

Progress in Soil Conservation

PROGRESS IN SOIL CONSERVATION

The Problem

A prosperous and lasting agriculture depends on productive land properly used and so protected that it will remain permanently productive. Without such protection, there can be no assurance of permanent prosperity, happiness, or peace anywhere on earth.

As long as people have enough productive land they can continue producing their food and fiber, and many of the raw materials of industry. If, on the other hand, the land is neglected or unwisely used, it will be wasted or severely damaged by erosion, and the certain consequences will be poverty, hunger, and national decline. That has been the tragic result in many of the world's older agricultural areas.

For these and other reasons, lasting soil conservation is mandatory everywhere. It is mandatory here in America, if our nation -- our civilization -- is to avoid tragic decline, economically, socially, nutritionally.

Land Supply

We now have left in the United States approximately 460 million acres of good land, counting all that is in cultivation and all that can be brought into cultivation by irrigation, drainage, and other feasible means.

In recent years we have been using for crop production and rotational pasture around 350 to 400 million acres annually. Something over 70 million acres of this farmed area is unfavorable for use as cropland and should be diverted to grass or trees.

And all but about 100 million acres of the 460 million acres of good land is susceptible to severe damage by erosion, waterlogging, and floods. Such hazards can be overcome only through modern soil conservation and flood control operations. This means that the soil conservation work must be scientifically fitted to the land according to kind and need and the flood control done all the way from the crests of enclosing divides on down to the main channels of the watershed drainage systems.

Solution of the Land Problem

Solution of the land problem calls for the use of every acre of every farm and ranch throughout the nation according to the kind of land and the needs of the land. This is a physical requirement that cannot be avoided. And there is no need to avoid it, since there are always safe uses to which land can be put in order to keep production within the limits of market requirements.

-
1. Address by H. H. Bennett, Chief, U. S. Soil Conservation Service. Distinguished Lecture Series, University of Arkansas, Fayetteville, Arkansas, March 7, 1950.

This may sound simple; but carrying it out is not everywhere a simple matter by any means. It means, among many other things, that some of the acres devoted to cultivated crops should be permanently turned to grass or trees and that other acres will sometimes need to be planted, at least temporarily, to a protective cover of grass. It means, also, that all land, whether used for crops, grazing, timber, or wildlife, must be adequately and permanently protected.

Unfortunately, many millions of acres are not being used wisely in this country -- and in most other countries. They are not being used according to natural capability and are not being protected with essential conservation measures. As a consequence, many millions of acres here and elsewhere are eroding or are being damaged by waterlogging, accumulation of alkali, and in other ways. In some parts of the world, land is still being permitted to decline in productivity or to be ruined for further cultivation faster than it is being safeguarded with conservation measures. This is true in most countries; it is tragically true in a great many countries. Unfortunately, it is true, also, here in the United States, although in our soil conservation work we are ahead of other countries having physical characteristics similar to ours.

The margin between land deterioration and land conservation has been narrowed within recent years here in the United States. We are making real progress with our national program of soil conservation, although we are not yet going fast enough. Still we have reached the point where our goal of a permanent agriculture is almost in sight. By increasing our present conservation operations on the land, we can -- and should -- control erosion and related processes of land impairment within 20 to 30 years, that is, if we all work together helpfully and with confidence in one another, and are provided with the facilities. We now know pretty well what the problem is, where it is, and how to solve it. We have made a splendid start toward solving it. All we need now is the decision to go ahead fast enough to do the job on a scientifically applied, permanent basis before it is too late -- before we have wasted too much land. Really, we should not waste so much as one single acre more. However, we still are wasting land, even though we have learned that it is easier and cheaper to conserve soil and water than it is to use those wasteful methods that impoverish land and waste rainfall as so much runoff to the sea.

The tragic fact must not be overlooked that still we are losing around 500,000 acres of land each year as the result of needless erosion and waterlogging, with a still larger area damaged in lesser degree.

Modern Soil Conservation

Modern soil conservation is not directed merely toward maintenance of the status quo. It is dynamic and progressive. It leads to increased and lasting productivity of the land and thereby promotes the common welfare, wherever it is practiced. All regions of the world probably can be improved and some currently poverty-stricken areas may be advanced to a state of relative prosperity by safeguarding and increasing the productivity of agricultural land through soil and water conservation.

Modern soil conservation does much more than safeguard land. It directly or indirectly results in a wide variety of fundamental benefits. It both increases the yields per acre and lowers the cost of production on most farms, and this, in turn, starts a whole chain of benefits, such as increased farmer income; increased taxes for support of local, state, and federal governments; increased trade for both rural and urban communities; and increased employment for professional, skilled, and unskilled workers.

It results in large savings, such as reduced siltation of streams, ditches, harbors, and costly reservoirs; lessened damage to fills, cuts, and culverts of highways and railroads; diminished damage to oyster beds and breeding and feeding grounds of fish, crabs, and other valuable aquatic life; and reduced flood crests on both major and minor streams, thereby lessening destruction of or damage to farm and city property, livestock, highways, railroads, manufacturing plants, and other property.

It helps to alleviate drought damage to crops, pastures, and meadows. It encourages a more flexible and diversified type of agriculture with a sound physical basis for making annual adjustments in the amounts and kinds of production needed to stabilize the national and world economies. It helps create a greater pride and satisfaction in farming, along with the greater material returns. It encourages the sons and daughters of farmers to stay on the farm, and become partners with their parents in the farming business. And last, but not least, it apparently helps to improve the health of all the people.

Some indication of what soil conservation means to those who practice it in this country is indicated in a recent letter from a Texas farmer who said, in part:

Abilene Tex., Route 5,
December 19, 1947

Dear Dr. Bennett: As there is a lot of talk ... about the benefits of soil conservation ... I would like to say a few words in behalf of soil conservation.

... I was born and raised on a farm in the Ozark Hills in northeast Arkansas. ... I moved with my parents to Red River County, Tex. ... in the fall of 1919 and farmed with them until I married in the fall of the next year and rented a farm close by ...

We ... started out with very little money, but lots of determination. Bought our housekeeping outfit and farming tools ... on credit and my father let me have a pair of mules to work ... That fall I went to the bank and borrowed money to buy the mules.

I was renting the farm ... and continued to rent ... for 8 years.

We then decided to try our luck further west, so I rented a farm near Stith... Jones County, Tex. ... Made three crops on this farm, then moved across the road on another farm and made four crops, then

moved to a farm 1 mile west of Abilene in Taylor County and lived there 3 years, at which time we were approved by the Farm Security Administration to buy a farm.

We ... located a farm of 160 acres .. that we could buy for the amount of money that was allowed by the FSA the total of our loan was \$7,678.

So in the spring of 1939 we began farming as landowners. And now comes the part of my story that I am most interested in. My family at this time consisted of one daughter and two sons, the daughter being 17 and the boys 11 and 9 years.. The daughter is married ... and the boys are both in college...

... I am a natural-born farmer, as you can see, although I have worked a little at other jobs at different times, such as mining, cotton ginning, barbering, teaching school, etc.

The first thing I did after we moved on our farm was to begin a soil conservation program.

I had always advocated soil conservation and practiced it as much as my landlords would let me, so when I moved to my own place I began to put into practice what I had been talking. I went to the SCS office and got the boys to run me a set of terrace lines and had the terraces built by the county machinery, paying for them myself.

The SCS boys worked out a complete plan for my farm, located tank (pond) site, helped plant clovers, vetch, peas, etc.

This was one of the first farms to be put under a soil conservation plan in the Button Willow watershed and there are now 37 of the 41 farms in the watershed that are carrying out soil conservation programs. ... Until recently I have been a supervisor of the Middle Clear Fork Soil Conservation District. . . .

When we bought this place we had 40 years in which to repay the FSA loan, but we paid it out the seventh year, and this was made possible through the soil conservation plan that has been carried out on the place.

As proof of the above statement, this year I made 18 bushels of wheat to the acre without the aid of fertilizer and one of my neighbors just, across the fence made 9 bushels and another on the other side used fertilizer and made 11 bushels.

Now you may be wondering* just how much time and expense the Government has been out on my farm. Well ... the SCS boys have spent around 8 days work on my place, first and last. Now at \$10 per day that would be \$80 expense to the Government.

Back to the statement about my wheat, the county average this year was 8 bushels, but I think the county average over a 10-year period is 12 bushels. So you see my place is making 1/3 more than the average.

Did I hear you say have I paid the Government anything in return for the \$80? Well to be exact, I just paid a little over \$600 income tax year before last, over \$500 last year ...

Since paying for my place I bought 200 acres more land adjoining it last fall, and have just completed 6 miles of terraces this fall on it. My plan calls for reseeding part of it back to native grasses with a complete pasture program, such as mesquite and prickly pear eradication and water control.

I am a believer in diversified farming and have always kept a small dairy herd, a few brood sows, and raised plenty of feed for them ...

So my advice, as a farmer to a farmer, is get your soil and water conservation program started now and watch your income increase.

Yours truly,

(s) W. O. Dawson

Complexity of the Soil Conservation Job

If there is any activity of mankind that requires the most scrupulous use of all that land science and hydraulics can provide, it is the work of keeping our land permanently productive and making the best use of our water supply.

There are in the neighborhood of a hundred soil and water conservation measures now being used in the program of the Soil Conservation Service to halt erosion, conserve rainfall, and improve the land. These measures include terracing, contouring, strip cropping, cover cropping, crop rotation, stubble mulching, range and pasture improvement, woodland improvement, gully planting, establishing grassed waterways, constructing farm ponds, adjusting land use, using organic and mineral fertilizers and lime according to need, drainage, irrigation, and so on. Each measure is used, as the situation demands, to meet a definite land need or to produce a specifically desired result. Usually, combinations of several measures are essential, used wherever necessary in mutual support of one another to obtain the most effective conservation.

A hundred years of farming experience in this country has definitely proved that no single practice, applied arbitrarily on a whole field or farm, will control erosion and maintain soil productivity permanently, except perhaps the planting of an entire area to grass or trees.

Single-practice soil conservation programs have never been successful on cultivated land in terms of real and lasting conservation. They can't be successful in the great majority of cases because a single conservation practice is almost always inadequate to cope with the diverse and complicated requirements for sound land use and protection, imposed by nature. Some single practices, such as contouring, rotation, stubble mulching, or manuring may bring some temporary benefits to entire fields or farms; but they can't get the job done

on anything approximating a permanent basis, except on the relatively small areas of the very best quality land (land of capability class I).

It is not the passing benefits of a single season or a few years that means success in the battle any country must wage to keep its good land productive and to make the best use of its less productive land of all its agricultural land. It is the long range -- the lasting -- benefits that will be reaped by all the people of a country, their children, and their children's children, that really count. A permanently productive agriculture is the goal; not just temporary gains in crop production or income.

The record of experience proves that most farmers are no more prepared to solve their difficult problems of erosion and water control alone than they are prepared to solve all their legal and medical problems. There probably is no more reason to assume that all farmers can witness a demonstration of complex soil and water conservation work and thereby equip themselves to do similar effective work than there is to assume that they can equip themselves to practice successful surgery by witnessing a surgical operation.

Technical Assistance Necessary

Practically all farmers need specialized, experienced scientific assistance on the ground to solve their land and water problems. Without such assistance, they cannot successfully bring their agriculture to full fruition.

Effective and lasting soil conservation work demands the utmost in technical excellence. A trained, experienced soil conservationist prescribes for the land just as an experienced physician prescribes for his patients. In a sense, Soil Conservation Service technicians are land doctors. These men have learned that half-way measures and improperly selected practices will not get the job done and that such measures often do more harm than good over a period of years.

Each conservation measure is specifically designed to fit the land on which it is used. Furthermore, each measure is designed to support another one, or several measures, wherever support is needed, whether in the same field or an adjoining field, above or below; also, conservation work on one farm is planned and carried out with an eye to the needs of the next farm and to farms downstream. This viewpoint is essential, for the process of erosion has no respect for boundary lines. Gullies don't stop at fence lines, farm lines, or even county or state lines; neither do dust storms, nor floods. And the costly process of sedimentation never concerns itself with the interests of water users dependent on an unprotected reservoir.

To hope that anything less than a scientifically planned and properly executed conservation program for each field, each farm, and each watershed will give the needed permanent protection to the land is to hope for the impossible; and, what is more important, any acceptance of the idea that there can be a shorter and easier way of doing the job is dangerous. Not only will it delay getting this most necessary

agricultural work done, but it may confuse those who have already attended to the needs of their land.

For example, it is frequently necessary to build graded terraces on sloping cultivated fields in humid areas, in order to carry excess rainfall safely off the land. The terraces must always be built with sufficient channel capacity and with the proper gradient (slope toward the side of a field) to handle the estimated volume of runoff at a rate of flow that will not produce scouring of the channelway. Moreover, the terraces must be spaced at proper intervals and at the best locations in a field to take care of all the runoff water. They require protected outlets; otherwise erosion is likely to begin at the outlets and cut gullies up the terrace channels far back into the fields. And even after the water has been moved safely off a field by means of such a terrace, or diversion system, a stabilized place must be provided for its final, safe disposal. This, again, calls for a complete survey and adequate technical engineering and agronomic planning to properly locate and construct the terrace outlet waterway.

Improperly built and inadequately maintained terraces, as well as terraces that are built on slopes that are too steep, usually do more damage to the land than no terraces at all. If a terrace ridge is too narrow or too low, or if the channel is inadequate to take care of the runoff from intensive rains, costly and ruinous erosion will surely follow. The terraces will break or overtop and damage the land below as well as the land on which the terraces are constructed. The rate of land damage, also, is usually increased rather than reduced when drainage systems, strip cropping, and various other practices are improperly applied.

For a farmer to be able properly to solve all these problems having to do with but a few of a hundred major soil conservation practices, it will be necessary for him to have a high degree of proficiency in engineering, hydraulics, agronomy, and land science. Few farmers have such training. Most farmers are not engineers, or hydrologists, or agronomists, or soil scientists, or foresters. They are farmers; and being a farmer is a full-time job in itself. So when it comes to dealing with a difficult erosion problem -- and most erosion problems are difficult -- most farmers need the help or guidance of a trained soil conservationist in order to arrive at the correct solution and get the best returns from their conservation efforts.

Whether the actual conservation operations are carried out by farmers or by contractors, there is no substitute for accurate knowledge of the land and its needs. Ill-advised or half-way conservation measures can lead only to unnecessary expense and waste of soil and water, such as can no longer be afforded in this or any other country.

We have learned these underlying principles of soil conservation through experience; there's no guessing about it. The Soil Conservation Service started out on a demonstration basis; but we changed as quickly as possible to our present method of furnishing technical

assistance to each farmer, on site. We made this change because it became evident that demonstrations, even though highly useful for preliminary educational work, would not get permanent conservation on the land quick enough.

Quality of Soil Conservation Work

There is no substitute for quality and completeness in the protection, development, improvement, and proper use of our land and water resources. Each acre of land must be used according to its individual capabilities and treated according to its needs; because each acre of land, like each human being, is different from any other acre. To get the best from it, it must be handled in just the right way. Likewise, each watershed, whether large or small, must be used and treated according to its specific physical peculiarities, if we are to properly conserve, develop, and use the water and land resources of that particular watershed -- any watershed.

If there were some simple remedy for our land and water problems that could be applied everywhere, according to a standardized treatment or formula, the job would be relatively easy. But there are as many variations in soil and water conservation problems as there are in the landscape, the climate, and the types of agriculture that farmers choose to practice. There is no cure-all, no short cut to the solution of these problems. Nothing less will suffice than a painstaking study of each acre, each field, and each watershed, and the appropriate application of all needed conservation measures that the study indicates as necessary to get the job done right. To ignore these facts is to invite further damage to the land, as well as to waste time, opportunity, and money.

Recommendations for Getting The Conservation Job Done in Time

What are the steps which hold the greatest promise for bringing about permanent conservation, as well as safe and orderly management of the farm lands of a country? Can these objectives be achieved without serious disruption of the economy of a people?

The answer to the last question is "yes."

As to the steps which give the greatest promise of success in protecting and developing our farm lands, there are several. No single one of them, however, seems adequate by itself to bring about the desired results, in time, on most land. It is the appropriate combination of essential steps which provides the greatest assurance of accomplishing the end we want.

Among the more important things that should be done at the earliest possible time in this country are the following:

1. Set up a timetable for the establishment of those basic measures needed for the conservation of our soil and water resources, according to capability of the land and availability and need of the water.

2. Adjust research in conservation to specific problems encountered in field work and intensify research on these pressing problems.
3. Encourage and promote a comprehensive program of conservation education through all available educational agencies and institutions.
4. Complete land capability surveys of the country and analyze the information to provide landfacts needed for future farm planning and action, and for other programs, such as a sound basis for farm credit, farmland assessments, etc.
5. Encourage continued organization of soil conservation districts, in order to develop conservation programs with local leadership and direction
6. Improve the conservation credit structure.

Public Responsibility

From every conceivable angle of consideration -- economic, social, cultural, public health, national defense -- conservation of natural resources is an objective on which all should agree. It is also a need which all should recognize. The public -- our society as a whole -- has a vital stake and, therefore, an enduring responsibility in these resources. Exercise of the public responsibility in the sustainment of agricultural land is of such obvious importance to the general welfare of all people, it would seem that an adequate program of soil conservation and prudent use of water would always be the first order of business in all nations.

With the understanding that can be developed through education, there should be little or no opposition to sound conservation action, persistently carried out. There are likely to be, spottedly, misconceptions, unwise proposals for alleged short-cuts and panaceas, and occasional bickering arising out of ignorance and the common error of taking things for granted. These deterrents represent a type of human behavior that probably can be dealt with most effectively through the educational process.

Public interest in making the wisest possible use of all of a nation's natural resources is, in a sense, of greater importance than the individual's interest, but both are tied together in such a completely complementary way, there is no point in pursuing the subject beyond indicating that no man should have the right, legally or otherwise, to wrecklessly destroy or unnecessarily waste any resource on which public welfare is dependent. Wilful destruction of those resources essential to life amounts, in the end, to a form of inflicting fatal privation.

Productive land occupies a position of such basic importance to everybody that some individuals have come to favor public control in the use and management of land. They contend that because of man's utter dependence on the limited supply of land, the question of how land is to be used should not be left entirely to individual discretion.

Our American experience, however, seemingly has developed a majority feeling to the effect that our soil conservation efforts should proceed along lines of cooperative action, without the use of compulsion at any point, at least until there has been time for adequate education and action. The present-national program of soil conservation, under which the government supplies, on request, technical assistance and certain materials to soil conservation districts, has become highly effective and very popular. Excellent progress has been made without public use of anything stronger than persuasion and cooperation. There have been, however, many instances where farmers have not brought themselves immediately into active cooperation in this conservation program. Delays have resulted from such action on the part of farmers, and, in turn, these have caused difficulties and hardships for their neighbors, but such situations have usually cleared up through the educational process.

Under state laws, many of the soil conservation districts have been given legal authority to impose land use regulations through the process of local referenda, but the authority has rarely been exercised. At this time it appears to be the feeling of the great majority of soil conservation district supervisors that many of the farmers who move slowly at first later on become the most enthusiastic and effective kind of conservationists. Accordingly, they see no need to propose the use of compulsion. Moreover, they have been impressed by the fact that nearly everywhere farmers are requesting technical help for the establishment of soil conservation practices on their land faster than such assistance can be provided.

While there is universal recognition of the need for increased speed in soil conservation, it appears to be generally believed this can be obtained without resort to any form of regulation.

Too long a delay in getting soil conservation on the land, however, could bring about public demand for increased speed through the use of some measure of land use regulation. It is not difficult to understand how the refusal of a farmer to protect his own land from erosion can do serious damage to an adjoining farm, as where, for example, uncontrolled gullies pouring out infertile sand, gravel, or subsoil clay, spread these materials over lower fields which have been given all the protection the neighboring farmer can provide through his own endeavors.

It would seem that some means of protection is justified on the part of the farmer whose lands are being damaged in any such manner. If, however, the farmer owning the gullies feels that he is unable to control them because of financial circumstances, or because of lack of manpower or knowledge, it might be advantageous to both parties if some satisfactory arrangement could be worked out to get the job done cooperatively. On the other hand, different circumstances might call for public action of some kind, particularly where there is evidence of wilful carelessness on the part of the farmer who refuses to do anything to protect his neighbors' land by protecting his own.

One serious difficulty in such instances is that it is not always easy to determine whether or not failure to act arises out of wilfulness, lack of concern, lack of education, natural tendency to move slowly, or what. In a good many instances, where obstinancy seemed to be the principal difficulty, farmers have been persuaded to take corrective action or have somehow come to understand, through their own observations or matured consideration, the error or injustice of their actions, with the consequence that they have gone vigorously about the job of remedying the situation.

From the standpoint of the government's obligation to help farmers with their erosion problems, there seems to be general agreement. A few people, however, try to make the point that the government should not concern itself with helping a farmer protect and improve his farm land any more than it should pay part of the cost of operating a privately owned and normally run manufacturing plant.

The exceedingly important difference such objectors fail to see is that the government's interest in the continuing productivity of the land is never-ending. Government dies if the land is ruined for further production. In other words, land is the individual's property for the moment and the nation's most priceless and indispensable resource for all time. There is much difference here, but the interests of both should be protected.

Over and above these considerations, productive land is the principal source, directly and indirectly, of the income required for the support of most nations.

A Conservation Timetable

Inasmuch as the time factor is so important in reckoning the rate and amount of land damage, it would seem, as already indicated, highly advantageous to establish a timetable for conservation operations, so that the necessary conservation progress from year to year could be clearly set forth, and adequately provided for. And, in all probability, a definite goal would prove advantageous from the standpoint of emphasizing the point that the quicker the job is done, the easier it will be and the lower its cost.

Enough is now known about the size of the job, as well as the speed required to complete it, to establish such a timetable. Furthermore, by looking at the whole soil-conservation and land-use job remaining ahead, it should be possible to determine much more clearly just how much of it should be done, and how much of it can be done, in any one year or any given number of years. There would seem to be reason for serious consideration now of an advance schedule, covering the years ahead, which would lead to the permanent protection of our productive land before it suffers irreparable damage on a very large scale. Such an advance schedule, if it could be agreed on, would provide for much more economic conduct of the necessary conservation job.

As pointed out, most farmers need trained technical aid in installing water-disposal systems and other conservation measures that are exacting to build or apply. Today the technicians available for this

work are being taxed to the utmost. The widespread and growing recognition of the hazard of erosion and other forms of land depreciation, and of the advantages of conservation, has sharply increased the demands of farmers for this kind of technical service. Even now, there are not enough technicians to meet current demands.

With about 115 million acres of cropland being damaged at a critically rapid rate, and approximately 120 million acres of additional cropland being damaged at a serious rate, there is clearly no time to waste on postponement. Within the next 20 to 25 years, this area will have lost an important share of its capacity to produce, unless it is protected in time. Such loss is more than the nation can afford, and it is unnecessary. We now have good reason to feel that the necessary basic conservation measures could be applied to the land within 20 to 25 years.

At the current rate of soil conservation treatment, however, some 40 years would be required to make the necessary shifts in land use and apply the needed conservation measures on the farms still untreated. In short, the present technical resources available are inadequate for the size of the job ahead, even though the Soil Conservation Service, during the past 17 years, has gathered together a technical staff of thousands of trained and experienced soil conservationists. It has taken years of training and experience, actually doing conservation work out on the land, to build up this technical staff. It is the largest and most experienced group of conservation technicians ever brought together. Yet, this group is not large enough. It should be increased, and it will take time to train properly a sufficient number of additional technicians to satisfy the current demands of farmers in soil conservation districts; and it will take still more time to train and increase this staff if we are to speed up the rate of conservation work so as to get the job done in the next 20 to 25 years.

Advantages of Developing Submarginal Lands

Tracts of eroding or natural^{ly} poor land are often a physical hazard to adjoining areas of good land or a barrier to their economic development. Although the size of individual parcels of such submarginal lands may not be large, the damaging effects of such tracts often extend to much larger total areas of interspersed good land. These submarginal lands are one of the chief obstacles to widespread conservation in many localities. There are almost always other reasons, of course; but often the submarginal lands are the key to the situation. When such submarginal lands become a festering point in an otherwise sound farming community, and if there is no apparent chance of solving the problem while the lands remain in private ownership, then it would seem appropriate to seek another remedy.

When desirable in the public interest, the government could very well afford to purchase and improve (1) such areas as would be permanently lost for agricultural production if retained in private ownership or (2) such areas as would constitute a permanent erosion hazard to adjoining productive land if left in private ownership. Once such

lands have been protected and developed in accordance with their capability for safe use (almost invariably this is a limited use, because of the highly vulnerable nature of these lands), they should be kept in government ownership and management in such a way as to provide the greatest possible benefit and use to neighboring private landowners and to the community -- until necessary and satisfactory arrangements can be worked out for safe return through sale, under restricted use, to those who can show evidence that they will efficiently manage and maintain such improved lands.

In the course of making essential shifts in land use in accordance with the capabilities of the many different parcels of land, it sometimes becomes desirable to enlarge the size of farms in order that they can be operated efficiently and profitably. In other words, farms may simply be too small to provide their owners with an adequate income. Such situations often lead to exploitative farming. Under these circumstances, it would seem to be in the public interest to purchase nearby tracts of submarginal agricultural land, particularly areas of excessively eroding land, for protection, improvement, and subsequent sale to farmers in need of additional acreage. Wisely and promptly handled, such purchase, development or improvement, and sale would not only help prevent permanent damage to the lands purchased but also to adjoining lands. This would help the owners establish economically sound units that would produce permanently under a conservation farming system.

Inasmuch as soil conservation districts are vitally concerned with the conservation and proper use of lands within their boundaries, they should be a prime factor in all activities involving the purchase, development or improvement, management, and final disposition of lands which cannot be placed under effective conservation use while in private ownership.

Each district, with whatever assistance is available, could determine what lands need to be placed in public ownership and restored or protected with public funds. However, since the districts have very limited authority or ability to raise funds, any activity involving the purchase and improvement of any significant acreage would probably have to be financed by other public agencies. The agency or agencies best able to assist the district in such activities would depend on the magnitude of the job, the pattern of purchase, the best future use of the land, and other factors. Present sources of assistance include county, state, and federal conservation agencies having authority to buy land.

In some instances it may be advisable to purchase and improve submarginal agricultural lands in furtherance of flood control operations. In this connection it may be desirable to have flood control legislation provide more adequate authority for the management and disposition of acquired lands. In any event, after development or satisfactory improvement, it would be desirable, in most instances, to transfer title or management authority to state or local agencies-- to soil conservation districts in particular.

A good many of the submarginal areas now administered by the Soil Conservation Service are paying their way; some that were largely tax delinquent when acquired are turning considerable sums into the county and the federal treasuries as the result of their earned income -- in some instances more than the lands ever earned.

Why The Erosion Problem Was Not Recognized

How did we get into this predicament with respect to our land? Why was it allowed to happen?

There are a number of reasons for our long delay in recognizing the menace of man-induced erosion and in starting an effective program of prevention and control, but the following are probably the main ones:

1. Man began losing land to erosion when he first started farming it or began intensive grazing, but for countless generations there was always more land in the next valley or across the mountains. Land was so readily available, people came to regard it as limitless and inexhaustible; it was easy to view the situation that way. This erroneous conception persisted, especially among people of newly settled countries, as time went by, and it was probably not until North and South America were settled all the way to the Pacific coast that people began to have any doubts about the myth of land plenty.
2. The apparent abundance of good land for so many generations gave rise to a careless and prodigal attitude. There were no prevailing attitudes to cause a landowner to take care of his land or even be concerned about maintaining its productivity. New land, everybody thought, could almost always be had somewhere else.
3. Even in modern times our leaders have too often had little or no personal knowledge or understanding of the land. They have been trained in law, medicine, finance, trade, philosophy, astronomy, military science, economics, political economy, education, or some field other than agriculture, and especially that vitally important part of agriculture having to do with maintenance of the agricultural base -- the productive land. With few exceptions, until recent years, they had had neither the training nor the incentive to look searchingly at the landscape around them and understand what was happening to it. The ancient and unchallenged myth of land plenty came down to them, too, across the ages and was unfortunately accepted as truth.
4. In many parts of the world too much of the land traditionally has been in the hands of inexperienced, untrained operators. During recent years, this situation has changed in some countries, fortunately for the better. However, over most of the world, land is still being used by men with little specialized or adequate training for the job. Too many land users have operated on a trial-and-error basis and have been influenced predominately by habits handed down from the past, whether good or bad. Some have placed greater faith in superstition than in science.

In short, the most precious natural resource on earth in many parts of the world has habitually been in the charge of those who often have had no greater qualifications for the trusteeship than the coincidence of inheritance or of birth on the land.

5. Too few farms have produced surplus capital for the owner over a period of years. On the contrary, the farm much too often has been no better than a marginal subsistence enterprise. Even in the United States the farmer rarely has had the personal resources or training to undertake research or seek out technological improvements. He has generally been almost wholly dependent on outside help, from government or private sources, to provide him with improvements in machinery, materials, and methods. Too often he has not even thought of including in his calculations any cost for depreciation or maintenance of his basic plant -- his farm land.

6. Our agricultural scientists failed almost completely, for the most part, over bygone years, to recognize land for what it is -- an important and complex resource. Too often they considered soil permanent and synonymous with land. As a result of this error, both agriculture and the land suffered. Soil is but one part of the land. For all practical purposes, land must be regarded in terms of all its component parts of soil, slope, climate, susceptibility to depreciation by erosion and other processes of deterioration. Some geologists saw very clearly what was going on, as N. S. Shaler and T. C. Chamberlin, but no one drove ahead to get necessary funds and legislation for research or control.

Many of the early scientists largely ignored erosion, paid too little attention to slope, called the weather inevitable, and allowed the problem to go untouched. Only a few recognized the difference between the tediously slow process of geological erosion and the exceedingly rapid process of man-accelerated erosion following the removal of nature's stabilizing cover of vegetation and the plowing of the land.

In the main, agricultural science was not greatly concerned about what changes were taking place on the land. It was primarily interested in the process of soil formation, in soil classification, and in the mapping of soil types; in the chemical and physical composition of soils; the health and breeding of livestock; improvements in strains of crops; and in modernization of machinery and equipment. All of this was important and beneficial, but it did lead to serious neglect of the capital stock of agriculture and the source of agricultural production -- the land itself.

7. In agriculture as in other enterprises, we often have waited until we were sick before calling the doctor. We did not practice preventive medicine, and now we must try to cure a malady -- erosion -- that has gotten into our system and weakened the land and ourselves.

Soil Conservation Districts

It is my conviction that the farmer-voted and farmer-managed soil conservation districts, through which the Soil Conservation Service makes available virtually all of its technical and certain other assistance to landowners and operators, represent the greatest land movement of all time. It is through these democratic units of state government that the soil and water conservation job on the farmlands of the nation is being done in an effective and lasting manner -- as never before achieved anywhere.

The districts are in an ideal position for the landowners and operators to work together and take advantage of counsel and assistance of one another, as well as of other local, state, federal, and private sources.

Back at the time when the districts were getting under way, I never would have believed that in the short space of a dozen years -- starting in 1937 -- every one of the 48 states, as well as our territories of Alaska and Hawaii and insular possessions of Puerto Rico and the Virgin Islands, would have enacted these district laws, so promptly taken advantage of by the landholders. More than three-fourths of the nation's farms are now within the boundaries of the nearly 2,200 soil conservation districts already established, by what usually has been the overwhelmingly favorable vote of the landowners themselves. The districts now cover nearly 1,200,000,000 acres, including more than three-fourths of the nation's farmland. Nine states are completely covered by districts and many others nearly covered. Up to July 1, 1949 (the beginning of the present fiscal year), farmers and technicians of the Soil Conservation Service, working together out on the agricultural lands of the country, in soil conservation districts alone, had prepared cooperatively some 800,000 complete soil conservation farm plans. These plans covered by that date over 200 million acres, of which more than 100 million acres had been treated with conservation measures in whatever combinations were required to give adequate protection to the land.

Group Action

Not only are farmers in soil conservation districts becoming more neighborly and helpful to one another in conservation work, but groups of farmers, living in more or less compact neighborhoods within districts are contributing in a most encouraging manner toward speeding up conservation work by planning together and working together, loaning one another machinery and seed, and cooperating in other ways. These groups are normally bound together by ties of neighborliness and common interests. The groups usually range from 4 or 5 to 15 or 20 families, sometimes, more.

The Soil Conservation Service is now working with some thirty thousand of these natural groups. An increasing number of governing bodies of soil conservation districts are finding that it is comparatively easy to organize and determine the membership of these groups and seek out their leaders, and to interest them in

conservation. In a great many instances, these groups, under these leaders, are coming together in planning and application meetings. They are helping the district supervisors and their own neighbors in routing equipment, distributing seed, and meeting seasonal farm needs. It has long been known that people like to work together. Many people work in groups far more effectively than as individuals. There is a certain stimulus to morale in the act of working with friends and neighbors for a common beneficial purpose.

Recently the leader of a typical neighbor group in Texas said, "We like this group way of doing things. One helps another and is helped in return. One learns what another is doing and wants to do likewise ... we save in transporting seeds for the whole group ... hauling fertilizer. Naturally it speeds up the application ... since working together we become more interested ... it makes for better group spirit."

Group action is a perfectly natural instrument for getting soil conservation accomplished. It brings out the initiative of the people themselves and makes highest use of their natural desire to help one another solve common problems. Group leaders are more and more becoming right-hand men to district supervisors, not necessarily by official designation but by their unselfish work in assisting the district to reach people more rapidly and more effectively.