

Department of Agricultural Economics  
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# Looking Forward In Oklahoma Agriculture



# Looking Forward in Oklahoma Agriculture

An Inventory of Oklahoma's Agricultural Resources.

An Analysis of Major Aspects of the State's  
Farm Industry and Rural Life.

Suggestions for Future Development.

## PREPARED BY REPRESENTATIVES OF:

Oklahoma Planning and Resources Board.  
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Oklahoma State Department of Vocational Education.  
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## FOREWORD

There are a number of State and Federal Agencies whose function is to serve all phases of Oklahoma agriculture and to assist farm families toward full realization of an adequate income and a satisfactory rural life. Representatives of these agencies, in working with farmers to achieve desired production and income, have realized a need for a careful inventory of the State's agricultural resources, an analysis of the major aspects of the farming industry and of rural life, and correlation of this information as a basis for looking ahead. To meet that need, this publication was prepared by representatives of the farm press and of State and Federal agencies serving the farm people of Oklahoma. The individual representatives are listed on page 77.

This booklet cannot be regarded as being "of and by" farmers, because farmers were not asked to make it. But the judgment and counsel of a committee of outstandingly successful farmers in the State were sought by those who assembled and analyzed this material. Those farmers were:

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|  | Mort Woods, <i>Ardmore</i>        |

The valuable assistance of these men is gratefully acknowledged.

This "look ahead" was prepared as a service to farmers in the State of Oklahoma and to others who are concerned directly or indirectly with the State's agriculture. It is hoped that all who can make use of any part or all of it will do so freely. More elaborate discussions of each of the several chapters or sections will be prepared and published separately if requests are sufficient to warrant it.

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# Looking Forward in Oklahoma Agriculture

## Introduction

**T**HE WARTIME production job done by Oklahoma farmers has centered attention on the fundamental importance of agriculture in the State's economy and aroused interest in its future development. Much progress has already been made, but great possibilities of further progressive development lie ahead.

The following pages present factual information about the agriculture of Oklahoma today, and suggest some possibilities for the future. These possibilities are not put forward as a plan for Oklahoma agriculture, but as opportunities which await development. They are presented in the faith that the people of this State will work together to choose their goals and drive forward to achieve them.

Adjustments in crops and livestock have advanced far toward balanced production in this State. However, further opportunity remains for adjustment of land and farm facilities to their best possible use. Land, water, timber and grass in Oklahoma are highly variable in quality and composition. Farmers and others interested in these resources have begun to manage and utilize them so as to make the best use of each kind and type of resource, thus developing a scientifically balanced agriculture. The greatly increased production achieved by Oklahoma farmers in the war years was due in large measure to better adjustment of the several crops, livestock and special farm enterprises to land capabilities. This job is far from completed, and never will be fully done; but remarkable progress has been made.

It is true that soil, timber and grass resources have been dissipated by lack of proper management and by failure to control wind and water erosion and fire. Some losses still continue. But the rate of loss has been reduced, and definite steps to avoid further losses are being taken. The low point in care and handling of farm resources in Oklahoma definitely was passed in the 1930's. An upturn in management and utilization of resources for greater production of food and fiber in this State began just prior to the outbreak of World War II. Phenomenal production during the war, despite shortages of labor and equipment, attests the truth of this statement.

Along with better adjustment between physical resources and production, Oklahoma agriculture can look forward to improvement in agricultural-industrial development, in credit, in marketing and distribution, in land tenure, and in rural life and community organization.

Natural resources and cheap fuel invite extensive industrial development in Oklahoma. Expansion of industry, regardless of whether farm products are used as raw material, would assist the State's agriculture significantly by increasing consumer outlets for food and fiber.

The financial condition of Oklahoma farmers is the best in many years. Farm debt is at low level, and ample credit is available for sound agricultural expansion. It is expected that farmers and other investors will develop more adequate credit systems in the years which lie ahead than have existed in the formative years of Oklahoma's agriculture.

Marketing and distribution facilities and procedure in Oklahoma have kept pace with agricultural production, and likewise are on the threshold of extensive development in this State. At present a large percentage of all raw agricultural products—with the exception of cotton lint, wool, hides, and peanuts—are processed within the State. However, farmers and non-farm businesses alike will benefit through increased development in these fields. Some important changes apparently are just ahead.

The trend of land tenure in this State is toward a longer term of occupancy by the average farm operator. This represents a sound development in land management and will result in more effective conservation and utilization of soil and other agricultural resources.

Rural community organization in Oklahoma is developing but has a long way yet to go to achieve the most satisfactory conditions for rural living. This applies to farm-business organizations and to such institutions as schools, churches and other social organizations. The opportunity for improvement of rural health facilities is quite apparent. The philosophy of self-development of rural people should be further encouraged.

Results of more than fifty years of farm research and the experience and judgment of successful farmers throughout the country were drawn upon to guide the adjustments already made in Oklahoma agriculture. The following pages summarize information developed by research and experience as a basis for further adjustment toward a desirable type of agriculture and rural life for Oklahoma.



## Agricultural and Industrial Development

**F**ARM PROSPERITY is inseparably linked with commercial and industrial prosperity. This fact must necessarily be one of the main guiding principles in building agriculture in Oklahoma on stable and secure foundations

The development of Oklahoma agriculture requires positive and aggressive efforts toward maintaining full nonagricultural employment in the Nation. Full realization of Oklahoma's industrial potential would strengthen the farmers' markets near at hand. No longer can farmers be passive concerning the advantage of linking agriculture and industry in a program of sound development.

The war practically doubled the physical output of the Nation's economy in goods and services, and also the dollar income of the people of the United States—from 75 billions to approximately 160 billions of dollars annually in 1944. This doubling of the national income resulted in the main from an expansion of industrial production. That this expansion has been predominantly a growth of war industrialization does not alter the significance of the fact.

The magnitude of these changes in Oklahoma can be measured in the increase of the number of the wage earners and salaried employees engaged in manufacturing in Oklahoma from 32,776 in 1939 to 89,000 in 1943 (Table 1).

Before 1940, generally speaking, agriculture and oil fixed the employment pattern of the State. The petroleum industry is not a heavy user of manpower. The large annual value income derived from petroleum in Oklahoma consists principally not in "value added by manufacture," but in the value

**TABLE 1.—Number of Wage Earners and Salaried Employees Engaged in Manufacturing in Oklahoma, by Years, 1899-1939.**

| Years | Number of Wage Earners and Salaried Employees |
|-------|---|
| 1899  | 2,650   |
| 1904  | 6,269   |
| 1909  | 15,336  |
| 1914  | 20,236  |
| 1919  | 35,994  |
| 1929  | 28,638  |
| 1939  | 32,776  |
| 1943  | 89,000  |

SOURCE: U. S. Census. except 1943 is estimated by U. S. Department of Commerce.

**TABLE 2.—A Comparison of Value Added by Manufacture and Value of Manufactured Product for Petroleum Refining and Other Selected Manufacturing Industries for Oklahoma in 1939.**

| Industry                                     | Value of Product | Value Added by Manufacture | Percent Value Added by Manufacture Is of Value of Product |
|--|------------------|----------------------------|---|
| Petroleum refining                           | \$106,666,837    | \$18,085,209               | 16.9  |
| Bread and other bakery products              | 10,052,686       | 5,189,996                  | 51.6  |
| Flour and other grain mill products          | 23,023,319       | 6,296,202                  | 27.3  |
| Nonalcoholic beverages                       | 5,885,053        | 3,354,844                  | 57.0  |
| Oil field machinery and tools                | 8,523,190        | 4,831,089                  | 56.7  |
| Glass containers                             | 3,340,669        | 1,594,513                  | 47.7  |
| Fabricated steel                             | 5,745,194        | 2,399,226                  | 41.8  |
| Other industries (miscellaneous small units) | 25,927,799       | 15,119,009                 | 58.3  |

SOURCE: U. S. Census, 1939.

of the scarce natural resource as a raw material (Table 2). There is an important difference between petroleum refining and industry using agricultural raw materials. Petroleum refining uses a nonreplaceable natural resource as its raw material.\*

An industry based on agricultural raw materials draws its continuous supply largely from the productive employment of manpower on farms. Industries utilizing agricultural raw materials are heavy users of labor, and produce goods with relatively large "value added by manufacture."

The future well-being of farmers is inseparably bound up with ways and means of continuing the high war-time level of employment of nonagricultural workers in the Nation and in the State. This full employment of labor, capital, and raw materials in manufacturing industries, and in the professional services and commercial employment derived from manufacturing as a primary source of income, is the solid foundation upon which a satisfactory level of well-being for Oklahoma farmers can be established.

\* Soil fertility is exhaustible, but not in the same sense as a purely mineral resource. Mineral resources can only be conserved; soil fertility not only can be conserved, but also can be maintained or even rebuilt. (See sections on "Physical Resources of Oklahoma Agriculture" and "Production Opportunities in Oklahoma Agriculture.")

## A DEVELOPMENT PROGRAM

The broad outlines of some of the next steps in a program of action for agricultural-industrial development are:

### COMMUNITY ACTION

Factual surveys should be made at once in all the cities and towns in the State where not already made to determine the capacity, responsibility, and opportunity in the community and surrounding rural trade area for maintaining full employment of manpower and of natural and capital resources, and for expanding non-agricultural employment.

These surveys should be done by the people of the community itself. The spirit which motivates such an undertaking must necessarily emerge from a recognition and desire of the people of the community to do something on their own initiative and on their own economic and social power. Lip service to the importance of preserving local initiative and local enterprise in this country is not enough. The time has now come when local enterprisers must act.

A survey of the kind recommended here would provide the community with concrete facts about its total employable labor force, how many are unemployed, and how many are underemployed—for example, farmers and their families on small, unproductive farm units who are barely able to live above a starvation level because of too little land for utilizing their full effort to best advantage. Inventories of industrial raw materials which can be economically produced in the community would be compiled.

In several Oklahoma communities, agricultural-industrial development studies have already been made. Others are now under way. The approach of these studies is from the point of view that industrial development is not something that will come quickly. The diversification of ways of earning a living is generally the result of slowly operating economic processes. Industry grows from small beginnings. Certainly it is to the advantage of farmers to be not too far removed from active markets which stable industrial and commercial activity creates.

Experience with community studies already made has shown that farmers in Oklahoma have an alert interest in sound industrial development in their communities and in the State.

As a result of a survey in one Oklahoma community, the Chamber of Commerce created a new agricultural division

and employed a competent field man whose duties would be to carry forward activities related to development of soundly based agricultural processing industries and to the improvement of farm marketing facilities.

#### COMBINING PROCESSING WITH FARMING

Favorable circumstances which make economically feasible combinations of manufacturing processes and merchandising with the production of farm raw materials would improve opportunity for increasing the net income of farmers. Under such circumstances, the farmer would continue to be a producer of food and fibers, but he would also become, in part, an industrialist. Farmers need not be timid nor afraid to consider taking this step. Manufacturers integrate mining, transportation, and merchandising with their primary business of making goods. Food merchandising concerns integrate fishing, canning, and farming operations with their primary business of selling food. Why should Oklahoma farmers be hesitant in examining the profit opportunities which might result from the integration of manufacturing and merchandising with farming?

As an example, the mixed-feed business is being integrated with farming. Oklahoma poultry raisers and hog and cattle feeders use enormous quantities of prepared feed. The grains, alfalfa, and other agricultural ingredients in these prepared feeds—the important bulk of it—are grown on Oklahoma farms. Much of it is shipped over relatively long distances and with relatively high freight costs. Yet the manufacturing processes are fairly simple, and basic feed formulas proved by actual feeding tests are available from state experiment stations. The mixed-feed industry would bring the processing operation near the farmers who use the product and thus keep down freight and handling charges. It would also provide employment for local labor.

Other possibilities for integrating farming with manufacturing and merchandising include the cotton oil business, cotton compressing, poultry packing, dairy manufacturing, peanut oil processing, fruit and vegetable canning, and many others.

#### LOCAL MANAGEMENT

Close integration of agriculture and industry, without actual financial integration, can be accomplished in communities by action of local businessmen who process farm products for a reasonable competitive income in exchange for the services and risk of capital which they provide.

When farmers seek the advantages of integration of industrial processing with farming, the coöperative is one type of business organization which can be used. If the cooperative increases the flow of goods and services to meet human needs and wants at the lowest possible cost per unit, it will contribute to full employment of labor, natural resources and capital, and produce a higher level of well-being for all. Cooperatives are a method of pooling the individual farmers' initiative and private resources of capital and product, to permit the group to engage in such processing endeavors as the individual would be unable to engage in alone.

Participation of farmers in the business of processing or manufacturing is well beyond the experimental stage in Oklahoma, as well as in other states. Coöperatively owned and operated processing plants—some operating on a fairly large scale—have not only reached the "going concern" stage of efficient operation, but have given farmers a share of the "value added by manufacture." Examples of the use of coöperatives as a means of integrating industrial processing with farming, to the net gain of farmers, are dairy manufacturing, cotton ginning and cottonseed crushing, feed processing, vegetable and fruit packing, grain storing and blending, and alfalfa dehydration.

#### IMPORTANCE OF LOW COSTS

Agricultural-industrial development, with a high level of employment of nonagricultural workers, is fundamentally dependent on low cost per unit of output. This means efficiency of production. Efficient production, for most Oklahoma farms, is achieved when a farmer operates a relatively large unit of land with sufficient capital—livestock, machinery, tools, and working capital. If Oklahoma farms are to produce efficiently in a scheme of efficient production in the total national economy, uneconomic small-unit farmers must find part- or full-time employment in nonfarm work. This shift would require the expansion of economic utilization of manpower and other resources in industrial and commercial activity.\*

Increasing the size of farms to a more efficient size unit does not preclude the possibility that industrial workers may add materially to their income by utilizing their spare time on small farms. With a shorter work week, the operation of small farms would supplement workers' income without adding any considerable amount to the market supply of farm products.

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\* Adjustment in size of farms is further discussed on pages 31 and 62.

The drive for low cost must be extended to:

- (a) Elimination of monopoly restrictions on output from whatever source—financial, cartel agreements, abuse of patent advantages, labor, or any other.
- (b) Increased production of low-cost electric power, either from public or private power enterprises or from both.
- (c) Provision for efficient labor supply through industrial training. Oklahoma supplied a large number of workers for war industries in this and other states. From the point of view of best use of manpower, it would be desirable if economic conditions could continue to keep a large number of these workers employed in nonagricultural work. But industry also requires a trained, trustworthy, and alert labor supply which will fit into a scheme of low cost per unit. Efficiency of labor does not mean low-wage labor; labor efficiency would be a strong factor in contributing to the maintenance of high wage levels.
- (d) Low-cost transportation. Large farm and industrial output to provide large freight volume is necessary to low per unit transportation cost. Public and private action in the State should be directed toward translating the low per unit cost of transportation, which goes with large freight volume, into low railroad, motor and air freight rates. Uneconomic and discriminatory freight rates weigh equally heavily on agriculture and industry. Completion of a network of hard-surfaced principal highways and farm-to-market roads would help to provide the farmer with low-cost transportation and other benefits. An investment in all-weather roads for the masses of Oklahoma farmers will generally contribute to increasing farm income by reducing the farmers' transportation costs.

#### EDUCATIONAL LEADERSHIP

Large responsibility for leadership in education for agricultural-industrial development in Oklahoma rests with the State's educational institutions, from the lowest grades to the highest levels in the colleges and universities. These institutions can be effective in turning the thinking of the farmers and business groups, as well as children and youth, toward the interdependence of agriculture and industry. The schools, colleges, and trade schools can provide the trained, trustworthy labor which industry needs. Colleges and universities can de-

velop a positive program of research and service designed to assist in the sound industrial development of this State. Such a research and service program can and should be coordinated with the activities of the Oklahoma Planning and Resources Board.

### **SOME AGRICULTURAL-INDUSTRIAL POSSIBILITIES**

There are possibilities in Oklahoma for developing rural industries, utilizing agricultural products or providing material and equipment for use on farms and ranches. Listed here are examples of some of those possibilities, considered from the point of view of availability of raw materials and need for processed goods. The economy of developing industries around any one of the suggested possibilities could be determined only by objective analysis. Other possibilities, not listed here, no doubt exist.

Dehydrating plants for dehydrating food and producing meals for livestock and poultry using sweet potatoes, grasses, small grain, hay, alfalfa, and other legumes, and possibly even some weeds.

Canneries and freezing plants for fruits and vegetables. The processing of such things as hominy and mung bean sprouts might fill in the slack seasons.

Quarrying and processing of building stone—limestone, granite, sandstone, and other types of building stone.

Building materials—expansion of cement manufacturing, manufacture of wall board from gypsum, manufacture of brick and tile, utilization of sand and gravel, and cement block manufacture.

Small woodworking industries utilizing products of Oklahoma forests and farm woodlands—staves, ties, pulp, fenceposts, tool handles, furniture. New chemical processes may possibly develop woodworking industries using low grade scrub timber found on many Oklahoma farms.

Processing of tree-nut products, pecan and walnut cracking, peanut butter, candies using nut kernels.

Industrial alcohol production using grain sorghums and other crops.

Manufacture of breakfast foods from corn, wheat, and other cereals.

Sorghum sirup and candy manufacturing, utilizing sorghum canes.

Packing livestock and poultry products.

Production of agricultural limestone, particularly in areas in the eastern part of the State where limestone is needed and where large deposits of agricultural limestone exist.

Manufacture of fertilizer and lime-spreading equipment.

Fertilizer mixing plants.

Cotton spinning and weaving and garment factories using cotton cloth.

## Production Opportunities

**H**OW MUCH can Oklahoma farms and ranches reasonably be expected to produce in some near postwar year, say 1950? What changes in ways of raising crops and livestock might affect production? Among how many farms is the production likely to be divided? How many people would those farms support?

These are questions which of course cannot be answered with complete certainty. Nevertheless, by assuming either full employment and good farm prices or a definite degree of unemployment and accompanying lower prices, it is possible to set up reasonable estimates with which actual production figures can be compared as they develop from year to year. These estimates thus are not forecasts, but "benchmarks" against which we can check in the future to see how we are getting along.

The following pages present a group of "benchmark" figures for Oklahoma agriculture. They have been used in other parts of this report to determine feasible recommendations, and can be used in future years to help determine when changes in those recommendations are needed.

The year 1950 was chosen as a "benchmark" year representing the period after demobilization when full reconversion from war to peace is accomplished. *The situation calculated for 1950 might be reached earlier or later. Use of 1950 is merely a convenience for estimating the approximate degree of progress in adjustments to be expected if present trends continue.*

The conditions of employment and prices assumed for 1950 are shown in Table 3. Assumptions for moderate employment were also calculated; but the results indicated that, although the general price level would be lower, the prices of Oklahoma farm products *with relation to each other* would be little different. Consequently, production adjustments would be only slightly different from those presented for conditions of full employment.

Estimates of consumption and prices under the assumed conditions of Table 3 are shown in Tables 4 and 5. Wage rates are assumed to be 82 percent of those paid in 1943, a period of full employment, and hence the estimate allows for the effects of a moderate labor supply.

Farm machinery costs are assumed to be about the same as in 1943. The assumed prices for fertilizers are 15 percent



**TABLE 3.—Assumed Post-war Conditions of Full Employment.**

| Item                                    | Unit or Base | 1935-39 | 1943  | Full Employment |
|---|--------------|---------|-------|-----------------|
| Total civilian employment               | Million      | 43.3    | 52.4  | 55.5            |
| Total farm employment                   | Million      | 9.3     | 8.8   | 8.0             |
| Total unemployment                      | Million      | 10.2    | 1.1   | 2.0             |
| National income                         | Bil. Dols.   | 65.4    | 147.9 | 150.0           |
| Wholesale prices, all commodities—Index | 1926         | 81      | 103   | 103             |
| Cash income from farm marketings        | Bil. Dols.   | 8.0     | 19.2  | 16.5            |
| Prices received by farmers—Index        | 1910-14      | 107     | 193   | 160             |
| Prices paid, interest, and taxes—Index  | 1910-14      | 128     | 162   | 165             |

**TABLE 4.—Estimated Quantities Required in 1950 from United States Farm Production to Meet Demand Under Conditions of Full Employment.**

| Farm Product                                   |             | 1935-39 | 1943    | 1950    |
|--|-------------|---------|---------|---------|
| Food grains                                    |             |         |         |         |
| Wheat (all) <sup>1</sup>                       | Mil. bu.    | 759     | 836     | 770     |
| Rye harvested for grain                        | Mil. bu.    | 45      | 31      | 40      |
| Feed grains                                    |             |         |         |         |
| Corn (all)                                     | Mil. bu.    | 2,316   | 3,076   | 2,925   |
| Oats   | Mil. bu.    | 1,045   | 1,144   | 1,153   |
| Barley   | Mil. bu.    | 239     | 322     | 340     |
| Sorghums harvested for grain                   | Mil. bu.    | 56      | 103     | 93      |
| All tame hay                                   | Thous. ton  | 74,244  | 87,264  | 102,000 |
| Vegetables                                     |             |         |         |         |
| Processing vegetables (11 crops)               | Thous. ton  | 3,505   | 4,981   | 5,739   |
| Commercial vegetables (25 crops)               | Thous. ton  | 6,385   | 6,508   | 7,800   |
| Potatoes                                       | Thous. bu.  | 355,513 | 464,656 | 351,000 |
| Sweet potatoes                                 | Thous. bu.  | 67,927  | 72,572  | 68,000  |
| Oil crops                                      |             |         |         |         |
| Soybeans harvested for beans                   | Thous. bu.  | 56,167  | 195,762 | 180,000 |
| Flaxseed                                       | Thous. bu.  | 10,991  | 52,008  | 23,000  |
| Peanuts, picked and threshed                   | Mil. lb.    | 1,229   | 2,562   | 1,820   |
| Cotton, all (500 lb. bales)                    | Thous. bale | 13,149  | 11,427  | 13,500  |
| Livestock <sup>2</sup> (live weight slaughter) |             |         |         |         |
| Hogs   | Mil. lb.    | 12,834  | 23,342  | 22,300  |
| Cattle and Calves                              | Mil. lb.    | 15,027  | 18,235  | 18,800  |
| Sheep and lambs                                | Mil. lb.    | 1,876   | 2,396   | 2,170   |
| Chickens and broilers                          | Mil. lb.    | 2,421   | 4,014   | 4,150   |
| Turkeys  | Mil. lb.    | 385     | 513     | 825     |
| Milk   | Mil. lb.    | 103,624 | 118,140 | 128,371 |
| Eggs <sup>3</sup>                              | Mil. doz.   | 3,032   | 4,514   | 3,959   |

<sup>1</sup> Almost all in 1950 for domestic food use; except for seed, a small net export, and usual feed use on farms where raised.

<sup>2</sup> Data for livestock are unpublished estimates of live weight of total slaughter.

<sup>3</sup> Does not include non-farm egg production which is estimated at about 10 percent of farm production.

**TABLE 5.—Assumed 1950 Average Farm Prices in Oklahoma.**  
(Dollars.)

| Item                          | Unit | 1935-39<br>Average | 1942  | 1943  | 1950<br>Assumed |
|-------------------------------|------|--------------------|-------|-------|-----------------|
| Wheat                         | Bu.  | 0.80               | 1.11  | 1.32  | 1.09            |
| Corn                          | Bu.  | 0.68               | 0.93  | 0.22  | 0.90            |
| Oats                          | Bu.  | 0.34               | 0.53  | 0.77  | 0.52            |
| Barley                        | Bu.  | 0.50               | 0.61  | 1.00  | 0.67            |
| Grain sorghums                | Bu.  | 0.66               | 0.87  | 1.23  | 0.88            |
| Peanuts                       | Lb.  | 0.04               | 0.049 | 0.049 | 0.046           |
| Cotton lint                   | Lb.  | 0.09               | 0.17  | 0.179 | 0.12            |
| Cottonseed                    | Ton  | 23.42              | 43.42 | 49.90 | 42.30           |
| Hay, all                      | Ton  | 7.39               | 8.20  | 14.10 | 10.56           |
| Potatoes                      | Bu.  | 0.71               | 1.10  | 1.34  | 1.06            |
| Sweet potatoes                | Bu.  | 1.04               | 1.34  | 2.65  | 1.50            |
| Truck crop index <sup>1</sup> |      | 102                | 163   | 245   | 178             |
| Hogs                          | Cwt. | 7.80               | 12.60 | 13.30 | 10.69           |
| Beef cattle                   | Cwt. | 5.66               | 9.50  | 9.90  | 8.82            |
| Veal calves                   | Cwt. | 6.84               | 11.80 | 12.40 | 10.80           |
| Sheep                         | Cwt. | 4.34               | 6.00  | 6.80  | 7.11            |
| Lambs                         | Cwt. | 8.12               | 11.00 | 13.00 | 11.34           |
| Wool                          | Lb.  | 0.20               | 0.34  | 0.34  | 0.33            |
| Chickens (live)               | Lb.  | 0.12               | 0.162 | 0.219 | 0.18            |
| Turkeys (live)                | Lb.  | 0.14               | 0.24  | 0.295 | 0.22            |
| Milk (wholesale)              | Cwt. | 1.67               | 2.45  | 3.20  | 2.91            |
| Butterfat                     | Lb.  | 0.25               | 0.37  | 0.47  | 0.50            |
| Eggs                          | Doz. | 0.17               | 0.275 | 0.34  | 0.26            |

<sup>1</sup> For United States instead of Oklahoma (1910-14=100).

below 1943. At those prices, it should be profitable to increase fertilizer application in areas where moisture conditions permit significant returns from its use. Other farm production costs, such as credit and repair and improvement of farm buildings, are assumed to be about the same as in 1945.

The crop acreages and livestock numbers to be expected on the basis of assumed conditions are shown in Table 6.

In considering production for individual crops and kinds of livestock, calculations were made by types-of-farming areas (Figure 1) to allow for the varying resources of different parts of the State.

*Much basic information used in arriving at the figures shown in the accompanying tables is presented in the appendix (page 81). This includes such data as fertilizer needed, estimated crop acreages and yields, amounts of feed available, feeding rates, etc.*

**PRODUCTION BENCHMARKS****CROPS**

Appendix Table 1 gives an estimate of major uses of cropland in 1950, under the assumed conditions.

Use of improved practices, especially the maintenance or improvement of soil productivity, will be important in determining crop production in coming years. In preparing the 1950 benchmark figures, the possible influence of improved practices was considered along with the effects of national employment and farm prices. These practices are discussed in a separate section (page 25).

**WHEAT.**—From the standpoint of acreage and cash income, wheat is the most important crop produced in Oklahoma. On a large portion of the land specially adapted to wheat, no alternative crop will utilize production facilities as efficiently nor provide comparable money returns.

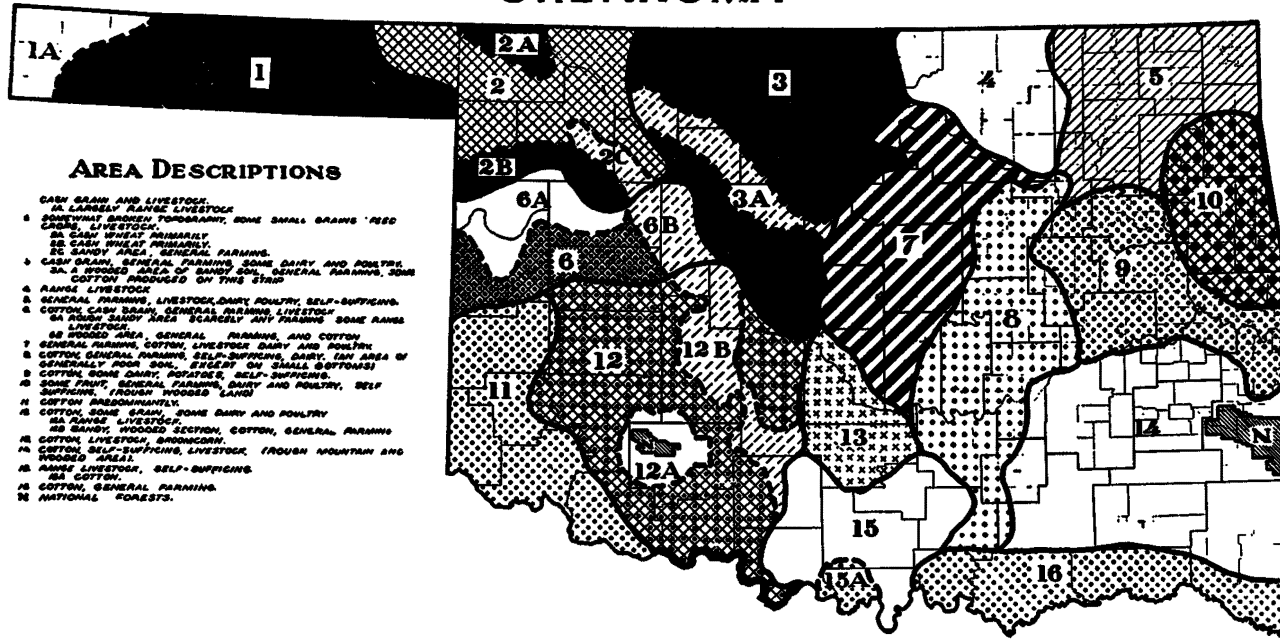
The estimated acreage of wheat in the post-war benchmark period is 5,800,000 acres, 53 percent more than the planted 1943 acreage. This estimated increase assumes a reduction of cotton acreage in Areas 11 and 12, and planting wheat instead of other small grains in other areas. It also assumes that wheat will continue to be sold as a food grain and that the proportion of the crop fed will be no larger than in prewar years. However, wheat is an efficient feed crop and could be used for that purpose if a surplus for food use occurs.

**COTTON.**—It is expected that cotton will continue to be grown on about the same acreage as was planted in 1944. Wheat and grain sorghums are satisfactory alternatives in the important southwestern areas, but widespread use of successful mechanical harvesters will assist in maintaining cotton acreage.

**PEANUTS.**—Peanut acreage can be profitably continued on many farms in the southern and eastern areas, but any expansion of the total state acreage is unlikely. Some expansion on individual farms having large acreages of suitable soils might be profitable, using mechanized equipment to windrow and thresh. Peanuts seem best adapted to Areas 7, 8, 14, 15 and 16, though some farmers may continue to grow them in Areas 11 and 12.

**BROOMCORN.**—The major broomcorn areas in the State are Area 13, around Lindsay, and Areas 1, 2, 6, and 12 in the western part of the State. Broomcorn growers generally use the best known production practices, so little increase in yield can be expected through better methods. Expectation of more

# PRELIMINARY TYPE-OF-FARMING MAP OF OKLAHOMA



DEPARTMENT OF AGRICULTURAL ECONOMICS

OKLAHOMA A. & M. COLLEGE

Fig. 1—Type-of-farming Areas in Oklahoma.

This classification of areas was used in preparing the accompanying analysis of agricultural opportunities in Oklahoma. The State's wide variety of soils and climate makes possible a great diversity in the kind of crops and livestock which can be produced. The areas shown in the above map are described on the opposite page.

Type-of-farming Areas in Oklahoma.

(See map, opposite page.)

1. Cash grain and livestock.
  - 1a. Largely range livestock.
2. Somewhat broken topography. Some small grains; feed crops; livestock.
  - 2a. Cash wheat primarily.
  - 2b. Cash wheat primarily.
  - 2c. Sandy area; general farming.
3. Cash grain; general farming; some dairy and poultry.
  - 3a. A wooded area of sandy soil. General farming. Some cotton produced on this strip.
4. Range livestock.
5. General farming; livestock, poultry, dairy, self-sufficing.
6. Cotton; cash grain; general farming; livestock.
  - 6a. Rough, sandy area; scarcely any farming. Some range livestock.
  - 6b. Wooded area. General farming and cotton.
7. General farming. Cotton, livestock, dairy, and poultry.
8. Cotton; general farming; self-sufficing; dairy. (An area of generally poor soil, except on small bottoms.)
9. Cotton; some dairy; potatoes; self-sufficing.
10. Some fruit; general farming; dairy and poultry; self-sufficing. (Rough wooded land.)
11. Cotton predominantly.
12. Cotton; some grain; some dairy and poultry.
  - 12a. Range livestock.
  - 12b. Sandy, wooded section. Cotton; general farming.
13. Cotton; livestock; broomcorn.
14. Cotton; self-sufficing; livestock. (Rough mountain and wooded area.)
15. Range livestock; self-sufficing.
  - 15a. Cotton.
16. Cotton; general farming.
- N. National forests.

TABLE 6.—Acres of Major Crops and Numbers of Livestock Estimated for 1950 Under Assumed Conditions of Full Employment.

| Items                          | 1937-41<br>Average | 1943   | 1950<br>Estimated |
|--------------------------------|--------------------|--------|-------------------|
| <b>Crops, 1,000 Acres,</b>     |                    |        |                   |
| Corn, all                      | 1,820              | 2,097  | 2,000             |
| Sorghums, all except sirup     | 1,958              | 2,372  | 2,000             |
| Peanuts, grown alone           | 74                 | 612    | 150               |
| Cotton                         | 1,938              | 1,554  | 1,600             |
| Wheat                          | 5,324              | 3,800  | 5,800             |
| Oats                           | 1,540              | 1,553  | 1,600             |
| Barley                         | 432                | 724    | 300               |
| Hay, all tame                  | 751                | 1,145  | 1,000             |
| <b>Livestock, 1,000 Head</b>   |                    |        |                   |
| Horses, mules, and colts       | 544                | 481    | 425               |
| All cattle and calves          | 2,306              | 3,123  | 2,600             |
| Cows kept for milk             | 747                | 912    | 850               |
| Sheep and lambs                | 365                | 424    | 350               |
| Hens and pullets               | 10,179             | 14,596 | 10,200            |
| Sows farrowed, spring and fall | 223                | 383    | 225               |

normal supply and demand conditions in the postwar period seems to warrant an acreage only slightly greater than 1943.

**IRISH POTATOES.**—Commercial production of Irish potatoes is concentrated on a few farms, chiefly in type-of-farming areas 4, 5, 7, 9, and 12. The 1944 acreage can be maintained with reasonable profits to growers.

**SWEET POTATOES.**—Areas 5, 8, 9, 12, and 16 have some commercial acreage of sweet potatoes. While a large proportion of the present sweet potato acreage is for home use only, the commercial acreage will increase if efforts to develop their use for livestock feed and starch are successful.

**TRUCK CROPS.**—Important Oklahoma truck crops from the standpoint of acreage and returns are watermelons, spinach, and green beans. Minor crops include tomatoes, onions, and sweet corn, and a few others. The principal commercial vegetable area is located on the eastern side of the State, extending westward along the Arkansas and Canadian River Valleys. Some commercial production also is found along the Red River on the south, the Washita River in the south central and in other scattered parts of the State.

**FEED GRAINS.**—Total acreages of major feed grains for 1943, 1944, and the post-war period are shown in Table 7.

**Wheat:** Some wheat will be fed on farms where produced, but the amount available for general feeding is not expected to be large.

**Corn:** In eastern and central Oklahoma, corn is the most important feed grain crop. Best yields are obtained in the fertile river bottoms. On the uplands and in the more western areas, feed production per acre is usually greater from small grains and sorghums than from corn, hence no increase in total State acreage of corn is expected.

**Sorghums:** The acreage of sorghums planted in Oklahoma usually varies with wheat seedings and abandonment

**TABLE 7.—Total Acreages of Major Feed Grains.**  
(1,000 Acres)

|                            | 1943  | 1944  | 1950<br>Estimated |
|----------------------------|-------|-------|-------------------|
| Corn                       | 2,097 | 1,971 | 2,000             |
| Sorghums, all except sirup | 2,373 | 2,210 | 2,000             |
| Oats                       | 1,553 | 1,646 | 1,600             |
| Barley                     | 724   | 326   | 300               |
| Total.                     | 6,747 | 6,153 | 5,900             |

of wheat acreage. Drought conditions for wheat during the fall and winter often result in greater sorghum acreages the following spring and summer. Although some varieties are better adapted for one use, sorghums in Oklahoma are frequently used as a combination grain and forage crop. The grain varieties may be used solely for grain, or the whole plant may be harvested to furnish both grain and forage.

Expectation in the postwar period is for increase in combine varieties but a decrease in acreage of all sorghums as a result of increased wheat acreage.

*Oats, Barley, and Rye:* These small grains occupy a considerable acreage in the State, but much less than wheat. Oats and barley are planted usually for feed use on the farm where produced although in recent years of wheat restrictions some oats and barley have been sold as cash grain from the major wheat areas.

Oat acreage could be increased slightly in the central and eastern areas to furnish needed grain and forage (when cut with a binder). In southwestern Oklahoma, if wheat were to find wide acceptance as a feed crop, a further decrease in oats and barley would be in order.

Rye occupies a relatively small acreage in Oklahoma, but it provides excellent pasture and winter soil cover and merits further attention for those purposes. A somewhat larger acreage could be planted for winter pasture.

**HAY CROPS.**—Alfalfa hay acreage could be increased, and in the western areas a larger alfalfa acreage could be harvested for seed. Additional acreages of alfalfa hay can profitably replace sorghums and other feed crops in the western areas.

**OTHER CROPS.**—Soybeans, cowpeas, flaxseed, and mungbeans are other minor crops grown in the State. With demands for flaxseed reduced, acreage can revert to the 1937-41 average. For several years mungbeans have been grown after wheat in the central and eastern areas and have proved very profitable to growers. Minor crops can often be developed as profitable enterprises for individual farms or small areas, but make only a slight percentage difference in total use of land.

**PASTURE AND RANGE.**—A concerted effort to improve pastures is essential, but total acreage used for pasture and range need not be greatly different from the present except in the eastern areas. In all areas there is cropland which should be retired to pasture and range, and in some instances pasture land could be opened for cultivation. Opportunities for more profitable use of land generally lie in a change toward larger pasture acreages.

**LIVESTOCK**

It is believed that livestock and poultry will return an increasing fraction of the farm income in Oklahoma in the future. Relatively more emphasis is expected on butter production and less on milk than during the war period, and poultry production is expected to return to about the prewar level. Greatest decreases in poultry and hog production are indicated for the western areas (principally Areas 1, 2, 6, 11, and 12) where increases in response to war needs were greatest (Appendix Table 2). Anticipated price relationships will make cash crops and other livestock more profitable in these areas.

The indicated acreage and production of feed crops will provide ample feed and forage to provide recommended rations to the indicated livestock numbers, plus a reserve above normal requirements to prevent disastrous liquidation of livestock following a year of adverse weather conditions. More feed is expected to be available in the central and eastern areas of the State where feed deficits have been large before and during the war.

**DAIRYING.**—The war stimulated interest in milk production in Oklahoma. A continuation of this trend is expected, with more attention to improvements in feeding and management practices than to increases of milk cow numbers.

The feeding program is an important factor in success or failure of the dairy enterprise. Opportunities for profitable increases in feeding rates are considered best in Areas 11, 12, 13, and 15. Moderate increases are recommended for Areas 3, 5, 7, 8, 9, and 10. In other areas, milk production is principally limited to farm family use.

**BEEF CATTLE.**—Nearly half the State's total farm area is in pasture. Since beef cattle require relatively less care than other livestock and are efficient users of low grade roughages, cattle ranching is one of Oklahoma's most important enterprises. Ranches are found in every area of the State but are less heavily concentrated in the southeastern part, principally Areas 9, 10, 14, and 16. Many farmers in the eastern areas graze cattle in the pasture season and send them to other areas for finishing.

**Hogs.**—Efficiency of feeding and management rather than increased numbers can probably contribute most to hog production in Oklahoma. Numbers of sows to farrow for the benchmark year are set at the 1937-41 average. This is 10 per cent above 1944, but with distribution through the state in proportion to the 1944 distribution.



**POULTRY.**—Sales of chickens and eggs provide many farmers in Oklahoma with a sizeable source of income although rarely is poultry a major enterprise. Turkey production is important, particularly in the central and southwestern part of the State (Areas 3, 7, 11, and 12).

**SHEEP AND WOOL.**—Sheep numbers are usually greatest in Oklahoma when labor is abundant and cattle prices low. During years of adequate fall moisture conditions, many lambs are fattened on wheat pastures. In returns and interest of farmers, wool production is looked upon as a by-product.

### PRODUCTION PRACTICES

The extent to which efficiency of farm production in Oklahoma can be increased by use of improved practices developed through scientific research and farm experience depends on many factors, not the least of which is the inducement offered by economic conditions. Therefore in setting 1950 benchmark figures, the feasibility as well as desirability of various practices had to be considered. The estimates used in compiling the preceding section of this report are shown in Table 8. The following pages describe recommended production practices which specialists in the various fields have agreed are desirable.

Restoring or maintaining soil fertility, and using the soil in a manner to assure a permanent living to farm people, is of course, basic to any set of recommendations of farm production practice. This has been taken into account in preparing the following recommendations, and is considered more specifically in the section on physical resources of agriculture (page 36).

#### CROPS

**WHEAT.**—Available moisture is the limiting factor in production of crops in the western half of Oklahoma where over 90 percent of the wheat acreage has been planted in the past (Type-of-farming areas 1, 2, 3, 6, 11, and 12). Therefore improved practices other than moisture saving would have little effect on yields when weather conditions are adverse.

Only relatively small increases in *yield* and *test weight* of wheat are to be expected because a high proportion of wheat growers already use varieties highest in those characteristics. Considerable improvement could be made in the average *milling and baking quality* of Oklahoma wheat by changing the varieties commonly planted, if sufficient price premium were paid to bring about the change.

TABLE 8.—Estimates of Extent of Use of Specified Improved Crop and Pasture Practices.  
(1,000 Acres)

| Land use            | Post-war<br>Acreage | Practice and total extent of use in 1950 |              |                      |              |                                       |              |   |              |                             |              |
|---------------------|---------------------|--|--------------|----------------------|--------------|---------------------------------------|--------------|---|--------------|-----------------------------|--------------|
|                     |                     | Fertilization                            |              | Follow<br>Cover Crop |              | Use of improved<br>varieties and seed |              | Recommended<br>plantings dates <sup>1</sup> |              | Seeding Improved<br>Grasses |              |
|                     |                     | 1943                                     | Post-<br>war | 1943                 | Post-<br>war | 1943                                  | Post-<br>war | 1943  | Post-<br>war | 1943                        | Post-<br>war |
| Wheat               | 5,800               | 100                                      | 200          | 100                  | 450          | 2,320                                 | 4,350        |   |              |                             |              |
| Cotton              | 1,600               | 40                                       | 100          | 10                   | 100          | 640                                   | 1,040        |   |              |                             |              |
| Peanuts             | 150                 | 25                                       | 75           |                      |              |                                       |              |   |              |                             |              |
| Corn                | 2,000               | 20                                       | 40           | 15                   | 100          | 140                                   | 500          |   |              |                             |              |
| Oats for grain      | 1,300               |  |              | 30                   | 200          | 650                                   | 1,100        | 65  | 390          |                             |              |
| Barley for grain    | 250                 |  |              |                      |              | 212                                   | 238          | 212   | 238          |                             |              |
| Sorghums, all       | 2,000               |  |              |                      |              | 1,050                                 | 1,875        | 500   | 1,000        |                             |              |
| Irish potatoes      | 28                  | 24                                       | 21           | 5                    | 10           | 5                                     | 8            |   |              |                             |              |
| Sweet potatoes      | 15                  | 2  | 5            |                      |              | 2                                     | 5            |   |              |                             |              |
| Hay, all tame       | 1,000               | 50                                       | 250          |                      |              |                                       |              |   |              |                             |              |
| Pastures, permanent | 14,581              | 200                                      | 1,200        |                      |              |                                       |              |   |              | 1,000                       | 3,500        |

NOTE: See text for assumptions and discussion.

<sup>1</sup>Increase in proportion of oats and barley fall planted. Later planting of sorghum in western areas and earlier planting in eastern areas.

**COTTON.**—Opportunity for profitably increasing yields of cotton through fertilization by 1950 is limited to about 100,000 acres, all in eastern Oklahoma. This compares with 40,000 acres fertilized in 1943, and is expected to be realized. Other increases in per acre yield in the eastern area can be made by more extensive use of better varieties, pure seed, and treatment of seed for disease control.

In the western cotton counties, better varieties would improve the grade and staple, but an adjustment in grade and staple price differentials will be needed to convince the grower that he can profitably change to the more desirable kinds. If differentials were adjusted to favor the "inch" cottons, an increased avreage of that kind could be expected.

**PEANUTS.**—Present practices in growing peanuts are generally those which will produce a good crop. Type of soil and moisture conditions seem to influence yield more than other factors. Fertilization with superphosphate would assist in maintaining and increasing yields. Peanuts should be grown only on types of soil adapted to them, and care must be taken to prevent erosion due to the bare condition of the soil after peanut harvest.

**BROOMCORN.**—Since broomcorn seed is relatively hard to produce and germination frequently low, adequate seed supplies will insure good stands and reduce crop losses. In some seasons more money can be made by shed curing on the farm rather than selling uncured broomcorn. In general, most broomcorn growers already use the best known practices.

**IRISH POTATOES.**—Fertilization will do more to increase Irish potato yield than any other improved practice. Fertilizer is now being applied on 50 percent of the commercial Irish potato acreage. An increase in the use of green manure crops will prove profitable for many growers. Irrigation will increase yields, but the economic feasibility needs further study. The use of improved strains and varieties will result in a yield increase of some 6 bushels per acre and is to be expected as adequate seed stocks of the better existing strains become available.

**SWEET POTATOES.**—Use of disease-free plants and increase in fertilizer applications would result in larger yields and greater profits.

**TRUCK CROPS.**—Application of additional fertilizers to truck crops would increase yields and improve quality. Spinach yields per acre would be increased markedly by applying more

fertilizer, principally nitrogen top dressing, in order to push the crop along for earlier maturity. Irrigation of fall spinach helps get the plants up at the proper time in some seasons.

Improvements in quality of plants and time of setting would increase profits in tomato production.

Watermelon production could be increased materially by use of fertilizer and to some extent by the use of better seed and seed treatment. Transplanting and "hot-kaps" might be profitable on a limited acreage for early harvest.

The use of dry sets in Spanish and Bermuda onion production may substantially increase per acre yields in the future.

Seed treatment and to a lesser extent irrigation may result in an increase in per acre yields of sweet corn.

Some increase in per acre yields of green beans would result from more extensive use of fertilizer and irrigation. New varieties soon to be available will also help raise yields.

More adequate facilities for handling green beans and spinach will be required to insure continued large acreages of these crops.

**FEED GRAINS.**—More extensive use of new varieties now available would increase the production of all types of feed grain crops.

*Corn:* The best opportunity for increasing per acre corn yields lies in the more widespread use of best adapted hybrids, although some increase could be brought about with more use of better open-pollinated varieties. In the eastern part of the State, commercial fertilizers would be beneficial to yield. Only 1 percent of the corn acreage now receives fertilizer. Seed treatment would assist in securing better stands in cold, wet spring seasons.

Improvements in corn production are handicapped by old methods and concentration on the smaller farms, together with unpredictable weather conditions. These factors will retard improvements in production practices generally over the State.

*Sorghums:* Disease-resistant strains are now available in all three classes of sorghums—grain, forage, and dual purpose—and their use would materially increase yields. More widespread use of seed treatment would improve stands and prevent smut, resulting in an increase in yield and quality. Delay of seeding until June 15-July 1 in the western milo area usually would give some increase in yield. In the eastern and central areas, on the contrary, sorghums should be planted as early as possible. An extra cultivation before laying by would increase sorghum yields in either area.

It is unreasonable to expect all farmers to use the best practices in sorghum production. The fact that it is widely used as a "catch" crop is one reason. Another is the great effect of weather on final production and the fact that under average weather conditions sorghums will produce with relatively little care. Frequently, time and money can be best spent on other farm work.

*Oats, Barley, and Rye:* Oat and barley yields would be materially increased by use of new varieties, especially fall sown winter oats and intermediate type barleys. A combination of thinner seeding, fall seeding, and better seed bed preparation is needed for maximum yields. Early seed bed preparation is especially important for success with winter oats. Better pasture varieties of rye could be planted.

**HAY CROPS.**—Phosphate and lime would profitably increase yields of alfalfa and other legume hays on many farms in the ten central and eastern areas (excluding Areas 1, 2, 3, 6, 11, and 12), and of tame and wild hays in eastern areas. Improvement in seedbed preparation will do much to insure adequate stands and conserve moisture. Weed control, resting to allow reseeding, and non-burning will improve native meadows.

**PASTURE AND RANGE.**—Pastures can be substantially improved through desirable grass seedings, fertilization, and better management. Fertilization and correct seeding will permit development of a sod sufficient to stop soil erosion and choke out weeds which in many cases are now taking the pastures. Management practices urgently needed are mowing for weed and brush control, and proper grazing both as to number of head and season of the year. More legumes are needed in pastures, for soil fertility and for mineral in feed. Since seed costs at the present time are frequently prohibitive and quantities available are inadequate, more grass and legume seeds could be grown and saved profitably in the State. Application of improved pasture practices would increase the carrying capacity of individual pastures 25 to 35 percent.

*Supplemental Pastures:* The grazing season can be considerably lengthened if permanent pastures are supplemented by temporary grazing crops. Early planting of small grains will frequently provide considerable livestock grazing with no injury to the spring grain crop. Increased acreages of rye grass and legumes could be planted in the eastern areas and should be fertilized according to needs. The planting of sudan grass for temporary grazing could be doubled in all areas of the state.

If the above practices are carried out, approximately twice as much temporary grazing will be available as at present and livestock can be better fed.

#### LIVESTOCK

**DAIRYING.**—Better breeding stock and improved disease and parasite control would increase dairy production rates. More emphasis needs to be placed on control of Bang's disease, mastitis, young calf troubles, and other diseases. Sanitation and housing can also be improved.

**BEEF CATTLE.**—Beef cattle production can be improved through improvement in feeding and breeding practices and in disease and pest control. Opportunities for improvement exist in mineral feeding, use of purebred sires to improve beef quality and produce more rapid gains, and control of blackleg, Bangs, cattle grubs and other diseases and parasites.

Beef cattle numbers can be better adjusted to the carrying capacity of pastures and range.

**Hogs.**—Pasture, year around if possible, should be a regular part of the hog production program. Purebred boars should be used in more herds, and selection of breeding animals should be based on production records. A breeding program now being started in the State for the production of hybrids similar to the hybrid corn program should be expanded and results carefully followed. More adequate control of cholera, swine pox, enteritis, erysipelas, worms, lice, and mange would be a saving to many growers. More pig brooders should be used.

**POULTRY.**—Poultry production per bird can generally be increased by better breeding, and improved sanitation to control pests and diseases.

*Chickens and Eggs:* Improvement in laying flock practices center principally on more feed per hen. Under certain conditions it is much more profitable to reduce hen numbers and supply more feed per hen.

Use of record of performance or certified males in flocks producing hatching eggs could be profitably increased in the important poultry areas. Improved disease and pest control through sanitation would be desirable. Adequate housing would pay off in more eggs, particularly more high-priced winter eggs.

Improvements in marketing will also be necessary for successful adoption of improved practices. In some areas grading needs to be expanded and improved.

*Turkeys:* Present feeding rates for turkeys are in line with requirements generally. However, with improved breeding stock it is estimated that two pounds more meat per bird can be produced with the same amount of feed. The proportion of superior broad-breasted type birds might well be increased in the larger commercial flocks, particularly those producing hatching eggs or poults for sale, and would thus eventually reach small farm flocks. Only young toms should be used, to insure high fertility of hatching eggs. Improved sanitation would increase livability by 10 percent. Greater protection from predatory animals is needed in all areas.

Opportunity appears to exist for some of the larger turkey producers to increase returns by specializing in the sale of hatching eggs to commercial hatcheries.

**SHEEP AND WOOL.**—Increased grain fed to lambs would permit increased marketing of fat lambs rather than feeders. Less of an increase will be required in areas with significant acreages of small grain pasture. Use of purebred sires needs to be increased in some flocks. Control of internal and external parasites and pasture improvement and rotation are also needed in a better sheep production program.

The main result of improved practices will be heavier lambs sold at higher prices, plus some increase in percentage of lambs saved.

## NUMBER OF FARMS AND FARMERS

### NUMBER OF FARMS IN 1940

Measured by almost any criterion, Oklahoma had too many farms in 1940. The following facts from census data can be offered to support this statement:

37.1 percent of the farms had less than \$400.00 income from farm products sold, traded, or used.

22.2 percent of the farms had fewer than 50 acres.

14.3 percent, or 40,314 persons, in the rural-farm labor force were unemployed. Furthermore, the distribution of farms by type (Table 9) indicates that most of the self-sufficing part-time farms are located in the poor land areas of the State.

Of the 178,588 farms in Oklahoma for which income figures for 1939 were reported in the census, 62.9 percent were

**TABLE 9.—Estimated Number of Commercial, Self-sufficing, and Part-time Farms, by Type-of-Farming Areas, 1940.<sup>1</sup>**

| Area   | All Farms | Class of Farms |                |           |
|--------|-----------|----------------|----------------|-----------|
|        |           | Commercial     | Self-sufficing | Part-time |
| State  | 178,588   | 112,415        | 51,173         | 15,000    |
| Area 1 | 3,655     | 2,630          | 743            | 282       |
| 2      | 5,690     | 4,415          | 928            | 347       |
| 3      | 18,312    | 15,346         | 1,981          | 985       |
| 4      | 2,426     | 1,472          | 699            | 255       |
| 5      | 14,623    | 7,635          | 5,259          | 1,729     |
| 6      | 8,177     | 6,816          | 931            | 430       |
| 7      | 19,403    | 11,242         | 6,224          | 1,937     |
| 8      | 14,077    | 7,423          | 5,332          | 1,322     |
| 9      | 19,749    | 10,674         | 7,263          | 1,812     |
| 10     | 6,787     | 2,424          | 3,584          | 779       |
| 11     | 9,395     | 7,874          | 991            | 530       |
| 12     | 20,458    | 15,236         | 3,948          | 1,274     |
| 13     | 5,351     | 4,030          | 1,035          | 286       |
| 14     | 10,144    | 4,651          | 4,389          | 1,104     |
| 15     | 8,151     | 4,808          | 2,672          | 671       |
| 16     | 12,190    | 5,739          | 5,194          | 1,257     |

<sup>1</sup> The method of determining estimates was as follows: Commercial farms were all those on which the farm value of products sold, traded, or used at home, in 1939 was \$400 or more, according to the census. Part-time farms were distributed by type-of-farming areas by (1) computing a ratio of the number of part-time as given for the State to the total number of farms with less than \$400 income and multiplying this ratio by the number of farms in each area with corresponding income, (2) computing a ratio of the number of part-time farms as given for the State to the total number of farms for which the operator worked 100 days and over off the farm and multiplying this ratio by the number of farms in each area reporting the operator working 100 days and over off the farm, and (3) averaging the results. Self-sufficing farms constituted the remaining units, or those on which the value of products was less than that specified for commercial farms and the operator worked less than 100 days off the farm. Adjustments were not made for croppers as suggested because of the relatively small number in this State.

classed as commercial farms, 28.7 percent as self-sufficing farms, and 8.4 percent as part-time farms.\*

#### ESTIMATED NUMBER FOR 1950

The estimates of the number of farms that might be operated in 1950 (Table 10) are, of necessity, highly subjective and speculative. In making the estimates these factual data were considered: (1) the estimated losses of rural-farm population based upon the school census enumeration in January, 1944, (2) the average annual change in number of farms between 1930 and 1940, (3) the average income per rural-farm person in 1939, (4) the percentage change in number of trac-

\* Census definitions of "self-sufficing" and "part-time" farms are:

"Self-sufficing.—Where the value of the farm products used by the family was 50 percent or more of the total value of all products of the farm it was classified as "self-sufficing."

"Part-time—Where the operator spent 150 days or more at work for pay at jobs not connected with his farm, or reported an occupation other than farmer, provided the value of products of the farm did not exceed \$750.00."

1939 Census of Agriculture. Vol. II, Part 2, p. 3.



**TABLE 10.—Estimates of the Number of Farms that Might Be Operated, Post-war Bench Mark, by Type-of-Farming Areas.**

| Area   | All Farms | Class of Farms |                     |           |
|--------|-----------|----------------|---------------------|-----------|
|        |           | Commercial     | Self-sufficing      | Part-time |
| State  | 150,000   | 107,000        | 29,000 <sup>1</sup> | 14,000    |
| Area 1 | 3,800     | 2,900          | 500                 | 400       |
| 2      | 5,100     | 4,100          | 600                 | 400       |
| 3      | 17,500    | 15,100         | 1,600               | 800       |
| 4      | 2,000     | 1,300          | 400                 | 300       |
| 5      | 12,600    | 7,900          | 2,600               | 2,100     |
| 6      | 7,100     | 6,200          | 600                 | 300       |
| 7      | 16,500    | 10,800         | 3,300               | 2,400     |
| 8      | 10,400    | 6,400          | 2,900               | 1,100     |
| 9      | 15,400    | 9,800          | 4,000               | 1,600     |
| 10     | 5,000     | 2,300          | 2,100               | 600       |
| 11     | 8,600     | 7,500          | 700                 | 400       |
| 12     | 18,500    | 15,500         | 2,000               | 1,000     |
| 13     | 4,000     | 3,000          | 800                 | 200       |
| 14     | 7,700     | 4,500          | 2,400               | 800       |
| 15     | 6,700     | 4,400          | 1,700               | 600       |
| 16     | 9,100     | 5,300          | 2,800               | 1,000     |

<sup>1</sup> Possibly 5,000 farms can be classed as "rural residences."

tors from 1930 to 1940, (5) the percentage of the rural-farm labor force unemployed in 1940, (6) changes in the acreage per farm as disclosed by recent surveys in southwestern and southeastern Oklahoma, and (7) changes in the farm machinery situation as indicated in special studies.

For the post-war benchmark, it is estimated that Oklahoma will have 150,000 farms, of which 107,000 will be commercial farms. The reduction in all farms would be 16 percent, and for commercial units, 4.8 percent. These estimates are based on the primary assumption of full employment. With reference to change in the number of commercial farms, these additional assumptions were made:

1. The trend toward sharply reduced numbers of rural-farm population between 1940 and 1944 probably has exhausted itself and increases due to the natural growth of population, the return of displaced civilians from defense industries, and the demobilization of armed forces will offset somewhat the losses in recent years.

2. Many subsistence farms will become commercial farms and many of the latter already in existence will be enlarged as a result of the consolidation of small units. Hence, the average acreage per farm will increase (See Tables 9 and 10).

3. Mechanization of farms can be expected to continue in Oklahoma at about the same rate in the post-war years as in the decade from 1930 to 1940. It is believed that further mechanization will be accomplished by an increase of 10 to 15 percent in the average size of farms. Further mechanization probably will result in the largest absolute increases in acreage per farm in southwestern Oklahoma and the largest proportional increases in southeastern Oklahoma.

4. Further improvements in farming practices can be expected to enable commercial farmers to increase the average acreage operated.

The estimated number of self-sufficing farms for the post-war benchmark year is 29,000, a reduction of 43.3 percent from 1940. This figure is based on these assumptions:

1. The decrease in number of farms will be greatest in that type from which the income available to the family is smallest.
2. Because self-sufficing farms do not provide adequate employment for the farm family, many of them will consolidate into larger units.
3. The largest decreases in self-sufficing farms will occur in the poor land areas.
4. Continuation of farm mechanization and improvement in farming technology will contribute to the reduction of self-sufficing farms.

Part-time farms, it is estimated, will number approximately 14,000 in 1950, or 6.7 percent less than in 1940. It is assumed that:

1. Decreases in the farm population will lead to some reduction in the number of part-time farms.
2. Under conditions of full employment, many families will prefer to live on part-time farms, thereby effecting economies in living costs and avoiding some of the drawbacks of urban life.

Some informed persons believed that the number of farms in Oklahoma was down to 150,000 or 155,000 in 1944.\* It is doubtful if nearly all under-sized farms have been elimi-

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\* Preliminary figures from the 1945 Census of Agriculture, which became available after the body of this report was in type, show approximately 173,000 farms in Oklahoma.

nated, but if the gains already made in that direction can be held through 1950, the agricultural situation in this State will be markedly improved.

#### NUMBER OF FARM WORKERS IN 1950

The farm labor force in 1950 (post-war benchmark), it is assumed, will be reduced from 1940 by the same rate as the total number of farms, 16.7 percent (See Appendix Table 13). However, in 1950 the average number of employed workers, 227,000, will result in a reduction of approximately one-fifth from the rural-farm labor force reported by the census in 1940.

The reason for assuming that the number of workers per farm will be the same in the post-war years as in 1940 is that the increase in the average size of farm will result in fuller employment despite advances in mechanization and farming technology. It may be anticipated that the amount of hired labor on farms employing labor will increase, but the aggregate number of laborers needed or used may be smaller. Also, it seems plausible that there will be replacements in all types of workers on farms after the war, which will bring the average number per farm up to nearly the level prevailing in 1940.

# Physical Resources for Agriculture

## SOILS

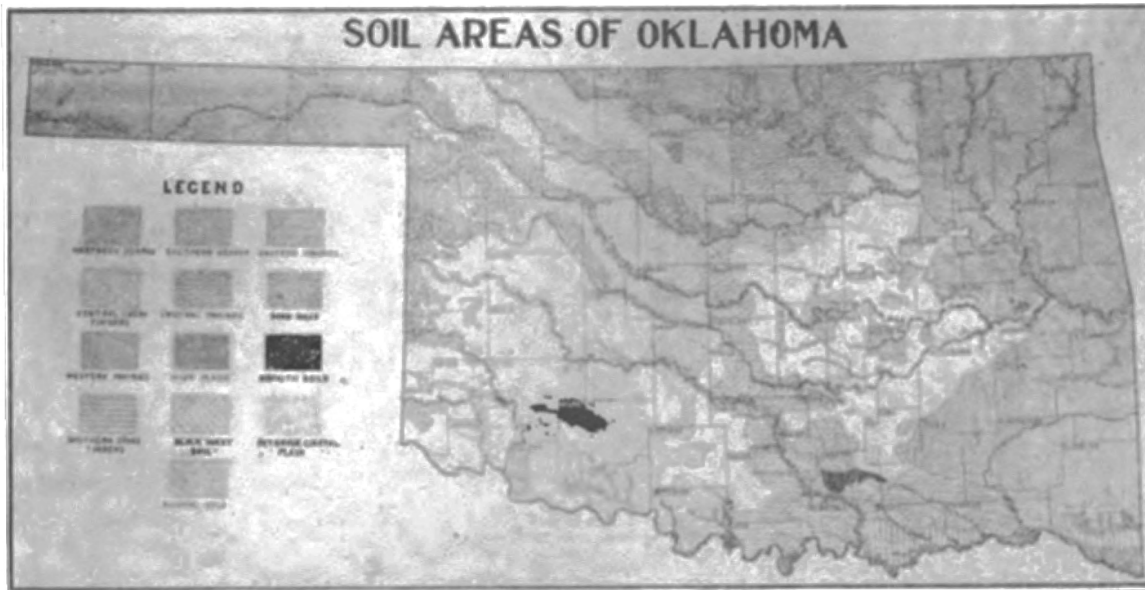
**T**HE SOILS of Oklahoma vary widely. Differences in topography, rainfall, age, parent material, vegetation, and other factors have produced great differences in both the physical structure and the chemical content of soils in different locations. The major groupings are shown in Figure 2.

The State's soils are as a whole highly erodible. About one-fourth of the land in farms has been abandoned from cultivation because of low fertility due to erosion and to depletion by cropping.

Most of the upland soils in the eastern part of the State need applications of lime and phosphorus for maximum production (See Figs. 3 and 4, and Appendix Tables 4 and 6). The soils of the more arid western portion are high in minerals, and are generally highly productive when adequate moisture is available. In the central transitional zone, some soils respond to lime and fertilizers and others do not. Many of the upland soils in the central area are shallow and highly erosive.

Oklahoma soils have lost one-third of their nitrogen and organic matter in less than a half century of cultivation. The exact proportion varies somewhat in different sections (Fig. 5).

Fertility losses from Oklahoma's soils undoubtedly have been serious, and are continuing. However, no state is more aware of the need for conservation, and few if any are doing more about it. A statewide terracing program was started by 1921, and 355,000 acres had been terraced by the end of 1927. Some of the Nation's first large-scale soil conservation research was initiated near Guthrie in 1929 under the joint sponsorship of the Oklahoma Agricultural Experiment Station, the United States Department of Agriculture, and the Guthrie Chamber of Commerce, and the accumulated results are now being widely applied by Oklahoma farmers. The first project under federal emergency conservation work was set up in Payne County in 1933, and after the Federal Soil Conservation Service was established in 1935 the Oklahoma legislature at its first opportunity took advantage of the provisions for establishment of soil conservation districts. About 90 percent of the State's land area is now within organized soil conservation districts, and about 15 percent is under working agreements for soil improvement. Through soil conservation districts and county agricultural conservation associations, with the active



**Fig. 2.—Major Soil Groupings in Oklahoma.**

Great differences exist in both the physical structure and the chemical content of soils in different parts of the State. The treatment necessary to maintain productivity varies from farm to farm, and even from field to field.





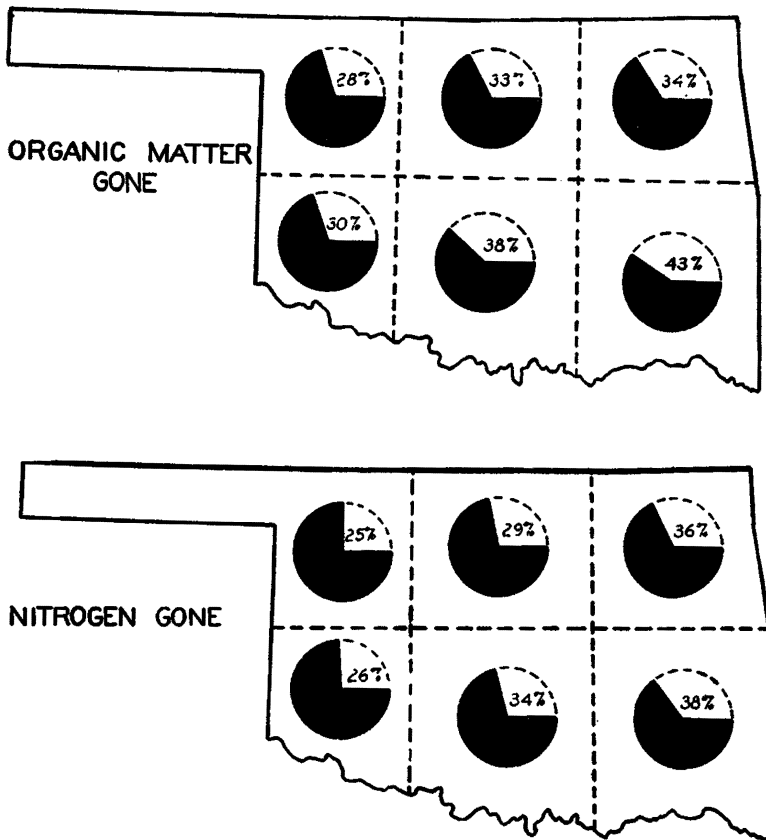


Fig. 5.—Nitrogen and Organic Matter Lost from Oklahoma Soils.

About a third of the original supply of nitrogen and organic matter has disappeared during a half century of cultivation, due to erosion and depletion by cropping. The exact proportion varies somewhat in different sections, as shown by these maps. Nitrogen and organic matter can be supplied by cropping systems which include legumes.

cooperation of county agents and vocational agriculture teachers, the Federal government is providing services, materials and cash payments to help farmers put into effect the conservation practices which will be of general public benefit through conserving this natural resource. Many individual farm operators and landowners are practicing conservation and fertility restoration measures on their own initiative with the



help of county agents and vocational agriculture teachers, using small equipment such as is found on nearly every farm. Nearly four million acres has been terraced in this way to date.

The production potentialities of Oklahoma farm and ranch land have been determined by soil surveys of more than 60 percent of the State's area, and survey work is being pushed to completion as rapidly as possible (Fig. 6). An inventory of the acreage suitable for various agricultural uses, based on these surveys and other available data, is shown in Table 11. It should be noted that the highest total acreage occurs in Classes III and VII, where the problems of soil erosion are most severe. Details concerning each of the classes of land listed in Table 1 are given in USDA Farmers' Bulletin No. 1853.

The general program of maintaining and improving soil fertility in Oklahoma is continuation and intensification of efforts now under way. The goal is to put each acre to the use for which it is best adapted under existing economic conditions.\* Only in this way can the greatest return be obtained from the State's soil resources year after year.

Changes which might be expected if all Oklahoma farm and ranch land were adjusted to its best presently known use are indicated in Table 12. These changes would put 1,285,000 acres of idle land into production. Some cultivated land would be shifted to pasture or farm woodland, but cropland would be reduced only about 9 percent since some land now idle would be placed in crops. All land, regardless of its present condition, has some value or use. When put to its best known use, none will be considered idle.

On individual farms, all the land should be inventoried as is done for the State as a whole in Table 11. One of the important parts of this soil inventory is knowledge of the plant nutrients available for crop production. After detailed knowledge of the productive possibilities of each kind of soil on the farm has been obtained, it is then possible to determine how the available acres can be most efficiently used on a permanent basis. The help of trained soil specialists should be obtained whenever possible in making the inventory and plan. But, with help now available from several sources, much can be done by each farmer to plan his own land for the greatest permanent productivity; and home labor and equipment will

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\* Economic use of Oklahoma's soil resources is discussed under the heading, "Production Opportunities," page 16.



TABLE 11.—Land Capability Classes and Acreage of Each in Oklahoma.\*

| Classes of Land According to Best Known Use  | PRESENT LAND USES |                  |                   |                | Total Acres       |
|--|-------------------|------------------|-------------------|----------------|-------------------|
|  | Cropland          | Idle             | Grazing Land      | Woodland       |                   |
| <b>Suitable for cultivation with:</b>  |                   |                  |                   |                |                   |
| I No special practices   | 3,243,303         | 32,265           | 1,078,365         | 62,693         | 4,416,626         |
| II Simple practices  | 1,963,690         | 31,600           | 1,789,047         | 60,335         | 3,844,672         |
| III Intensive practices  | 7,045,510         | 288,072          | 5,401,687         | 108,128        | 12,843,397        |
| <b>Suitable for occasional or limited cultivation with:</b>  |                   |                  |                   |                |                   |
| IV Limited use and intensive practices   | 60,874            | 32,097           | 179,099           | 3,461          | 275,531           |
| <b>Not suitable for cultivation but suitable for permanent vegetation with:</b>  |                   |                  |                   |                |                   |
| V No special restrictions or special practices   | 67,076            | 25,105           | 260,858           | 23,531         | 376,670           |
| VI Moderate restrictions in use  | 193,934           | 29,850           | 1,924,195         | 143,021        | 2,291,000         |
| VII Severe restrictions in use   | 1,381,820         | 793,225          | 6,260,605         | 163,422        | 8,599,172         |
| <b>Not suitable for cultivation, grazing or forestry:</b>  |                   |                  |                   |                |                   |
| VIII Ordinary, extremely rough, sandy, wet or arid land not suitable for cultivation, grazing or forestry, but land that may have value for wildlife | 2,853             | 53,080           | 57,419            |                | 113,352           |
| <b>TOTAL</b>   | <b>13,959,160</b> | <b>1,285,294</b> | <b>16,897,275</b> | <b>564,611</b> | <b>32,760,420</b> |

\* Based on an analysis of 23,898 farms having a complete soil conservation program and on soil conservation surveys of 18,705,000 acres.

**TABLE 12.—Changes in Land Use to Be Expected When the Soil of Oklahoma Is Put to Its Best Known Use.**

| Kind of Use            | ACRES OF LAND <sup>1</sup> |                 |
|------------------------|----------------------------|-----------------|
|                        | Present                    | After Treatment |
| Cropland               | 13,959,160                 | 12,697,411      |
| Pasture and range land | 16,897,275                 | 19,290,261      |
| Farm woodland          | 564,611                    | 605,316         |
| Idle                   | 1,285,294                  | None            |
| Other <sup>2</sup>     | -----                      | 113,852         |

<sup>1</sup> Miscellaneous—land in lanes, lots, roads, yards, etc., 1,565,000.

<sup>2</sup> Acreage included in the other unused under present conditions, but it is classed as land-capability VIII after treatment.

go a long way toward making the necessary changes.\* Land-owners are recognizing that the first step toward permanent soil productivity is knowledge of the capabilities of each type of soil on the farm. Expansion of existing services providing this type of knowledge is needed to meet the increased demand.

After desirable adjustments in land use have been made, the return per acre for the time, work, ability, seed and fertilizer invested will provide a greater return because the land itself is being used more efficiently.

## WATER

Oklahoma includes within its borders almost every type of problem involved in the relation of water to agriculture.\*\* Any consideration of water resources therefore must be on a sectional basis. In general, the State can be divided into five

\* Detailed information about land classification and the most efficient use of various types of land is given in numerous bulletins and other publications. These include USDA Farmer's Bulletin 1853, USDA Technical Bulletin 437, Oklahoma Experiment Station Bulletins 205, 257 and 279, and Oklahoma Extension Circular 412. Much other material is available. Help in obtaining and using these publications can be obtained from county agents, soil conservation technicians, vocational agriculture teachers in high schools, and others.

\*\* An extensive analysis of the water resources and water problems of Oklahoma, considered as a part of the entire Arkansas Valley region, is presented in *Regional Planning, Part XII—Arkansas Valley*, National Resources Planning Board, June, 1943. Available data on the State's water resources as related to industry are presented and discussed in considerable detail in *Oklahoma Water: Quantity, Occurrence, and Quality of Surface and Ground Water*, prepared for the Oklahoma Planning and Resources Board by the United States Department of the Interior, Geological Survey, Water Resources Branch, March 1, 1945. Water data for the State are also summarized in the industrial survey of Oklahoma published in loose-leaf form in 1945 by the Division of Industrial and State Planning of the Oklahoma Planning and Resources Board. Other information concerning the water supplies of the state is given in *Minerals of Oklahoma Map* published by the Oklahoma Geological Survey in 1944; in other publications of the Survey; and in *The Chemical Analyses of the Waters of Oklahoma*, Publication No. 52 of the Engineering Experiment Station of the Oklahoma A. and M. College (1942). Climatological data for the State are available in *Climate and Man: Yearbook of the United States Department of Agriculture, 1941*. pp. 1065-1074.

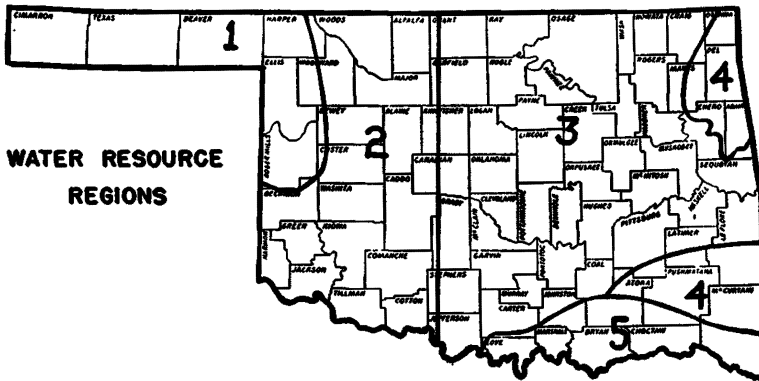


Fig. 7.—Water Resources Regions of Oklahoma.

Water problems within the areas shown are somewhat similar (See text, page 44). Any consideration of water resources in Oklahoma must be on a sectional basis, because of the wide variation in rainfall. The 98th meridian is taken as the dividing line between regions 2 and 3, though the difference is not abrupt.

major areas within which the problems are somewhat similar. These areas, shown in Figure 7, are: (1) The High Plains, including the Panhandle and a few adjacent counties; (2) other areas west of the 98th meridian, which runs north and south through the western parts of Grant county on the north and Jefferson county on the south; (3) the central and east central counties; (4) the Ozark-Ouachita Highlands; and (5) the Gulf Coastal Plain along the Red River east of Jefferson county.

Annual precipitation varies from more than 50 inches in northeastern McCurtain county to less than 18 in the western end of the Panhandle (Fig. 8). Heavy to almost torrential rains occasionally occur, and falls of more than 10 inches in 24 hours have been recorded at a number of scattered weather stations. West of the 98th meridian, rainfall is uncertain and insufficient for consistent crop production.

On an average, 75 percent of the annual precipitation occurs during the summer growing season, March to October inclusive. Rains are most general and abundant during the spring and early summer. In late summer and early fall they are more local, and in the western part rains are often uncertain during this period. General rains frequently set in again during September and October.

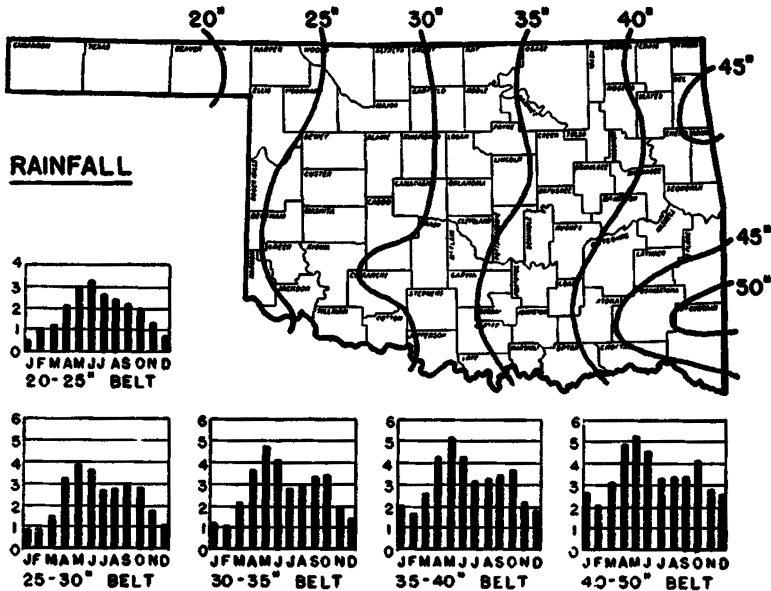


Fig. 8.—Rainfall Varies Widely in Oklahoma.

Lines on the map show average annual rainfall, which varies from more than 50 inches in the southeast to less than 20 inches in the Panhandle. The small graphs show seasonal distribution by months, an important factor in adjusting cropping systems to moisture available.

The high seasonal variation in rainfall leads to corresponding variation in surface water supplies. Most of the streams in the western and central areas have wide, sandy beds. During very dry periods, nearly all the water is beneath the surface sands. Heavy rains bring sudden rises, occasionally amounting to 10 feet or more in a few hours. Except in the Ozark-Ouachita Highlands, surface supplies are unreliable and widespread shortages occur during droughts.

The seasonal character of the rainfall, its concentration in a few heavy rains, and rapid runoff due to soil types and other conditions, create problems both of flood control and of storage for use during dry periods.

Frequent floods characterize the entire section east of the 98th meridian. These cause extensive losses through damage to farm buildings and equipment and also through silting and erosion of productive bottomlands. Records on the Arkansas River at Ft. Smith, Ark., for the past 60 years show that

a large majority of the floods occur in April, May and June; and the same situation undoubtedly exists on other rivers in central and eastern Oklahoma.

Climatic conditions in Oklahoma are such that loss of water from plants by transpiration is high; therefore crops in this State require more water per pound of production than those growing in more humid areas. In general, in Oklahoma, the water transpired by vegetation and evaporated from land and water surfaces appears to be about 32 inches per year where the annual precipitation is 42 inches or more. The corresponding figure for more northern parts of the United States having similar annual rainfall is 20 inches. Droughts of several weeks' duration, or even longer, sometimes occur when high summer temperatures are accompanied by hot, dry winds.

Except for streams in the Ozark-Ouachita Highlands, water courses are in general highly polluted by domestic and industrial wastes, and by natural mineralization from salt and gypsum beds or soils with high mineral content.

Absence of pollution in streams of the Ozark-Ouachita Highlands is one factor in making these mountainous areas one of the most attractive recreational centers in the Midwest.

Oklahoma has 252 recreation and conservation lakes, in addition to about 125 larger lakes created for municipal water supply, hydroelectric power, flood control, and irrigation. At least 132 additional possible dam sites are under actual investigation. Thirteen large flood control projects are expected to be ready for work to start early in 1946. About 42,000 farm ponds are in use, or about one pond for each four farms.

Before a complete plan of water development can be worked out for Oklahoma, additional data are needed.\* On the basis of present information, the following are suggested as desirable directions for development of water resources in relation to agriculture:

*Farm Water Supplies:* The widespread program of pond building now under way should be continued, to provide stock water facilities and possibly water for household use. Small storage reservoirs might serve a group of farms where conditions permit. More attention needs to be given to making storage ponds large enough to carry over dry summers. Additional wells with windmill or other power, and adequate stor-

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\* Work toward obtaining the needed data is now going forward under cooperative agreements among the agencies concerned. Negotiations toward establishment of a central water laboratory for the State are also under way.

age tanks, could be installed on many farms to provide water for stock and for the home. Extension of rural electrification will be helpful in providing power for pumping water.

**Flood Control:** Flood control is a concurrent and inseparable part of the development of water resources of Oklahoma. Flood losses can be reduced by a combination of dams and levees along stream channels with conservation treatment of uplands to reduce the rate of runoff and the deposit of silt farther downstream. Numerous small upstream reservoirs would check floods or help reduce their crests, help regulate low-water flows downstream, and in some locations provide irrigation water. Crop damage in frequently flooded bottomlands can be reduced by cropping systems planned for more diversification and emphasizing crops which escape the period when floods are most frequent.

**Irrigation:** Irrigation to supplement natural rainfall could be used in many sections of the State to increase yields or insure a crop, but cost of production under irrigation must be given consideration. Irrigation from surface water supplies is possible at scattered locations throughout the State. Irrigation using ground water could be developed in the High Plains area, but should not be widely attempted until test drillings have located adequate supplies and indicated their safe rate of sustained use. Suitable spacing of wells and controlled use of water probably will be necessary for safe development.

In any irrigation project, both the soil and the water must be adapted to such use. Also to be considered is the effect of upstream reservoirs in maintaining or reducing flow available for irrigation use.

**Pollution Control:** Pollution abatement measures, including treatment of industrial and domestic wastes and satisfactory disposal of wastes from oil field and mining operations, are of interest to agriculture as well as to other downstream water users.

**Recreation:** Preservation and wise public use of the recreation facilities offered by streams and reservoirs are of interest to agriculture. Farm people have special need of nearby recreational facilities; and, in the Ozark-Ouachita Highlands, recreation seekers from a distance can help provide off-farm employment and also a market for farm products.

**Other Uses of Water Resources:** Drainage rather than irrigation is of interest in some areas along the streams of east-



ern Oklahoma. Agriculture also has a direct or indirect interest in use of water resources as a source of electric power, and in relation to wild life conservation and malaria control.

### MINERALS

The farmer's most direct need for mineral products is for limestone to correct soil acidity, phosphates for improving low-phosphorus soils,\* and cement and stone for building construction and road making. In addition, he has an equal interest with others in developing within the State deposits of minerals which go into the products he buys.\*\*

Development of available deposits of stone suitable for building and roadmaking would be helpful in the farm building construction and rural road improvement program of the State.

Most Oklahoma areas needing limestone to correct soil acidity have an abundant supply near at hand. The chief exception is a considerable area in the southeast portion of central Oklahoma where limestone is needed and has to be hauled some distance, making transportation relatively expensive.

Some phosphates of a low grade exist in Oklahoma. The State may possibly benefit also from deposits of phosphate found in northern Arkansas.†

Fuels for heating and for motor vehicle operation are increasingly important as agriculture becomes more mechanized. Coal, petroleum and natural gas are abundant in the State, and on some farms are a direct source of income from royalties.

### FORESTS

Oklahoma has six million acres in woodlands having commercial possibilities. About one-third of this acreage is on farms. These woodlands now have approximately 3 billion board feet of

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\* Oklahoma's need for lime and phosphates for soil improvement is described above, page 36.

\*\* See Agricultural-Industrial Development, page 9. Mineral resources of the State are described in reports of the Oklahoma Geological Survey and the United States Geological Survey, in *Mineral Yearbooks of the United States Bureau of Mines*; in the industrial survey of Oklahoma published in looseleaf form in 1945 by the Division of Industrial and State Planning of the Oklahoma Planning and Resources Board; and in *Construction Materials of Oklahoma* published in mimeographed form by the Emergency Relief Administration of Oklahoma in 1934.

† See *Regional Planning, Part XII—Arkansas Valley*, p. 70. (National Resources Planning Board, June, 1943; Superintendent of Documents, United States Government Printing Office, Washington, D. C.)

lumber and 30 million cords of pulpwood and fuelwood. The value of the products at the primary wood-using plants for the year 1945 was estimated at \$4,500,000.

With proper fire protection and management, Oklahoma woodlands could produce 100 million board feet of lumber and 2,600,000 cords of fuelwood annually, in addition to a large volume of poles, crossties, fence posts, and other items. On a large portion of Oklahoma woodlands, the growth rate is about one-fifth of what the lands are capable of producing.

About one-fourth of the State's forest land was under organized fire protection in 1943. In addition a substantial, but undetermined, area on farms was protected by individual owners.

About 600,000 seedlings were planted in 1942, mostly on woodlots and shelterbelts.

Forests could be improved and wood-using industries strengthened by:

1. Expansion of forest protection work. Areas of extensive woodlands will require organized protection. An individual farmer can usually protect his woodlands by controlling fires in his own lands and developing cooperation among his neighbors and tenants. In the more heavily wooded counties, protection could be provided through cooperative units.

2. Encouragement of longtime planting and management of farm and commercial forests.

3. Reforestation and replanting, including windbreaks and shelterbelts. A great many woodlands have patches of idle land, either treeless or with a stand of undesirable scrub oaks or excessively limby, open-grown pines, which need replanting. A farmer could do the work with his own labor during winter and spring months. Seedlings are available at cost from State-owned nurseries. Woodland owners could be planting two million seedlings a year profitably by 1950.

4. Improved cutting practices could be spread to a much larger acreage.

5. Expansion and development of forest cooperatives for purposes of forest management and marketing, particularly in the southeast and east portions of the State where forest land constitutes a large part of the entire land area.

6. Reconversion of some existing native woods into plantings yielding products of higher commercial value. Elm, etc., could be replaced with pecans, walnuts, catalpas, etc.

**INTER-RELATION OF RESOURCES**

Soil, water and mineral resources are fundamental not only to agriculture but to all life. How they are conserved and used is of such vital importance that formation of a statewide council to guide public thinking and action on this subject seems desirable. This council would include representatives of each research, educational and action agency, both State and Federal, in Oklahoma. It should meet often enough to review reports of progress in research, operations and education (including extension and adult education), and make recommendations concerning the future direction of these activities.

Many problems need to be carefully considered in relation to available physical resources. For example, in locating industrial plants where it is anticipated that workers will engage in part-time farming, attention should be given to such questions as suitability of soil type and availability of irrigation water, since high productivity is necessary for intensive use of small areas. Inter-relation of forest resources with agriculture and with part-time farming by those employed either in timber cutting or in wood products manufacturing poses a similar problem.

Once sound land use has been determined, appropriate soil-saving and soil-using practices must be applied and continued in use to stop erosion, conserve rainfall, and maintain fertility while at the same time providing a living for the farmer. The exact combination of practices will vary with the needs of different farms. For the State as a whole, permanently profitable use of soil and water resources requires a balanced system of cropping combined with livestock farming; and in many locations the same principle applies to individual farms. For livestock farming, adequate water supplies are necessary; and the needed stock ponds can be integrated into the whole system of water conservation. Irrigation may be helpful in the arid sections in providing an assured feed supply.

Lost organic matter and nitrogen must be restored to the soil through cropping systems employing legumes and grasses. This often requires mineral fertilizers to establish the legumes; and the legumes and grassland and cover crops needed to prevent erosion and restore or maintain soil fertility can be most profitably utilized by livestock.

## Agricultural Credit

**N**OTHING in the farm finance picture indicates any shortage of suitable agricultural credit for sound financing. The present problem is not the availability of credit, but the wise use of it. Credit facilities have been so improved since the end of the first World War that any farmer to whom credit would be truly useful can be directed to a source of credit the characteristics of which will closely approximate his needs.\* Average interest rates on farm mortgages in Oklahoma have been reduced from a high of 7.3 percent in 1923 to 4.7 percent in 1944,\*\* and other credit costs have also declined. In view of the rather standardized rates of many of the institutional lenders, there is no reason to believe that these credit costs are likely to increase seriously.

### THE CURRENT FARM FINANCIAL SITUATION

The general farm finance condition at present is favorable. Total farm mortgage debt is smaller than it has been for more than twenty years (Table 13). The non-real estate or operating debt is small relative to that at the end of World War I and of the middle twenties (Table 14), and is in reasonable proportion considering the fact that the bulk of the debt is made up of short-term obligations which may be liquidated at current or early post-war price levels.

This favorable debt situation is further improved by the unusually large financial reserves in the hands of farmers. Financial assets held by United States farmers on January 1, 1945 have been estimated at \$16,788,000,000 contrasted with \$5,243,000,000 on January 1, 1940.† Of the January 1, 1945 assets, 69 percent was in bank deposits and currency, 23 percent in United States Government bonds, and 8 percent about evenly divided between warehouse receipts and other financial assets. Physical assets of the Nation's farms also show an increase of \$25,461,000,000 or 52 percent since 1940 but, since part of that inventory increase is due to price increases which may not hold, it is not as indicative of the realizable increase in net worth as is the change in financial assets. Likewise, it does not

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\* For a condensed description of the various sources of credit, see "Sources and Use of Credit for Oklahoma Farmers" in *Current Farm Economics*, Vol. 14, No. 4, August 1941, Oklahoma Agri. Exp. Station; or Oklahoma Extension Circular No. 377, *Credit for Oklahoma Farmers*.

\*\* Umstott and Yarnall, *Revised Annual Estimate of Interest Charges and Interest Rates on Farm Mortgage Debt*, Bureau of Agricultural Economics, U. S. D. A., pp. 29, 30.

† Tostlebe et al., *The Balance Sheet of Agriculture*, 1945. Bureau of Agricultural Economics, U. S. D. A., calculated from Table 13.

**TABLE 13.—Farm-Mortgage Debt: Total Outstanding and Amounts Held by Leading Lending Agencies; Oklahoma, 1910, 1915, 1920, 1925, 1930-40.**

(1,000 dollars)

| Beginning<br>of Year | Total<br>Farm<br>Mortgage<br>Debt | AMOUNTS HELD BY LEADING LENDING AGENCIES               |                              |                                |                     |  |   |
|----------------------|-----------------------------------|--|------------------------------|--------------------------------|---------------------|--|---|
|                      |                                   | Federal Land<br>Banks and<br>Land Bank<br>Commissioner | Joint Stock<br>Land<br>Banks | Life<br>Insurance<br>Companies | Commercial<br>Banks | Farm Security                                | Administration                          |
|                      |                                   |  |                              |                                |                     | Construction<br>of Farmstead<br>Improvements | Tenant Pur-<br>chase and<br>Development |
| 1910                 | 64,166                            |  |                              |                                |                     |  |   |
| 1915                 |                                   |  |                              |                                |                     |  |   |
| 1920                 | 188,890 <sup>1</sup>              |  |                              |                                |                     |  |   |
| 1923                 | 284,766                           |  |                              |                                |                     |  |   |
| 1925                 | 218,963 <sup>1</sup>              |  |                              |                                |                     |  |   |
| 1928                 | 228,513 <sup>1</sup>              |  |                              |                                |                     |  |   |
| 1930                 | 274,971                           | 20,885   | 4,558                        | 71,898                         |                     |  |   |
| 1931                 | 261,300                           | 21,201   | 4,173                        | 65,923                         |                     |  |   |
| 1932                 | 259,210                           | 20,822   | 3,525                        | 65,040                         |                     |  |   |
| 1933                 | 233,230                           | 20,097   | 3,146                        | 62,208                         |                     |  |   |
| 1934                 | 193,047                           | 21,098   | 2,915                        | 57,645                         |                     |  |   |
| 1935                 | 183,421                           | 45,756   | 2,206                        | 47,892                         | 3,424               |  |   |
| 1936                 | 175,861                           | 54,395   | 1,762                        | 37,053                         | 3,192               |  |   |
| 1937                 | 168,816                           | 56,028   | 1,415                        | 32,283                         | 3,331               |  |   |
| 1938                 | 161,317                           | 55,526   | 1,049                        | 28,729                         | 3,482               |  |   |
| 1939                 | 157,508                           | 53,114   | 921                          | 27,808                         | 3,787               | 172  | 1,378                                   |
| 1940                 | 153,879                           | 50,188   | 795                          | 25,923                         | 4,224               | 202  | 2,906                                   |
| 1941                 | 156,364                           | 48,079   | 246                          | 25,817                         | 4,321               | 171  | 4,745                                   |
| 1942                 | 159,332                           | 45,297   | 188                          | 25,894                         | 4,230               | 372  | 6,877                                   |
| 1943                 | 151,554                           | 40,262   | 141                          | 24,095                         | 3,861               | 447  | 7,707                                   |
| 1944                 | 141,850                           | 36,284   |                              | 21,095                         | 4,123               | 303  | 8,382                                   |

SOURCE: *Agricultural Finance Review*, various issues.

<sup>1</sup> Outstanding Farm-Mortgage Loans of Lending Agencies, B. A. E., U. S. D. A., Dec. 1937, Subject to revision.

TABLE 14.—Operating Credit.  
(1,000 dollars)

| Year | Rural Rehabilitation Loans | Personal and Collateral Loans of Insured Commercial Banks | Production Credit Associations | Regional Agricultural Credit Corporation | Emergency Crop and Feed Loans |
|------|----------------------------|---|--------------------------------|--|-------------------------------|
| 1935 |                            |   | 1,796                          |  |                               |
| 1936 |                            | 21,775  | 2,727                          |  |                               |
| 1937 |                            | 22,008  | 3,348                          |  |                               |
| 1938 | 9,245                      | 25,747  | 2,481                          |  |                               |
| 1939 | 11,924                     | 31,852  | 2,811                          |  |                               |
| 1940 | 14,475                     | 32,463  | 3,124                          |  |                               |
| 1941 | 15,736                     | 40,227  | 4,047                          |  | 2,721                         |
| 1942 | 16,527                     | 44,783  | 4,219                          |  | 2,635                         |
| 1943 | 16,505                     | 68,337  | 4,013                          | 1,613                                    | 2,476                         |
| 1944 | 16,828                     | 52,256  | 4,253                          | 1,251                                    | 2,427                         |

SOURCE: *Agricultural Finance Review*.

as truly show the liquid position of agriculture, although many of the physical assets such as crops and livestock really represent liquid assets since they may be realized upon in the normal operation of the business. In Oklahoma the volume of deposits in checking accounts in country banks has steadily risen to a new record height in July 1945 when the deposits were 319 percent of the 1940 volume.

This liquid condition of farm finances did not exist in 1918 at the end of World War I. Farm mortgage debt in the Nation had then risen to 158 percent of the pre-war levels and continued to rise for several years. Farm foreclosures were already beginning to show signs of the fateful increases which followed in the twenties.

#### DANGERS IN THE PRESENT SITUATION

The way farmers utilize these financial assets will have enormous influence in determining the condition of agriculture in coming years. These financial assets can be used for building, or they can be used to undermine the farm financial structure.

There are two main roads that would contribute to undermining the farm financial structure. First, farm families may use large portions of the financial reserves to replace and to add to farm and home equipment and conveniences at a rate too highly accelerated and at high prices. Second, they may further bid up the price of farm real estate. Of the two, the latter is potentially the more dangerous by far.

Farm land values in Oklahoma are about as high now\* as they were in 1918, and it should be remembered that the very disastrous rise in land values and mortgage debt occurred *after* 1918. Approximately two million farmers, or about one-third of the farmers in the United States, lost their farms through foreclosure or forced assignment in the twenty years that followed the World War I land boom. This history could be repeated. "If high farm incomes continue [for a year or two following the war], with a large and growing volume of liquid funds in the hands of prospective buyers, a demand by returning servicemen and war workers for farms, an expansion of their acreage by farmers when their sons return, relief from many of the . . . [wartime] obstacles to production, keen competition for loans between lenders, easy credit conditions, and possibly an attitude of optimism over future prices for farm products, all the essential elements for a full-fledged land boom will be present."\*\*

These conditions should be guarded against. Although the 46 percent increase in land values in Oklahoma from the 1935-39 average to July 1945 was less than the 57 percent increase for the whole Nation, it is nevertheless true that there have been only a few years since 1910 when Oklahoma land values have exceeded present ones. Land values in three adjoining states have increased 71, 80, and 93 percent respectively.† It is true that larger proportions of cash are now being used in the purchase of farms, but for the United States between one-fourth and one-third of all credit-financed farms bought in 1944 carried debts equal to 75 percent of the sales price and almost three-fourths had a debt of 50 percent or more.†† In Oklahoma the farms that were bought in 1944 carried an average indebtedness of just over 60 percent of the purchase price, and if land prices should drop to 1941 levels the buyer's equity in those farms would be only half of the average buyer's equity in 1941.

The Nation's farm mortgage condition is influenced not only by the amount of debt but also by the way in which the debt is held. In 1941, in Oklahoma, individuals loaned only 20 percent of the farm mortgage money while the remainder was loaned by institutional lenders. In 1944 the proportion loaned by individuals had increased to 40 percent. Of interest to the farm borrower is the question whether the individual

\* August, 1945.

\*\* Regan, Johnson and Charenbach, *The Farm Real Estate Situation, 1943-44*, January 1945, U. S. D. A. Circular 721.

† New Mexico, Arkansas, and Colorado. See *Current Developments in the Farm Real Estate Market*, July 1945, B. A. E., U. S. D. A.

†† *Ibid.*, p. 5.

lender from whom he borrows is in a sufficiently strong position to go along with him without soon foreclosing if farm incomes should drop and the farmer become temporarily delinquent in his payments. This question is especially pertinent if the amount of the loan is greater than that which would normally be loaned by institutional lenders.

If current prices for farm products could be maintained for a long period, the burden of present high land values and the incidental debt load might not be disastrously heavy, but for agriculture as a whole the consequences would only be postponed. Continued high product prices would stimulate further land price increases until such time as commodity prices moderated or broke as they have broken after each major war. While it is true that every effort will be made to prevent a post-war collapse of prices and Congress has committed itself to support prices at ninety percent of parity for most important farm products for at least two years after the war, it is also true that such supported levels would be materially below present prices.

Among the indications which suggest that agricultural prices may eventually weaken are the following:

1. Prices received by farmers have more than doubled since 1939, while those of "all commodities" other than farm products have increased by less than one-third. The relationship is more favorable to agriculture than existed in the parity base period, 1910-14. Since agricultural prices have normally been more flexible than non-agricultural prices in periods of changing demand and supply conditions, there is no reason to believe that this unusually favorable relationship of agricultural prices will continue to hold after the period of readjustment.
2. The acreage in cropland with which we enter the post-war era may produce a volume larger than can be sold at high prices even under favorable conditions of employment and international trade. If prices are maintained it will probably involve the operation of the agricultural plant at less than capacity which in turn will affect net earnings.



**FARM FINANCING FOR THE FUTURE**

With these possible conditions introducing a high degree of risk in financing operations, the following recommendations may be made:

**THE USE OF CREDIT AND THE FARMER'S OWN FINANCES**

1. Careful consideration should be given by farm families to making the best use of accumulated savings. Heavy purchases of farm and household equipment and building repair or replacement could result in depletion of farm financial reserves, an over-expanded short or intermediate term debt, or a serious expansion of deferred-payment purchases.
2. The purchase price of farms should be evaluated in the light of the net farm income which could reasonably be expected over a long period of ups and downs in production and prices.
3. Farm mortgage debts should be incurred on the basis of long-term earning power of the farm, unless the debt is very small in relation to the value of the mortgaged property and can be paid off in a very short time. High loan ratios are ordinarily dangerous. Where the debt has already been incurred, maximum prepayments should be made to reduce the loan ratio to safe proportions. Over-borrowing entails a greater risk for the borrower than for the lender. The lender's money is usually protected by specific security.
4. Each borrower should select a financing agency suited to his particular needs. This selection should involve an evaluation of the mortgage repayment plan which preferably should include the features of amortization and advance or additional payment privilege. A systematized variable payment plan, which allows higher payments in high income years and smaller payments in low income years, also has much to recommend itself.
5. It should be recognized that there is greater danger of excessive purchase price and of over-mortgaging on small farms, on those with inferior soils, and on those which are located in the border regions between good and poor soils areas, than on the most productive units.
6. Prospective buyers should not neglect the possibility that greater net returns may be made by renting for a time than by buying land at inflated prices.

7. The financing of large scale land developments in clearing, drainage, irrigation, or terracing should be preceded by careful study of the economic possibilities of the projects.
8. Short-term credits should be limited as much as possible to strictly productive rather than strictly consumption uses *but this would not exclude productive household equipment likely to add to the productivity of the farm family.*

#### THE EXTENDING OF CREDIT.

1. Mortgage problems resulting from extreme shifts in the price of land could be reduced by careful evaluation of the security on the basis of the net income it can be expected to produce over a long period of ups and downs in production and prices of products. Careful appraisal methods are as important to individual lenders as to institutional lenders.
2. Competition between lenders should be based on the quality of loan services rather than upon liberal appraising of the property and the size of loans offered.\*
3. Greater recognition might be given by lenders to the fact that debt losses are normally greater on poor soils than on good.
4. Sellers of land should consider the advisability of demanding substantial down payments in order that the buyer may not be forced to default on a loan which might be excessive if prices fall to lower levels.
5. There may be danger in over-emphasis of the farm purchase provisions of the "G. I. Bill of Rights." Loans should be assumed only when the ability of the borrower is known, only for farms of size and quality adequate for efficient operation, and at prices consistent with the earning capacity of the farm in those cases where the veteran's major income is to be made in farming.

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\* See North Central Regional Committee on Land Tenure Research, *Preventing Farm Land Price Inflation in the Mid-west*, published by Iowa State College, Bulletin F72.

## Marketing and Distribution

**T**HE PRINCIPAL marketing problems existing at the end of the war were those resulting from the wartime emergency, including problems related to price policy. Another group of problems is those which have been continuing through recent years—standardization, assembling, margins, freight rates, and market news. Marketing agencies owned by individuals, corporations, or farmers' cooperatives will face these problems along with the farmer.

### PRICE POLICY\*

As prices are the thermometer that farmers use in deciding whether to increase or decrease production, they are the means of directing the use of agricultural resources. Prices also direct the use of these products by consumers. Prices must, therefore, remain flexible enough to permit best use of resources so that neither surpluses nor shortages arise. Unless we are to be tied up almost permanently in an inflexible agricultural economy of rigid controls, an effort must be made to keep away from direct crop acreage control.

Some form of price stabilization may be desirable to prevent wide fluctuations in prices and bring more stability to farm income, but prices should not be so high as to encourage the building up of surpluses. They should rather be just high enough to clear supplies offered in the market over a period of several years.

### MARKETING MARGINS

Reduction of costs and likewise margins in marketing Oklahoma farm products will increase the income share of farmers. In June, 1945, the farm value for the United States was 54 percent of the retail price for the "market basket."\*\* While marketing margins have increased (absolutely) only slightly since 1935-39, they are yet of sizeable proportions. The margin amounted to 69 percent of the retail price of bakery and other cereal products, 56 percent for fruits and vegetables, 42 percent for dairy products, 23 percent for poultry and eggs, and 22 percent of the retail price of meat products.

Marketing margins have been influenced by price ceilings, floors, and subsidies, but the stabilizing effects of these will not continue for long after legislation creating them is revoked.

\* For a complete discussion of agricultural price policy see the articles in the *Journal of Farm Economics* for November, 1945.

\*\* This "market basket" is composed of the 1935-39 average annual quantities purchased per family of three average consumers. Data are from *The Marketing and Transportation Situation*, July, 1945.

**LOCAL ASSEMBLING AND TRANSPORTATION**

The present system of marketing and distribution fails to move effectively the production of many small-scale but efficient farmers who cannot afford to transport small lots to market. In other cases the products could be moved more cheaply. Improvement might be made for fruits and vegetables, milk and cream, poultry and eggs and livestock—particularly small lots. For example, the collection of eggs on cream and milk routes permits higher quality eggs and a greater return to the farmer—particularly if they are bought and sold on grades.

Development of local assembling point facilities in conjunction with systematic organization of local transportation services would meet this need. Plans for establishing local or community assembling points and for organizing local transportation services should be attempted on a neighborhood action basis.

Where necessary, secondary assembling point facilities and supporting transportation services should be established to assure the continuous movement of commodities to terminal markets. There is also much need for improvement in terminal marketing facilities.

Development of an all-weather system of farm-to-market roads is of fundamental importance in improving local marketing conditions. The road pattern should be laid out with due regard to accessibility to the largest possible number of farms and to the type of products grown in the area.

**FREIGHT RATES**

A recent decision of the Interstate Commerce Commission provides for the equalization of class rates among the sections of the country. In the past commodity rates have been related to class scales. This equalization should eventually benefit Oklahoma considerably. At present, class freight rates are roughly one-half to two-thirds higher per ton mile in Southwestern territory than in Official or Eastern territory, but cost of service per ton mile is approximately the same in the two areas. Freight rates not equalized on a cost-of-service basis results in the subsidization of industries in the lower-rate areas at the expense of others. Furthermore, lower-rate marketing areas tend to surround and restrict production and distribution into the higher-rate area.

There is some likelihood that air transport will be used profitably for some fruits and vegetables.

#### **STANDARDIZATION AND MARKET NEWS**

If price is to be the regulator of the type of product wanted, and producers are to receive prices based upon the quality of their products, both standardization of products and prompt dissemination of market news are necessary.

While the problem of standardization varies with products and areas, the need for its extension is very apparent. Grading or its benefits should be extended all the way down to the local assembling point, at least for all products which are shipped out. Prices should then be based upon the grade of product offered so as to reflect quality differences accurately.

Market news covering grades and prices, from local assembling point up to the terminal market, should be made available promptly and effectively to the producers and others concerned.

#### **PROCESSING**

Continued investigation should be made of the possibilities of further processing of Oklahoma farm products within the State, and new possible uses of Oklahoma farm products should be investigated. Processing should be done within the State if it can be done as effectively and as cheaply as in other areas. Much such processing is now being done, and possibilities of expansion are indicated in the preceding discussion of agricultural-industrial opportunities within the State (page 9).

#### **MARKETING CHANNELS**

Individual and corporate enterprises normally provide satisfactory channels through which the farmer can market his products. Where a satisfactory outlet does not exist, farmers can pool their individual initiative and private resources to provide this service through a marketing cooperative.

## Land Tenure

**T**HE FAMILY-TYPE FARM is generally accepted as the basis of a stable, yet progressive, agriculture. Farms must vary in size because of differences in managerial ability, the family labor supply, the financial resources of the operators, and the type of farming; but every "full time" farm should be large enough to give employment to the farm family and thus enable it to secure a satisfactory living.

A large percentage of the farms in Oklahoma report incomes entirely too low to provide more than the necessities of life. These low incomes can often be attributed to the under-employment of farm operators and their families, due in most instances to inadequate farm units. Data from the 1940 Census indicate that farms are increasing in size, but a large number of farms reported incomes below that necessary for a satisfactory standard of living. (See Tables 15, 16, and 17.)

### OKLAHOMA'S PRESENT TENURE SITUATION

The number and percentage of all farms operated by tenants is high in Oklahoma, but is declining (Fig. 9). The 1940 Census shows 97,821 tenant operated farms in the State. It was 61 percent in 1935, 54 in 1940, and the 1945 Census will show a further decline.

One of the principal criticisms of the tenure system is the excessive mobility of tenant operators. Movement from one farm to another is desirable if it enables tenants to improve their status. Excessive mobility is cause for inefficient farm units and farm organization, mining of the natural resources, lack of flexibility in farm organization, and generally results in an out-moded, non-progressive system of farming.

Insecurity in tenure is also partially responsible for inefficiency in farming and uneconomical farm units, and has contributed a great deal of the rate of mobility. Insecurity in tenure and excessive mobility have resulted in part from unsatisfactory landlord-tenant relationships.

### FUTURE POSSIBILITIES

Problems of landlord-tenant relationships are rather complex, but not insurmountable. Agriculture can make more rapid progress when the obligations and rights of tenants and landlords in relation to each other and to the soil become more clearly defined. All tenure groups can then participate more fully in programs of a longtime nature such as soil conservation.

TABLE 15.—Classification of Oklahoma Farms by Tenure Groups.

| Number<br>Farms<br>Tenure<br>Group | 1900    |         | 1910    |         | 1920    |         | 1930    |         | 1935    |         | 1940    |         |
|------------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
|                                    | Number  | Percent | Number  | Percent | Number  | Percent | Number  | Percent | Number  | Percent | Number  | Percent |
| Total                              | 108,000 | 100.0   | 190,192 | 100.0   | 191,988 | 100.0   | 203,866 | 100.0   | 213,325 | 100.0   | 179,687 | 100.0   |
| Owners                             | 53,619  | 49.6    | 64,884  | 34.1    | 69,786  | 36.3    | 53,647  | 26.3    | 58,796  | 27.6    | 55,859  | 31.1    |
| Part Owners                        | 6,590   | 6.1     | 20,520  | 10.8    | 23,431  | 12.2    | 24,067  | 11.8    | 23,093  | 10.8    | 25,227  | 14.1    |
| Tenants                            | 47,250  | 43.8    | 104,137 | 54.8    | 97,836  | 51.0    | 125,329 | 61.5    | 130,661 | 61.2    | 97,821  | 54.4    |
| Managers                           | 541     | .5      | 651     | .3      | 935     | .5      | 823     | .4      | 775     | .4      | 780     | .4      |

SOURCE: Census of Agriculture, 1900-1940.

TABLE 16.—Land Operated by Tenure Groups.

| Tenure<br>Group | 1930       |         | 1935       |         | 1940       |         |
|-----------------|------------|---------|------------|---------|------------|---------|
|                 | Acres      | Percent | Acres      | Percent | Acres      | Percent |
| Full Owners     | 7,866,835  | 23.3    | 8,557,566  | 24.2    | 7,841,016  | 22.5    |
| Part Owners     | 8,604,691  | 25.5    | 8,702,741  | 24.6    | 11,057,301 | 31.8    |
| Tenants         | 16,333,056 | 48.3    | 16,905,885 | 47.9    | 14,768,931 | 42.4    |
| Managers        | 986,235    | 2.9     | 1,169,278  | 3.3     | 1,136,069  | 3.3     |

SOURCE: Census of Agriculture, 1930-1940.

**TABLE 17.—Number and Distribution of Farms by Value of Farm Products Sold.**

| Value of Farm Products Sold | 1930   |         | 1940   |         |
|-----------------------------|--------|---------|--------|---------|
|                             | Number | Percent | Number | Percent |
| Under \$250                 | 12,282 | 6.5     | 39,573 | 22.1    |
| 250- 399                    | 16,356 | 8.6     | 26,600 | 14.9    |
| 400- 599                    | 24,648 | 13.0    | 28,187 | 15.8    |
| 600- 999                    | 41,022 | 21.6    | 34,846 | 19.5    |
| 1,000- 1,499                | 32,725 | 17.2    | 20,676 | 11.6    |
| 1,500- 2,499                | 33,150 | 17.4    | 16,200 | 9.1     |
| 2,500- 3,999                | 17,919 | 9.4     | 7,395  | 4.1     |
| 4,000 5,999                 | 7,136  | 3.8     | 3,041  | 1.7     |
| 6,000- 9,999                | 3,334  | 1.7     | 1,448  | .8      |
| 10,000-19,999               | 1,125  | .6      | 545    | .3      |
| 20,000 & over               | 451    | .2      | 245    | .1      |

SOURCE: Census of Agriculture, 1930-1940.

Possibilities of improving landlord-tenant relationships include:

1. Leasing agreements for periods of more than one year. Agreements should be for indefinite periods, or for stated periods with provisions for renewal and for termination by either party on or before a specified date.

2. Partnership agreements, in which landowners and tenants share in the farm income in proportion to the amount each contributes to the total cost of production. There is need for reappraisal of rents and rental systems, especially in areas where there is a tendency to change from cash crops to a combination of crops and livestock.

3. A written plan for the individual farm. The written lease contract too often is merely a legal document setting forth the rights, privileges and obligations of the parties affected. A written contract serves best when it is a memorandum of agreement mutually arrived at by both landlord and tenant in their efforts to work out for the farm an agricultural program which combines the natural resources of the farm with the capital, labor and management of the operator so that over a period of years the best interest of both parties will be served. Most of the so-called "blights of farm tenancy"—soil robbing, one-crop farming, inadequate livestock facilities, and high mobility of tenants—stem from lack of thinking, careful planning, and mutual consideration of reasonable self-interest.

4. A landlord-tenant handbook, assembling the available pertinent information in a form useable as a guide by individuals, agencies, and institutions.



LAND SETTLEMENT AND TENURE

Oklahoma can at the most provide farms for only about 25,000 new farmers in the next few years. The State had 203,866 farms in 1930 and preliminary figures for the 1945 Census show 172,871; but this does not mean the State can absorb as many as 30,000 farm families and that many or more farm laborers. Although the number of farms has decreased, as well as the farm population (or farm labor force), agricultural production has increased. This increased production resulted partly from favorable weather, but it has also been due to mechanization and greater efficiency of farm units. Numbers of farms can be economically expanded only if demand increases for those farm products requiring relatively larger amounts of labor.

Some opportunity for settlement will be provided by retirement of the older men now on farms. Some estimates place the number as high as 15,000 in the first year or two following close of the war. This may not be excessive because: (1) A considerable number of farmers who would have retired during the past few years have not done so because of the war;

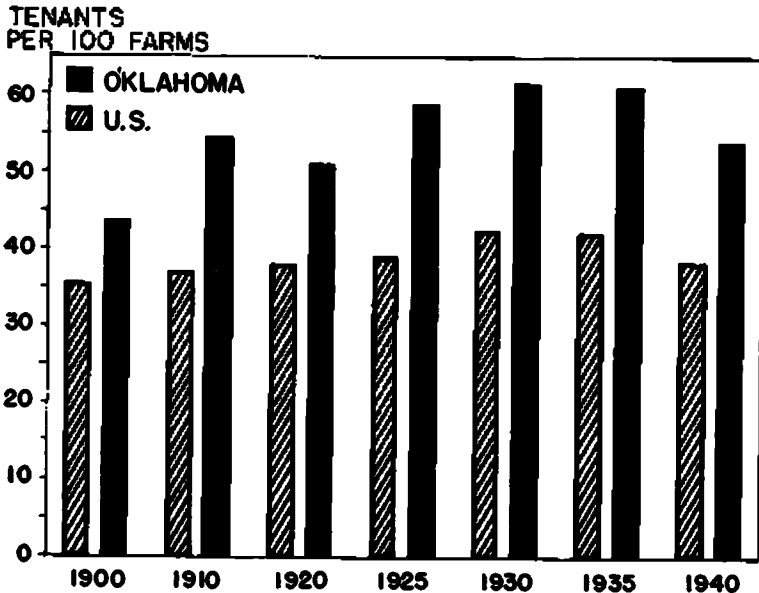


Fig. 9.—Farm Tenancy in Oklahoma and the United States.

The proportion of tenancy in Oklahoma has declined since 1930, and the 1945 census of agriculture is expected to show a further decline.

(2) the rate of retirement may be increased in the next few years because of increased farm income during the war years; and (3) there are relatively more older farmers in Oklahoma than in other states.

Because need for more commercial farms is created only through a demand for additional farm products, back-to-the-land movements or land settlement programs may aggravate tenure problems. Too many land-settlement programs have failed, resulting in bankruptcy of individuals, burdensome farm mortgages and eventual foreclosure, and the establishment of uneconomic units which will take years to correct. Any re-settlement program would be harmful to the individual and the general public, as well as to agriculture, if careful consideration is not given to:

1. The prospective operator, his family, and the operator's training and experience.
2. The size of the farm unit and the family's opportunity to employ itself.
3. Avoidance of any radical departure from the existing type of farming in the area.
4. The danger of over-loaning on farms in land purchase programs at present inflated prices.

## Rural Life and Community Organization

**T**HE WAR brought territorial and occupational shifts of population that almost wiped out the attachments of people to places and groups, particularly among young adults. It, along with other forces that have been operative during the past quarter century, virtually shattered the community and institutional pattern of social life in general, and, of course, rural life. Yet Oklahoma has a vital need for a strongly and firmly organized rural community life in the future. The bonds which stabilize social life, but which have been broken by the war, must be knit together again.

### THE FAMILY

In agriculture, the idea of a farm is inseparable from that of a family. The ultimate objective of every enterprise on a farm is the welfare of the family on it. Hence, every possible influence that favors the establishment and maintenance of farm family units should be provided and cultivated. Likewise, every obstruction to family life should be removed.

The farm family should be provided with adequate educational, religious, recreational, and health facilities. It must have all-year roads and other means of communication. Ways must be devised to facilitate the attachment of farm families to land. Levels of farm family living must be improved generally. It is of special importance that the economic machinery beyond the farm be geared so as to promote rather than hinder the achievement of, and enrichment of, farm family life.

### EDUCATION

Education not only prepares the individual for his life needs, but also protects society from the dangers of anti-social behavior and internal weaknesses in its own structure. To accomplish these ends, certain fundamental objectives must guide educational processes and procedures: (a) mastery of the mother tongue, (b) proficiency in use of basic mathematical operations, (c) development of appreciation and understanding of nature, (d) safety education and health, (e) development of vocational aptitudes, (f) a sense of civic and moral responsibility, (g) appreciation of the liberal and fine arts, and (h) scientific attitude.

These larger goals of education do not vary because of occupation, political beliefs, race, location or other conditions of man. Rural schools should also stress such things as: (a) the dignity and importance of agriculture as an occupation

and way of life, (b) forms of human association appropriate to rural society, (c) values that have significance to rural life, i. e., what rural people want for themselves and their children; (d) relations between farmers and various urban groups; and (e) ways by which the general social and economic order can best serve rural people. *Rural education should be organized increasingly toward the ideal of making the school the center of community life in secular affairs.*

In Oklahoma, there are several counties that have in their farm population large proportions of adults with no schooling and also of high school graduates. This means that the problems of formal education are being solved. Present educational programs in these counties need to be continued and expanded to wipe out illiteracy in the older population. In other counties, the percentages of adults with no schooling are great and of high school graduates are low. These counties need to take definite remedial steps because their school systems are either inadequate or are not functioning effectively. Long-time corrective measures for the improvement of rural education are needed in at least one-fourth of the counties of the State.

The main immediate problem in achieving a high degree of literacy is one of providing more adequate support for primary and elementary education generally. To get the full advantage of increased support, the instructional program should be extended upward with night classes in language, arithmetic, and citizenship for adults.

#### LIBRARY SERVICE

A great expansion of library facilities is urgently needed to make books, bulletins, periodicals, and other reading material and sources of information available without personal expense to the individual. Alternatives for providing this benefit include: county libraries with mobile units and book routes; village-centered libraries with county support, for use of both village and open country people; extension of the range of circulation of church, school and club libraries; expansion of services rendered by the State Library Commission and package libraries of colleges and universities; rental libraries and the expansion of library facilities at the offices of county agricultural agents and other public officials, especially indexes, reader's guides, and repositories of practical farm and household information.

Properly conceived, the library is an adjunct of the school system and inseparable from it. Therefore, library service should be included in constructing the educational framework of the community.

**HEALTH**

The intangible costs of poor health—mental and physical suffering, disruption of homes, discouragement, loss of educational opportunities to children, and the like—cannot be measured. Common contagious diseases, pneumonia, tuberculosis, malaria, and venereal disease are chiefly responsible for the losses from preventable sickness. Reducing these preventable health losses in Oklahoma is in a large measure a problem of providing more adequate, less expensive, and more readily available health facilities of all kinds for general use.

An inventory of various health facilities in Oklahoma in 1945 (the latest figures available) shows that 38 county health units were in operation, most of which were set up since 1935. Tuberculosis clinics and surveys, malaria control projects, and venereal disease clinics were conducted during the year in a number of localities. One county, and 33 cities in other counties, have standard eating and drinking establishment ordinances at the present time, and 44 municipalities have standard milk ordinances.

In 1945, Oklahoma had approximately three thousand persons licensed to practice the healing arts. Included in this number were 2,500 M. D.'s, both white and negro, 284 osteopaths, and 337 chiropractors. Many of the physicians registered are still in the armed services and are not yet available for general practice. Few strictly rural counties had more than one doctor to two thousand population. On an average, rural counties had from one-fourth to one-half as many physicians as were needed, and the State as a whole had not more than 80 percent as many as needed. Only a few counties with large cities were amply supplied.\*

Over half of the doctors in the State were general practitioners. The physician in general practice is largely the center of medical organization, especially at the family or local level. As such, he is a very important personage. Probably there should be not less than one general physician per 1,000 population for adequate health care.

In 1945 there were 23 full-time health officers and 54 part-time county superintendents of health. Approximately seven hundred dentists were registered. Also there were some two hundred hospitals, although 14 counties had no hospital facilities whatever.

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\* Any figures quoted today may be out of date tomorrow due to the shifting of population and the returning of doctors, dentists and nurses from military service.

The cost of hospital beds per day per person ranges from \$2 to \$20 in private rooms, and from \$2 to \$6 in wards. Not enough hospital beds are available to the masses in Oklahoma at any price within their means.

It is the plan of the State Department of Health in cooperation with the various divisions of local government to district the State by grouping counties so that each county in the State would have the opportunity to participate in maintaining a local public health department, thereby receiving the services which would be available from a local health department.

Legislation is pending in Congress (S.191) to provide federal grants to states and political subdivisions, not less than 25 percent nor more than 75 percent to any state, to build public non-profit hospitals. When effected into law, this will encourage states to take steps toward meeting the need for hospitals in rural areas.

The 20th Oklahoma Legislature passed four acts designed to enable Oklahoma to take advantage of the several phases of the federal proposal (S.191) when it becomes law. These acts are: S. B. No. 153 to promote public health and authorize the formation of cooperative health departments in political subdivisions; H. B. No. 468, an act defining and regulating hospitals of all kinds; H. B. No. 476, to provide for a survey of hospital and health center facilities; and H. B. No. 478, an act authorizing the state commissioner of health to formulate and administer a state plan for the construction of public and other non-profit hospitals. The last legislature also enacted two laws relating to the control of venereal disease, requiring blood tests of applicants for marriage licenses and of pregnant women upon the first visit to doctors after discovering pregnancy. Still another law provides for the formation of a state board of health to cooperate with the state health commissioner.

To provide Oklahoma with a well rounded health and safety program, the following are suggested:

First, extension of health and safety education.

Second, extension of sanitation in food sale and distribution, of contagious disease control in schools, and of safety features and emergency appliances in construction of buildings designed as gathering places, particularly schools, theaters, and clubs.

Third, greater care in disposal of sewage by cities and towns in reference to the pollution of streams, residential areas etc.

Fourth, better facilities for first aid and emergency treatment of school children by school authorities.

Fifth, establishment of parenthood clinics, improved services to promote maternal and infant care, and health supervision on the family level.

Sixth, further effort to prevent the spread from livestock to human beings of such diseases as bovine tuberculosis, rabies, spotted fever, etc.

Seventh, extension of control of malaria and other disease originating from lack of sanitation.

The general problem of health improvement involves the cooperation of all agencies in the community. This includes four over-all functions: (a) popular diffusion of health knowledge; (b) lowering of health costs to individuals; (c) providing better and more adequate health facilities; and (d) the training of additional personnel. More scholarships are needed for worthy students at health training centers.

#### HOUSING

Oklahoma ranks among the lowest quarter of all the states in rural farm housing when scored by 13 characteristics enumerated by the 1940 federal census. However, it also has some of the best farm houses in the Nation, which shows that its farm people desire good modern homes. In addition, there is an actual shortage of housing units.

On the farm, houses must compete with machinery, barns, land improvement, and other capital investments which yield more direct economic returns. To equate this condition more properly, the need for spending increased proportions of farm incomes for housing is now being emphasized.

Several steps are involved in promoting better future rural housing in Oklahoma:

First, stabilization of incomes and purchasing power of farmers.

Second, extension of credit, particularly a system of insured loans conducive to lower interest rates and reduced foreclosure hazards.

Third, technological assistance and building codes. To insure economy, utility and beauty, rural home builders should be encouraged to employ the talents of competent architects. Much research is needed on use of native building materials, on construction to avoid the effects of earth movement, and on preservatives for protection against weather and pests. Building codes, similar to those of cities, would promote safety in

wiring, heating, plumbing, and arrangement of buildings. As well as protecting life, this would protect property and lower insurance premiums.

Fourth, extension of low cost electrical power. This is becoming a farm necessity, not alone for its comforts but also for its economic value. It makes possible the installation of water pressure systems, which in turn afford fire protection. It facilitates such work as grinding feeds, milking, carpentry, tool grinding, and brooding chicks, to mention only a few. Better home lighting and refrigeration alone would justify considerable expense for electric power.

Fifth, farmstead engineering. This applies to water conservation, drainage, and use, and to the location of buildings appropriately in respect to prevailing winds, road outlets, and the general topography. Poultry houses, bins, barns, implement sheds, driveways, and other farmstead structures can be fitted into a systematic ground pattern to facilitate use, insure symmetry, and guarantee safety.

#### RECREATION

Recreational programs are usually most successful when built as far as possible around existing community institutions, such as the home, schools, churches, fraternal orders, service clubs, youth organizations, and adult education groups.

Varied recreational activities suitable for different age, sex, and socio-economic groups can be planned and sponsored by practically all rural organizations and agencies. These plans would include (a) suitable quarters and facilities simple in character, (b) some professional leaders, (c) much voluntary lay leadership and sponsorship, and (4) widespread participation.

Recreational activities and programs can be adapted to occupational interests, the time and seasons, the characteristics of the population, the natural talents and interests of the people, and the social and psychological needs of the community.

#### COMMUNICATION AND TRANSPORTATION

America's cultural and industrial growth has been accomplished mainly through its ever expanding system of communication and transportation. Yet, for the most part, open country areas have been relatively isolated until recently. Better transportation and communication facilities are among the most vital requirements of improved rural social organization.



The future transportation and communication system of this country, and of Oklahoma, should eventually include: (a) All-year, all-weather farm-to-market roads accessible at every farm; (b) an adequate system of arterial state and national highways; (c) the extension of rural electrification, telephone and mail service to farm home; (d) the preservation of railway, bus systems, and truck lines for travel and freight service; and (e) the establishment of small airports at convenient rural trade centers.

#### RELIGIOUS ORGANIZATION

Institutional rural religion as a whole is gradually shifting its congregational identity to villages, towns, and cities. Large numbers of religious people are left stranded in the open country without leadership and monetary assistance, and still larger numbers remain without religious attachments.

The promotion of rural religious life by organized religion might well include: (a) Concentration of effort among the population (about half of the total) without religious attachments; (b) focusing of religious teaching more toward youth groups; (c) increasing informal in proportion to formalized religious instruction; (d) greater participation of rural ministers in the secular life of the community; (e) greater cooperation between church and civic life; and (f) family relations counseling and guidance for young adults.

More generally, it is suggested that: (a) The localization of religious organization conform to centers of habitual population groupings; (b) church communities (parishes) be enlarged geographically as transportation becomes easier; and (c) religious centers be located at points where school, economic, recreational social service, and as many other interests as possible converge.

#### COOPERATION

True cooperation is a basic human necessity. Its preservation requires (a) that legal safeguards perpetuate the rights of people to assemble, organize, and bargain collectively; (b) that organized groups be restrained from interfering with the rights of small groups, and of individuals, in trade; (c) that professional leadership be procured for implementing cooperative enterprise through forums and institutional organizations of the community.

#### MINORITY GROUPS AND SOCIAL ORDER

Farmers constitute the largest single economic group in Oklahoma. Even so, they comprise only a minority of the total

population. Moreover there are potential cleavages among farmers themselves.

The major problem of minorities is that of maintaining effective checks and balances designed to preserve the integrity of each competing group so that each may have its appropriate weight in determining the policies of action which affect both it and society at large. To accomplish this objective, it is necessary to: (a) Preserve the democratic processes of government to all groups without exception; (b) preserve freedom of movement between classes, and check the rise of all potential obstructions, or restraints, to it; (c) preserve freedom of movement of people between geographic areas, except in time of peril or grave danger to public safety, such as war; (d) eliminate interstate barriers to and restraints of trade and commerce of all kinds; (e) preserve the freedom of all groups to bargain collectively without violence; and (f) prevent the rise of mobsters, gangsters, terroristic organizations, or other forms of violent action.

#### **LEADERSHIP**

Until about 1870, the farm was traditionally regarded as the cradle of great national leaders. More recently, cities and their suburban areas have taken first place in the production of leaders. In local affairs, farm communities have suffered losses of leadership by the migration of population to cities. Even in state legislatures, farmers are reduced to minorities by larger representation from professional, business, and other classes. The need for ways of recruiting agricultural leadership is imperative. This is evidenced by the rapid absorption of the great majority of farm youth trained in scientific agriculture into secondary rather than primary agricultural pursuits, often before their training is completed.

The objective in rural leadership recruitment is to discover and move to action those who can help farm people generally to do for themselves what they need to have done. The development of this leadership can be promoted by: (a) Study and discussion groups on such problems as cooperation, soil and livestock husbandry, and community affairs generally; (b) conditioning the rural mind generally in the processes of integrated group action; (c) fairs, short courses, conventions ranging from local to national scope, and organizational meetings by delegations of farmers in the interests of agriculture; (d) encouraging organized contests on rural civic affairs; (e) extension of both junior and adult club activity in technical agriculture and homemaking under local direction, emphasis-

ing principles of voting, office holding, and group responsibility; and (f) focusing the programs of rural agencies, e. g., church, school, conservation agencies, etc., more directly upon problems and opportunities of rural leadership, and upon responsibilities of rural people for national, state, and local public policy.

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## Appendix Tables

**TABLE 1.—Estimates of Major Uses of Cropland, 1950.**

| Type-of-Farming Area | Land in Farms <sup>1</sup> | Cropland <sup>2</sup> | Wheat          | Corn           | All Sorghums except Sirup | Cotton         | Oats           | Hay All Tame   |
|----------------------|----------------------------|-----------------------|----------------|----------------|---------------------------|----------------|----------------|----------------|
| (1,000 Acres)        |                            |                       |                |                |                           |                |                |                |
| 1                    | 3,164                      | 1,552                 | 1,001.0        | 19.0           | 288.5                     | —              | 5.6            | 5.1            |
| 2                    | 2,828                      | 1,109                 | 710.0          | 17.0           | 237.7                     | 1.0            | 35.6           | 22.7           |
| 3                    | 4,390                      | 2,618                 | 1,995.0        | 85.0           | 160.0                     | 28.5           | 222.7          | 142.1          |
| 4                    | 1,156                      | 175                   | 38.0           | 34.0           | 26.6                      | 8.2            | 33.4           | 11.3           |
| 5                    | 2,128                      | 964                   | 68.0           | 229.0          | 59.3                      | 13.2           | 346.8          | 38.1           |
| 6                    | 2,441                      | 1,070                 | 598.0          | 51.0           | 214.3                     | 85.6           | 89.1           | 51.5           |
| 7                    | 2,737                      | 1,112                 | 166.0          | 172.0          | 127.3                     | 87.6           | 200.4          | 123.6          |
| 8                    | 1,760                      | 684                   | 5.0            | 185.0          | 54.8                      | 93.7           | 50.1           | 82.4           |
| 9                    | 2,170                      | 1,046                 | 18.2           | 370.0          | 54.9                      | 203.8          | 133.6          | 61.8           |
| 10                   | 597                        | 238                   | 17.0           | 60.0           | 12.5                      | 2.6            | 38.9           | 30.9           |
| 11                   | 2,227                      | 1,283                 | 430.0          | 30.0           | 254.5                     | 387.1          | 69.8           | 65.9           |
| 12                   | 4,048                      | 2,121                 | 728.0          | 220.0          | 326.9                     | 417.7          | 229.3          | 139.0          |
| 13                   | 773                        | 409                   | 12.5           | 112.0          | 52.1                      | 66.2           | 33.4           | 53.6           |
| 14                   | 1,423                      | 415                   | 1.3            | 131.0          | 39.2                      | 44.8           | 22.3           | 41.2           |
| 15                   | 1,646                      | 498                   | 9.5            | 123.0          | 58.7                      | 68.3           | 44.5           | 64.9           |
| 16                   | 1,315                      | 538                   | 2.5            | 162.0          | 32.7                      | 91.7           | 44.5           | 65.9           |
| <b>State</b>         | <b>34,803</b>              | <b>15,832</b>         | <b>5,800.0</b> | <b>2,000.0</b> | <b>2,000.0</b>            | <b>1,600.0</b> | <b>1,600.0</b> | <b>1,000.0</b> |
| Percent of 1943      |                            |                       |                |                |                           |                |                |                |
| 1                    | ---                        | ---                   | 130.8          | 94.5           | 81.9                      | ---            | 147.4          | 122.9          |
| 2                    | ---                        | ---                   | 138.0          | 88.1           | 84.3                      | 99.0           | 112.7          | 110.9          |
| 3                    | ---                        | ---                   | 150.7          | 86.7           | 76.0                      | 105.9          | 92.8           | 106.9          |
| 4                    | ---                        | ---                   | 248.4          | 96.0           | 113.2                     | 106.5          | 103.4          | 93.8           |
| 5                    | ---                        | ---                   | 158.5          | 96.9           | 107.6                     | 109.6          | 100.6          | 105.9          |
| 6                    | ---                        | ---                   | 168.3          | 99.2           | 83.5                      | 102.5          | 104.2          | 102.7          |
| 7                    | ---                        | ---                   | 162.3          | 93.0           | 83.8                      | 102.4          | 95.6           | 91.3           |
| 8                    | ---                        | ---                   | 255.1          | 94.2           | 81.7                      | 106.5          | 106.6          | 65.7           |
| 9                    | ---                        | ---                   | 198.9          | 95.5           | 91.2                      | 119.9          | 110.4          | 74.4           |
| 10                   | ---                        | ---                   | 165.0          | 94.3           | 86.2                      | 113.0          | 111.5          | 110.4          |
| 11                   | ---                        | ---                   | 178.9          | 87.5           | 84.0                      | 98.6           | 106.7          | 96.9           |
| 12                   | ---                        | ---                   | 178.9          | 91.7           | 83.9                      | 98.2           | 106.8          | 86.9           |
| 13                   | ---                        | ---                   | 211.9          | 99.4           | 88.3                      | 98.7           | 99.7           | 92.6           |
| 14                   | ---                        | ---                   | 260.0          | 99.3           | 88.9                      | 114.0          | 114.9          | 61.6           |
| 15                   | ---                        | ---                   | 185.2          | 102.8          | 90.9                      | 94.5           | 130.5          | 84.2           |
| 16                   | ---                        | ---                   | 446.4          | 97.8           | 87.9                      | 114.1          | 126.1          | 72.3           |
| <b>State</b>         | ---                        | ---                   | <b>152.6</b>   | <b>95.4</b>    | <b>84.3</b>               | <b>103.0</b>   | <b>103.0</b>   | <b>87.3</b>    |

<sup>1</sup> 1940 Census.

<sup>2</sup> 1940 Census, Cropland, Harvested, Idle or Fallow and Failure.

Continued—



TABLE 1.—Continued.

| Type-of-Farming Areas | Peanuts Picked and Threshed | Broom-corn   | Irish potatoes | Truck Crops    |                |                  | Barley       |
|-----------------------|-----------------------------|--------------|----------------|----------------|----------------|------------------|--------------|
|                       |                             |              |                | Sweet potatoes | For Processing | For Fresh Market |              |
| (1,000 Acres)         |                             |              |                |                |                |                  |              |
| 1                     |                             | 33.6         | .2             | -              | ---            | ---              | 106.5        |
| 2                     | ---                         | 3.1          | .5             | ---            | ---            | ---              | 53.5         |
| 3                     | ---                         | .3           | 1.8            | .2             | ---            | ---              | 46.4         |
| 4                     | ---                         | ---          | .4             | .3             | ---            | ---              | 3.3          |
| 5                     | ---                         | ---          | 1.6            | 1.0            | .3             | 4.3              | 3.1          |
| 6                     | ---                         | 2.8          | 1.0            | .6             | ---            | ---              | 23.7         |
| 7                     | 15.0                        | ---          | 2.5            | 1.8            | ---            | .4               | 6.2          |
| 8                     | 32.4                        | .2           | 2.4            | 2.2            | .2             | .9               | 1.2          |
| 9                     | ---                         | .2           | 6.2            | 2.8            | 17.1           | 6.0              | 3.5          |
| 10                    | ---                         | ---          | 1.0            | .4             | 1.7            | 1.0              | 1.7          |
| 11                    | ---                         | 1.0          | .5             | .3             | ---            | ---              | 15.4         |
| 12                    | ---                         | 2.5          | 2.4            | 1.1            | ---            | ---              | 26.1         |
| 13                    | ---                         | 21.3         | 1.2            | .3             | ---            | ---              | 2.0          |
| 14                    | 20.3                        | ---          | 1.5            | 1.3            | .5             | .3               | 1.0          |
| 15                    | 12.3                        | ---          | 1.8            | 1.0            | ---            | ---              | 5.3          |
| 16                    | 45.0                        | ---          | 3.0            | 1.7            | .2             | 2.1              | 1.1          |
| <b>State</b>          | <b>125.0</b>                | <b>65.0</b>  | <b>28.0</b>    | <b>15.0</b>    | <b>20.0</b>    | <b>15.0</b>      | <b>300.0</b> |
| Percent of 1943       |                             |              |                |                |                |                  |              |
| 1                     |                             | 101.5        | 96.0           | ---            | ---            | ---              | 93.2         |
| 2                     | -100.0                      | 103.3        | 65.9           | ---            | ---            | ---              | 50.4         |
| 3                     | -100.0                      | 100.0        | 51.0           | 117.6          | ---            | ---              | 19.7         |
| 4                     | -100.0                      | ---          | 44.4           | 120.0          | ---            | ---              | 28.0         |
| 5                     | -100.0                      | ---          | 48.5           | 113.6          | 47.1           | 124.4            | 27.7         |
| 6                     | -100.0                      | 103.7        | 73.8           | 113.2          | ---            | ---              | 36.9         |
| 7                     | 55.4                        | ---          | 59.0           | 116.1          | ---            | 104.9            | 24.3         |
| 8                     | 55.2                        | 100.0        | 65.6           | 147.4          | 48.6           | 114.8            | 34.3         |
| 9                     | -100.0                      | 100.0        | 50.5           | 116.7          | 58.0           | 109.0            | 77.8         |
| 10                    | -100.0                      | ---          | 45.7           | 142.9          | 37.1           | 126.6            | 60.7         |
| 11                    | -100.0                      | 100.0        | 74.7           | 125.0          | ---            | ---              | 31.6         |
| 12                    | -100.0                      | 100.0        | 73.8           | 110.0          | ---            | ---              | 32.6         |
| 13                    | -100.0                      | 101.4        | 70.6           | 107.1          | ---            | ---              | 43.5         |
| 14                    | 55.2                        | ---          | 56.3           | 113.0          | 55.6           | 73.7             | 66.7         |
| 15                    | 55.0                        | ---          | 62.9           | 114.9          | ---            | ---              | 67.1         |
| 16                    | 97.6                        | ---          | 64.3           | 113.3          | 48.6           | 124.0            | 64.7         |
| <b>State</b>          | <b>45.5</b>                 | <b>101.6</b> | <b>57.1</b>    | <b>115.4</b>   | <b>54.9</b>    | <b>114.5</b>     | <b>41.4</b>  |

TABLE 2.—Estimates of Livestock Production 1950.

| Type-of-Farming Areas | All Cattle and Calves | Milk Production | Sows Farrowed | Hens and Pullets | Egg Production | Chickens Raised | Turkeys Raised |
|-----------------------|-----------------------|-----------------|---------------|------------------|----------------|-----------------|----------------|
|                       | 1000 head             | Mil. lbs.       | 1000 head     | 1000 head        | 1000 doz.      | 1000 head       | 1000 head      |
| 1                     | 129.0                 | 69.1            | 4.0           | 122.3            | 1,039.5        | 203.8           | 28.7           |
| 2                     | 168.5                 | 158.6           | 5.2           | 380.5            | 3,931.8        | 634.1           | 57.9           |
| 3                     | 315.7                 | 419.4           | 21.3          | 1,426.0          | 15,091.9       | 2,376.6         | 197.2          |
| 4                     | 125.2                 | 43.2            | 4.5           | 108.7            | 1,005.5        | 181.2           | 4.4            |
| 5                     | 221.1                 | 245.9           | 25.3          | 966.5            | 9,584.5        | 1,610.8         | 61.6           |
| 6                     | 174.1                 | 179.0           | 7.5           | 569.0            | 5,737.0        | 948.4           | 88.9           |
| 7                     | 218.8                 | 323.7           | 18.5          | 1,179.7          | 11,305.4       | 1,966.1         | 117.3          |
| 8                     | 114.9                 | 148.4           | 19.5          | 634.4            | 5,339.5        | 1,057.4         | 38.7           |
| 9                     | 179.6                 | 217.0           | 24.7          | 912.1            | 7,904.9        | 1,520.2         | 33.2           |
| 10                    | 59.5                  | 71.3            | 14.2          | 370.3            | 3,116.7        | 617.2           | 10.5           |
| 11                    | 109.8                 | 132.9           | 5.2           | 578.4            | 5,832.2        | 963.9           | 116.8          |
| 12                    | 317.2                 | 385.2           | 16.5          | 1,334.2          | 12,897.3       | 2,223.7         | 332.7          |
| 13                    | 58.6                  | 67.6            | 7.8           | 307.4            | 2,920.3        | 512.4           | 55.6           |
| 14                    | 138.7                 | 100.4           | 18.7          | 392.4            | 3,270.0        | 654.0           | 21.5           |
| 15                    | 150.7                 | 115.7           | 12.9          | 439.9            | 3,885.8        | 733.2           | 94.4           |
| 16                    | 118.6                 | 108.6           | 19.2          | 478.2            | 4,064.7        | 797.0           | 40.6           |
| State                 | 2,600.0               | 2,786.0         | 225.0         | 10,200.0         | 96,927.0       | 17,000.0        | 1,300.0        |
| Percent of 1943       |                       |                 |               |                  |                |                 |                |
| 1                     | 85.0                  | 103.3           | 32.8          | 27.0             | 25.0           | 25.0            | 135.4          |
| 2                     | 78.0                  | 101.5           | 37.1          | 69.9             | 79.0           | 52.4            | 135.3          |
| 3                     | 79.7                  | 102.5           | 46.7          | 69.5             | 82.1           | 57.0            | 142.1          |
| 4                     | 89.2                  | 97.5            | 61.6          | 59.7             | 62.4           | 56.4            | 141.9          |
| 5                     | 85.0                  | 100.7           | 63.7          | 86.1             | 96.4           | 82.5            | 142.3          |
| 6                     | 80.8                  | 93.1            | 41.0          | 65.2             | 76.2           | 58.5            | 135.3          |
| 7                     | 85.7                  | 105.7           | 61.3          | 76.3             | 85.6           | 73.0            | 142.0          |
| 8                     | 89.4                  | 102.3           | 64.1          | 73.9             | 74.2           | 81.5            | 142.3          |
| 9                     | 89.7                  | 105.8           | 71.6          | 66.3             | 69.5           | 73.0            | 135.5          |
| 10                    | 86.9                  | 102.7           | 67.9          | 85.1             | 85.3           | 90.0            | 134.6          |
| 11                    | 75.9                  | 98.5            | 41.9          | 60.3             | 70.7           | 56.2            | 135.3          |
| 12                    | 79.1                  | 105.6           | 48.4          | 70.5             | 79.6           | 60.7            | 135.4          |
| 13                    | 84.3                  | 101.5           | 64.5          | 59.7             | 67.1           | 63.7            | 128.7          |
| 14                    | 90.7                  | 101.8           | 71.6          | 63.0             | 63.1           | 73.6            | 128.7          |
| 15                    | 82.5                  | 124.8           | 67.5          | 75.1             | 79.0           | 84.0            | 128.6          |
| 16                    | 84.8                  | 113.7           | 73.6          | 82.7             | 83.2           | 85.9            | 128.5          |
| State                 | 83.3                  | 103.5           | 58.7          | 69.9             | 77.0           | 66.1            | 136.3          |

TABLE 3.—Estimates of Use of Farm Land.  
(1,000 Acres)

| Use of farm land   | Acreage   | Reported for 1943 <sup>1</sup> | Post-war bench mark <sup>2</sup> |
|--|-----------|--------------------------------|----------------------------------|
| Corn, all  | Planted   | 2,097                          | 2,000                            |
| Sorghums, all except sirup                               | Planted   | 2,372                          | 2,000                            |
| All sorghums for grain                                   | Harvested | 597                            | 750                              |
| All sorghums for silage                                  | Harvested | 103                            | 110                              |
| All sorghums for forage                                  | Harvested | 1,397                          | 992                              |
| Soybeans, grown alone                                    | Planted   | 35                             | 24                               |
| Soybeans for beans                                       | Harvested | 10                             | 7                                |
| Soybeans for hay   | Harvested | 11                             | 11                               |
| Cowpeas, grown alone                                     | Planted   | 114                            | 125                              |
| Cowpeas for peas   | Harvested | 19                             | 15                               |
| Cowpeas for hay  | Harvested | 42                             | 40                               |
| Peanuts, grown alone                                     | Planted   | 612                            | 150                              |
| Peanuts picked and threshed                              | Harvested | 275                            | 125                              |
| Peanuts for hay  | Harvested | 490                            | 120                              |
| Cotton, all upland                                       | Planted   | 1,554                          | 1,600                            |
| Irish potatoes   | Planted   | 49                             | 28                               |
| Sweet potatoes   | Planted   | 13                             | 15                               |
| Broomcorn  | Planted   | 64                             | 65                               |
| 11 Truck crops for processing, total <sup>3</sup>        | Planted   | 36                             | 20                               |
| Snapbeans  | Planted   | 13                             | 7                                |
| Spinach  | Planted   | 23                             | 13                               |
| Other truck crops for processing <sup>4</sup>            | Planted   | 6                              | 6                                |
| Sweet corn   | Planted   | 3                              | 3                                |
| Tomatoes   | Planted   | 2                              | 2                                |
| 25 Truck crops for fresh market <sup>5</sup>             | Harvested | 13                             | 21                               |
| Spinach  | Harvested | 2                              | 2                                |
| Watermelons  | Harvested | 9                              | 15                               |
| Strawberries   | Harvested | 1                              | 2                                |
| Other truck crops for fresh market <sup>6</sup>          | Harvested | 12                             | 15                               |
| Tomatoes   | Harvested | 5                              | 8                                |
| Sweet corn   | Harvested | 3                              | 3                                |
| Other intertilled crops, total                           |           | 3                              | — 3                              |
| Adjustment for multiple use <sup>7</sup>                 |           | 358                            | 360                              |
| Total cropland used for intertilled crops <sup>8</sup>   |           | 6,623                          | 5,714                            |
| Oats   | Planted   | 1,553                          | 1,600                            |
| Barley   | Planted   | 724                            | 300                              |
| Winter wheat   | Planted   | 3,800                          | 5,800                            |
| Oats for grain   | Harvested | 1,273                          | 1,300                            |
| Barley for grain   | Harvested | 375                            | 250                              |
| Grains cut green for hay                                 | Harvested | 40                             | 40                               |
| Rye for grain  | Harvested | 138                            | 100                              |
| Flaxseed   | Planted   | 60                             | 10                               |
| Other small grains                                       | Planted   | 191                            | 250                              |
| Mung beans   | Planted   | 50                             | 100                              |
| Adjustment for multiple use <sup>7</sup>                 |           | 290                            | 400                              |
| Total cropland used for close-growing crops <sup>8</sup> |           | 6,226                          | 7,760                            |

For footnotes see next page.

Continued—

TABLE 3.—Continued.

| Use of farm land   | Acreage   | Reported for 1943 <sup>1</sup> | Post-war bench mark <sup>2</sup> |
|--|-----------|--------------------------------|----------------------------------|
| Hay, all tame—except soybean, cowpea, peanut and small grain hay | Harvested | 562                            | 789                              |
| Hay, all tame  | Harvested | 1,145                          | 1,000                            |
| Seeds, hay and cover crop, alfalfa                               | Harvested | 91                             | 125                              |
| Rotation (cropland) pasture                                      |           |                                |                                  |
| Adjustment for multiple use <sup>7</sup>                         |           | 91                             | 125                              |
| Total cropland used for sod crops <sup>8</sup>                   |           | 562                            | 789                              |
| Total cropland used for crops <sup>8</sup>                       |           | 13,411                         | 14,263                           |
| Summer fallow and idle cropland                                  |           | 1,734                          | 1,122                            |
| Total cropland <sup>8</sup>                                      |           | 15,145                         | 15,385                           |
| Other plowable pasture   |           | 3,830                          | 3,830                            |
| Open permanent pasture   |           | 10,751                         | 10,751                           |
| Wild hay   | Harvested | 516                            | 500                              |
| Other land in farms  |           | 4,561                          | 4,337                            |
| Total land in farms  |           | 34,803                         | 34,803                           |

<sup>1</sup> By the Bureau of Agricultural Economics except as otherwise indicated.

<sup>2</sup> See assumptions in text of report.

<sup>3</sup> Commercial acreage of the 11 truck crops for processing that are reported by BAE.

<sup>4</sup> Commercial acreage.

<sup>5</sup> Commercial acreage of the 25 truck crops that are reported by BAE.

<sup>6</sup> Commercial acreage including market-garden acreage not reported by BAE.

<sup>7</sup> In making the adjustment for multiple use of land by crops in the same group or in two or more groups, the first use in the crop year is considered to be the primary use.

<sup>8</sup> Total acres used for crops is less than the sum of the acreages of individual crops to the extent that two or more crops were, or will be planted on or harvested from same land during the year.

TABLE 4.—Estimated Quantities of Fertilizer Constituents and Lime Needed Annually for Post-war Production.<sup>1</sup>  
(Tons)

| Crop or kind of pasture | Nitrogen | Phosphoric acid | Potash |
|-------------------------|----------|-----------------|--------|
| Cotton                  | 450      | 1,100           | 450    |
| Corn                    |          | 400             |        |
| Wheat                   |          | 2,000           |        |
| Peanuts                 |          | 1,500           |        |
| Irish potatoes          | 210      | 504             | 210    |
| Sweet potatoes          | 30       | 90              | 30     |
| Other truck crops       | 220      | 440             | 220    |
| Hay                     |          | 7,500           |        |
| Pasture                 |          | 36,000          |        |
| Miscellaneous           |          | 8,600           |        |
| Total tons              | 910      | 58,134          | 910    |

<sup>1</sup> Based on Table 8 in text, page 26. See text for assumptions and discussions.

TABLE 5.—Estimates of Crop Yield Per Acre.

| Crop                        | Acreage   | Unit | Yield per Acre               |                             |                            |
|-----------------------------|-----------|------|------------------------------|-----------------------------|----------------------------|
|                             |           |      | Average 1937-41 <sup>1</sup> | Normal in 1943 <sup>2</sup> | Post-war 1950 <sup>3</sup> |
| Corn, all                   | Planted   | Bu.  | 17.6                         | 17.6                        | 19.4                       |
| All sorghums for grain      | Harvested | Bu.  | 10.9                         | 10.9                        | 12.0                       |
| All sorghums for silage     | Harvested | Ton  | 3.9                          | 3.9                         | 4.2                        |
| All sorghums for forage     | Harvested | Ton  | 1.23                         | 1.23                        | 1.32                       |
| Soybeans for beans          | Harvested | Bu.  | 7.1                          | 7.1                         | 7.1                        |
| Cowpeas for peas            | Harvested | Bu.  | 5.7                          | 5.7                         | 5.7                        |
| Peanuts picked and threshed | Harvested | Lb   | 509.                         | 509.                        | 550.                       |
| All upland cotton           | Planted   | Lb.  | 167.                         | 167.                        | 174.                       |
| Irish potatoes              | Planted   | Bu.  | 72.                          | 72.                         | 78.                        |
| Sweet potatoes              | Planted   | Bu.  | 76.                          | 76.                         | 76.                        |
| Processing truck crops:     |           |      |                              |                             |                            |
| Snapbeans                   | Planted   | Ton  | 1.22                         | 1.22                        | 1.22                       |
| Spinach                     | Planted   | Ton  | 1.56                         | 1.56                        | 1.75                       |
| Fresh market truck crops:   |           |      |                              |                             |                            |
| Watermelons                 | Harvested | Ton  | 2.56                         | 3.12                        | 3.25                       |
| Strawberries                | Harvested | Ton  | .82                          | .82                         | .82                        |
| Oats for grain              | Harvested | Bu.  | 20.2                         | 20.2                        | 22.2                       |
| Barley for grain            | Harvested | Bu.  | 17.5                         | 17.5                        | 17.5                       |
| Winter wheat                | Planted   | Bu.  | 11.2                         | 11.2                        | 12.2                       |
| Rye for grain               | Harvested | Bu.  | 9.2                          | 9.2                         | 9.2                        |
| Flaxseed                    | Planted   | Lb   | 7.7                          | 7.7                         | 7.7                        |
| Hay, all tame               | Harvested | Ton  | 1.30                         | 1.30                        | 1.48                       |
| Wild hay                    | Harvested | Ton  | 1.03                         | 1.15                        | 1.18                       |
| Broomcorn                   | Harvested | Lb.  | 270.                         | 270.                        | 270.                       |

<sup>1</sup> Reports of the Bureau of Agricultural Economics except as otherwise indicated.

<sup>2</sup> Assuming 1943 cropping pattern and practices, and normal weather.

<sup>3</sup> Probable yield on estimated post-war acreage with assumptions as set forth in text of report.

TABLE 6.—Estimated Acreage Limed, Acreage Needing Lime, and Quantities of Calcium Carbonate Equivalent Needed for Specified Purposes.<sup>1</sup>

| Item              | At end of 1943                       |   | Required to establish on acreage in col. 2 | Required annually for maintenance on acreage in col. 1 |
|-------------------|--------------------------------------|---|--|--|
|                   | Total acreage limed and needing lime | Total acreage needing lime <sup>2</sup> |  |  |
|                   | Acres                                | Acres                                   | Material                                   | Material   |
| Cropland          | 5,500,000                            | 5,430,000                               | 10,345,000                                 | 2,750,000  |
| Permanent pasture | 1,200,000                            | 1,170,000                               | 2,340,000                                  | 600,000  |

<sup>1</sup> These estimates are based on bringing acid soils to a pH value considered adequate for optimum use; they do not take into account the cost of the lime or the expected response from its application.

<sup>2</sup> Include acreage that needs initial application and acreage on which previous applications were inadequate.

TABLE 7.—Estimates of Supply of Feeds Available for Feeding Livestock and for Other Purposes.

| Item  | Year beginning Oct. 1 |                     |
|---|-----------------------|---------------------|
|   | 1943-44               | Post-war<br>1950-51 |
|   | Tons                  | Tons                |
| Corn, net supply <sup>1</sup>                             | 662,172               | 1,075,200           |
| Sorghums for grain, net supply <sup>1</sup>               | 137,564               | 240,800             |
| Oats, net supply <sup>2</sup>                             | 315,280               | 402,560             |
| Barley, net supply <sup>2</sup>                           | 80,784                | 90,800              |
| Wheat fed on farms where grown                            | 166,416               | 175,000             |
| Other wheat produced and fed in the State                 | 423,450               |                     |
| Rye fed on farms where grown                              | 17,584                | 13,500              |
| Total net supply <sup>2</sup>                             | 1,729,906             | 1,917,660           |
| Total needed for food and industrial use and outshipments | 73,344                | 80,000              |
|   | 1,729,906             | 1,917,660           |
| Total available for feeding livestock                     |                       |                     |
| Total needed for feeding livestock                        | 2,127,600             | 1,730,800           |
| Total available for outshipments                          |                       | 186,860             |
| Total inshipments needed                                  | 397,694               |                     |
| <b>Other Farm-produced Concentrates</b>                   |                       |                     |
| Peanuts fed (including hogged off)                        | 1,300                 | 525                 |
| Cowpeas fed   | 780                   | 1,000               |
| Cottonseed fed  | 20,000                | 20,000              |
| Soybeans fed  | 330                   | 300                 |
| Skim milk fed (dry basis)                                 | 70,000                | 70,000              |
| <b>Hay</b>  |                       |                     |
| Tame and wild hay, net supply                             | 1,717,000             | 2,070,000           |
| Total needed for feeding livestock                        | 1,894,700             | 1,887,800           |
| Available for outshipments                                |                       | 182,200             |
| Inshipments needed  | 177,700               |                     |
| <b>Other roughages produced and fed</b>                   |                       |                     |
| Sorghum silage  | 360,000               | 462,000             |
| Corn silage   | 68,000                | 75,000              |
| Sorghum forage  | 1,508,000             | 1,305,000           |
| <b>Carrying capacity of pastures and ranges</b>           |                       |                     |
|   | Animal<br>unit mo.    | Animal<br>unit mo.  |
| Open permanent pasture and range in farm                  | 18,053,000            | 18,053,000          |
| Other pasture in farms                                    | 4,815,000             | 4,815,000           |
| Total carrying capacity                                   | 22,868,000            | 22,868,000          |
| Total requirements for livestock                          | 23,188,000            | 20,681,000          |

<sup>1</sup> Carry-in plus production less seed and carry-out.

<sup>2</sup> Available for feeding livestock, food, industrial use, and outshipments.

**TABLE 8.—Feeding Rates per Unit of Livestock.**  
(Pounds)

| Class of livestock             | Unit | Feeding rate per unit |       |              |       |
|--------------------------------|------|-----------------------|-------|--------------|-------|
|                                |      | 1943                  |       | Post-war     |       |
|                                |      | Concentrates          | Hay   | Concentrates | Hay   |
| Workstock                      | Head | 1,524                 | 1,925 | 1,524        | 2,200 |
| Milk cows                      | Head | 1,075                 | 2,180 | 1,161        | 2,500 |
| Beef cows                      | Head | 263                   | 480   | 263          | 500   |
| Other cattle                   | Head | 141                   | 281   | 141          | 300   |
| Ewes                           | Head | 7                     | 200   | 7            | 200   |
| Other sheep and lambs          | Head | 7                     | 200   | 17           | 200   |
| Hens and pullets               | Head | 50                    |       | 55           |       |
| Hogs, net live-weight produced | Cwt. | 453                   |       | 432          |       |

**TABLE 9.—Production per Unit of Livestock.**

| Livestock and Livestock Products | Unit      | Production per unit |            |            |
|----------------------------------|-----------|---------------------|------------|------------|
|                                  |           | Average 1938-42     | 1943       | Post-war   |
| Milk cows                        | Number    | 723,000             | 836,000    | 796,000    |
| Milk, per cow                    | Pounds    | 3,500               | 3,220      | 3,500      |
| Hens                             | Number    | 10,704,000          | 14,596,000 | 10,200,000 |
| Eggs per hen                     | Number    | 100                 | 103        | 114        |
| Sows, farrowed in spring         | Number    | 128,000             | 212,000    | 113,000    |
| Pigs saved per litter            | Number    | 6.08                | 6.20       | 6.38       |
| Sows, farrowed in fall           | Number    | 129,000             | 171,000    | 112,000    |
| Pigs saved per litter            | Number    | 6.34                | 6.30       | 6.66       |
| Average weight of hogs           | Pound     | 224                 | 227        | 225        |
| Ewes                             | Number    | 243,000             | 275,000    | 210,000    |
| Lambs saved per 100 ewes         | Number    | 90                  | 92         | 95         |
| Total production per lamb saved  | Lb. L. W. | 75                  | 79         | 85         |
| Calves born                      | Percent   | 86                  | 84         | 90         |
| Total production per calf born   | Lb. L. W. | 601                 | 608        | 637        |

**TABLE 10.—Estimated Quantities of Feeds Needed for Feeding Livestock for the 12-month Period Beginning October 1, 1950.**

| Class of livestock                | Feed per animal, bird or cwt. |                                  |                                     |        |                                |                                     | Total livestock and feed |                                  |                                     |              |                                |                     |
|-----------------------------------|-------------------------------|----------------------------------|-------------------------------------|--------|--------------------------------|-------------------------------------|--------------------------|----------------------------------|-------------------------------------|--------------|--------------------------------|---------------------|
|                                   | Concentrates                  |                                  |                                     |        | Tame and wild hay <sup>4</sup> | Units of livestock hay <sup>5</sup> | Concentrates             |                                  |                                     |              | Tame and wild hay <sup>4</sup> | Pasture and grazing |
|                                   | Grains <sup>1</sup>           | Seeds and skim milk <sup>2</sup> | Commercial by-products <sup>3</sup> | Total  |                                |                                     | Grains <sup>1</sup>      | Seeds and skim milk <sup>2</sup> | Commercial by-products <sup>3</sup> | Total        |                                |                     |
| Pounds                            | Pounds                        | Pounds                           | Pounds                              | Pounds | 1,000 Units                    | 1,000 Tons                          | 1,000 Tons               | 1,000 Tons                       | 1,000 Tons                          | A. U. Months |                                |                     |
| 1. Horses, mules and colts        | 1,491                         |                                  | 33                                  | 1,524  | 2,200                          | 425                                 | 316.8                    |                                  | 7.0                                 | 467.5        | 3,022                          |                     |
| 2. Milk cows                      | 867                           | 56                               | 238                                 | 1,161  | 2,500                          | 850                                 | 368.5                    | 23.8                             | 101.2                               | 1,062.5      | 7,839                          |                     |
| 3. Beef cows                      | 102                           | 72                               | 89                                  | 263    | 500                            | 475                                 | 24.2                     | 17.1                             | 21.1                                | 118.8        | 4,592                          |                     |
| 4. Feeder cattle                  | 1,550                         |                                  | 500                                 | 2,050  | 1,500                          | 25                                  | 19.4                     |                                  | 6.2                                 | 18.8         |                                |                     |
| 5. Other cattle and calves        | 46                            | 55                               | 40                                  | 141    | 300                            | 1,250                               | 28.7                     | 34.4                             | 25.0                                | 187.5        | 4,808                          |                     |
| 6. Ewes, 1 year +                 | 7                             |                                  |                                     | 7      | 200                            | 210                                 | .7                       |                                  |                                     | 21.0         | 420                            |                     |
| 7. Feeder sheep and lambs         | 120                           |                                  | 20                                  | 140    | 140                            | 75                                  | 4.5                      |                                  | .8                                  | 5.2          |                                |                     |
| 8. Other sheep and lambs          | 17                            |                                  |                                     | 17     | 200                            | 65                                  | .6                       |                                  |                                     | 6.5          |                                |                     |
| 9. Hogs, cwt. net production      | 395                           | 21                               | 16                                  | 432    |                                | 2,840                               | 560.9                    | 29.8                             | 22.7                                |              |                                |                     |
| 10. Hens and pullets <sup>6</sup> | 43                            |                                  | 12                                  | 55     | xxx                            | 10,200                              | 219.3                    |                                  | 61.2                                | xxx          | xxx                            |                     |
| 11. Chickens raised <sup>7</sup>  | 17                            |                                  | 1                                   | 18     | xxx                            | 17,000                              | 144.5                    |                                  | 8.5                                 | xxx          | xxx                            |                     |
| 12. Comm. broilers produced       | 5                             |                                  | 4                                   | 9      | xxx                            | 2,000                               | 5.0                      |                                  | 4.0                                 | xxx          | xxx                            |                     |
| 13. Turkeys raised                | 58                            |                                  | 9                                   | 67     | xxx                            | 1,300                               | 37.7                     |                                  | 5.8                                 | xxx          | xxx                            |                     |
| 14. Total                         | xxx                           | xxx                              | xxx                                 | xxx    | xxx                            | xxx                                 | 1,730.8                  | 105.1                            | 263.5                               | 1,887.8      | 20,681                         |                     |

<sup>1</sup> Includes corn, sorghums, oats, barley, rye, and wheat fed from any source including harvested grain, corn silage, corn fodder, unthreshed grain, or commercial mixed feeds. <sup>2</sup> Includes peanuts hogged off and fed whole, cowpeas, velvet beans, cottonseed fed whole, soybeans fed whole, and skim milk (dry basis). <sup>3</sup> Includes oilseed meals, gluten meal, tankage meat scraps, fish meal, dried milk products, wheat, millfeeds, gluten feed, brewers' and distillers' dried grain, hominy feed, alfalfa meal, molasses, beet pulp (dry basis), screenings, garbage, etc., fed as an individual feed or in a commercial mixed feed. <sup>4</sup> It is assumed that the other roughages recorded in Table 7 will be used for supplementing hay. <sup>5</sup> Numbers and net production recorded in Table 12, column 4. <sup>6</sup> Feed per bird should include an allowance for cockerels in the flock. <sup>7</sup> Excluding commercial broilers produced.



**TABLE 11.—Estimated Quantities of Feeds Needed for Feeding Livestock for the 12-month Period Beginning October 1, 1943.**

| Class of livestock                | Feed per animal, bird or cwt. |                                  |                                     |        |                                | Total livestock and feed        |                     |                                  |                                     |                                |                     |
|-----------------------------------|-------------------------------|----------------------------------|-------------------------------------|--------|--------------------------------|---------------------------------|---------------------|----------------------------------|-------------------------------------|--------------------------------|---------------------|
|                                   | Concentrates                  |                                  |                                     |        | Tame and wild hay <sup>4</sup> | Units of livestock <sup>5</sup> | Concentrates        |                                  |                                     | Tame and wild hay <sup>4</sup> | Pasture and grazing |
|                                   | Grains                        | Seeds and skim milk <sup>2</sup> | Commercial by-products <sup>3</sup> | Total  |                                |                                 | Grains <sup>1</sup> | Seeds and skim milk <sup>2</sup> | Commercial by-products <sup>3</sup> |                                |                     |
|                                   | Pounds                        | Pounds                           | Pounds                              | Pounds | Pounds                         | 1,000 Units                     | 1,000 tons          | 1,000 tons                       | 1,000 tons                          | 1,000 tons                     | A. U. months        |
| 1. Horses, mules and colts        | 1,491                         |                                  | 33                                  | 1,524  | 1,925                          | 468                             | 348.9               |                                  | 7.7                                 | 450.4                          | 3,309               |
| 2. Milk cows                      | 795                           | 53                               | 227                                 | 1,075  | 2,180                          | 921                             | 336.1               | 24.4                             | 104.5                               | 1,003.9                        | 8,228               |
| 3. Beef cows                      | 102                           | 72                               | 89                                  | 263    | 480                            | 684                             | 34.9                | 24.6                             | 30.4                                | 164.2                          | 6,155               |
| 4. Feeder cattle                  | 1,550                         |                                  | 500                                 | 2,050  | 1,500                          | 25                              | 19.4                |                                  | 6.2                                 | 18.8                           |                     |
| 5. Other cattle and calves        | 46                            | 55                               | 40                                  | 141    | 281                            | 1,549                           | 35.6                | 42.6                             | 31.0                                | 217.6                          | 5,076               |
| 6. Ewes, 1 year+                  | 7                             |                                  |                                     | 7      | 200                            | 228                             | .8                  |                                  |                                     | 22.8                           | 360                 |
| 7. Feeder sheep and lambs         | 112                           |                                  | 10                                  | 122    | 180                            | 75                              | 4.2                 |                                  | .4                                  | 6.8                            |                     |
| 8. Other sheep and lambs          | 7                             |                                  |                                     | 7      | 200                            | 102                             | .4                  |                                  |                                     | 10.2                           |                     |
| 9. Hogs, cwt. net production      | 423                           | 21                               | 9                                   | 453    |                                | 3,963                           | 838.2               | 41.6                             | 17.8                                |                                |                     |
| 10. Hens and pullets <sup>6</sup> | 39                            |                                  | 11                                  | 50     | XXX                            | 15,027                          | 293.0               |                                  | 82.7                                | XXX                            | XXX                 |
| 11. Chickens raised <sup>7</sup>  | 16.9                          |                                  | .9                                  | 17.8   |                                | 18,000                          | 152.1               |                                  | 8.1                                 | XXX                            | XXX                 |
| 12. Comm. broilers produced       | 5                             |                                  | 4                                   | 9      | XXX                            | 2,000                           | 5.0                 |                                  | 4.0                                 | XXX                            | XXX                 |
| 13. Turkeys raised                | 58                            |                                  | 9                                   | 67     | XXX                            | 1,000                           | 29.0                |                                  | 4.5                                 | XXX                            | XXX                 |
| 14. Total                         | XXX                           | XXX                              | XXX                                 | XXX    | XXX                            | XXX                             | 2,127.6             | 133.2                            | 297.3                               | 1,894.7                        | 23,188              |

<sup>1</sup> Includes corn, sorghums, oats, barley, rye, and wheat, fed from any source including harvested grains, corn silage, corn fodder, unthreshed grain, or commercial mixed feeds. <sup>2</sup> Includes peanuts hogged off and fed whole, cowpeas, velvet beans, cottonseed fed whole, soybeans fed whole, and skim milk (dry basis). <sup>3</sup> Includes oilseed meal, gluten meal, tankage, meat scraps, fish meal, dried milk products, wheat millfeeds, gluten feed, brewers' and distillers' dried grains, hominy feed, alfalfa meal, molasses, beet pulp (dry basis), screenings, garbage, etc., fed as an individual feed or in a commercial mixed feed. <sup>4</sup> It is assumed that the other roughages recorded in Table 7 were used for supplementing hay. <sup>5</sup> Numbers and net production recorded in Table 12. Data for lines 4, 7, and 9 on this table taken from column 2 (1943) in Table 12. Data for all other lines in this table taken from column 3 (1943) in Table 12. <sup>6</sup> Feed per bird should include allowance for cockerels in the flock. <sup>7</sup> Excluding commercial broilers produced.

**TABLE 12.—Estimates of Numbers of Livestock and Production of Livestock and Livestock Products.**  
(1,000 units)

| Items of livestock and livestock products       | Unit   | Reported for <sup>1</sup> |                  | Post-war bench mark <sup>2</sup> |
|---|--------|---------------------------|------------------|----------------------------------|
|   |        | 1943                      | 1944             |                                  |
| <b>On farms January 1:</b>                      |        |                           |                  |                                  |
| Horses, mules and colts                         | Number | 481                       | 468              | 425                              |
| Cattle and calves, all                          | Number | 3,123                     | 3,154            | 2,900                            |
| Cows kept for milk, 2 years+                    | Number | 912                       | 921              | 850                              |
| Other cows 2 years+                             | Number | 638                       | 684              | 475                              |
| Sheep and lambs, all                            | Number | 424                       | 330              | 350                              |
| Ewes, 1 year+                                   | Number | 275                       | 228              | 210                              |
| Hens and pullets                                | Number | 14,596                    | 15,027           | 10,200                           |
| <b>During year:</b>                             |        |                           |                  |                                  |
|   |        | Reported for 1943         | Expected in 1944 |                                  |
| Sows farrowed, spring <sup>3</sup>              | Number | 212                       | 106              | 113                              |
| Pigs saved, spring                              | Number | 1,314                     | 647              | 721                              |
| Sows farrowed, fall <sup>4</sup>                | Number | 171                       | 97               | 112                              |
| Pigs saved, fall                                | Number | 1,077                     | 582              | 746                              |
| Chickens raised <sup>5</sup>                    | Number | 25,725                    | 18,000           | 17,000                           |
| Commercial broiler production                   | Number | 2,750                     | 2,000            | 2,000                            |
| Turkeys raised                                  | Number | 954                       | 1,000            | 1,300                            |
| Milk cows, average during the year              | Number | 836                       | 840              | 796                              |
| Milk produced                                   | Pound  | 2,692                     | 2,700            | 2,786                            |
| Wool shorn                                      | Pound  | 3,194                     | 2,495            | 2,380                            |
| Eggs produced                                   | Dozen  | 125,833                   | 125,000          | 96,927                           |
| Cattle put on feed <sup>6</sup>                 | Number | 25                        | 25               | 25                               |
| Sheep and lambs put on feed <sup>6</sup>        | Number | 75                        | 75               | 75                               |
| Average wt. hogs sold or butchered <sup>7</sup> | Pound  | 227                       | 225              | 225                              |
| Net production of hogs <sup>8</sup>             | Pound  | 396,315                   | 235,013          | 283,950                          |
| Calves born                                     | Number | 1,302                     | 1,380            | 1,192                            |
| Net production cattle and calves <sup>9</sup>   | Pound  | 791,285                   | 829,380          | 759,304                          |
| Lambs saved                                     | Number | 253                       | 195              | 200                              |
| Net production of sheep and lambs <sup>9</sup>  | Pound  | 19,961                    | 15,370           | 17,000                           |

<sup>1</sup> By the Bureau of Agricultural Economics except as otherwise indicated.

<sup>2</sup> See the text for assumptions.

<sup>3</sup> December 1 (of previous year) to June 1.

<sup>4</sup> June 1 to December 1.

<sup>5</sup> Excluding commercial broilers.

<sup>6</sup> Twelve-month period beginning on October 1.

<sup>7</sup> Weight in pounds instead of 1,000 pounds.

<sup>8</sup> Calendar year.

**TABLE 13.—Estimates of Numbers of Workers Employed on Oklahoma Farms in 1950 Compared with 1940.**  
(Thousands)

| Month     | 1940 <sup>1</sup>           |                       |                        |                    | 1950 assumed <sup>2</sup>   |                       |                        |                    |
|-----------|-----------------------------|-----------------------|------------------------|--------------------|-----------------------------|-----------------------|------------------------|--------------------|
|           | Number and class of workers |                       |                        |                    | Number and class of workers |                       |                        |                    |
|           | Family workers              | Hired regular workers | Hired seasonal workers | Total farm workers | Family workers              | Hired regular workers | Hired seasonal workers | Total farm workers |
| January   | 203                         | 25                    | 0                      | 228                | 169                         | 21                    | 0                      | 190                |
| February  | 202                         | 26                    | 0                      | 228                | 169                         | 22                    | 0                      | 191                |
| March     | 204                         | 30                    | 0                      | 234                | 170                         | 25                    | 0                      | 195                |
| April     | 218                         | 34                    | 0                      | 252                | 182                         | 28                    | 0                      | 210                |
| May       | 239                         | 34                    | 1                      | 274                | 200                         | 28                    | 1                      | 229                |
| June      | 266                         | 34                    | 8                      | 308                | 222                         | 28                    | 7                      | 257                |
| July      | 279                         | 34                    | 21                     | 334                | 233                         | 28                    | 18                     | 279                |
| August    | 244                         | 34                    | 2                      | 280                | 204                         | 28                    | 2                      | 234                |
| September | 237                         | 34                    | 1                      | 272                | 198                         | 28                    | 1                      | 227                |
| October   | 243                         | 34                    | 71                     | 348                | 203                         | 28                    | 59                     | 290                |
| November  | 235                         | 34                    | 14                     | 283                | 196                         | 28                    | 12                     | 236                |
| December  | 190                         | 34                    | 5                      | 229                | 159                         | 28                    | 4                      | 191                |

<sup>1</sup> These data are not regarded as official estimates; they are approximations based on unpublished data for the years 1939-41. The data relate to the week including the first of the month and cover all persons 10 years of age and older working 2 days or more during that week.

<sup>2</sup> Based on assumptions discussed in text of report.