

## FINANCING SOIL CONSERVATION AND IMPROVEMENT

by

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Changes in American agriculture are taking place at an almost revolutionary rate. Total agricultural production during recent years has averaged 24% above the 1935-39 prewar level. While much of this increase came about during the World War II period, it is becoming generally agreed that there is more to it than an all-out war effort to meet emergency demands for food and fiber. Actually, the answer to what's back of it all lies in the technological developments during the last twenty to twenty-five years. More complete mechanization of farms, crop improvements such as the development of hybrid seeds, improved livestock breeding and feeding methods, and the wider adoption of soil conservation and soil improvement practices are the real forces that have created the higher level of farm production. While it is possible that the years ahead may see some slight decline from present levels, it is almost certain that the normal level of farm production in this country will remain well above the prewar level and that further technological developments will exert an upward rather than a downward pressure on farm output.

At first glance, it might appear that the recent trends in production reflect a new era of better land use and sounder soils management. To the extent that farmers are more widely accepting soil conservation programs and soil building practices, that is true. Actually, however, the balance is in the other direction. While better soils management is making a definite contribution, the two strongest factors behind the increased level of farm production are mechanization and crop improvements.

The farmer is not putting into practice improved soils management methods to the extent that he has accepted improved techniques of extracting the last drop of

productivity from the soil through heavier feeding crops and more timely mechanized farm operations. He is simply doing a more complete job of soil exploitation. This creates a more urgent need for soil conservation and soil improvement than has existed heretofore. Heavier drains on productivity must be balanced with better soils management if in the long run farm output is to be maintained at or near present levels.

The exploitive habits of the American farmer have already resulted in soil erosion losses and productivity declines almost beyond the human imagination. Agriculture has existed by cashing year by year a part of its basic capital assets. It is one of the few industries that has been able to operate under such a system. Only those industries that live through exploitation of natural resources can do so. There are definite limits beyond which agriculture cannot continue the annual sales of basic capital assets. To reverse the trend means a re-investment of new capital in the basic producing assets of agriculture. Much new capital is required on American farms if erosion losses and productivity declines are to be reversed. Capital will be required for soil conservation practices such as the construction of grass waterways, terraces, outlet structures, and new fences to re-arrange the physical farm layout with the natural lay of the land. Capital is needed to rebuild soil productivity through the addition of lime and mineral fertilizers. It requires capital to develop timber and permanent pasture on lands not suited to cultivation and to buy seeds for soil building crops for cover and green manure. Additional new capital is needed for more complete mechanization of farms and further improvement of livestock and crop production.

The active interest of the Federal Reserve Bank of St. Louis in the problem of soil and farm improvement is at least two-fold. First, the research program of the Federal Reserve Bank is being geared towards the overall economic development of the District. The Eighth Federal Reserve District is largely agricultural. It is, therefore, logical that the St. Louis bank's interest should focus on the conser-

vation and development of the soil resources of the District. Second, as a member of the financial community, it is interested in knowing something about the volume of new capital required to facilitate shifts to more efficient utilization of farm resources, where the new capital will come from, how it will be used, and its soundness from an investment viewpoint. These interests are behind the Federal Reserve Bank's program of individual case farm studies of soil conservation and improvement programs.

It seems likely that as the trend towards better soils management continues, a considerable demand will develop for loans to finance complete soil conservation and improvement programs on the individual farm. Our individual farm studies, therefore, have been designed to answer the questions of how much does it cost to place the ordinary run-down farm under a complete and well integrated program of soil conservation and improvement, what are the prospective returns from soil improvement investments, how long a time is required for the investments to retire themselves, and can credit be soundly extended to individual farmers for soil improvement work.

The Reserve Bank's case farm studies show that there is a wide variation in the type of practices required in the shift to a balanced system of farming, in the per acre cost of making the shift, and in the rapidity with which farm improvement investments pay for themselves. These variations are found between different areas of the district and to a great degree within relatively small communities. The most significant fact in this research to date is that in all the analyses of individual farms that have been completed, not a single instance has been found in which the investments made for soil conservation, soil building, and other farm improvement practices were not highly profitable.

An interesting individual case farm study is a farm located in the Black Belt that extends into Central Mississippi. In this area, minerals have been leached from the soil and profitable farm production is almost impossible without

a liberal replacement of mineral plant food. In a ten-year program on this 145 acre farm, a total of \$8,832 is required to install a sound land use and balanced system of farming. This averages a total cash outlay of \$60.91 per acre, of which \$40.40 represents the cost of mineral plant food. Despite this unusually high investment, however, in the ten-year period \$12,430 in new income, calculated on an average price basis, which figures wheat at \$.96 per bushel, corn at \$.73, Oats at \$.40, alfalfa hay at \$12.50, and pasture at \$1.50 per mature cow per month. The net income from the farm was increased by \$1,711 with an annual maintenance cost of \$600.

To carry this analysis a little further, let us review some figures from ten farms scattered throughout the Eighth Federal Reserve district on which we have analyzed the records of farm improvement programs on a before-after and through-the-middle basis. These ten farms include a total of 2,255 acres of land with an average normal appraised value of \$47.64 per acre at the time the improvement programs were started. The time involved in the improvement programs has ranged from 6 to 10 years and for the ten farms has averaged eight years. The average improvement cost per acre has been \$29.28 which is approximately 61 $\frac{1}{2}$  percent of the original normal appraised value. However, the average per acre returns during the period in which improvement programs were being completed increased \$65.47, which is a \$2.20 return for every \$1.00 invested in soil improvement. Of the total of \$29.28 invested per acre, \$17.58 represented permanent improvement to the land and raised the normal appraised value on the average from \$47.64 to \$65.22 per acre.

The average farm of those analyzed would be a 225 $\frac{1}{2}$  acre farm with a normal appraised value of \$10,744 at the time the improvement program was started. An addition of new capital in the amount of \$6,603 would be required to complete the improvement program in an eight-year period. This investment of new capital would result in increased income in the eight-year period of \$14,568, or \$2.20 return for each \$1.00 invested. The yearly income from the farm following the completion of the improvement program would be increased by \$2,391 with an annual maintenance

cost of \$568 which would leave a net increase in income of \$1,823 per year. The normal value of the farm would have increased to \$11,708.

These studies, and a pile of other evidence, are convincing proof that, morals or ethics aside, from a cold business standpoint, the man who controls a farm cannot afford not to start now on a complete and integrated program of conservation farming.

One more word about capital. A conservation program, generally adopted, would require a lot of it. There was a time when the lack of capital would have been definitely a limiting factor. In isolated instances that may even be true today. It is interesting, however, to project the cost of a complete improvement program on every acre of land in a given community and then lay the figure of total costs alongside bank deposit totals for the same community. In most agricultural areas the local supply of capital is more than sufficient to meet the cost of farm improvements if they were to start now and proceed much more rapidly than we can ever hope will be the case. You will find in almost every instance that bank deposits, and in many cases even the amount of uninvested cash on hand in banks, will exceed the amount of new capital that would be required to complete a sound land use program on every acre of farmed land in the community.

Now it is true, of course, that while the total supply of capital within a community may be sufficient, there will be individual instances where the farmer lacks sufficient liquid reserves to meet the need in his particular case. He may have to resort to borrowing to carry out a sound soil improvement program. A well-planned soil improvement program carried out under the right kind of supervision is a sufficiently profitable venture to justify the ready extension of credit for its completion. Farm improvement plans can be developed and financed on a basis that will enable the farmer to repay the borrowed money from income earned directly by the improvement investments. It requires a little different type of loan than the conventional real estate loan or the crop production loan with which

we have long been familiar. Lending money for farm improvement programs requires a careful analysis of the individual farm and a flexible extension of credit wherein money can be advanced in varying amounts on farm real estate mortgage security over a period of years. The repayment program needs to be geared to the income pattern of the farm, varied in amount repaid from year to year as income from the improvement investments develops.

Loans for soil conservation and improvement to be soundly advanced and repaid must be closely geared to a good farm plan. The general principles laid down above will apply but loan advances, repayments, and terms will vary with the individual farm. The only way to be sure that the extension of credit fits a particular farm problem is to gear it closely to the farm plan. There have been times when it would have been impossible to make farm plans with sufficient accuracy to serve as dependable farm mortgage loan guides. Today, however, with the vast stockpile of technical information that has been developed at the Land Grant Colleges, through actual performance of farms cooperating with the Soil Conservation Service and other sources, a well-trained farm planner can sit down with the farmer and lay out a program over a period of years through which costs and production increases can be accurately estimated. This makes it possible to project a realistic loan program by which money can be advanced for needed improvements and can be repaid from income that will be produced by the improvements.

Up until recent years there may have been some justification for the exploitive farm real estate mortgage practices that have persisted. With the practical knowledge that is available today, however, there is little reason for continuing farm mortgage loan practices that encouraged poor land use. The primary offenders have been the farm appraisal policies, the slide rule method of loan amount determination, and the requirement that the annual loan balance becomes successively less from the time the loan is made. These are merely conventional loan practices that have persisted for years and are generally adhered to today.

They worked reasonably well in the days when farmers first began to encounter a need for farm mortgage finance and when farm land was new. The farmer, through annual liquidation of a part of his soil productivity capital, could retire a loan with reasonable certainty. While these conventional loan practices actually encouraged exploitation, virgin soils could withstand the shock and farm ownership via the credit route was accomplished even though the farm when paid for, in many instances was much less valuable than when the purchase was made. As time went on, however, and land values increased, total mortgage debt rose and soil productivity declined, these conventional loan practices have become a less certain vehicle of farm ownership. We have reached a point today where it has become difficult for a farmer who is ready to advance from a tenant to an owner to buy a good farm. New land is no longer available and in most instances the prospective farm owner is confronted with the purchase of a farm which has already been badly exploited. Further exploitation under heavy mortgage indebtedness makes farm ownership a less certain possibility. The average farm buyer today is confronted with the problem of conserving what topsoil remains and with rebuilding soil productivity to a level that will produce sufficient income to furnish a reasonable standard of living and retire indebtedness. It seems only reasonable, therefore, that farm mortgage loan policies must be adjusted in keeping with the times if the use of credit is to continue to be a sound medium of individual farm ownership. The adjustments in farm mortgage credit policies which must be made are relatively simple. We must first recognize that the real value of farm land, irrespective of sale prices, actually increases or declines depending on the nature of practices followed on a particular farm. Here are some adjustments that need consideration:

- (1) Land appraisal must be adjusted to recognize the increased real value that results from proper soils management. Recognition of changes in real value will make it possible for the slide rule lenders to vary the amount loaned to cover improvement

costs. The slide rule or percentage limitation practices are established by law for some lenders but there is no law that regulates the real value of land.

- (2) Disbursement schedules on farm mortgage loans must be liberalized from the conventional practice of one disbursement for each mortgage loan. A realistic loan program requires that a flexible disbursement schedule be adopted through which funds can be advanced to the borrowing farmer over a period of years for conservation and improvement costs in addition to the initial disbursement for purchase of the land.
- (3) Repayment programs must be more nearly geared to the income pattern of the particular farm being financed. Where heavy investments for soil improvements are required, these costs will usually exceed the income they produce for a period of from two to five years. This makes it imperative that repayments be made flexible so that repayments are light during the period when costs are high and returns low and that the annual repayments increase in amount as income increases from the improvement investments.
- (4) The idea that the mortgage balance on a given farm loan should be successively less each and every year from the time the loan is made must be overcome. Actually, on many farms which require heavy improvement outlays, the year-end balance of the mortgage debt may actually increase for a period of some two to five years while the productivity level of the farm is being rebuilt.

When lenders generally accept these four adjustments from conventional loan practices and write into mortgage papers a sound soils management program, farm



improvement loans will become a much more constructive influence toward individual farm ownership than has ever been true in the past. These adjustments are an absolute "must" if this nation is to realize its full potentialities from sound development of its farm resources.

The following table gives a loan schedule for the 145 acre Mississippi Black Belt farm, mentioned earlier in this article. This is a farm which lies reasonably well but which has a soil that is very deficient in basic mineral elements. For complete improvement, it requires some erosion control practices and very heavy applications of mineral fertilizer and lime, in addition to a properly balanced cropping system. The normal value of the land without treatment is \$20 per acre or \$2,900 for the farm.

(INSERT TABLE I)

Line one and two gives a conventional 10 year purchase loan based on 60% of the normal appraised value of the land amortized at the rate of 4% of the original loan balance per year. Line three shows the additional disbursements that would be required on the loan to finance a complete farm improvement program. This calls for loan advances each year throughout a ten year improvement program. Line 4 shows the repayment schedule for the conservation portion of the loan. Repayments are calculated on the basis of 75% of the anticipated increased income resulting from the improvement program. Repayments are light during the early years of the program and build up as income from the improvements develops. Line 5 shows the annual year-end balance of the advances for conservation and improvement purposes. It is interesting to note here that the maximum balance for the conservation portion of the loan comes in 1949 or the fourth year of the program and totals only \$1,461.98, despite the fact that improvement costs amounted to an aggregate of \$8,832. Line 6 shows the total year-end mortgage debt during the 10 year loan program and illustrates a case where the total mortgage debt

remains relatively constant for a five year period while farm improvements are being made and then declines sharply as improvement expenditures are reduced and new income develops in a substantial amount. Line 7 merely outlines the total principal payments by years throughout the ten year program. This is a rather typical program that would be expected on lands where productivity is badly depleted, responses are relatively slow, and total costs heavy. Yet, the ultimate income returns are so great that a farmer buying this type of farm cannot afford not to make the additional investment. Likewise, the banker advancing money for purchase of the farm will better secure the loan and more nearly insure repayment through advancing the additional money for improvement purposes. This case represents one of the more difficult kind. Of the total of \$8,832, invested in improvements, \$2,483.12 represents permanent long-term improvement to the land, raising the per acre value from \$20 to \$37.12 per acre or for the entire farm from \$2,900 to \$5,383.12.

This example of how loans can be extended for improvement purposes in addition to the conventional purchase loan illustrates the four suggested adjustments listed earlier.

First, a controlled re-appraisal procedure is accepted through which permanent improvements added to the land are reflected in appraised value. This enables the banker to advance all the cash costs necessary to a sound improvement program in addition to the conventional purchase loan and to keep the total loan balance within 60% of the normal appraised value. Flexible disbursement schedules are set up according to the planned program and repayments on the conservation advances are geared to the income increases that are expected from the planned program. Total mortgage debt is allowed to increase or to remain relatively constant during the period that the improvement program is being completed. The important point is that while in some instances the total amount of credit required for improvement purposes may be a relatively

small amount, to the farmer investing all his available liquid assets in the down-payment on a farm, a small amount of additional credit may well mean the difference between a starvation operation and a highly profitable farm program.

It is not difficult to see the benefits that accrue to the farm buyer if purchase mortgages are made to include sound soils management programs. The community, too, has something to stake in such a program. Multiply the income increases from this type of program on one farm by hundreds for the community, tens of thousands for the state, and millions for the nation and what do you get? Vastly increased returns, reduced cost of production, and larger profits even at the lower price levels we shall one day see. In the aggregate, a land that is at long last adjusting itself to eternal fruitfulness.