Chapter VI

Role of Government

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Role of Government

Government policies and programs that affect agricultural technology use and land productivity gcnerally fall into one of two categories: 1) those that promote economic or social goals, either by developing and promoting production technologies or by manipulating short-term economic factors; or 2) those that promote conservation of natural resource productivity, either by developing and promoting conservation technologies or by subsidizing investment in conservation. The two types of Government act iv i ties often operate simultaneously. Both influence farmers' decisions about technology use and about resource conservation, but the two influences are not always compatible.

This chapter reviews the major Government programs and policies related to these two goals—economic manipulation and conservation. It focuses primarily on Federal activities and concludes with a description of some State conservation initiatives that illustrate the potential for increased local involvement.

PROGRAMS AND POLICIES DESIGNED FOR ECONOMIC GOALS

Commodity Programs

Federal commodity and conservation programs were closed associated when they began in the 1930's, but during and after World War 11 they evolved in separate directions. Commod it y programs generally focused on helping farmers adjust to changes in short-term market conditions with a minimum of economic dislocations, while conservation programs assisted farmers with long-term land productivity problems. The explicit economic goal of most commod it y policies has been to raise farm incomes closer to average non farm incomes.

Since the establishment of the quasi-governmental Commodity Credit Corporation in 1933, farm income has been supported through artificial commodity pricing-supporting prices for certain products above what the market would otherwise pay. Other programs have since been developed to support farm income, including production controls (such as direct income-support payments, cropland set-asides, and crop acreage diversions), disaster relief payments, and, recently, subsidies for ,gasohoI production,

Direct income-support payments were initiated in the 1970's so price supports could be reduced to world market levels without reducing the total income support to farmers. Set-asides and crop diversion programs have ranged from long-term commitments that withdraw acreage from production to l-year agreements that divert portions of a farm's acreagc from one crop to another. Under the Agriculture and Food Act of 1981, the Secretary of Agriculture could require farmers to set aside some of their wheat, feed grains, or upland cotton acreage as a condition of receiving commodity program benefits. The Secretary is also empowered to make payments to farmers who voluntarily divert cropland to so ii-conserving crops, whether or not set-asides have been declared. Set-asides for wheat and feed grains removed 19 million acres from production in 1978, and 12 million acres in 1979 (Cook, 1980a),

Disaster relief programs were initiated on the premise that agriculture's unique dependence on biological processes and the weather requires that the risks of natural disaster be shared by society. Over the years, several disaster relief programs have been created, some in response to specific disasters. At present, some 20 aid programs offer a fairly comprehensive response to agricultural disasters.

Subsidies to produce biomass for gasohol are a recent development in farm income support programs. The Energy Security Act of 1980 (Public Law 96-294) provides subsidies to operations that convert biomass to ethanol for use in gasohol. Because of the economic incentives created by these subsidies, the demand for grains, especially corn, is increasing (USDA, 1981 b),

An underlying, sometimes explicit, social goal of the commodity programs has been to assure a plentiful, reasonably priced supply of agricultural products for consumers. The rationale is that wide fluctuations in the profitability of agriculture would drive many, perhaps most, farmers out of business if some stability were not provided by Government programs. Thus, society would be left with too few producers and too little production. Largely because of increases in off-farm employment, average farm incomes are now on par with average nonfarm incomes in the Nation, so the income level goal of commodity programs is becoming less important, The income stability goal is likely to become even more important, however, if the role of U.S. agriculture as a supplier of world food continues to increase as expected.

Because farm incomes depend directly on market prices, farm economic policies and supporting programs historically have fluctuated with commodity price variations. This has generally been on a crisis-oriented basis which is not conducive to long-term income stability. In recent years, rapid market changes have intensified these fluctuations. As a result, new farm programs have been formulated almost on an annual basis. As one U.S. Department of Agriculture (USDA) report concludes:

> Times of a studied, deliberate approach to the design of a forward-looking farm policy, rather than adjustment of the previous statute, have been rare. Careful attention to more than the immediate national effects of the programs used to implement policy has likewise been scarce (USDA, 1981 b).

A dearth of information or analysis also exists on the effects of commodity program activities on natural resources, even though over 80 percent of the sheet, rill, and wind erosion occurring on U.S. croplands takes place on land used to grow the major crops covered by those commodity programs: wheat, feed grains, soybeans, and upland cotton (Benbrook, 1980). Recently, research has begun to identify certain commodity programs and policies that encourage land-use practices that conflict with conservation objectives.

Commodity programs seem to have promoted specialization in farming by reducing economic risks and uncertainty for farmers and ranchers (Emerson, 1978). Income protection afforded for acreage planted in program crops adds a powerful incentive for farmers to put more acres into those crops than they would if they bore all the risks. This causes a decline in mixed-crop livestock operations in favor of less diverse, cash-grain operations. Cropland specialization reduces the use of crop rotations including cover crops, and thus increases erosion and other land degradation processes.

Controlling Production

Even though the main objectives of the commodity programs have been the economic effects, the set-aside and crop acreage diversion programs also have had significant conservation effects. Generally, participants have been required to plant set-aside land in some cover or soil-conserving crop. Because farmers tend to place their less productive land in these programs, the production control effect is compromised somewhat (Cook, 1980a), However, the less productive land is often more erosion-prone or otherwise fragile, so the conservation effects are enhanced.

Conservation benefits are reduced to some extent if farmers take less than the required amount of land out of production when set-asides are in effect. Enforcing such programs is difficult. Short-term production control programs (recently, most have lasted only 1 year) may also substantially reduce long-term conservation effects, Also, such benefits are only realized when production controls are in effect,

and diversions and set-asides were not used in 1974, 1977, or 1980. With increasing foreign demand for U.S. agricultural products, production control programs probably will not be common in the future.

Disaster Relief

Unlike production control programs, disaster relief may encourage cultivation of fragile lands. Disaster relief payments are calculated on the basis of total acreage planted and established yield-per-acre figures. The yield figures are set by local committees of farmers organized by the Agricultural Stabilization and Conservation Service (ASCS). In arid and semiarid regions, these yield F'igures are likely to be higher than the average yields over a drought cycle. Thus, disaster relief payments made for water stress and wind erosion damage in these areas are not so much insurance programs as they are subsidies, keeping farmers in the uneconomic business of farming erodible land with inappropriate row crop and small-grain technologies. Another problem is that basing the payments on acreage planted to the eligible crop discourages the use of stripcropping or stubble strips that could help control erosion (Sheridan, 1981).

The system used to determine qualifying acreages for commodity program payments may itself conflict with conservation objectives. The Food and Agriculture Act of 1977, for example, replaced a n earlier allotment scheme with a new concept, the normal crop acreage for wheat, feed grains, and upland cotton. Instead of being established for individual crops planted over a historical period, the normal crop acreages are established for total acreage planted to program crops in the previous season. The old system to determine allotments had included a provision for a "conserving base, " a portion of acreage that was to be fallow, in forage, or in crops grown for soil improvement, but that concept was eliminated. The 1981 farm act, like the 1977 one, does not allow grass strips planted for conserivation purposes to be included in determining commodity benefit eligibility. As a result, farmers who set aside such strips had reduced eligibility when compared with improvident farmers. There have been reports of farmers plowing under grass in order to increase their normal crop acreage (Cook, 1980a). While USDA/ ASCS, the agency which oversees commodity programs, recognizes this conflict, no analysis of the actual effects has been made.

Another conflict between commodity program implementation and certain conservation technologies exists regarding organic agriculture, Little explicit Federal, State, or local public policy deals with organic farming practices, although these practices often incorporate conservation technologies. A 1980 USDA study, however, discovered that price support programs administered by the local ASCS committees discriminated against organic farmers. Criteria for eligibility in these programs included requirements for certain tillagc practices and commercial fertilizer applications unacceptable to organic farmers (Geisler, et al., 1980].

Gasohol subsidy programs and policies raise additional considerate ions for conservation. Perhaps the most serious implication of an alcohol-fuels program will be the pressure to convert erosion-prone or otherwise fragile land into grain acreage. Without careful planning, policies that subsidize alcohol fuels could increase land degradation and loss of productivity. This potential problem is examined in OTA's report *Energy From Bioiogical Processes* (U.S. Congress, 1980a).

Commodity policies and programs have a number of unplanned impacts on the structure and operation of the U.S. agriculture sector, and these probably have subsequent un measured effects on land productivity. These include: 1) program benefits becoming attached to the land, thus contributing to land price inflation and inhibiting entry of new or young owner-operators. This increases the trend toward tenant farming and concentrated wealth. 2) Artificially high commodity prices causing farmers to plant row crops and small grains on more land, and presumably on more fragile land, than they would if responding only to free market prices. 3) Farmers using more

fertilizer and other inputs than they would if responding only to market prices (USDA, 1981 b).

The combined effects of these unplanned influences caused by commodity programs may outweigh the effects of Federal conservation programs. Commodity programs do not have conservation of resource productivity as a primary goal, and only some acreage set-asides and diversions have had conservation as explicit secondary goals. Even in the few programs where conservation or land productivity was an explicit aim, there has been no built-in strategy to evaluate the programs to determine whether the conservation goal was being achieved. For these reasons, the interactions between commodity programs and agricultural technologies, and the consequences for land, have never been well understood. One important area to investigate is the relationship between conservation decisions and the improvements in net farm income and income stability achieved by the commodity programs.

Credit Programs

The ability of farmers and ranchers to obtain credit through private and public lenders has become an increasingly important factor in U.S. agricultural decisionmaking. As a percentage of net farm income, total farm debt increased from 91 to 428 percent from 1950 to 1977 (Schmiesing, 1980). Moreover, demand for borrowed funds is expected to continue increasing as the agriculture sector strives to meet growing global demands for food at the same time that operation costs are rising rapidly (USDA, 1981 b).

The effects of credit policies on individual farms and ranches and on the resource base are not well understood. However, concern is growing that credit policies and programs, coupled with other economic factors such as inflation, are significantly shortening farmers' and ranchers' planning horizons and so reducing conservation investments.

Generally, farmers have had access to plentiful credit at competitive costs, often at rates lower than their counterparts in other sectors of the economy. Federal initiatives have provided access to funds at cost through the nonprofit Federal Credit System (FCS) banks and to subsidized loans from public lending agencies, In addition, agricultural customers have become attractive to private lenders because Federal emergency lending programs, price supports, and other commodity programs have reduced farming risks. The plentiful and favorable supply of funds has encouraged farmers to increase their reliance on borrowed money, to invest heavily in capital-intensive technology, and to expand their use of purchased production supplies (e.g., fertilizers and pesticides) (USDA, 1981 b).

In recent years, a less direct effect has become evident, Easy credit at good terms gave more purchasers the ability and incentive to pay higher prices for land, thereby contributing to inflation. Consequently, land prices have risen so high that beginning farmers are increasingly unable to pay for land from its current cash earnings. As a result, cropland has become concentrated under the ownership of established farmers and speculators (Schmiesing, 1980),

Farmers with nonprime land that is susceptible to productivity damage often have tight budgets and little economic flexibility. For these farmers, high land costs become an important constraint on the adoption of expensive conservation practices, though not on the adoption of conservation tillage (USDA, 1981b; Lee, 1981).

In the last two decades, most agricultural credit has come from the private sector, with FCS being the largest source of credit and related services to farmers, ranchers, and their cooperatives. FCS holds about one-third of the Nation's total farm debt. It consists of three separate banking systems—Federal Land Banks, Federal Intermediate Credit Banks (FICBS), and Banks for Cooperatives, Under FICBS, local Production Credit Associations have also been authorized to serve as retail outlets for credit.

In the public sector the Farmers Home Administration (FmHA) is the largest Federal

agency lending directly to farmers and ranchers. The Small Business Administration has a relatively new and limited program. Besides administering farm-operation and farm ownership loans, in 1979 FmHA also was responsible for at least 21 other programs, including emergency-disaster, economic emergency, individual housing, rural rental housing, water and waste, and business and industrial development loans.

Credit Programs for Production

What role do lenders play in influencing farmers' production and conservation decisions? Generally, financial institutions assess current cash flows to evaluate credit applications, This approach puts productivity-sustaining technologies at a disadvantage because it does not account for possible future changes in inputs and commodity prices or the long-term effects of soil conservation. Although the producer may eventually be penalized for having failed to use soil conservation practices, the implications of resource degradation may become evident in the loan evaluation process only after the producer has neglected conservation for several years.

The historic purpose of FmHA agricultural loan programs has been to assist farmers and ranchers who need, but cannot obtain, credit from commercial lenders. As a lender of the last resort, FmHA has been the major provider of subsidized credit and emergency loans. This image apparently has caused applicants to take more risks with their production and marketing plans, According to a recent USDA report, the emergency lending programs of FmHA "tend to reduce the overall threats farmers and ranchers face from the weather and the market . . . . (They) have been referred to as free insurance programs, with the overuse that predictably accompanies any 'free' goods" (USDA, 1981 b),

Federal credit subsidies that encourage behavior beyond that reasonably prudent for an average operation have serious implications for producer decision making and land productivity. Resource planning and wise use become less necessary as one transfers risks to the Government. The likely consequences are less efficient use of resources in the short run and adoption of technologies that are wasteful and resource-depleting in the longer term.

Federal credit programs, like commodity programs, have profound impacts on the planning horizons and technology decisions of farmers, and thus have indirect but important impacts on land productivity. In the recent past, inexpensive and easily available credit seems to have contributed to the inflated costs of farming, making profit margins so low that farmers cannot forgo current profits to conserve future productivity. Today's more expensive credit results in higher discount rates and fewer funds being available for investment in conservation technologies.

Programs that make credit availabIe for current production also can have positive conservation effects, For example, if farmers have funds to apply optimum fertilizer, then crop residues and organic matter will increase, soil microbiology will improve, and erosion will diminish. The overriding problem is that maintaining land productivity is not an explicit objective with most agricultural credit programs. So, as with commodity programs, the substantial negative and positive conservation effects of past programs are poorly understood and the analytical methods to foresee impacts of current or future programs have not been developed.

Credit Programs and Conservation Practices

Although many credit programs are directed to current production, there are some programs that provide credit explicitly for conservation, In the private sector's FCS, full-time farmers are eligible for credit for a range of agricultural purposes including conservation investments, while part-time farmers can get credit for agricultural conservation *practices* but have restricted access to credit for other purposes (GAO, 1980a).

Credit institutions' policies, however, may discourage the adoption of innovative conser-

vation technologies. For example, financial institutions are generally reluctant to lend money for a farmer to convert to organic farming, though they willingly assist in a shift to conventional agriculture. Thus, organic farmers are likely to pay more for their capital needs, and those who have chosen to farm organically have done so in spite of financial incentives rather than because of them (Geisler, et al., 1980; Oelhaf, 1978].

No-till illustrates another credit problem. Whether a switch to no-till is financially attractive to a farmer is influenced by initial investment costs. For instance, a new no-till planter costs more than a conventional planter. For small-farm operators in particular, the decision to buy is strongly influenced by credit availability, yet their access to credit is generally more restricted than for large operations (Geisler, et al. 1980; Pereleman, 1977). The labor savings offered by no-till may not be sufficiently attractive to the small-farm operator to compensate for his relatively high capital cost. Thus, preferential access to credit makes it more likely that larger farms switch to no-till, but the steeply sloping land where the conservation effects of no-till are most significant are more characteristic of small farms.

Tax Policies and Programs

Congress frequently uses tax programs to stimulate economic activities in directions that will enhance particular policy goals. In recent years, many major agricultural tax programs have been intended to support family farm operations. There is an implicit, and occasionally explicit, social goal of ensuring continuation of an agriculture structure that is based on owner-operator family farms.

Tax programs designed to achieve this and other social and economic goals interact with conservation in various ways which are not well understood. Some of these tax programs, such as preferential estate tax treatment for farms, are thought to increase the use of conservation practices, though they may also have less direct effects that partially offset the conservation benefits. Other tax policies, such as the cash accounting rules for farms, have unknown impacts on long-term land productivity.

In general, tax programs affect long-term land productivity positively when they make it economically attractive for producers to use longer planning horizons for their technology investments, and negatively when they make shorter planning periods necessary. Tax policies also affect landownership and land use in ways that may have significant impacts on use or disuse of productivity-conserving technologies,

Tax programs generally have greatest influence on taxpayers who have substantial tax 1iability or income to offset. Thus, tax programs designed to aid family farms have made agriculture an attractive tax shelter for affluent nonfarmers, for limited partnerships, and for other types of investment groups. Landownership and farm operation are likely to be separated when nonfarmer investors are attracted to agriculture, and this change may lead to decreased long-term investments in conservation. Tax policies have contributed to the trend toward concentrating U.S. agricultural production and wealth among fewer producers (USDA, 1981 b), but no data exist to indicate whether the redistribution of land and wealth is causing changes in use of productivity-conserving technologies. Tax policies also have been a causal factor in the shift to more capital-intensive (v. labor- or land-intensive) agricultural technologies (USDA, 1981 b).

Preferential estate tax provisions enacted as part of the Tax Reform Act of 1976, and more recent revisions of tax laws, substantially reduce the estate-tax burden (Harl, 1980). The opportunity for reduced tax liabilities has a mixed effect on the maintenance and enhancement of land productivity. The most obvious effect is to lengthen a family's planning horizon. If a farmer knows that his heirs will receive the benefit of his conservation efforts, he should be more willing to make investments or sacrifices of current income. Offsetting this benefit somewhat is the possibility that preferential treatment for farm estates helps inflate land prices, which is thought to have a generally negative effect on conservation.

Income tax provisions that allow producers to use cash accounting for the costs of developing an asset, while taxing future income derived from those assets as long-term capital gains, provide high tax benefits where there is substantial current income to offset. For example, certain perennial crops provide special tax shelters. Under the tax code, the costs of developing certain trees and vines that produce fruits and nuts can be deducted as current cost from ordinary income, while proceeds from these assets when sold can be treated as capital gains. Because the income and expenses may be reported under cash-accounting rules, the taxpayer has substantial freedom in choosing the time when the tax liabilities, if any, must be paid. Again, these provisions should encourage a longer planning horizon that would make conservation investments more attractive, but may also attract nonfarmers seeking tax shelters and so drive up the price of cropland and the incidence of tenant farming.

Other tax policies favor capital investments by reducing investment costs through appreciation-depreciation rules and special investment tax credits. These policies encourage and reward capital investments, including expanded use of machinery and equipment, rather than increased expenditures for labor and management. Such policies could also encourage investment in conservation structures, such as terraces or fences.

The 1981 USDA report on the structure of agriculture reaches a number of general conclusions about Federal tax programs and policies (USDA, 1981 b):

- Tax law tends to perpetuate ownership of farm assets, particularly land.
- Tax law seems to encourage capital structures with a higher ratio of debt to assets and greater use of debt capital relative to other resources than would otherwise exist.
- Because labor is taxed while capital investments receive tax breaks, farmers have an incentive to substitute capital for labor.
- Recent changes in tax policy encourage increased use of corporations as a way of organizing agricultural operations.

Management practices may be chosen because they allow the best use of tax rules, They may not be the best crop and animal management. The overall impact could be less efficient use of resources.

As a consequence, conservation may suffer, as when large labor-saving tractors (generally not well adapted to terraces, contour farming, stripcropping, and other conservation structures] are used in place of smaller machines that require less capital and more labor. On the other hand, some conservation practices and some production techniques that conserve productivity require substantial capitaI investments and benefit significantly from the tax programs that encourage such investment. These include the shift to no-till farming and the installation of well-designed irrigation and drainage systems,

Thus, if tax programs are to be an effective tool for encouraging conservation of land productivity, they should be quite specific about which types of capital equipment, structures, or land improvements qualify. Careful analysis of the likely consequences of tax programs must be conducted ahead of their implementation to avoid unplanned, counterproductive impacts.

RESOURCE CONSERVATION PROGRAMS

Evolution of the Federal Role

Federal soil conservation efforts began with the establishment of the Bureau of Chemistry at USDA in 1894. During the first decades of the 20th century, USDA issued publications and conducted some research on soil erosion. However, the concept of direct Federal action to control and prevent soil erosion did not gain major support until the late 1920's and early 1930's, when hard economic times for the agricultural producers and severe drought and duststorms in the Great Plains combined to attract national attention. Since then, the Federal

Government's role in natural resource conservation has grown in breadth and intensity. Table 23 shows the major Federal legislation through which Congress has established the Federal role.

The first Soil Erosion Service, established in 1933, became the Soil Conservation Service (SCS) of USDA in 1935 with passage of the Soil Conservation Act, That law authorized the Secretary of Agriculture to survey and investigate

Table 23.—Evolution of the Federal Role in Resource Conservation

Resource	Authorizing legislationa	Lead agency	Conservation program	Public Law	U.S. Stat.	Us. Code	Date of enactment
Soil and Water	Agricultural Credit Act	ASCS/Fm HA	Emergency conservation to control wind erosion, conserve water, rehabilitate farmland harmed by erosion, floods, or other natural disasters; loan assistance	95-334	92 Stat. 433	16 U.S.C. 2204	1978
Natural Environment	Federal Pesticide Act	EPA	Program to streamline pesticide registration through generic registration, conditional registration, data compensation, & trade secret revisions	95-396 820	92 Stat.	—	1978
Rangeland	Forest & Rangeland Renewable Resources Research Act	USFS	Research & dissemination of findings to support resource protection & management	95-307	–	–	1978
Rangeland	Public Rangelands Improvement Act	BLM	Mandates on-the-ground improvement programs for public grazing lands & increases funding for this effort	95-514	92 Stat. 1803	43 U.S.C. 1901 et seq.	1978
Rangeland	Renewable Resources Extension Act	US FS/Science & Education Administration	Renewable Resources Extension Program for private landowners, natural resource conservation education	95-306	92 Stat. 349	16 U. SC. 1671	1978
Soil and Water	Surface Mining Control & Reclamation Act	Scs	Conservation treatment of rural abandoned or inadequately reclaimed mined lands & waters	95-87 sec. 406	91 Stat. 460	30 U.S.C. 1236	1977
Soil and Water	Soil & Water Resources Conservation Act (RCA)	Scs	Resource Appraisal & Program Development	95-192	91 Stat. 1407	16 U.S.C. 2001 et seq.	1977
Water	Clean Water Act of 1977	EPA/SCS	Rural Clean Water Program to control nonpoint pollution from agricultural sources; financial & technical assistance	95-217 sec. 208	91 Stat. 1579	33 U. SC. 1288	1977
Rangeland	Federal Land Policy & Management Act	BLM	Organic Act for BLM management & disposal of public lands; inventory, planning, and management for grazing leases	94-579	90 Stat. 2743	43 U.S.C, 1701 et seq.	1976
Rangeland	Forest & Rangeland Renewable Resources Planning Act (RPA)	USFS	Resource Appraisal & Program Planning & Development	93-378	88 Stat, 476	16 U.S.C. 1601-10	1974

Table 23.—Evolution of the Federal Role in Resource Conservation-Continued

Resource	Authorizing legislationa	Lead agency	Conservation program	Public Law	Us. Stat.	Us. Code	Date of enactment
Soil and Water	Agriculture & Consumer Protection Act	ASCS	Cost-sharing & technical assistance under the Agricultural Conservation Program (excludes certain Great Plains Conservation Program participants)	93-86	87 Stat, 241	16 U.S.C. 1501 et seq.	1973
Natural Environment	Federal Environmental Pesticide Act	EPA	Comprehensive registration of pesticides by use & enforcement authority over misuse	92-516	86 Stat. 973	—	1972
Soil and Water	Rural Development Act	SCS/Fm HA	Land inventory & monitoring; loans for soil & water conservation	'92-419	86 Stat. 670	7 U.S.C 1010a	1972
Water	Water Bank Act	ASCS	Water Bank Program to conserve surface waters & wetlands	91-559	84 Stat. 1418	16 U.S. C 1301 et seq	1970
Natural Environ - ment	National Environrmental Policy Act	CEQ	Environmental impact assessments of Federal projects; national policy to minimize environmental damage	91-190-		- =	1969
Soil and Water	Appalachian Regional Development Act	ASCS	'Appalachian Land Stabilization & Conservation Program (cost-sharing & technical assistance for erosion, sediment control, & other conservation measures	89-4	79 Stat, 5	—	1965
Water	Water Resources Planning Act	Water Resources Council	Conservation, development, & use of water & related land resources; formation of river basin commissions to coordinate, plan, & study resource	89-90	79 Stat. 244	42 U.S.C. 1962 et seq.	1965
Rangeland	Public Land Law Review Commission Organic Act	Public Land Law Review Commission	Appraisal of Federal land laws to improve Federal Government's custodian role to meet current & future needs	88-606	78 Stat . 982	43 USC. 1391-1400	1964
Soil and Water	Food and Agriculture Act	SCS/Fm HA	Resource Conservation and Development (loans & technical assistance to develop & carry out conservation plans)	87-703	76 Stat. 607	7 U.S.C, 1010-11 a	1962
Soil and Water	Consolidated Farmers Home Administration Act	Fm HA	Conservation loans to individuals	87-128 307	75 Stat. 1921	7 U.S.C	1961
Rangeland	Multiple-Use Sustained-Yield Act	USFS	'Mandate to develop" renewable surface resources of the national forests for multiple use & sustained yield	86-517	74 Stat. 215	16 US C 528-31	1960
Soil and Water	Great Plains Conservation Program	SCS	Great Plains Conservation Program (long-term cost-sharing & technical assistance)	84-1021	70 Stat.	16 U. SC. 1030	1956

Table 23.—Evolution of the Federal Role in Resource Conservation-Continued

Resource	Authorizing legislation[a]	Lead agency	Conservation program	Public Law	U.S. Stat.	Us. Code	Date of enactment
Soil and Water	Agriculture Act of 1956	USDA	Soil Bank Program	84-540	—	—	1956
Water-sheds	Watershed Protection & Flood Prevention Act	SCS/Fm HA	Watershed planning, operations, & emergency assistance; certain technical & financial assistance; river basin surveys & investigations; watershed loans	83-566	68 Stat. 666	16 U.S.C. 1001 et seq.	1954
Water-sheds	'Flood Control Act	Scs	Emergency watershed operations	81-516 sec. 216	64 Stat. 184	33 U.S.C. 701 b-1	1950
Natural Environ-ment	Federal Insecticide, Fungicide, & Rodenticide Act	USDA	Pesticide registration in interstate commerce	80-104	61 Stat. 163	—	1947
Water-sheds	Flood Control Act	Scs	Installation of improvements in 11 watersheds & emergency watershed operations	78-534	58 Stat. 887	33 U.S,C. 701-1 et seq.	1944
W-ate r-sheds	Flood Control Act	Scs	Watershed protection & flood protection (surveys & investigations to prevent soil erosion on watersheds)	74-738	49 Stat. 1570	33 U.S.C. 701a et seq.	1936
Soil and Water	Soil Conservation & Domestic Allotment Act	ASCS	Agricultural Conservation Program (ACP), provision of payments & grants in aid to carry out approved soil & water conservation measures	74-461	49 Stat. 1148	16 U,S.C. 590g-p (m), 590q	1936
Soil and Water	Original Soil Conservation & Domestic Allotment Act	SCS	Technical assistance, soil surveys, snow surveys, water supply forecasting, & research relating to soil erosion & measures to prevent it	74-46	49 Stat. 163	16 U.S.C. 590a	1935
Soil and Water	Soil Conservation & Domestic Allotment Act	SCS	Plant Material Centers	74-46	49 Stat. 163	16 U,S.C. 590a-f	1935
Rangeland	Organic Act of 1897	U.S. Forest Service (FS)	National Forest Systems	—	30 Stat.	16 U.S.C. 473-482	1897

aAuthorizing legislation refers to basic athorities for each activity and does not include amendments to the orginial Acts.

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soil erosion processes and the measures necessary to prevent and control those processes. It also authorized the Secretary to enter into agreements with any agency or person for the purpose of soil conservation, and established the Conservation Operations Program. The program's initial activities emphasized projects to demonstrate erosion control methods but soon evolved to emphasize more direct service to individuals, relying heavily on local Soil Conservation District organizations.

The 1935 act was amended and expanded by the Soil Conservation and Domestic Allotment Act of 1936. This provided cost-sharing assistance for approved conservation practices and authorized payments to farmers who shifted acreage from "soil-depleting" to "soil-conserving" crops. The Agricultural Conservation Program (ACP) was established to carry out the 1936 act. It initially focused on short-term needs, but in the 1940's its direction shifted toward more long-range needs, and permanent

conservation investments became the main purpose of the Federal cost-sharing programs under ACP.

Congress also increased its attention to renewable resources other than cropland soil in the 1930's, Decades of uncontrolled overgrazing had ruined many public rangelands. In the more environmentally fragile arid regions, forage production was greatly reduced. Then the drought of the *1930's* drastically cut forage production in the Great Plains, which until then had been less arid and more resilient, The combination of reduced forage and low livestock prices meant economic ruin for many ranchers. It also resulted in calls for an active Federal role in applying the newly emerging principles of ''range science" to the vast, publicly owned rangelands in the Western States. In 1934, Congress passed the Taylor Grazing Act and gave the Secretary of Interior broad powers for multiple-use management of rangelands in the public domain. It provided the basic authority for classifying, protecting, administering, regulating, and improving tile rangelands under the jurisdiction of the Crazing Service, later the Bureau of Land Management (BLM),

Watershed protection and flood prevention also began to receive increased congressional attention during the 1930's. As erosion processes came to be better understood in the 1930's and 1940's Congress passed a series Of laws authorizing investigation and improvement of watershed,s and providing emergency measures for flood control, Financial and technical support for conservation and land improvements increased in 1954 with passage of the Watershed Protection and Flood Prevention Act. Through the *1950's* and 1960's, Congress established programs for regions with especially severe problems of resource degrada t ion, including the Great Plains Conservation Program and the Appalachian Regional Development Act.

During the *1970's,* Congress produced several major legislative packages reflecting growing national concern over the adequacy of existing programs to ensure long-term resource productivity. Natural resource appraisal and long-term planning were emphasized by the Soil and Water Conservation Act of 1977, the Forest and Rangeland Renewable Resources Planning Act of 1974, and the Federal Lands Policy Management Act of 1976. Regulation of agricultural chemicals, control of nonpoint source agricultural pollution, and the preservation of environmental quality also received broad and intensive legislative attention.

The major laws enacted during the past two decades that directly or indirectly affect rangeland and cropland resource use and productivity include:

- Multiple Use-Sustained Yield Act of 1960,
- Clean Air Act of 1963 (amendments 1970 and 1977),
- Wilderness Act of 1964 (amendments 1972 and 1977),
- National Environmental Policy Act Of 1969,
- Federal Environmental pesticide Control Act of 1972,
- Federal Water pollution Control Act Amendments of 1972 (amendment—The Clean Water Act–1977),
- Endangered Species Act of 1973,
- Forest and Rangelands Renewable Resources Planning Act of 1974 (amendments 1976),
- Wild Horse and Burro Act of 1974,
- Archaeological and Historic Preservation Act of 1974,
- National Forest Management Act of 1976,
- Federal Land Policy and Management Act of 1976,
- Soil and Water Resources Conservation Act of 1977,
- Forest and Rangeland Resources Extension Act of 1978, and
- Public Rangelands Improvement Act of 1978.

Resource Appraisal and Protection

The Conservation Operations Program, administered by SCS, has been responsible for developing farm-level and local conservation plans for encouraging the use of soil and water

conservation techniques. ACP, administered by ASCS, provides cost-sharing assistance for conservation investments, These programs, however, are voluntary, and participation has been inadequate to control resource degradation on the Nation's croplands and rangelands, This inadequacy was widely recognized in the 1970's, and this led to enactment of the Soil and Water Resources Conservation Act of 1977.

Resources Conservation Act

The 1977 Resources Conservation Act established a process for natural resource appraisal and planning, That process is popularly known as "RCA. " The purpose of RCA is to provide a mechanism for informed, long-range policy decisions regarding the conservation and improvement of the Nation's soil, water, and related resources. It is intended to serve not only the Federal Government but also State and local governments and private landowners and land users. The legislation mandates a continuing resource appraisal and inventory which is to be the basis of a comprehensive national policy. That policy is to include priorities for a national soil and water conservation program. Finally, there is to be continuing program evaluation to keep the program responsive to changing priorities.

The RCA appraisal was published in the summer of *1981*. The proposed RCA program was distributed for public review in late 1981. The final program and publication are unlikely to be issued before late 1982. Meanwhile, there is some indication that the RCA process is not yet meeting the intent of Congress. A 1980 General Accounting Office (GAO) evaluation of the ongoing RCA found that 2 years and $11 million after beginning the process, USDA had not fully evaluated each of its 34 soil and water programs, The GAO report focused on whether RCA was developing useful and accurate information for water program decisions, and found considerable fault with the RCA analysis of conservation programs, techniques, and changing needs (GAO, 1980b). The program evaluations will be a key issue in assessing the soundness of the final RCA recommendations, There is a strong tendency for any department or agency to avoid self-critical evaluations, since these can be used by Congress or the Office of Management and Budget as a rationale for cutting out the programs. Yet, without such evaluations the agencies are unlikely to make good use of the continuing resource appraisal process.

Rangelands

The Federal Government's role in managing rangelands has concentrated mainly on the 214 million acres of federally owned rangeland outside Alaska. Excluding Alaska, * 64 percent of U.S. rangeland is outside Federal ownership, but does get some service from SCS and ASCS programs. The rangeland work of those agencies is minor compared with their work on croplands and improved pastures.

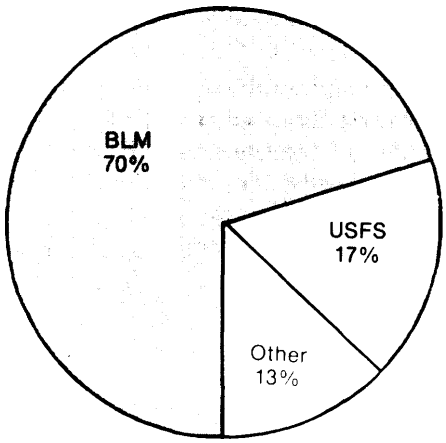
BLM administers 70 percent of the Federal rangeland outside Alaska, and the U.S. Forest Service (USFS) has jurisdiction over 17 percent, The remainder is administered by various agencies in the Departments of Defense and the Interior (fig. 15) (USDA, 1980 b). The Taylor Grazing Act of 1934 was the guiding mandate for administering BLM lands for decades, and the Organic Act of 1897 was the basis of USFS land management, Various laws influenced Federal rangeland management from the 193o's through the 1960's. The Soil and Water Resources Conservation Act provided some funds to restore productivity of the public lands, and the Multiple-Use, Sustained-Yield Act of 1960 mandated administration of the USFS lands for uses other than timber and forage. In the 1970's, however, Congress recognized that these laws were inadequate for sustaining the productivity of the public lands, and six important new laws were passed to guide the work of BLM and USFS,

THE FEDERAL LAND POLICY AND MANAGEMENT ACT AND PUBLIC RANGELANDS IMPROVEMENT ACT

Congress enacted two major pieces of legislation dealing with long-term planning and man-

" '1'here are 231 million acres of land classified as range in Alaska, most of it federally owned, hot that land is not heavily used or managed,

Figure 15.—Administration of Federal Rangeland Excluding Alaska



SOURCE' U.S Department of Agriculture, Forest Service, "An Assessment of Forest and Rangeland Sitution in the United States," 1980

agement of land administered by BLM: the Federal Land Policy and Management Act of 1976 (FLPMA—Public Law 94-579) and the Public Rangelands Improvement Act of 1978 (PRIA–Public Law 95-514). The two acts give express policy recognition to the plight of public rangelands, mandate land-use plans, and provide funds for on-the-ground improvements.

FLPMA is the result of congressional concern over the deterioration of Federal lands and over the numerous, often-conflicting, and sometimes-antiquated acts related to public lands. Indeed, a major purpose is to give BLM enough authority to effectively carry out the public lands goals and objectives established by other laws.

The complete act has six titles with provisions ranging from broad types of BLM authority to specific policies on issues such as protecting wild horses and burros, managing the California desert area, and managing BLM's wilderness land.

FLPMA specifies that the Secretary of Interior will carry out resource planning for the BLM-controlled public lands by:1) preparing and maintaining a resource inventory of all the lands, 2) developing and maintaining land-use plans for all lands by tractor area, and 3) developing management allotment plans for the lands designated during the planning stage as available for grazing. The land-use planning activity is guided by nine directives, including a mandatory provision for compliance with pollution laws and standards, and a requirement to balance long- and short-term benefits.

To strengthen the FLPMA program, Congress enacted PRIA. This act authorized substantially increased funds for restoring and improving Federal rangelands. In its declaration of policy, Congress recognized that rangelands are still in unsatisfactory condition and may decline further without more funds and improved management. It declared that such "unsatisfactory conditions on public rangelands present a high risk of soil loss, desertification, and a resultant underproduction for large acreages of the public lands" (43 U.S.C. 1901 (a)(3)),

In PRIA, Congress mandated improved management and more funds to be raised through fees collected from livestock grazing permits and leases on public lands. Fees have been charged for decades, but traditionally they have been below fair market value. While generating considerable debate prior to enactment, the legislation does specify that the fees charged are to represent "the economic value of the land to the user;" it designates the base and formula to be used for determining the fair market value (43 U.S.C, 1905(a)). Furthermore, the act mandates that over 80 percent of the funds generated are to be spent for on-the-ground range rehabilitation, maintenance, and the construction of range improvements (43 U.S.C. 1904(c)).

THE RESOURCE PLANNING ACT

The Forest and Rangeland Renewable Resources Planning Act of 1974, which generated the RPA process, is landmark legislation that requires USFS to engage in long-term planning. Congress enacted the law to improve the collection and analysis of data so that legislative and administrative decisions on policy and program design and funding will more adequately meet future demands on forests, rangelands, and associated renewable resources.

RPA requires that the administration prepare an updated inventory and assessment of resources and a detailed program for investment in, and use of, the forest system. The updated inventory and program are to be submitted to Congress for review every 5 years for the next four decades and a progress report is to be prepared by the administration annually. This resource assessment and planning process is to encourage the development of all the federally owned forest, range, and related lands as a unified system dedicated to long-term benefit for present and future generations. The scope of the RPA resource assessments reported thus far has not been limited to land administered by USFS, but the Forest Service is the lead agency, and so far the RPA program planning process has related mainly to USFS lands.

The legislation sets the year 2000 as the target year:

> . . . when the renewable resources of the National Forest System shall be in operating posture whereby all backlogs of needed treatment of their restoration shall be reduced to a current basis and the major portion of planned intensive multiple-use sustained-yield management procedures shall be installed and operating on an environmentally sound basis (16 U.S.C, 1607 (1974)).

THE NATIONAL FOREST MANAGEMENT ACT

A major amendment to RPA occurred in **1976** with the enactment of the National Forest Management Act (Public Law 94-588). While RPA provided the philosophy and factfinding basis for long-term planning, this amendment contains a more specific framework for developing and implementing multiple-use management plans for sustained yield use of specific resources. A key objective of the legislation is to develop USFS management programs that "will not produce substantial and permanent impairment of the productivity of the land" *(16* U.S.C. 1604(g)(3) (C)(1976)).

THE FOREST AND RANGELAND RENEWABLI RESOURCES RESEARCH ACT AND THE RENEWABLE RESOURCES EXTENSION ACT

The Forest and Rangeland Renewable Resources Research Act (Public Law 95-307) of *1978* mandates a comprehensive program of forest and rangeland research and dissemination of the findings. Again, this act is expressly intended to complement RPA.

Another complementary law is the Renewable Resources Extension Act of 1978 (Public Law 95-306), which requires the Secretary of Agriculture to prepare a 5-year plan. A principal purpose of this act is to use education to increase the yield of privately owned forest and rangeland renewable resources, but it has broader implications. Jurisdiction distinctions among the various agencies constrain the coordination of forest, range, and cropland policies and programs, but Congress recognizes that these resources are intimately interrelated, This is evidenced, for example, by the act's directive that the 5-year plan include programs for managing trees and shrubs in shelterbelts because these "protect farm lands from wind and water erosion, " The legislation states that:

> to meet national goals, it is essential that all forest and rangeland renewable resources including fish and wildlife, forage, outdoor recreation opportunities, timber, and water, be fully considered in designing educational programs for landowners, processors, and users , . . , (16 U.S.C. 1671(2) (1978)].

These legislative developments guide management support of the practices and technologies necessary to ensure future productivity of publicly owned rangelands. In essence, it is a congressional mandate for land stewardship. A congressional white paper issued after the first series of RPA reports were submitted by the administration in June 1980 declared:

> . . . the role of the Federal Government in managing the National Forests is to protect and enhance the land, and to provide goods and services from those lands to the Nation's people. But the first consideration must be the enhancement and protection of the land, both forest and range (U.S. Congress, 1980b).

Even though the policy seems clear, implementation is not. No comprehensive analysis to determine the adequacy and completeness of the RPA process as a long-term planning instrument has been undertaken, However, in mid-1980 GAO reviewed BLM and USFS land

management activities and found that congressional expectations were not being achieved. BLM has a mandate for resource inventory and land-use planning, but no mandate to develop long-range resource programs. As a result, BLM has no rigorous basis for determining the production levels required to meet the Nation's long-term needs for the various benefits produced from its land.

GAO found that "neither the Bureau nor the Forest Service have land management plans for sizable portions of their lands" (GAO, 1980b). While both agencies have been working to develop better land management plans and planning procedures, many of the existing plans are inadequate because they:

- are based on incomplete or obsolete resource inventory data or
- do not identify specific actions required to meet production goals while achieving environmental protection objectives.

GAO recommended that Congress amend FLPMA to require a long-range renewable resource program development process for BLM. Improvements in the planning process are being made and more comprehensive plans are in progress, but these will take several years to complete. In the meantime both agencies "will continue to be guided by substandard plans or by the intuition and best guesses of land managers" (GAO, 1980b).

Finally, for both BLM and USFS, staff and funds have not kept pace with the new responsibilities and specific tasks assigned to the agencies by legislation, Executive orders, and court decisions. For example, the Renewable Resources Extension Act of 1978 remains unfunded. The problem is particularly acute in BLM, where since 1970 responsibilities for major resource management programs have increased rapidly while the agency's limited resources have hampered completion of even the most pressing mandates. The GAO report emphasizes the need to link agency program mandates to the budgeting process (GAO, 1980b),

Environmental Protection

During the 1970's, several types of programs were implemented to safeguard or restore the Nation's general environmental quality. Three of these are particularly significant for cropland and rangeland productivity: pesticide regulation, nonpoint source pollution control, and environmental impact assessment.

PESTICIDE REGULATION

The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) of 1947 regulated labeling and registration of pesticides sold interstate, The primary purpose of that law was to protect pesticide users from fraud. Since 1950, however, there has been a prodigious increase in the use of pesticides, which are potential pollutants of food, drinking water, and fish and wildlife habitat, * By the early 1970's Congress had recognized the need for Federal safeguards for the general environment and protection of the public from misuse of these dangerous chemicals. In 1972, FIFRA was amended to establish a sophisticated regulation system involving Federal, State, and local government agencies. In 1978, further amendments expedited the registration and classification process for pesticides by allowing generic chemical registration, conditional registration, special data-use compensation, State primary use enforcement, and special trade secret exceptions. The 1978 act further requires the Environmental Protection Agency (EPA) and USDA to coordinate efforts in integrated pest management. Because of these amendments and careful congressional oversight, EPA has made important strides to implement more responsive and efficient programs in pesticide regulation which protect the public and the resource.

NONPOINT SOURCE POLLUTION

The Federal Water Pollution Control Act (FWPCA) of 1972 (Public Law 92-500), as amended by the Clean Water Act of 1977, deals with the problem of nonpoint source pollution,

*U.S. production of pesticides rose from 680 million lb in 1962 to 1,420 million lb in 1980 (Harkin, et al., 1980).

It cites agricultural activity as one of the many, diffuse sources of such pollution. Section 208 of FWPCA is intended to affect the technological practices used on croplands and rangelands. It calls for areawide water quality management plans to achieve the goals of the act, including complete elimination of pollutant discharge by 1985 where technically, economically, and socially achievable. More specifically, the plans are to identify and set forth procedures and methods to control agricultural nonpoint pollution sources.

EPA is responsible for administering FWPCA. It has indicated that State governments should develop and implement "best management practices, " described by section 208 as:

> , . , the control techniques that a State considers most reasonable and effective and which are suitable to local conditions at the time of implementation. Such practices include crop rotation, less intensive cropping systems, conservation tillage, and structural controls, It is significant to note that these best management practices are preventive measures—they are directed toward controlling soil erosion on-site rather than dealing with sediment after it has eroded (EPA, 1978).

The "208 planning process" has been under way since before 1978, when detailed management plans and implementation schedules for the States were due. The 1977 Clean Water Act expanded section 208 by establishing a new program authorizing USDA to provide technical and financial assistance to farmers, ranchers, and other rural land operators for installation and maintenance of the FWPCA best management practices, This cost sharing is to support implementation of the State water quality management plans for control of nonpoint source pollution. Programs have now been established by many States, although the cost-sharing funds have subsequently been reduced,

Overall, the section 208 program has moved slowly. EPA became more active after the 1977 amendments and relied heavily on USDA cost sharing. Many States opposed the program originally, however, and the progress will continue to be slow, in part because funds and technical expertise are limited. Also, the benefits of agricultural water pollution control accrue slowly to a widely dispersed set of beneficiaries who may not recognize the benefits when they occur.

ENVIRONMWTAL IMPACT ASSESSEMENT

The National Environmental Policy Act of 1969 (NEPA—Public Law 91-190) requires Federal agencies to prepare an environmental impact statement (EIS) when a proposed action significantly affects the quality of the human environment. Even if a full EIS is not needed, there must still be preliminary data collection and analysis to support a finding of no significant adverse impact. Consequently, where Federal involvement exists, NEPA generally will trigger at least some data collection and analysis of how the project is expected to affect natural resources.

The principal purpose of NEPA is to inform decisionmakers about the likely environmental and natural resource consequences of proposed major actions before the actions are taken, and where serious negative consequences are anticipated, to encourage consideration of alternative actions. NEPA has resulted in more complete environmental impact consideration for many projects than would otherwise have occurred. The fundamental purpose of promoting informed decisionmaking has seldom been faulted. However, at times the application of NEPA has led to controversy and criticism.

For example, in the mid-1970's, a citizens' organization brought a lawsuit against BLM challenging the adequacy of its programmatic grazing statement for public lands under its jurisdiction. The suit was settled in 1975, with a decision that BLM should prepare, by 1989, 145 EISS to cover its projects on over 170 million acres of public lands. The subsequent EIS process has been expensive, consuming a large portion of BLM's limited funds and, especially, of its limited expert personnel, and causing significant delays in needed rangeland development, Whether the EISS need to be so expensive is doubtful, but certainly the process caused more thorough planning than occurred

before the lawsuit. The EISS have revealed more severe range degradation than had formerly been recognized—or admitted—and it seems likely that the improved information will result in improved programs, It is possible that without being forced to prepare EISS, BLM still would have improved its planning as it worked out programs in response to the mandates of FLPMA and PRIA.

Federal Cost Sharing

Cost sharing has been an integral component of Federal conservation policy since *1936*. The rationale is that each year society wants more row crops, small grains, beef, and other products than farmers and ranchers can produce from the most resilient prime agricultural lands. Therefore, nonprime and fragile croplands and rangelands must be used. But society does not pay high enough prices to the producers, relative to their costs, to implement the conservation practices needed to protect the long-term productivity of these fragile lands. (And it is not clear that if society did, the farmers would use the money for that purpose.) So, to the extent that society places a high value on future production, it must directly pay a share of the cost for conservation practices.

This rationale is convincing and widely accepted. A 1979 Harris Poll indicated that 72 percent of the American public supported the concept of public funding to help pay for soil conservation practices on private land (Cook, 1980a). Eight USDA programs have offered cost sharing to landowners for conservation purposes (table 24), Yet this has been the most

Table 24.—Conserwation Programs and Their Purposes

Agency	Conservation program	Conservation purpose[a]														Type of program
		Flood control	Land reclamation	Water supply	Timber productivity	Watershed protection	Wind erosion	Pasture/range production	Water quality improvement	Waste management	Irrigation management	Drainage	Cropland productivity	Habitat development	Outdoor recreation	
ASCS	Agriculture conservation	4		5	1	5	5	3	5	5	5	1	5	2	1	Cost sharing
	Water bank	5		5		5	1							5	4	Cost sharing
	Emergency conservation	1	5	5		4	5	2	5	4	5	3	3	4		Cost sharing
FmHA	Irrigation and drainage loans	5	3	5	1	4	4	5	3	1	5	5	3	1		Loans
	Watershed loans	5	3	5	3	5	5	4	3	3	5	4	3	3		Loans
	Resource conservation loans	5	4	5	4	5	5	5	3	4	4	5	3	3	3	Loans
	Loans to individuals	5	4	5	4	4	5	4	3	3	5	5	3	2	1	Loans
USFS	State and private forestry	4	3	3	5	3	3	3	2	1				5	2	Technical assistance
	National forest system	3	4	4	4	5	1	4	2	3				5	5	Resource management
SEA-E	Conservation education	4	1	3		5	4	3	4	2	4	4	4			Education
	Conservation operations		3	4	3	5	5	4	4	3	5	2	5	3	1	Technical assistance
	Watershed operations						2	4	4	2	4	2	3	4	3	Cost sharing/technical assistance
							2	4	4	4	5	4	4	4	4	Cost sharing/technical assistance
																Cost sharing/echnical assistance
									4	3	3	1	3	3	3	Cost sharing/technical assitance
							5	2	4	3	4		2	2		Cost sharing/technical assistance

[a]The most important purpose of each program is assigned a value of 5 with 01 her purposes rated relative to this one on a scale from 1 to 5 If no rating is shown the purpose is not relevant to the program

SOURCE Overview *Program* Linkages, USDA Land and Water Conservation Task Force, Washington, D.C , December 1978, U S General Accounting Off Ice Report to Congress *A Framework and Checklfst for Evaluating Soil and* Water Conservation Programs (Washington D C March 1980) p 15

controversial of the Government approaches to the maintenance of agricultural land productivity.

Recent evaluations of the largest cost-sharing programs have indicated that they have not been a cost-effective approach to soil conservation. The controversy is over why this is so and what should be done about it—not over the basic rationale of cost sharing. The principal reasons offered for the lack of cost effectiveness are: 1) that funds intended for technologies to enhance long-term conservation have been used instead to increase short-term production and 2) that funds are spread so broadly and administered so loosely that they mainly subsidize conservation practices on land with few conservation problems and rarely reach the land with severe problems (Cook, 1980a),

The proposed solution to the first problem, already implemented to a considerable extent, is to have stricter guidelines for use of cost-sharing funds to exclude production-oriented technologies. The conservation effect of some "production" technologies such as drainage, however, may have been discounted too much.

The proposed solution for the second problem—i.e., "targeting" the cost-sharing programs on regions of the Nation with the most severe conservation problems and on particular farms with the most fragile lands—is receiving increased support, but will be politically difficult. Farmers have become used to conservation cost-sharing programs in every county—in every congressional district—and any major redistribution of funds or personnel is sure to be resisted. And experts do not all agree that "targeting" is the most effective approach, Much of the Nation's most productive land suffers constant, but not necessarily alarming, erosion and loss of productivity which might be neglected under the "targeting" approach. Further, comparing the long-term importance of preventing a small amount of soil loss from highly productive land to the importance of saving more soil on less productive land is an important, unresolved issue. This issue cannot be resolved for national policymaking, however, until improved models of land productivity and agricultural policy are developed.

Further controversy centers on whether completely voluntary approaches to conservation will ever involve enough farmers. One proposed alternative is to make inclusion in the various commodity and credit programs contingent on participation in the conservation programs. This approach is referred to as "cross compliance. "

Agricultural Conservation Program

ACP is the country's largest cost-sharing program, Roughly $8 billion in Federal funds have been distributed to farmers through the program, which is available in every county in the Nation. In recent years the total annual program budget has been about $200 million divided among about 300,000 participating farms.

The program is administered at the national level by USDA's ASCS, but most of the important administrative decisions are made by farmer-elected county committees. The authority of the county committees includes identifying conservation problems, setting priorities, selecting appropriate cost-share practices, setting levels of cost sharing, approving applications, entering into contractual obligations, and making payments for completed conservation work (USDA, 1981a).

In 1976-77, GAO found that less than half of ACP funds actually had been used for soil conservation-oriented measures. Most of the money had supported measures that, although eligible for funding, were primarily production-oriented or that resulted in minimal soil conservation. The GAO report noted that most county committees did assign priority to the practices for which Federal cost-sharing funds were to be spent, but these commonly were 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 (GAO, 1977).

ASCS conducted its own evaluation of ACP in 1977 (USDA, 1981a). This study added a new dimension to the criticism, for it indicated that many of the practices specifically intended to control erosion were placed on land without severe erosion problems, Data collected nationally on nine erosion-control practices revealed that 52 percent of the erosion-control practices installed under ACP have gone on land where annual sheet and rill erosion was below 5 tons per acre, Moreover, ACP-funded practices had not effectively reached lands where sheet and rill erosion were known to be most severe, The ACP evaluation stated:

> Effectively targeting erosion control funds according to the potential for erosion reduction could more than triple the amount of soil saved through the program. Achieving these improvements hinges on the willingness of farmers with severe erosion problems to participate in the program (USDA, 1981a).

USDA's main cost-sharing program could be substantially more effective in controlling erosion if funds were reallocated among States, counties, and farms in proportion to their relative erosion problems. Achieving improvements this way depends not only on the willingness of the farmers with severe erosion problems but also on their ability to pay their share and to implement the practices, The necessary socioeconomic studies to identify the opportunities and constraints for directing cost-sharing programs have not been done, however.

ACP cost sharing has also been criticized for investing too much in the less efficient conservation practices and too little in the most efficient ones (table 25), Stricter guidelines for the county committees to adhere to priorities and select eligible practices could help eliminate this problem,

Even before this evaluation was released, steps had been taken to direct funds to critically eroding areas and to ensure that the most

Table 25.—Cost Per Ton of Erosion Reduction by Practice and Erosion Rate

	Type of practice									
Average annual soil loss before treatment (tons per acre)	Establishing permanent vegetative cover	Improving permanent vegetative cover	Stripcropping	Terrace	Diversions	Interim cover	Conservation till age	Competitive shrub cont rol	Vegetative cover on critical areas	Average cost for all practices
	—Average cost per ton of erosion reduction in dollars—									
0-1	57.48	69.80	7.57	9.48	28.98	65.52	63.47	11.20	68,39	45.40
1-19. , ...	15.97	9.01	7.10	6.91	18.52	61.39	4.98	3.16	5.77	14.23
2-2.9 .., ...	6.36	4,91	6,28	3.43	11.24	31.53	2.35	1.58	—	5.05
3-3.9	4.32	3.04	2.15	3.14	12.18	29.13	1.76	3.64	0.29	4.19
4-4,9 .., ...	3.81	2.76	0.92	4.13	9.91	18,43	1.50	0.83	4.38	4,70
5-5.9, ...	2.93	2.05	1.61	3.60	3.04	15,30	0.90	0.78	4.37	3.10
6-69. , . . .	1.89	1.72	1.14	2.68	2.98	15.19	0.98	0.51	2,96	3.46
7-79, ...	1.81	1.38	0.52	2.57	4.67	9.49	0.53	0.61	0.38	2.33
8 - 8 , 9 . . ,	1,60	1.21	0.88	2.66	1.52	7,69	0.53	0.46	0.44	2,40
9-9.9	1.31	1.07	1.07	2.08	3.79	7.21	0.61	0.13	0.89	2,16
10-10 .9	1,20	1.03	1,43	1.68	2.16	6.77	0.39	0.33	8.4	2.16
11-11,9 ...,	1.00	0.84	—	1.95	0.49	5.77	0.39	0.33	0.59	1.57
12-12.9 .,	0.85	0.66	0.30	1.43	0.57	5,95	0.83	0.66	0.21	1.54
13-13.9. , . . .	0.89	0.64	1.07	1.12	0.99	3.99	0.61	1,06	0.49	0.94
14-14.9 . ,	0.80	0.57	—	1.21	0.54	3.90	0.21	0.30	0.42	1.12
15-19,9 .., ...	0.59	0.54	0,69	0.99	0.61	3.94	0.32	0.19	0.27	0.84
20-24 .9	0.45	0.45	0.06	0.87	0.44	3.07	0.29	0.32	0.21	0.54
25-29 .9....., . . .	0.38	0.36	—	0.76	0.63	2.38	—	0.03	0,26	0.48
30-499	0.26	0.24	0,02	0.44	0.29	1.81	0.08	0.31	0.23	0,39
50-74 .9....., . .	0.17	0.14	—	0.15	0.14	2.21	0.13	—	0.46	0.24
75-99 .9.., . . .	0.14	0.13	—	0.03	0.08	2,19	0.04	—	0.15	0.22
over 100	0.10	0.06	0.01	—	0.07	1,36	—	0.01	0.16	0.21

SOURCE National Summary Evaluation of the Agricultural Conservation Program, Phase I USDA, ASCS, 1981 Data from a sample of Agricultural Conservation Program activities in 171 counties, 1975-78

cost-effective erosion control measures would be used, However, the decision to reallocate ACP funds significantly resides with Congress. Data from the 1977 National Resource Inventories (NRI) provide an accurate basis for directing funds at sheet and rill erosion on croplands and improved pastures. The 1982 NRI is expected to improve substantially the data bases on wind erosion and gully erosion on croplands and pastures and to make some improvement in the data on rangeland erosion. RCA appraisals of problems, opportunities, and priorities at the State level could be used to reallocate the program resources among States. The State and county committees would remain vitally important because the NRI and RCA processes cannot be made precise to the county level, and conservation problems are always site specific.

Great Plains Conservation Program

An alternative to redistributing ACP funds is to establish new programs for areas where land productivity is being most severely degraded. The Great Plains Conservation Program (GPCP) is a model for this approach, This cost-sharing program was created in 1956 and has been extended through September 30, 1991, It authorizes the Secretary of Agriculture, through SCS, to make contracts with landowners and operators in the designated Great Plains area. The contracts, effective for periods of up to 10 years, provide cost-sharing assistance for conservation practices necessary to conserve, develop, protect, and use the soil and water resources,

The program is completely voluntary. However, each contract approval depends on the producer's plan of farming operations, including schedules for proposed changes and implementation of conservation measures, The plan must incorporate soil and water conservation practices for maximum mitigation of the area's climate hazards. It must also include practices and measures for: 1) enhancing fish, wildlife, and recreation resources; 2) promoting economic use of the land; and 3) reducing or controlling agriculturally related pollution (16 U.S.C. 590 p(b)(l)),

The Great Plains area was chosen because of its susceptibility to serious wind erosion. The program proposes to rehabilitate agriculture so that farms and ranches use more progressive soil and water conservation techniques. In 1961, amendments to the program extended contract authorization to land not in farming or ranching, but where severe erosion hazards were a threat to cropland or grazing land,

GAO has criticized GPCP for making unsatisfactory progress in alleviating soil erosion. Reasons included: 1) the frequent funding of projects that are locally popular rather than those that have highest conservation priority, 2) insufficient effort to promote the program in areas with highest conservation priority, and 3] inadequate extension work to encourage producers to maintain grass cover on the areas most susceptible to erosion. Further, much of the land that had been seeded into permanent vegetative cover was being converted back into cropland at the expiration of the contract period. GAO concluded that the program was making slow progress in attaining its primary objective—wind and water erosion control (GAO, 1977).

In 1974, USDA evaluated GPCP using linear programing models to examine the most cost-effective practices and funding distribution for optimal erosion control. The program was found to be achieving 56 percent of the technologically possible level of erosion reduction for the $11.5 million cost-sharing level then in effect. According to that analysis, reallocation of funds among States and optimal combinations of practices within each State could significantly improve erosion reduction and lower the associated Federal cost-share per ton (Cook, 1980b).

For either the nationwide ACP or regional programs modeled on GPCP, the importance of evaluation and adjustment is clear. ACP and GPCP would probably benefit by eliminating or curtailing the cost-sharing eligibility of the less cost-effective conservation practices—though this might best be done at the State level because of the site specificity of conservation

problems. Possible approaches to encourage farmers with severe erosion problems to participate include giving them preference in other ACP cost-sharing programs, raising the limit on total Federal spending per participant (currently $3,500 a year) for them but not for others, and increasing the Federal share of their costs, Another approach would be to discourage participation by those farmers who do not have severe erosion problems, These approaches were suggested by the GAO evaluation of GPCP, but most remain untried.

CrOsS Compliance

Among the novel policy proposals presented to Congress by Secretary of Agriculture Charles F. Brannan in 1949 was the idea of requiring approved conservation practices as a condition for farmer eligibility in Federal commodity programs (Rasmussen and Baker, 1979). This was the first public proposal for cross compliance, The idea, rejected in 1949 (along with most of the "Brannan Plan"), subsequently has not received much consideration by Congress.

In the 1980 Resources Conservation Act review draft, USDA discussed cross compliance as a possible conservation strategy. It noted that land users could be required to meet a certain standard of conservation performance, or to carry out certain conservation measures, in order to qualify for USDA program benefits (USDA, 1980a). The report suggested that USDA could remove all program benefits from land users who fail to comply, or it could offer special additional benefits and subsidies to those individuals who do comply. The range of benefits offered for compliance might include subsidized interest loans, crop or flood insurance adjustments, commodity payments, and payments for income foregone or for maintenance of conservation practices.

The rationale for cross compliance is fairly straightforward, The Federal Government, through its commodity and credit programs, assumes part of the individual farmer's economic risks, At the same time resource problems (primarily soil erosion), which have adverse social effects, occur on farms receiving the commodity and credit program benefits. So farmers who desire the society's protective farm programs might, in return, be expected to protect the socially valued resources, This rationale has some public support, A 1979 Harris public opinion poll, part of the RCA process, indicated that 41 percent of respondents believed that cross compliance would be fair to both farmers and taxpayers.

In the spring of 1980, however, USDA received nearly 110,000 comments on the RCA draft's discussion of cross compliance. Overall, 49 percent of the comments supported the strategy and 51 percent were opposed. Environmental groups generally supported the idea, as did farm organizations in the Northeast and Midwest, whereas members of farm organizations in the South and West opposed it (USDA, 1980a),

One cross-compliance proposal would require participants to adhere to acceptable regional and crop-specific management practices to qualify for commodity program benefits. Participating farms would have, as an addendum to their commodity program contracts, an approved plan specifying an adequate conservation strategy consisting of management practices compatible with the farm's equipment and livestock feed needs. Specific practices would be recommended or required as the farm's erosion potential warranted, but practices contributing to excessive erosion would be explicitly prohibited (Benbrook, 1979; 1980). The incentives offered could include slightly higher target prices or loan rates, upward adjustment of disaster payments, relaxation of payment limitation, use of higher yield levels in payment formulas, and tax credits or deferrals.

Even a cross-compliance mechanism that might be politically palatable to farmers and to Congress could contain important practical difficulties. First, some of the land needing *conservation* treatment is not enrolled in Federal commodity programs. One USDA report indicates that only about 25 percent of the land needing conservation treatment would be cov-

ered by a cross-compliance requirement between USDA's commodity and conservation programs (USDA, 1980a). This is a rough estimate because the conservation status of commodity program participants is poorly documented. A large share of commodity program benefits is paid to a fairly small number of large, high-income farms. Generally, these farms are thought to have the better quality land, while smaller farms, having lower participation in Federal commodity programs, are often situated on more erosive land. Consequently, cross compliance might be more suitable for depletion problems other than soil erosion, such as water conservation in the Great Plains region.

Second, many farmers elect not to participate in commodity programs in periods of high market prices because program benefits are then negligible. Thus, they might discontinue conservation practices in those years. Yet these are the years when production pressures are greatest on agricultural resources, Thus, for cross compliance to be effective, conservation and commodity programs would have to be instituted on a multiyear basis, instead of the annual basis traditionally used. Were such a policy in effect, some farmers would probably drop out of the program, with the result that other, traditional commodity program goals would be compromised. For example, if the conservation requirements caused larger farms to withdraw, supply-control efforts would be hampered; a relatively small number of these larger farms make up a large proportion of program-controlled acreage and production, This is a familiar policy dilemma of any proposal that would affect large farms (USDA, 1981 b).

Smaller farms are more likely to be affected adversely by cross-compliance schemes. These farms tend to have lower quality land, and require more expensive conservation practices. Because some practices such as terracing would be costly to install, or would reduce the farm's cash crop acreage by requiring crop rotation or stripcropping, owners of smaller farms might be unable to participate. If small farms did drop out, program benefits would be skewed to an even greater degree toward larger farms. Recognizing this dilemma, most proposals for cross compliance have stressed the need to retain complementary cost sharing, or loan or tax incentives for participating farmers.

A final, important drawback of cross compliance would arise if Government commodity programs were to become less active in the future. This could happen as the export demand for major crops expands. In such a case, target prices, set-asides, and diversion payments would be needed less often. However, some cross-compliance leverage will remain available in the future for certain commodities, such as cotton or tobacco. Also, disaster-payment or crop-insurance programs underwritten by the Federal Government possibly could tie conservation to credit and commodity policy. As commodity programs become oriented more toward achieving economic stability for farmers (v. achieving higher income levels), there may remain a place for some cross-compliance strategy.

Generally, the design of a cross-compliance strategy would depend on how the productivity y-conserving practices imposed on the farmers or ranchers affect their profits. If the conservation practices do not jeopardize the economic viability of the farm, a penalty-oriented implementation strategy may be appropriate, Fines, cross compliance with USDA production subsidies, taxes, and penalties for excessive soil loss and water resource depletion might be considered. But if the conservation practice creates financial hardships, an incentive-oriented strategy would be more appropriate.

STATEINITIATIVES

Soil Conservation Districts

In 1935, following passage of the first major soil conservation legislation, a USDA Committee on Soil Conservation recommended that all erosion control work on private lands by the newly formed SCS be undertaken only through a legally constituted Soil Conservation Association. Thus began the concept of the Soil Conservation District, and in 1937 the President sent a model act for creating Soil Conservation Districts to each State Governor. By 1947, all States had enacted some form of enabling legislation. Today, nearly 3,000 Soil Conservation Districts exist, covering more than 99 percent of the Nation (USDA, 1980c).

These local conservation districts are governed by local citizens and are independent of Federal Government programs. However, SCS provides technical assistance through agreements with the districts. The conservation district committees also work with the local committees that oversee programs of ASCS, and with the staffs and advisory committees of the Extension Service and of FmHA. In areas with Federal lands, districts are encouraged to carry out cooperative efforts with USFS and BLM.

The existing system of Soil Conservation Districts has been criticized. First, a majority of the enabling statutes provide for district boundaries to conform to county lines rather than to watershed boundaries, the approach favored by SCS. This creates more districts than might have been necessary. Perhaps more importantly, this creates conflicts between counties over conservation efforts in the same watershed and sometimes results in an inability to deal with the needs of an entire watershed. Second, a number of States did not authorize districts to enact land-use regulations as provided for in the Standard Act; others have never used those provisions. Had local controls been more widely adopted to regulate farmers' actions on many of the lands suffering from severe erosion, needs might be fewer today.

Notwithstanding these criticisms, the local conservation districts approach has been valuable in bringing conservation efforts to the land. Over the years, many local conservation districts have expanded their roles and responsibilities to address a broader range of resource problems, including preparing agricultural plans for water quality, sediment control, coastal zone management, and rangeland improvement (USDA, 1980c). Soil Conservation Districts are an institutional base already in place coordinating Federal and State policies and programs at the local level. Through their State and National associations, they are in a position to communicate to policy makers the changing needs and priorities of local communities. As such, they are likely to become increasingly useful.

State Soil Conservation Planning

208 Plans

With the passage of FWPCA, State and local governments were called on to deveIop long-range water quality management plans (called "208 plans" in reference to the section of the act dealing with these plans). Several States completed the agricultural parts of the 208 plans through agreements with the conservation districts or State soil conservation agencies. Most plans had been certified and approved by EPA by the end of 1979.

In 1973, the Council of State Governments published a Model State Act for Soil Erosion and Sediment Control. It presented the basic requirements for amending State soil and

water conservation district laws to extend existing programs and to make them more effective. As of mid-1980, 20 States, the District of Columbia, and the Virgin Islands had enacted erosion and sediment control laws and many included provisions set out in the model act. All of the laws contain some provision for enforcement of conservation requirements, and many include mechanisms to regulate compliance with established soil loss limits.

RCA=Funded Long-Range Plans

Since the 1930's, local Soil Conservation Districts have been charged with preparing long-range programs for conservation of their areas' resources. State-level long-range programing was not used for many years, in part because Federal assistance went directly to the districts. In the late 1970's, however, with grants from USDA under the RCA process, State agencies increased their involvement in resource planning. In 1979, the National Association of Conservation Districts developed a sample outline for States to consider in formulating their long-range programs.

Two general types of planning are being used to develop the State long-range programs. One develops a statewide summary drawn from the long-range programs of each conservation district. The second relies on citizen meetings where statewide concerns are identified, priorities established, and actions planned. Both planning processes use extensive citizen involvement, but the second process is less dependent on the existence of a long-range program in every conservation district. A few States have completed their long-range planning; most others have it under way, A few probably will not be developing plans. Some States may have difficulty completing their plans because their initial RCA grants may run out before the planning is completed.

The planning processes vary, but the common goal is to develop statewide, long-range conservation programs that will foster closer working relationships among landowners, the districts, their State soil conservation agencies, SCS, other State and Federal agencies, and the public.

Iowa and Oregon were the first States to complete their long-range programs as part of the RCA process; their plans were released in 1980. Iowa relied on citizen meetings to identify statewide concerns and to plan actions, Oregon compiled its summary document from each conservation district's updated program and public hearings. These two States, with very different topography, climate, and land use, exemplify the range of resource problems at the State level.

IOWA'S FIVE-YEAR RESOURC~ CONSERVATION PLAN

Iowa's 5-year plan contains specific actions recommended by task forces organized in Iowa as part of the RCA appraisal process. The plan identifies Iowa's major land productivity problems. The top three problems cited are soil erosion, water quality, and land use. In Iowa's plan, soil erosion receives extended review and planning attention in areas including cost sharing, technical assistance, lengthening conservation construction periods through long-term agreements of 3 to 10 years, increasing landowners' awareness and acceptance of conservation practices, tax incentives, soil loss limits, and urban soil erosion.

The plan contains specific recommendations in each of its program areas. In 1979, to support the plan, the Iowa General Assembly enacted into law two of the plan's recommended State cost-sharing programs: the Iowa Till Program and the Wind Erosion Control Incentive Program. Other recommendations include an investment credit of up to 75 percent of the cost of installing permanent erosion control practices and strengthening existing soil loss limits legislation by expanding the complaint authority to include State and other government officials. Previously, only a farmer's neighbors had the authority to complain about his soil maintenance,

ORWON'S NATURAL RESOURCES CONSERVATION COMMITMENT, 1980-84

Oregon's plan applies primarily to 28 million acres under private ownership. It also takes note of public land management and the need

for coordination between responsible State and Federal land management agencies.

The plan identifies eight major concerns: rangeland management, forest management, soil erosion, drainage, irrigation water management, pasture and cropland management, water quality, and fish and wildlife habitat. It identifies practices to help revitalize deteriorated rangeland, emphasizing management plans that schedule proper stocking rates and periodic development input.

The Oregon plan contains fewer formal recommendations than does the Iowa plan, Oregon's plan is a broad policy document that recognizes State resource problems and suggests some preferred practices to overcome them, The document calls for cooperative action among individuals, organizations, and agencies to address problems and set priorities that will result in effective and enduring conservation,

State=Funded Cost=Sharing Programs

In recent years, possibilities for State cost sharing for practices that control erosion and sedimentation have received increased attention. This reflects a growing awareness that States receive long-term benefits from such measures and that the immediate costs may be more than an individual producer can reasonably be expected to bear.

As of July 1980, Iowa, Nebraska, Minnesota, Wisconsin, Ohio, and Kansas all had cost-sharing programs. Funds come from both State and local sources. The programs are administered in addition to and in cooperation with USDA's conservation programs.

In 1973, Iowa became the first State to begin financing a cost-share program for conservation, To supplement this effort, Iowa launched two experimental programs in 1979: The Till Program and the Wind Erosion Control Incentives programs. The Till Program authorizes Soil Conservation Districts to nominate tracts of land where owners of at least 80 percent of the land area agree to manage 50 percent of their row-cropped acres to maintain crop residue cover. For acreage with appropriate cover, the States make one cost-share payment of $30 an acre, if that acreage is maintained under the tillage practice for 5 years. Funds come from the State general fund and are limited to 10 percent of the State cost-sharing funds allocated annually ($5 million in 1979-80) (USDA, 1980c).

The Wind Erosion Control Incentive Program was enacted by the Iowa legislature in 1979. This program authorized one payment of $1,000 an acre for field windbreaks (trees) maintained for 10 years, one payment of $500 an acre for grass windbreaks maintained for 5 years, and one payment of $30 an acre for "Iowa Till" as described under the Iowa Till Program, Funds are derived from State road use tax revenue.

Minnesota amended its Soil and Water Conservation Law in 1977 to include the State Cost Share Program. Approximately $3 million in cost-sharing funds comes annually from the State general funds. The money is allocated to districts by the State Soil and Water Conservation Board, based on approval of each district's comprehensive plan. The State board considers its priority areas to be controlling soil erosion, sedimentation, and related water quality problems. Practices cost-shared by districts must be on the approved list, which in 1980 included erosion control structures, stripcropping, terraces, diversions, storm-water control systems, and critical area stabilization. Maximum cost-share levels are set by the State board. Cost-share levels on individual practices are set by the districts, so long as they do not exceed the maximum level. The maximum level for 1980 was 75 percent of the total cost,

COORDINATION OF COMMODITY AND CREDIT PR0GRAMS WITH CONSERVATION PR0GRAMS

In the past, the programs that manipulated agricultural economics and the programs to conserve resources seldom have had common objectives, As noted by the National Association of Conservation Districts (USDA, 1980a):

> Changing annual targets of commodity programs contrasted with the long-term objectives of conservation plans confuse and distort land management decisions. Some farmers have found themselves penalized by USDA programs when they carried out the USDA-encouraged conservation plans.

In light of increasing demands on the Nation's resource base, it becomes more urgent to coordinate goals and strategies. Food and fiber demands are growing because of: 1) rapidly increasing foreign demand, 2) the nascent demand for biomass energy production, and 3) increased concern for national self-reliance —i.e., producing crops that are imported now, such as rubber. Prices and supply/demand fluctuations increasingly will be affected by international forces outside the control of the American producer.

Thus, the 1980's appear to be a necessary time for integrating agricultural programs. State programs such as those recently developed by Iowa and Oregon have made substantial progress toward effective integration of agricultural programs. It may also be a time when integration at the Federal level is feasible; policies and programs will be undergoing fundamental changes to adapt to major economic changes. Analysts generally expect the principal goals for commodity and credit programs to change from production control and income enhancement to production stimulation and income stability. If this is the case, new strategies probably will put more programs on a multiyear basis, a change that would help integrate them with conservation programs. Production stimulation, however, may conflict with conservation if it causes fragile lands to be brought into row crop or small-grain production with conventional farming technologies.

CONCLUSIONS

This assessment finds that there are technologies being developed that can enhance short-term production and long-term productivity concurrently. In some cases, the beneficial effect on the resource base has been serendipitous, such as fertilizers' effect of increasing soil cover and crop residues. In other cases the benefits have been planned as a goal of the technology development, as with the erosion control effect of minimum tillage. If resource sustainability is set as an explicit goal of both the Government-funded technology development programs and the commodity and credit programs, and if production enhancement is made an explicit goal of the programs to develop and implement conservation technologies, it should become possible to increase total agricultural production and inherent land productivity simultaneously,

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