CHAPTER 11

WAR AND CONSERVATION

Prices and Production in a War Economy

In a war economy the prices of many products are not determined by consumers' demands; this is true of the multitude of military goods, guns, airplanes, vitamin tablets, green vegetables, and many more. Military experts direct production into various channels on the basis of efficiency of each product in defeating the enemy; this is the supreme social end existing at that time.

Changes in prices have little to do with the directions of industrial production. If we want more tanks, we plan their production in physical terms and alternatives—more tanks and fewer battleships, farm machinery, or motor cars; we do not simply advance the price of tanks and depend upon the normal business responses of individual firms to produce more.

This change is of vital importance to agriculture now because food is in a category similar to war materiel when it is used to help the United Nations. The difficulty of planning agricultural production compared to industrial planning lies in the large numbers of small competing firms with a relatively fixed productive plant. One problem of establishing "reasonable" prices lies in the great variations in costs and levels of rural living. A further complication arises from the large consumers' demand that impinges on the market and affects prices; there is no consumers' demand for guns, and the government and the firm determine prices. In industry a conflict between consumers' demands for cars, refrigerators, and so on, is solved by rationing materials and a reduction in the

supply of consumers' goods; this has to be followed by rationing consumer goods, price controls, and tax or other measures that will prevent inflation resulting from a reduction of the supply in relation to the demand.

Because of the difficulty of differentiating between consumers' goods and defense goods in agricultural production, because the raw materials of agriculture (land, labor, and capital) cannot be allocated to the production of defense or consumer goods, and because defense needs are purchased on the open market in competition with consumers' demands, production in agriculture must largely be directed through price controls with a system of voluntary or economically induced cooperation between farmers and Government agencies. Thus develops the complex problem of whether agricultural production can be stimulated sufficiently to provide a supply large enough to meet both defense and consumers' needs without undue increases in prices.

The effect, on land use and erosion, of using price changes to direct the production of agricultural products will depend upon the kind of crops that are needed to meet war demands. If we needed only increased production of hay and pasture, higher prices for these crops and their products would favor conservation because the comparative advantage of these nonerosive crops would be increased. However, the present indications are that we will need greatly increased quantities of concentrate feeds, including corn, for increased production from our dairy herds and for feeding more hogs to heavier weights. We will also need to expand the acreage of soybeans very rapidly if we are to produce sufficient oil. If the increased production of the erosive crops is stimulated through increased prices, the comparative advantage of an exploitive system over a conservation system may be greatly enhanced, and serious damage to the soil resources may result unless additional measures are adopted.

Where price controls are used, the price offered must anticipate the future supply response by at least one growing season in order to avoid rather violent fluctuations in production. If, for example, the requirements of soybean oil are expected to be doubled by the fall of 1942, the market price in the fall of 1941 and spring of 1942 may be left to competitive conditions at the time, but the price to be offered in the fall of 1942 should be guaranteed in the spring at a level that will stimulate production to the necessary output. This appears to be the function of a "floor" below which prices will not be allowed to drop, and it is essentially a means of spreading production risks over the whole population.

Emergency Conservation Planning

In responding to price guarantees, the farmer needs to know the minimum prices he can expect and the probable duration of the time of maximum production. *If the expected period is short, he may maximize production by depleting his soil resources, or if the period is longer, production may be maximized by maintaining or even increasing the fertility.* A five-year period does not now seem to be too long for production plans if we consider the necessity of building up stores of food for post-war use in Europe.

Contrasted to this relatively short-run period, conservation planning considers long-time permanent production, and hence may conflict directly with war-time planning. Where this occurs, the war economy must always take precedence, because the values we are fighting to preserve are more vital than the resources used up to achieve victory. In this case present emergency production becomes all important. A conflict between conservation planning and war planning need not always arise, nor should conservation be abandoned. The degree of conflict will depend upon the type of products needed and the methods used to obtain the increase. In many

areas a conservation plan will increase production over a five-year period as well as stabilize it over the indefinite future.

From the point of view of conservation, we must consider the effect of increases in erosion-inducing crops, such as soybeans and corn, and support those means of increasing production that will cause the least permanent damage to our soil resources. Increases in roughages and a larger production of milk, beef, and sheep may well be associated with increased conservation.

Conservation policy during an emergency, therefore, should be different from a permanent policy in two major respects. It must consider a shorter time period, and it must consider adjustments that may be necessary after the emergency. The objectives can be stated as directing the use of land resources so that production over the period is maximized, and selecting from alternative means of increasing production, those which will minimize the destruction of our land assets during and after the war.

If we assume a five-year period and the need for a considerable increase in erosive or depleting crops, conservation plans should delineate the areas where increases may take place with the least capital loss over the period being considered.[1] Similarly, increases in hay and pasture should be encouraged in areas where they are most needed for conservation.

This applies not only to regional differences, however, but also to fields within farms. The basic distinction to be made is the difference between soils where only fertility depletion occurs, causing no permanent loss, and soils where depletion and erosion occur under intensive cultivation. In Iowa, as was pointed out earlier, this distinction between depletion and deterioration was made by the State Subcommittee on Con-

[1] For an analysis of this problem, *see* U.S.D.A., Bureau of Agricultural Economics, *Farming Adjustments in the Corn Belt and Lake States to Meet Defense Needs and Post-War Problems*, mimeo., Milwaukee, Wis., November, 1941.

servation. Similar distinctions may be made in all states, and the areas where fertility depletion causes no permanent damage to the land should be treated differently from the areas of soil deterioration or erosion. Similarly, the land areas of a farm may also be divided into these two major classes and differential treatment developed.

The necessity for treating these areas differently lies in the fact that increased prices for erosive crops will tend to maximize production and income in areas subject only to depletion but this may not be true for areas subject to deterioration. The reasons for this divergence, together with suggestions for corrective policies, are outlined below.

Government Policy for Areas of Fertility Depletion

For the sake of brevity, we will designate areas of fertility depletion as class A land and areas of soil deterioration as class B land. The objective of war planning for all lands is to assist the farmer to maximize the physical production of required crops over the period of the emergency through the most efficient combination of the factors of production.

On class A lands this might be done by using the following measures: (1) Prices could be guaranteed in advance by at least one growing season and adjusted to bring out the required production of specific crops. (2) Special "incentive" payments could be made for specific practices which would increase production.

During the emergency period many farmers with class A lands might increase their production and income by shortening their rotations to include more corn or soybeans. A three-year corn, oats, sweet clover rotation might be changed to a two-year corn, oats and sweet clover, or to a three-year corn, soybeans, oats and sweet clover rotation. Yields might be maintained or increased by the use of larger amounts of lime and fertilizer. Even though the soil fertility is actually reduced

over the period, it may be restored again after the emergency is over and, so long as the more exploitive system does not reduce yields during the emergency so as to lower the total output of the required crops, this system should maximize the farmers' income over the five-year period. It is because economic returns may be the major incentive to increased production that guaranteed prices over the current crop year play an important part in directing production.

For this increase in production to occur, however, it is essential that all restrictions over the acreage of intertilled crops on class A land be removed. Instead of benefit payments, such as those made for meeting corn acreage allotments under the present A.A.A. program, some means of preventing increased returns from leading to inflated land values (such as special taxes or deferred commodity payments) may be desirable. To the extent that farmers on class A lands can increase their income by increasing the production of intertilled crops, the need for increases of these erosion-inducing crops on class B land is lessened. Hence, pushing intertilled crops to the limit on class A land is one means of conserving class B land.

Similarly, conservation payments for seeding class A lands to grasses or legumes may actually be detrimental to the conservation of class B lands by reducing the production of intertilled crops on non-erosive soils. These payments restrict the production of the needed crops and act to negate the effect of increased prices. For this reason cash payments on class A lands should be limited to practices which will increase the production of those crops needed during the war period.

Government Policy for Areas of Soil Deterioration

When we turn to the problem of maximizing production on class B lands, the conditions are more complex, and increased prices cannot be depended upon to achieve the desired re-

sults. This is true for several reasons:

(1) Many farmers make production plans covering only one year and make no allowance for the destruction of the soil due to erosion. This may mean that increased exploitation will permanently reduce the productivity of these lands and create serious post-war adjustment problems.

(2) In many areas of class B land, increases in intertilled crops would not result in increased erosion provided that certain conservation practices such as terracing, contouring, and strip cropping were adopted. The adoption of these practices, however, requires special skills and may also involve cash outlays. A program to induce the adoption of these practices is, therefore, essential to offset the danger of increased erosion.

(3) Instead of increasing the acreage of intertilled crops, farmers on class B lands might increase their production of hay and pasture. This, however, may involve considerable expense for liming, fertilizing, and re-seeding during the first year, while the acreage of clean-tilled crops can be expanded with very little cash outlay. At the same time, more roughage-consuming livestock may be needed in order to make use of the increased quantity of roughage feed. This again may call for capital outlay for livestock, facilities for handling them, and increased purchases of concentrate feeds.

As a result of these factors, a withdrawal of Government control over acreages in these areas of soil deterioration might simply result in an increased production of intertilled crops and a decline in the production of roughages because the former could be achieved at little increase in costs when disinvestment in land resources is not taken into account. This is undesirable for two major reasons: (1) It may result in a relative underproduction of roughage crops and roughage-consuming animals and their products; (2) When the cost of

disinvestment and the associated costs of post-emergency adjustment are considered, the social net returns may be much less than they would be from an intensified non-exploitive system.

To some extent, the dangers of withdrawing Government control over the acreages of intertilled crops on class B lands might be reduced by using price controls to increase the returns from roughage crops compared to the returns from exploitive crops in these areas. Even large price differentials, however, might have little effect in overcoming inertia and stimulating investment in a short period of time. At the same time the administrative difficulties of having differential prices related to classes of land would be an almost insuperable obstacle to this method of control.

Because of these and other difficulties, Government price policies are limited to guaranteeing minimum future prices in order to expand the production of those crops needed in larger quantities without regard to their relationship to erosion. Under these circumstances a withdrawal of Government acreage controls on class B lands might easily result in destroying or disturbing conservation systems already established on many farms. In order to prevent this (and also to assist the further development of conservation plans), Government policies apart from price guarantees are needed to maximize social net returns from class B lands.

Government controls over the use of these lands may, as we have seen, take many forms including a limitation of property rights, various kinds of subsidies, and tenure legislation. Limiting property rights through zoning ordinances and land use regulations are appropriate means for preventing the development of serious maladjustments in the future; they may only be used, as was indicated in Chapter 9, to designate broad classifications of land use such as grazing areas, forest

areas, and agricultural areas. They can do little in an emergency to stimulate increased production. Where subsidies or land-use regulations are used, they must meet two basic requirements in an emergency; they must result in the production increases required during the emergency period and, at the same time, eliminate the socially uneconomic exploitation of the soil resources. In other words, they must be based upon positive control over erosion and increases in production and not upon the control of acreages of specific crops based on historical criteria. Under these circumstances payments are needed to encourage such practices as terracing, contour farming, strip cropping, field reorganization, liming and fertilizing, improvement of hay and pasture lands through renovation, and adapting the crops grown to the physical resources of the soil. Payments might also be made for improved livestock production through better sanitation, feeding of balanced rations, and the use of good stock.

Because these class B lands are subject to erosion, the acreages of erosive crops such as corn and soybeans must be related to the conservation practices adopted. Since payments for keeping such acreages below a stipulated figure may not be associated with any improved production methods, acreages of these crops might be controlled by making deductions from other payments for excessive plantings. This would mean that for class B lands the permissible acreages of intertilled crops would have to be related to the use of erosion control practices such as terracing, contouring, and strip cropping.

In order to do this, class B land could be broken down into three classes corresponding to the degree of erodibility. The most erosive class would be suitable only for hay and pasture. The remaining two classes would represent land suited to cultivation with the acreages of intertilled crops related to

both the erosiveness of the soil and the erosion control practices used. For any given area of such lands, several possible alternative bases of earning payments and deducting penalties could be related to the operator's ability to maximize his income. One farmer might wish to use all possible conservation practices in order to have as large an acreage of corn and soybeans as possible and raise hogs and poultry; another might use no conservation practices, grow very little corn or soybeans, and raise dairy cattle. The size of the farm would be an important factor in determining which alternative the farmer would choose; on smaller farms the more intensive system would probably be adopted while on larger farms a more extensive system may be desirable.

Apart from subsidies, social action to give security of occupancy is extremely desirable, because this increases the ability of the operator to invest in both land improvements and livestock. This is important when larger amounts of roughage are required and an exploitive corn-hog system offers an immediate increase in income with much less risk for a tenant with an annual lease.

Some Practical Problems

When we turn from generalizations regarding class A and class B lands to the problem of developing action programs suited to individual farms which include both classes of soil, certain practical problems must be solved.

If the farmer is to maximize his income from class A lands by growing any quantity of intertilled crops that seem most profitable to him over the emergency period, no general depleting acreage can be established for the farm as a whole. Similarly for class B lands, various alternatives may be available. Which is the most desirable depends upon the operator's preference, the conditions of his occupancy, and the size of

the farm. Such flexibility of land use is desirable, but raises many objections because the conditions of allocating payments and planning are too complex and indefinite.

The Soil Conservation Service has been developing individual farm plans based upon detailed conservation surveys, and in the soil conservation districts, much of the planning is now done by the farmers themselves in group meetings led by SCS technicians. One of the major difficulties, however, is to make the detailed conservation surveys and prepare the land use capability maps as rapidly as the area incorporated in districts expands. During an emergency, higher prices may encourage an expansion of erosive crops, *and the need for more rapid planning becomes urgent.* Essentially the great need is for the type of individual farm planning that has been developed by the Soil Conservation Service with a simplified land classification that would enable trained township committeemen to cooperate with the farmer in developing a production and conservation plan for his farm and earn payments that would be related to his attainment of a suitable plan. Such a simplified classification would have to be developed for various areas and regions, and the following is suggested as one which might prove feasible in the Corn Belt; adjustments for local conditions such as soil types and special problems would have to be made.

A Simplified Classification

According to an analysis of the relationship of slope classes to erosion, the most important single factor determining the rate of erosion in Iowa was the steepness of the slope.[2] This suggests that a simple criterion for classifying land according to its erodibility within a given area of similar climate and associated soil types would be the percentage of slope. This

[2] For the detailed figures upon which this conclusion is based, *see* the author's article, "War and Soil Conservation," *Jour. of Land and Public Utility Econ.*, Vol. XVIII, No. 2, May, 1942, pp. 127 and 128.

characteristic has the further advantage of being easily determined without specialized scientific training. Using slope as the single criterion of erodibility, Corn Belt agricultural land could be grouped into the following tentative slope and land use classes.

Class 1. Nearly level land. Subject to slight or no erosion. Land use and practices may be determined by the farmer in relationship to other physical factors and prices. This would correspond to the areas of fertility depletion previously referred to as class A land.

Class 2. Slightly sloping land. With no conservation practices, not more than 25 per cent should be planted to intertilled crops in any one year; with contouring, $33^1/_3$ per cent might be in such crops; and with terraces and strip cropping, 50 per cent could be in intertilled crops.

Class 3. Rolling land. With no conservation practices, not more than 20 per cent should be in intertilled crops each year; with contouring, 25 per cent might be in such crops; and with terraces and strip cropping, $33^1/_3$ per cent could be in intertilled crops.

Class 4. Steeply sloping land. Not suitable for cultivated crops but may be used for permanent hay or pasture with cultivation limited to that necessary to establish new seedings.

These four classes would vary between areas and should be related to broad soil groups and climatic conditions. This simplified classification is suitable only for areas where topography is the controlling factor in determining erodibility, and for other areas different factors would have to be used.

The advantage of using as simple a classification as possible during an emergency lies in the fact that farm planning may be greatly facilitated. Class 1 land may be used any way the farm operator thinks most profitable; no payments for conservation practices and no acreage restrictions on intertilled crops would be made. Class 4 land could be kept in permanent

cover and payments earned only for liming, fertilizing, and re-seeding or forest practices; deductions from the total farm payments could be made for each acre cultivated except for re-seeding purposes. This leaves only class 2 and 3 lands which need be considered in detail by representatives of the action agencies responsible for the production and conservation program. Alternative payments for various conservation practices and various acreages of intertilled crops could be chosen by the farmer.

Payments and Land Use Controls

Under any such plan the conservation payments and deductions must apply to the farm unit as a whole so that deductions for excess acreages of intertilled crops on one piece of land could be made, where necessary, from conservation and other payments made on the same farm unit. Other payments that might be included would be for disease control, scientific feeding methods, field reorganization requiring the moving of fences, and the planting of trees and shrubs in forest and game areas.

One of the major problems that would inevitably arise would be that of allocating optional land use programs on fields that contained land of more than one class and which should be used differently. The fact that we have a square survey applied to a curved landscape has resulted in many rectangular fields containing, in some cases, all four classes of land.

In many cases a sound land use program cannot be applied to the present rectangular field layout and simply to subdivide the present fields would result in areas too small to be worked efficiently with modern machinery, especially if farmed on the contour. Field reorganization could be encouraged in two ways, by a direct payment for such reorganization based upon the rods of fencing that had to be rebuilt in order to make

a conservation land use plan possible, and by the classification of mixed fields so that the permitted acreage of intertilled crops is reduced by failing to rearrange them.[3]

Skills and Action

In developing a broad conservation and production program of this nature, the various action agencies would have to cooperate closely, with each contributing the special skills and techniques they have developed.

While the conservation plans may not be so complete as those being developed within conservation districts, they might be very much more widespread; at the same time the allocation of conservation payments within the districts would speed up the introduction of more complete plans. It is a question of evaluating an intensive procedure against an extensive one in the allocation of funds and personnel.

For the production program to be successful it would be necessary to maintain contacts with all farmers to obtain forecasts of planting intentions in order that price guarantees could be closely associated with probable supply and demand conditions. These contacts would also be useful for making any adjustments in production that may be called for in the post-war period.

Why Changes Are Needed

The justification of a more extensive approach to conservation during a period of emergency lies in the fact that it permits increases in production in response to prices and at the same time directs the increased production of intertilled crops to those lands which will not be permanently damaged by excessive cropping during the emergency. It also encourages the farmer to maximize his income on erosive soils according

[3] For detailed suggestions of such a classification, *see* "War and Soil Conservation," *ibid*, p. 130.

to his preference, his size of farm, and the degree of erodibility of the land involved. In an emergency it is essential that each farmer use his skills of production to the fullest extent, and this can be done only when there is flexibility in the farm plan.

Conservation does not imply any narrow land use. There are usually several alternatives possible, and thinking in terms of alternative conservation possibilities will impress upon farmers the fact that erosion is a basic consideration in farm planning. Finally, this extensive approach uses funds to increase efficiency and achieve or maintain an appropriate land use pattern which is flexible within limits and which will reduce erosion rather than increase it during the emergency. A further consideration, that can only be mentioned here, is the probability that funds will tend to flow to the areas of poorer soils where lack of capital may be a serious obstacle to the improvement and intensification of both primary and secondary production. To the extent that this is true, an increased allocation of funds to these areas may permanently raise the level of living of the rural population.

Post-War Adjustments

One of the greatest advantages of developing these flexible individual farm plans is that the three basic factors of soil, operator, and prices are brought together and given consideration. This forms a logical basis for further adjustments that may be needed after the emergency is ended. What these adjustments may be will depend upon the post-war organization of Europe and the world, particularly with respect to tariffs and agricultural policies, and whether we are able to maintain a high level of industrial employment.

If interdependence, exchange of goods, and a rationalization of European agriculture are accepted, we may again be exporters of grains, cotton, and lard with part of the European

grain areas turning to the production of dairy products, fresh meats, and fruits. If economic nationalism again dominates the people of Europe and America, we may face the necessity of curtailing our production of these products. Some adjustments both in Europe and in this country are inevitable and the procedure outlined above would provide a better basis for making more satisfactory adjustments because any necessary crop controls could be related to the physical resources involved. This would eliminate the conflict between conservation and production control that exists in the present AAA program. Any expansion of depleting crops on a percentage or historical basis is unsound from a conservation point of view. At the same time, percentage reductions of specific crops for the purpose of adjusting production are not related to the relative importance of that crop to the balance of the farm as a whole or its relationship to commercial production. Because it is necessary to harmonize production adjustments and conservation during the emergency, the basis for a sounder adjustment program in the future might be developed now. Such a production adjustment program might include acreage payments for commercial crops to stimulate necessary crop changes, the ever-normal granary, and price guarantees over one crop year supported by loans. Conservation payments could then continue to be made only for positive conservation measures or, as may become desirable, for actual land improvement.

As has been emphasized earlier, the development of conservation plans in areas where basic maladjustments between farm population and land exist is unsound unless these maladjustments are remedied. In many areas we need a recombination of the factors of production and shifts in the intensive and extensive margins. This may occur by increasing capital or land inputs relative to farm labor; secondary production may be intensified where labor is not fully employed,

or where farm size is increased with a less intensive primary production. To the extent that war demands create alternative employment for farm labor, adjustments in farm size may be facilitated. Where this occurs, the changes should be considered permanent, and some method of preventing further maladjustments from developing should be adopted. The post-war pressure of unemployed labor upon the land may be very great or slight depending upon our ability to maintain a high level of industrial employment. As we have seen, it is relatively easy to intensify agricultural production but exceedingly difficult to reverse the process; controls to meet this post-war problem should be developed now and might take the form of land use regulations, zoning ordinances or public ownership.

After the last world war one of the most serious problems facing agriculture was the deflation of land values following the price crash in the summer of 1920. From the pre-war period (1912–14 = 100) the index of estimated land values for the United States rose to a high point of 170 in 1920 and then declined steadily until 1931 when it was 106 and only slightly above the base period. Following the depression, the land value index fell to a low of 73 in 1933; since then it has slowly risen and reached 86 for 1941.[4] There has been no rapid increase in land values in 1942 and the high income received by farmers in 1941 has partly been used to reduce their mortgage indebtedness.[5] Whether land values will rise during the present war will depend upon the ability of the government to prevent the prices of agricultural products from rising to abnormally high levels, both directly by price control measures and indirectly by stimulating increased production.

Because a collapse of land values leads to pressure to exploit the soil in order to meet fixed charges, increased production

[4] U.S.D.A., *Agricultural Statistics*, 1941, Table 710, p. 583.

[5] U.S.D.A., Bureau of Agricultural Economics, *The Agricultural Situation* April, 1942, p. 23.

now, even at the expense of depleting fertility, will be of value in avoiding future exploitation. This is true to the extent that expanded production can avoid price increases. Similarly, other actions during the emergency which prevent inflation are of direct value in preventing increased exploitation in the post-war period.