmers cost share conservation practices that will go far toward alleviating soil erosion problems in the Great Plains; however, much of the program's funds have also helped finance practices which are popular with farmers because of the inherent economic advantages they offer but which are not considered to be high priority for controlling soil erosion. Although funding of these practices is allowed under the law, it contributes little toward accomplishing the major conservation objective of the program.

When the program was initially established, the Department estimated that 95 percent of program funds would be spent for establishing vegetative cover on unsuitable cropland and reseeding rangeland. However, SCS reports show that of the approximately \$156 million spent under GPCP as of June 1975, \$41.4 million, or only 27 percent, had been used for such practices. More than one-third of the funds had been used for grazing management practices, such as livestock water facilities, wells and pipelines, fencing, and other practices which improve the grazing distribution or quality of rangeland. About 12 percent had been used for reorganization of irrigation systems; the remaining funds had been used for various other conservation practices.

Although grazing management practices and reorganization of irrigation systems may have some conservation

benefits, they do relatively little toward mitigating the erosion and deterioration of the land from natural causes-- a basic aim of GPCP. (Reorganization of irrigation systems is discussed in ch. 4.)

SCS regulations require that priorities for cost sharing be established on the basis of GPCP's primary purpose-- to establish wind and water erosion control conservation measures on Great Plains agricultural land. High-priority designations are assigned to farm units having major problems converting unsuitable cropland to permanent vegetation or having major wind and water erosion and moisture conservation problems. Medium priority is applied to units having moisture conservation, management, or vegetative problems on cropland and rangeland with slight erosion. Low-priority designations are assigned when a unit has few conservation problems and slight erosion. As indicated below, in the four GPCP States we reviewed, the estimated percentage of contracts approved for medium-priority projects ranged between 10 and 68 percent of the total GPCP contracts approved during the 6-year period ended June 30, 1976. A small percentage of contracts also was approved for low-priority projects in the first three States during this period.

<u>GPCP States</u>	Estimated percentage of contracts approved for medium-priority projects (<u>1971 to 1976</u>)
New Mexico	67.8
Texas	30
North Dakota	40
Kansas	10

SCS officials said that practices for medium-priority needs are funded when there is no demand for assistance with high-priority needs. One official stated that some GPCP counties primarily had medium-priority needs and little activity would occur if they had to limit financial assistance to high-priority work.

We believe that program fund allocations to States and counties should give primary consideration to high-priority conservation needs. Every feasible effort should be made to identify and satisfy the high-priority conservation needs in the Great Plains before cost sharing lower priority needs. Along this line, our 1973 report on GPCP recommended that SCS revise its fund allocation system to

make sure that GPCP funds are used, to the extent practical, for highest priority work first. Subsequently, SCS revised its system for allocating GPCP funds to individual States to include consideration of the estimated cost of treating soil erosion problems in the GPCP counties in each State. It is not clear to what extent the revised fund allocation procedures have been helpful in trying to promote use of program funds for high-priority needs first.

Need for more effective program promotion in areas where critical erosion problems exist

The following two examples indicate that greater emphasis will have to be placed on critical erosion control needs if the program's objective of controlling erosion in the Great Plains is to be achieved.

In New Mexico, only 4 percent of the cumulative GPCP cost shares through fiscal year 1975 were used to establish permanent vegetative cover. Although the program has been in effect for 20 years, only about 84,000 acres had been converted through program assistance. In November 1975 a local SCS official said that 80,000 to 100,000 acres of cropland in the county we visited in this State needed to be converted to permanent cover. However, an average of only 630 acres had been converted annually. Nevertheless, wind and water erosion are serious problems, with about 45 percent of the county cropland classified by a federally prepared soil survey as being highly susceptible to wind erosion. Nearly 98,000 acres, or about 22 percent, of the cropland were in categories generally not suited for cultivation. Classification of the soils by wind erosion groups 1/ shows that much of the cropland in the county is in groups which have the highest susceptibility to wind erosion as shown below:

<u>Wind erosion group</u>	<u>Wind erosion potential</u>	<u>Acres</u>	<u>Percent</u>
1,2	High	230,000	46
3,4	Medium	250,000	50
5,6	Slight	<u>20,000</u>	<u>4</u>
Total		<u>500,000</u>	<u>100</u>

1/Indicators of soil's susceptibility to wind erosion.

County wind erosion reports showed that, during each of the four wind erosion seasons from November 1971 through May 1975, an average of 63,780 acres of cropland was damaged. This damage was sufficient to cause further erosion. During this period about 140,000 acres of growing crops were destroyed.

Tests on 28 units showed that 26 units had estimated annual soil losses exceeding the maximum tolerable level of 5 tons an acre a year. The average estimated annual soil loss for the 28 units was about 15 tons an acre.

Despite these severe problems, medium-priority projects accounted for about 68 percent of all GPCP contracts approved in New Mexico for the 6-year period ending June 30, 1976. A State official noted that there had been a lack of farmer interest in converting unsuitable cropland and that the State returned \$150,000 of its allotted cost-share funds for redistribution to other States in 1975. The State office planned a renewed effort to publicize GPCP in the State.

In Texas where medium-priority projects constituted about 30 percent of the contracts approved, information gathered at the county we visited indicated soil erosion remains a serious problem. County wind erosion reports showed that on the average, about 159,250 cropland acres were damaged and 12,700 acres of growing crops were lost during each of the four wind erosion seasons from November 1970 to May 1974. Likewise, soil loss tests showed that 38 of the 39 farms in our sample had estimated losses exceeding the maximum acceptable level of 5 tons an acre and that the average estimated soil loss overall was 48 tons an acre. This county, however, has only devoted an average of about 6 percent of its GPCP funds to establish permanent cover--converting an average of 249 acres annually despite a total need of about 65,000 acres of permanent cover. On the other hand, about 80 percent of the county's GPCP funds had been used to reorganize irrigation systems.

The district conservationist told us that farmers lacked interest in converting cropland to grassland. He said, however, that farmers made a lot of requests for assistance for other types of practices. A district conservationist in another State told us that he does not require his staff to seek out farmers with the greatest needs because of limited manpower in his office. Farmers must request assistance themselves. As a result, there is no assurance that SCS has treated the most serious problems first.

Cost sharing vegetative cover does not insure long-term protection or correction of critical soil erosion areas

Significant quantities of cropland which had been seeded into permanent vegetative cover under GPCP are being converted back into cropland. Also, although most of the treated land in the Southern Great Plains counties critically needed the soil erosion protection provided by vegetative cover, much of the treated Northern and Central Great Plains lands were not considered to have critical erosion control problems. Both of these types of situations diminish the effectiveness of recorded GPCP accomplishments.

Farmers have a legal obligation to maintain cost-shared practices only as long as their GPCP contracts are valid. GPCP contracts are written for 3- to 10-year periods. During this time SCS makes an annual status review to insure compliance with the contract. After a GPCP contract expires, the cost-shared practice may be destroyed, altered, or modified at the discretion of the farm operator. In the GPCP counties we reviewed SCS did not systematically identify and periodically contact farmers with expired contracts to encourage them to maintain their treated land.

We examined 98 expired GPCP contracts at selected counties in the four Great Plains States in our review. These contracts provided cost-share payments to establish permanent vegetative cover on a total of 12,878 acres. Our interviews with the farmers disclosed that 48 of them had returned some or all of their permanent cover to crop production. Overall, 3,407 acres, or about 26 percent, of the 12,878 acres established, were being cultivated at the time of our review. Several farmers told us they plan to convert additional acres of their seeded land to crop production in the next few years.

Established grassland is being returned to cropland because of two important reasons. Farmers generally said that higher crop prices provided increased earning potential which offset the risk of excessive soil erosion caused by taking the land out of grassland. Secondly, in the Northern Great Plains farmers commonly rotate grass and crops on land which does not necessarily have soil erosion problems. Many typical livestock and small grain farmers in this area seed a field to grass and use it for livestock feed or grazing until it wears out, usually in 5 to 8 years. The field is then plowed and planted with small grains for the next few years, and another field, formerly in small grain, is seeded with grass for the livestock.

Southern Great Plains counties

In two Southern Great Plains counties, almost half of 46 operators we contacted had returned cost-shared grassland to crop production after their GPCP contracts expired. This represented 1,280 acres of the 6,002 acres which these operators initially had seeded into grass. Two of these farmers told us that they planned to convert a total of 492 additional acres of cost-shared grassland to cropland by 1977. Agronomists estimated that most of the converted land would average soil erosion losses of over 5 tons an acre each year and that average losses of over 40 tons an acre annually could occur on 575 of the 1,280 acres. This land's susceptibility to erosion was dramatically proven in two of the cases reviewed.

Two farmers received poor yields on their converted grassland because wind erosion damaged their crops. Subsequently, they both applied for and received Federal ASCS disaster relief payments authorized by the Agriculture and Consumer Protection Act of 1973 (Public Law 93-86, 87 Stat. 221). One received \$2,700 and the other received more than \$10,000. This raises a question as to whether farmers who return this type of grassland (established under GPCP and designated by SCS as highly susceptible to erosion) to cropland should be eligible for Federal assistance when their crops are damaged or destroyed because of erosion problems.

SCS officials in both States were pessimistic about achieving GPCP conservation goals.

Northern and Central Great Plains counties

In the two Northern and Central Great Plains counties, we interviewed 52 farmers and looked at expired GPCP contracts which, when active, had been used to cost share seeding 6,877 acres of cropland into grassland (5,712 acres in one county and 1,165 in the other county). Of this treated land, about 30 percent (approximately 2,140 acres) had been returned to cropland.

In these two counties, however, an estimated three-fourths of the reconverted grassland did not appear to have a critical need for vegetative cover for protection against soil erosion. SCS classified it, at worst, as land which is suitable for crops but may require some special conservation practices, such as reduced amounts of cultivation or restricted timing of planting, tillage, and harvesting. This raises some question as to whether the land so treated should be counted toward meeting the program's goal of

treating 16 million acres of unsuitable cropland and badly depleted rangeland by 1981.

CONCLUSIONS

On the basis of past progress GPCP will fall far short of its primary objective of converting or reseeding about 16 million acres of unsuitable cropland and badly depleted rangeland by 1981. Progress is further diminished because some treated land is being plowed back into cropland. Also, although medium-priority needs are authorized under the program, placing greater emphasis on high-priority needs would better help achieve the major conservation goals of the program.

SCS officials feel that many farmers lack incentive to establish grassland in the first place, or to maintain it after GPCP contracts expire.

SCS needs to systematically seek out and encourage farmers with the greatest needs to use the program, and periodically contact farmers with expired contracts and encourage them to maintain, in permanent vegetative cover, land highly susceptible to erosion.

RECOMMENDATIONS TO THE SECRETARY OF AGRICULTURE

We recommend that the Secretary of Agriculture have
SCS

- make greater efforts to identify Great Plains farmers with high-priority needs and encourage them to apply for corrective assistance;
- take whatever steps may be needed to make sure that available GPCP funds are used, insofar as practical, for high-priority work first; and
- periodically contact farmers with expired GPCP contracts and, through technical assistance and information about the Department's conservation programs, encourage them to maintain permanent vegetative cover on their highly erodible lands.

AGENCY COMMENTS

The Department said it concurred in the intent of our recommendations for improving GPCP and said SCS would carry them out within the limits of its manpower, budgeting resources, and institutional arrangements. (See app. I.)

CHAPTER 6

SCOPE OF REVIEW

Our review was made at Soil Conservation Service and Agricultural Stabilization and Conservation Service headquarters in Washington, D.C., and at selected offices of both agencies in 8 States and 10 counties covering the Great Plains, Corn Belt, and Pacific Northwest areas of the United States.

We reviewed pertinent laws and their legislative history; SCS and ASCS policies and procedures, program status records, selected conservation plans and cost-share contracts, and other records pertaining to the results and administration of the Conservation Operations Program, the Great Plains Conservation Program, and the Agricultural Conservation Program.

We randomly selected and personally interviewed 283 farmers to determine, with the assistance of Department of Agriculture technicians, the severity of soil erosion on their cropland, and to evaluate the effectiveness of Federal programs in combating it. We also obtained the views of Federal, State, and local conservation officials, local officials of the Extension Service, and farm equipment manufacturers on matters relating to soil conservation efforts.



DEPARTMENT OF AGRICULTURE
OFFICE OF THE SECRETARY
WASHINGTON, D. C. 20250

Mr. Henry Eschwege, Director
Resources and Economic
Development Division
U. S. General Accounting Office
Washington, D. C. 20548

February 2, 1977

Dear Mr. Eschwege:

The following are the comments of the Department of Agriculture relative to the draft of the GAO Report to the Congress, "More Effective Conservation Efforts Needed to Protect the Soil Productivity of the U. S. Croplands, Department of Agriculture."

Soil Conservation Service

The GAO Report highlights a number of areas where program improvements can be made to benefit the Soil Conservation Service's efforts to conserve the Nation's soil and water resources. The Service concurs in the intent of the recommendations and will carry them out within the limits of its manpower, budgetary resources, and institutional arrangements.

Agricultural Stabilization and Conservation Service

In general, we are in agreement with findings and recommendations regarding ACP. USDA has long recognized program problems and the need to improve the effectiveness of ACP in meeting the Nation's overall conservation problems on farmland.

This report should be useful in helping to improve ACP so that the program can impact more directly and effectively on meeting soil and water conservation needs. In this regard, the report reveals the need to reemphasize program goals and objectives. There is insufficient goal orientation and policy directions within the authorizing legislation, the Soil Conservation and Domestic Allotment Act (as amended).

However, the report concentrates solely on the effect of the program on controlling soil erosion. Congressional authority mandates use of program funds to conserve water, wildlife, and woodland resources, and to combat agriculture-related pollution, as well as for soil conservation. USDA has administered the program to include these objectives and believes that a program evaluation should consider the success of the program in meeting these objectives as well as soil erosion control.

Mr. Henry Eschwege

2

This report strongly indicates the need for Congressional updating of ACP legislative authority. ACP today is largely a product of historical development and legislative requirements instituted as a counter-reaction to executive administration. Some of the program weaknesses have no remedy other than a change in the legislation. The goals and objectives of the program need to be redetermined in the light of today's agriculture, and the need for conservation of basic soil and water resources. Appropriate changes should be made to help direct the program more effectively toward the determined objectives.

We agree that the report recommendations for ACP should be followed and ASCS will attempt to implement them. However, we believe that Congressional action to update program authorities is necessary before administrative measures can become fully effective.

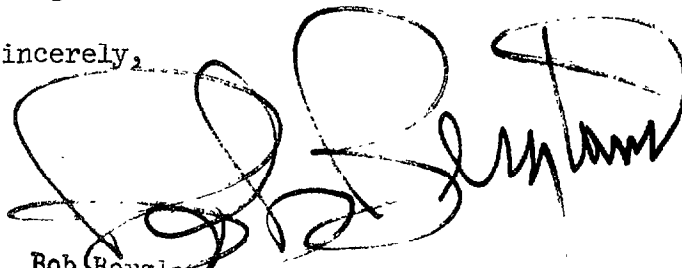
Federal Extension Service

Extension Service, U. S. Department of Agriculture, will intensify its educational efforts to implement the recommendations set forth in the above named draft GAO Report.

There is no significant disagreement with the philosophy of the recommendations. Extension in its education role has a responsibility to advise on practices that apply under varying local conditions and will make all reasonable efforts to coordinate with other USDA agencies to eliminate or minimize inconsistencies in advice given to farmers.

We appreciate the opportunity to comment on this report and to discuss it with the GAO representatives responsible for its development prior to its being issued in final form.

Sincerely,

A large, stylized handwritten signature in black ink, appearing to read 'Bob Bergler', is written over a faint, circular stamp or watermark.

Bob Bergler
Secretary

PRINCIPAL OFFICIALS OF
THE DEPARTMENT OF AGRICULTURE
RESPONSIBLE FOR ADMINISTRATION OF
ACTIVITIES DISCUSSED IN THIS REPORT

	<u>Tenure of office</u>	
	<u>From</u>	<u>To</u>
SECRETARY OF AGRICULTURE:		
Bob Bergland	Jan. 1977	Present
John A. Knebel	Oct. 1976	Jan. 1977
Earl L. Butz	Dec. 1971	Oct. 1976
Clifford M. Hardin	Jan. 1969	Dec. 1971
ASSISTANT SECRETARY, CONSERVATION, RESEARCH, AND EDUCATION (note a):		
Paul A. Vander Myde (acting)	Jan. 1977	Present
Robert W. Long	Mar. 1973	Jan. 1977
Thomas K. Cowden	May 1969	Mar. 1973
ASSISTANT SECRETARY, INTERNA- TIONAL AFFAIRS AND COMMODITY PROGRAMS:		
Richard E. Bell	July 1975	Present
Clayton Yeutter	Mar. 1974	Mar. 1975
Carroll G. Brunthaver	June 1972	Jan. 1974
Clarence D. Palmby	Jan. 1969	June 1972
ADMINISTRATOR, SOIL CONSERVATION SERVICE:		
Ronello M. Davis	June 1975	Present
Kenneth E. Grant	Jan. 1969	May 1975
ADMINISTRATOR, AGRICULTURAL STABILIZATION AND CONSERVA- TION SERVICE:		
Seeley Lodwick (acting)	Jan. 1977	Present
Kenneth E. Frick	Mar. 1969	Jan. 1977

a/Title changed from Assistant Secretary, Rural Development and Conservation in January 1973.

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