Graphic Summary of

LAND UTILIZATION IN THE UNITED STATES

COOPERATIVE REPORT

U. S. DEPARTMENT OF COMMERCE

W. Averell Harriman, *Secretary*

BUREAU OF THE CENSUS

A. C. Capt, *Director*

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Letter Of Transmittal

DEPARTMENT OF COMMERCE
Bureau of the Census
Washington 25, D. C.

June 12, 1947

Sir:

I am transmitting for publication a special report on Land Utilization which is a graphic presentation of the uses being made of the agricultural land resource, both inside and outside farm boundaries. The use made of the land and the productive capacity of farm lands during World War II have been contrasted with similar characteristics for earlier periods. Attention has been given to factors contributing to record volumes of crop and livestock production with little expansion in physical areas. Most of the basic data were gathered by the Bureau of the Census in the 1945 and other censuses of agriculture or by the Bureau of Agricultural Economics of the United States Department of Agriculture.

The report was made possible through the cooperation of the Bureau of the Census of the Department of Commerce and the Bureau of Agricultural Economics of the United States Department of Agriculture. Plans for this cooperative study were made by Ray Hurley, Chief, Agriculture Division of the Bureau of the Census, and V. Webster Johnson, Head, Division of Land Economics, Bureau of Agricultural Economics. The report was prepared principally by Claude C. Haren, Bureau of Agricultural Economics, and Warder B. Jenkins, Bureau of the Census. H. H. Wooten and F. J. Marschner of the Bureau of Agricultural Economics prepared certain materials on total land use and on the use of land outside of farms and assisted in reviewing the data. Acknowledgment is made of the cartographic assistance rendered by Clarence E. Batschelet, Chief of the Geography Division, and Alford Archer of the Bureau of the Census.

Respectfully,

J. C. CAPT,
Director of the Census

Hon. W. AVERELL HARRIMAN,
Secretary of Commerce

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CHARTS AND MAPS

The period since 1940 has marked a significant milestone in the utilization of the Nation's land resources. The expansion of agricultural production, even above the previous peak levels around 1930, has been without parallel during the present century. This dynamic expansion was comparable with that attending the agricultural occupation of the prairies during the 1870's and 1880's, but the underlying conditions were vastly dissimilar. The tempo of increase during this previous period was generated by the bringing into cultivation, within a short space of only a few decades, of millions of acres of fertile land, accompanied by an upsurge of farm and total population. The unprecedented production during the present period was accomplished by fewer workers and by using substantially the same aggregate acreage for crops and pastures as had been utilized throughout the past quarter-century, and not new land or an expanded acreage. The former period represented an important stage in the expansion of agriculture through extending the physical frontier, while the latter represented an extension within the new technological frontier.

The immediate influences contributing to this recent expansion of agricultural production stemmed in part from the restoration of favorable price levels for products marketed by farmers, the recovery from the unfavorable weather conditions of the 1930's, and the patriotic response of farmers and ranchers to wartime needs. These influences were given relatively full play through a set of forces which had been gaining momentum throughout several decades. A combination of (a) rapid technological advances—particularly in the use of power machinery, the development of higher-producing crops and farm animals, and the adoption of improved feeding and cultural practices and (b) changes in the requirements for food, feed, forage, fiber, and other agricultural commodities resulted in shifts and adjustments in the use of the land between areas and within individual farms. They furnished the impetus for the expansion of agricultural production in the virtual absence of an enlargement in the physical plant.

The steady accumulation of experience by farmers has been a vital factor in the expanded productive capacity in agriculture. The use of power machinery, with the attendant enlargement and timeliness of operations, has brought about reductions in labor requirements and aided in overcoming the adversities of the weather. Substitution of tractor for animal power has released crop and pasture land for the production of feed and forage for other farm livestock and has increased the comparative natural advantage of land which is productive and which, in general, is least subject to erosion. Increased employment alternatives during the past 25 years have had the greatest impact in areas where land had proved to be poorly adapted to crops, increasing the pasture- and forest-producing potential. Improved varieties of crops, such as hybrid corn, better feeding practices, and development of livestock breeds have contributed to higher unit production. Changes in dietary and other consumer preferences have favored production of crops with high per-acre volumes and increased the value or utility of the Nation's feed- and forage-producing resources. Changes in export requirements have had an equally great influence upon national and, more especially, upon regional requirements for land. Considering the disruptions and dislocations during this period and the enormity of these changes when spread among an industry of 6 million farms, the period of time that elapsed in this major transformation of the Nation's major basic industry was relatively short.

Scope of this report.—This graphic summary of land utilization takes stock of the present uses being made of the land resources of the United States and notes the current and past changes and developments which have been instrumental in shaping these patterns of land use. It provides agricultural workers and students with a fund of graphically presented information on the use of land resources, recent accomplishments, and the major readjustments effectuated through the years. Stress has been placed on the more recent economic and technological developments with less attention to the long-standing factors in the molding of agriculture.

This present report on the utilization of crop, pasture, and other land is a continuation of a series of graphic summaries, the first appearing in the 1915 Yearbook of Agriculture which was based largely on the 1910 Census of Agriculture. A somewhat similar publication has followed each succeeding census. For example, Miscellaneous Publication No. 260 of the United States Department of Agriculture, which was issued in 1937, was a graphic presentation of Physical Features and Land Utilization in the United States using data from the 1935 Census of Agriculture and from the Department of Agriculture. In order to facilitate publication and to avoid duplication in the preparation of maps and charts, this present issue has been prepared cooperatively by the Bureau of the Census and the Bureau of Agricultural Economics. The graphic and other references supplement the data presented in the General Report and other publications of the 1945 Census of Agriculture. In order to make a more complete presentation for all agricultural land, production, and income, the Census data are supplemented by information on the use of land outside farms, material prepared from the annual crop and livestock estimates, and other statistics issued annually or periodically by the Bureau of Agricultural Economics and other agencies of the United States Department of Agriculture.

Information presented on the use of land not reported under farm or ranch ownership or lease has been assembled from the records and reports of public land-owning and land-managing agencies, State agencies, and other sources in connection with an inventory of land resources and their major uses. A number of general and detailed maps and other data on physical characteristics, use, and ownership were used in the preparation of the maps on the distribution of land in farms and of the individual categories of farm land.

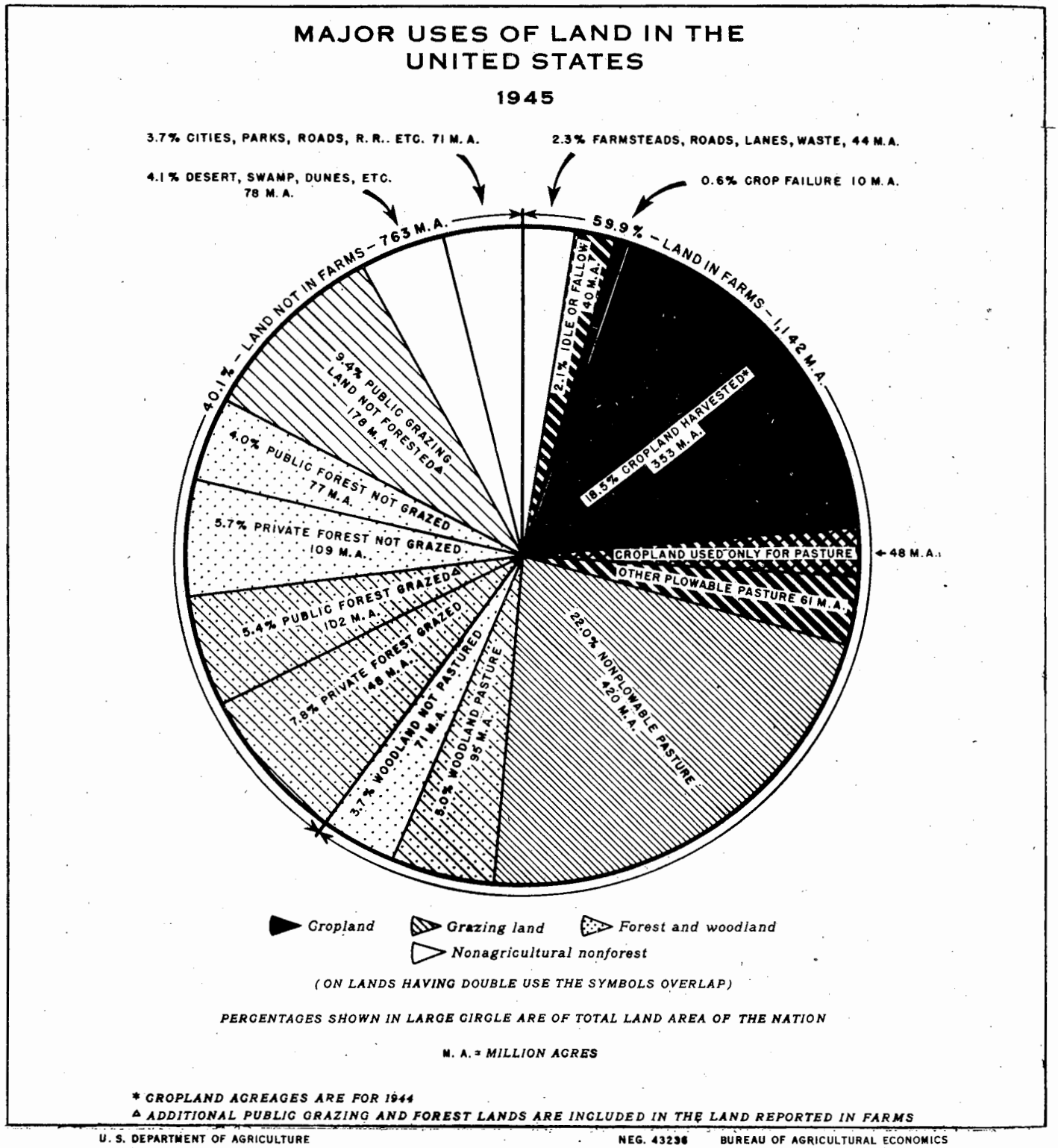
Much of what has been presented would be evident to the transcontinental traveler of today, whereas less emphasis has been placed upon what the "Forty-niner" could have visualized in his time. To the student seeking to delve more deeply into the physio-economic relationships in contrasting areas, a detailed examination of trends in major and specific uses for individual crops offers a prospective field for investigation.

Definitions and explanations.—The terminology in this report which refers to farms, land in farms, the individual classes of land in farms, and similar descriptive terms are based upon the Census definitions outlined in the 1945 reports of the Census of Agriculture. It should be noted particularly that the term "farms" includes both farms and ranches, and that the definition of land in farms generally excludes land not under ownership and lease, such as grazing land used free or under permit. Extensive areas of timber land, mineral land, or other tracts not used for crops or for pasture or grazing purposes are generally excluded from the enumeration of farm land.

In mapping changes, classes of cropland have been combined which exclude cropland reported as used only for pasture in 1944 and plowable pasture reported for previous periods. This change in classification defines cropland used only for pasture in 1944 as that plowed within the preceding 7 years as contrasted with figures for a similar item reported in 1925, 1930, 1935 and 1940 Censuses on land which could have been plowed and used for crops without additional clearing, draining or irrigating. This represented a significant distinction, excluding the land never plowed as well as that once used for crops but shifted, probably permanently, to other uses.

A number of the maps included in this report have been modified from those presented in the General Report of the 1945 Census of Agriculture. This modification was accomplished by determining and plotting the approximate location, within States, of crop failure and other classes of land in farms, adding to State as contrasted with county totals.

The description and location of various areas have involved use of physiographic terms which may be unfamiliar to some readers. In these instances, areas have been identified with a specific location within an individual State or group of States. Broader areas are designated by the familiar geographic division names. The eastern part of the United States refers to that part of the country east of the classical dividing point, the 100th meridian; or when groups of States have been involved, to the States east of the six Plains States.



Nearly 60 percent of the land area of the United States was in farms or ranches in 1945. Of this land in farms or ranches, 39.5 percent was classified as cropland, 42.1 percent as pasture (exclusive of cropland used for pasture and woodland pastured), 14.6 percent as woodland, and the remaining 3.8 percent as land occupied by farmsteads, roads, lanes, or as wasteland. Altogether, over one-half of the land area of the Nation was utilized for pasture or range for livestock. Two-fifths of the total pasture and grazing land was outside farms or ranches. About two-thirds of this latter acreage was publicly owned land, principally located in the western part of the country. The grazing land outside farms included range areas, mostly in native grasses or shrub vegetation, and the more open or accessible tracts of forest and woodland. The carrying capacity of these nonfarm grazing lands was generally low. A total of 458 million acres of forest and woodland was outside farms or ranches. Of this area, 22 million acres were in parks, preserves, and military reservations. Over one-half of the nonfarm forest or woodland was in private ownership, and about three-fifths was grazed. The land required for cities, parks, roads, railroads, and similar uses amounted to only 71 million acres, or 3.7 percent of the total land area. The 78 million acres of desert, bare rock, tidal marshlands, and coastal beaches had little agricultural value but had some value for wildlife and recreational uses.

PRESENT UTILIZATION OF LAND RESOURCES

The land resources of the United States are both abundant in quantity and varied in character relative to resources in other parts of the world. The 353 million acres from which crops were harvested in 1944 represented more than two and one-half acres per capita. The 200 or more crops of economic or commercial significance included all of the major crops except certain tropical and subtropical products, such as rubber, tea, coffee, palm and coconut oils, bananas, and spices. During 1944 and the other wartime years when agricultural production might have been expected to be disrupted by shortages of labor and materials, most crop and livestock commodities were produced at record levels.

About two-thirds of the total cropland harvested was utilized for producing feed and forage crops for consumption by livestock and, in turn, largely for supplying animal proteins, vitamins, and other essentials of quality diets. One-fifth of the acreage from which crops were harvested, or about one-half acre per capita, was utilized for growing crops, such as wheat, rice, rye, potatoes, beans, and peas, which provide staple diets for a large proportion of the population in other parts of the world. About one-tenth of an acre per capita was used for fruits and vegetables, sources of minerals and other protective constituents of today's diets. The fiber, oil-producing, and other crops accounted for the remaining one-tenth of the acreage of harvested crops.

Production of record supplies of dairy, meat, poultry, and other livestock products during the war years required about the same acreage of feed and forage crops and of pasture and grazing land as were utilized during the previous peak period of agricultural production of the predrought years around 1930. A part of this increased production was attributable to herd and farm-flock improvements; better feeding practices; improved quality of pastures, hay, and other livestock feed; and to decreased feed and forage requirements for farm work stock. An equally important or even greater contribution was provided by increased crop yields and increased pasture-carrying capacities. Production of feed grains was one-fifth and hay one-fourth greater during the 5-year period from 1942 through 1946 than during the years from 1928 through 1932. There was an improvement over the former period of one-fifth in the condition of late summer pastures and some improvement in the western range.

To the extent that weather during these two periods was generally favorable and the acreage used for production of feed and forage was virtually the same, these increases can be attributed to the influence of such factors as the widespread adoption of higher yielding varieties, greater use of fertilizers and lime on both crop and pasture fields, establishment of safeguards against soil losses and excessive run-off, and of increased selectivity in the use of land for crops. The enlargement of the capacity of crop and pasture acres to produce, which had been arrested or obscured during the period of drought and low prices of the 1930's, was expanded from 1937 onward under the impetus of these technological developments, the return of favorable growing conditions, a favorable price structure, and of the patriotic response of farmers during the war.

Crop and livestock products are replenished or restored annually or over a relatively short period of years. The large volume and variety of lumber, timber, pulpwood, naval stores, and other forest products which went to meet wartime needs represented the harvest of a resource accumulated and carried over from many preceding decades. This latest drain upon the Nation's forests has accentuated a situation where dependence, as that upon crops and pastures, henceforth must be placed upon current and prospective growth.

This wartime period was noteworthy in that all requirements for agricultural production—for a population nearly one-third greater than in 1920, the added needs of the armed forces, wartime industries, and for meeting commitments overseas—were supplied without seriously impairing the gains in conservation achieved during preceding years. Improvements in yields and carrying capacities and in soil and moisture conservation were associated with reductions over the predrought period of about 30 million acres in the two intertilled crops of corn and cotton alone. Mechanization since 1920 not only resulted in reductions of about 70 million acres in crops on mostly tillable pasture land required for feeding farm work stock, but also in additional gains through timeliness of farm operations. These and other savings applied to growing of other crops, to pasture, and to providing feed and forage for meat and dairy animals scaled down over-all demands for land and thereby precluded the rebreaking or plowing of a large acreage of grassland in areas susceptible to erosion and to high climatic risk.

Shortages in manpower, machinery, and other equipment and facilities placed a high premium upon land which was productive, easy to work, or easy to farm with mechanized equipment. Farmers made the most of their time and of scarce machinery and fertilizer by continuing or intensifying the practice of restricting crops like corn and cotton to the fields where soils, slope, erosion, drainage, and other conditions were relatively favorable for crop production. Vacant farms were generally leased or acquired by neighboring farmers for enlarging crop-farming operations where physical conditions were fairly good. Where physical conditions were less favorable many farms that were vacated by operators who left for the armed forces or for wartime industries remained idle or were used in part for pasture.

Scarcity of labor and materials also had the effect of retarding or postponing additional farm and community engineering projects, reseeding of depleted pastures and range, replanting of deforested areas, and other aids to soil and moisture stabilization. While adjustments in land use continued to be made and conservation practices were maintained, much remained to be done to protect and safeguard cropland and other resources.

Cropland.—About 500 million acres, or one-fourth of the land area of the United States, comprise what may be regarded as the present cropland area. This includes the 451 million acres classified by the Census as cropland. A part of the remainder was in permanent but tillable pasture and a small amount was in tracts temporarily unoccupied in 1944. About 40 million acres of the total cropland are ill-suited to cultivation every year owing to low fertility or to critical slope or erosion conditions. These 500 million acres do not represent the acreage that is either physically or economically feasible to devote to crops every year. They represent the over-all area where use for crops has competed and is likely to continue to compete with other demands for the land, contingent upon the needs for agricultural production, prices and markets, and production facilities available to farm operators, and upon the relative capacities to produce and responsiveness of various grades of land. Prospective additions to this over-all cropland base through land reclamation would have the effect of replacing the acreage shifted from cropland to other uses as the result of the reversion of poor farm land to pastures, grazing or forests, or the expansion of urban areas.

The present situation with respect to the utilization of cropland may be clearly visualized when it is recognized that only 353 million acres of cropland harvested in 1944 provided (either directly as foodstuffs or fibers, or indirectly through use as feed and forage for livestock) the bulk of the many

agricultural products that went to meet the tremendous consumption demands during wartime and later years. A precise measurement cannot be made, but the geographic distribution of the cropland harvested indicates that as much as 90 percent or more of the acreage was concentrated on land of comparatively high natural advantage for crops. This concentration of harvested crops on land which was productive, workable, dependable, and durable was especially significant in view of the character of the remaining cropland in farms. The 10 million acres of complete crop failure in 1944 and comparable losses during the other wartime years may be regarded as a minimum annual expectancy, considering the wide geographic range of drought, flood, unseasonable weather, and shortage of help which beset individual farmers between the time crops are planted and are ready for harvest. The 40 million acres of cropland, idle or fallow, in farms in 1944 included the minimum reserve required to sustain the practice of alternate summer fallow as a moisture-saving and moisture-storing measure in areas such as the western Great Plains, and to compensate for insufficient fertility or other obstacles to maintenance of continuous crop usage. This acreage also included cropland which, because of such recurring factors as too little or too much moisture or scarcity of labor and materials, was not used for crops or pasture, even when the intention at the outset of the season had been to produce a crop.

Cropland used only for pasture in 1944 (plowed during the previous 7 years) consisted mainly of pasture in rotation with crops, as contrasted with permanent pasture lots. This pasture generally consisted of land unadapted to sustained use for crops except in rotations of pasture with occasional use for crops. A small acreage represented pasture provided on unplanted fields or on abandoned corn, cotton, and other crop fields. Mature crops with low yields in prospect may be completely abandoned (crop failure), be harvested in the customary or an entirely different manner, or be grazed by livestock. During 1944 and other recent years, when both prices and yields were favorable, the acreage of crops abandoned or diverted to pasture and other uses was comparatively small.

Pasture and grazing.—The 1,052 million acres of pasture and grazing land which were within and outside farms or ranches at the beginning of 1945, or which had been used or were available for use during the preceding year, provided low-cost forage sufficient to meet more than one-third of the feed and forage requirements of farm and ranch livestock. This pasture and grazing land varied widely in grass and other forage provided and in carrying capacities. Only 624 million acres were under farm ownership and lease, the remainder consisting of national forest, public domain land in grazing districts, and other publicly and privately owned land outside farms. Of the total area of pasture and grazing land, 707 million acres were nonforested, but only about 100 million acres were adapted to use for crops. This acreage of essentially nontillable and unwooded land, combined with the 345 million acres of farm woodland and nonfarm forest, comprised about 950 million acres of dry, steep, rough, poor, and swampy land, valuable for pasture or grazing, for a combination of forest and grazing uses, for providing cover for wildlife, and for watershed protection.

Forage supplies are supplemented by utilizing wheat and rye fields for pasture in the fall or spring, and by turning cattle and other farm livestock to graze over hay, grain stubble, and cornfields after the crop is removed. Improved pastures include a large number of such introduced species as bluegrass, white clover, lespedeza, and Johnson, Bermuda, and carpet grasses. Native forage plants in the humid and subhumid areas include the broom sedges, wire grasses, and similar species of the originally forested areas; the grasses, reeds, and undergrowth within the forested and cut-over areas; and the bluestem pastures of central Minnesota, the Dakotas, and the Flint Hills and adjoining areas of eastern Kansas and Oklahoma. The grama, buffalo, and other short grasses of the semiarid areas of the Great Plains; the sagebrush and other desert shrubs of the intermountain region; and the scattered vegetation on the mountain slopes and other elevated or better situated areas in the West round out the broad picture of the many grasses and other plants adding up to the forage resource. In many instances this vegetation provides forage palatable to cattle, but in others it is browsed only by sheep or goats.

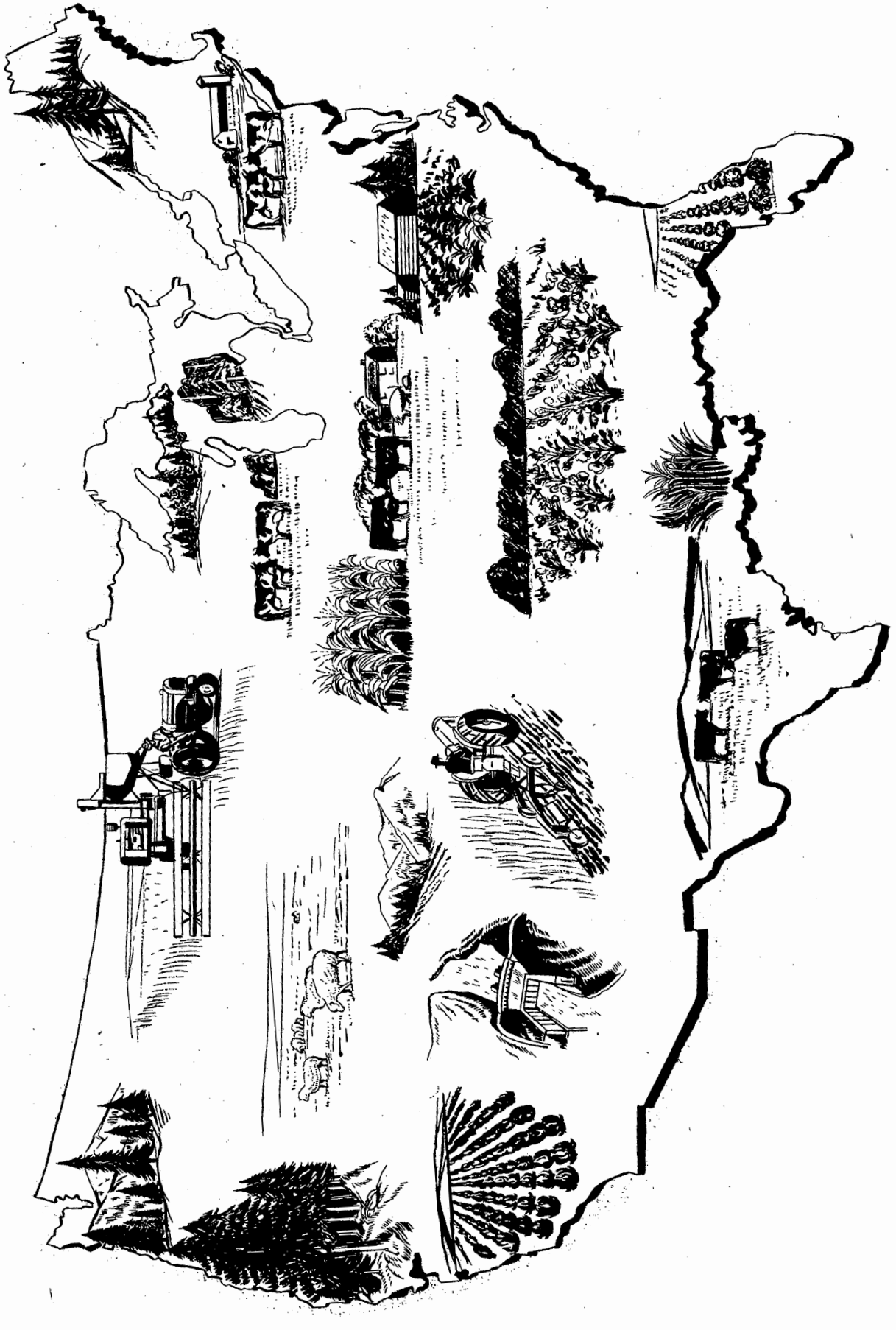
The pasture or grazing season is yearlong in the southern portion of the United States, but with limitations—associated with high temperatures and scant moisture supplies—from southwestern Texas to southern California. Other limitations associated with high temperatures, humidity, tropical diseases, and pests along the lower Atlantic and Gulf Coasts have been partially overcome by cross-breeding of cattle to withstand such conditions. The season averages from 3 to 6 months in the upper latitudes of the Northeast, northern Minnesota, and the high elevations of the West. Climatic limitations in the length of the pasture season (particularly in the Northern States and the mountain valleys of the West) are overcome by growing hay and other crops for winter feeding. Throughout much of the West, farm and ranch livestock are moved to seasonal pastures—during the summer to the mountains and plateaus and during the fall to the lower-lying winter ranges where moisture and water supplies are more favorable than at any other time of the year.

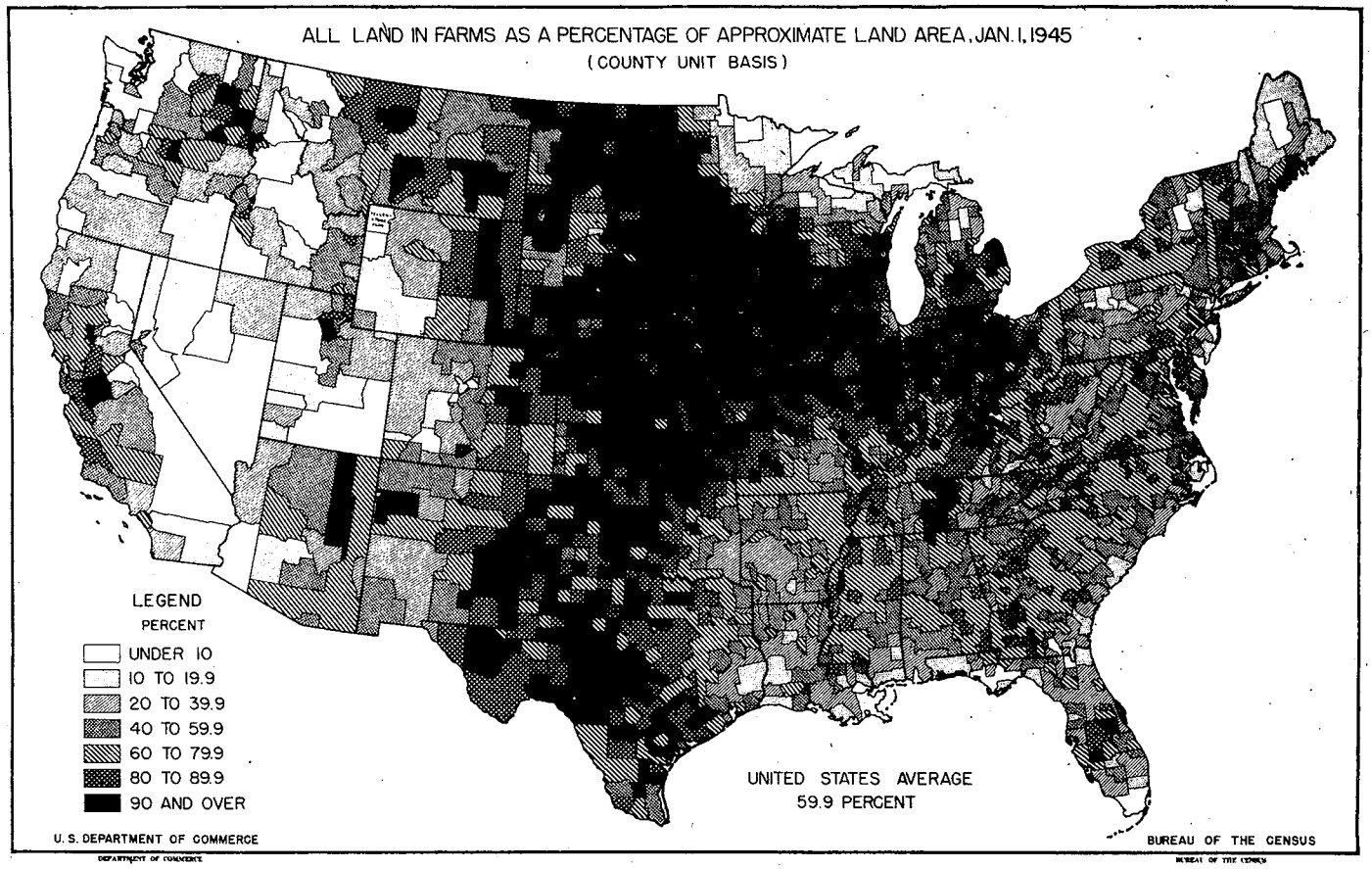
Carrying capacities of pasture and grazing land range from the two or more head of cattle or equivalent livestock units per acre maintained on virtually a yearlong basis on the rice fallow land in southern Louisiana, southeastern Texas, and eastern Arkansas to one head for 40 acres or more on a seasonal basis of the arid West. The highly productive land in areas such as the Corn and Dairy Belts and the Mississippi Delta is capable of producing excellent pastures, but is of even greater value for crops. Pasture and grazing land on the typically dry, rough, or otherwise low-quality land which comprises over 90 percent of the present pasture area provides relatively low carrying capacities which are mostly improvable by controlled grazing, reseeding, and the application of soil and moisture-conservation measures.

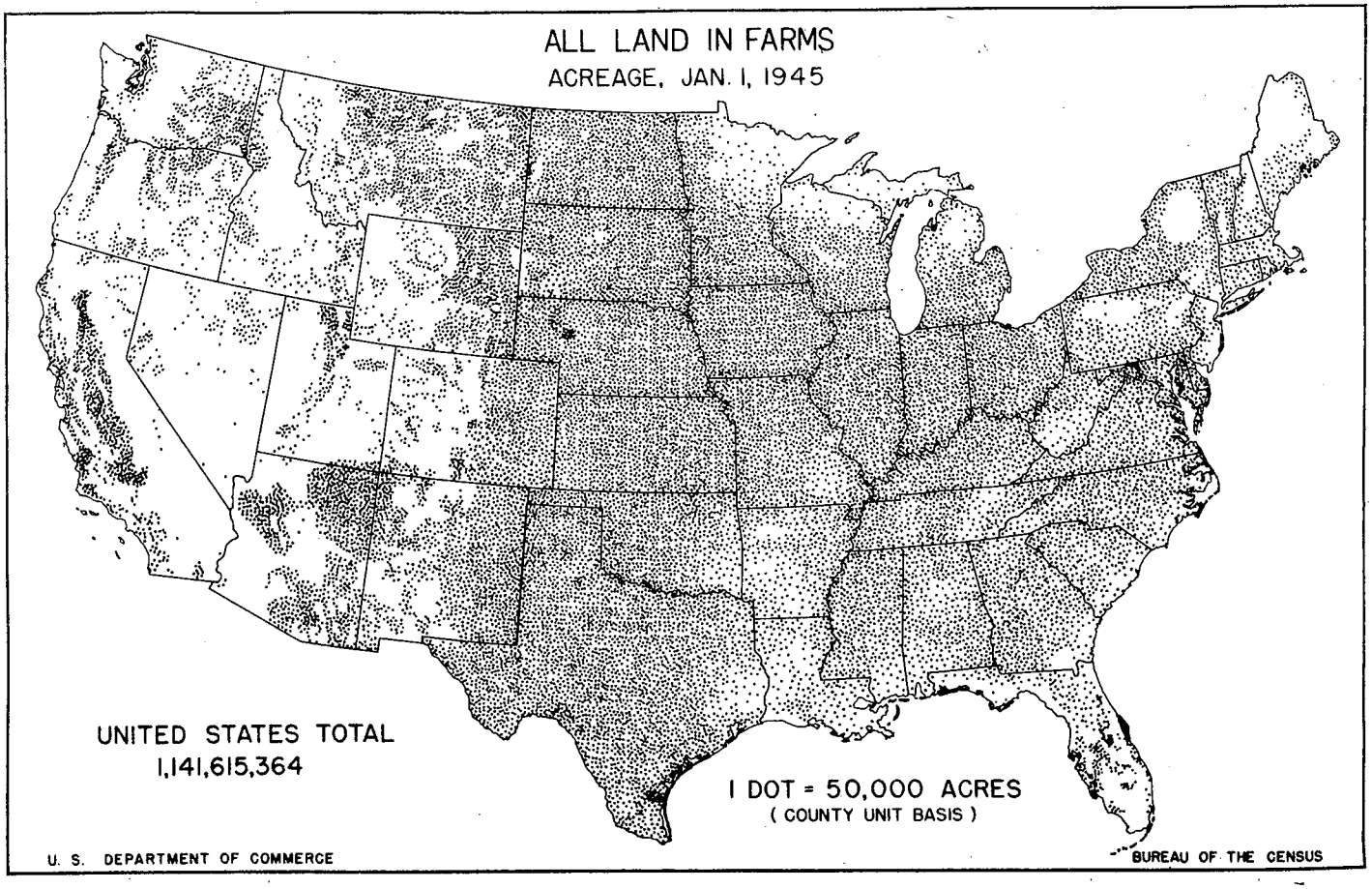
Forest and woodland.—The Forest Service, in a reappraisal of the forest situation, has estimated the total forest and woodland area in 1945 to be 624 million acres, or nearly one-third of the Nation's land area. This acreage included approximately 163 million acres in inaccessible alpine ranges, or in chaparral, mesquite, pinon-juniper, and other noncommercial wooded areas, or in withdrawn areas (parks, preserves, etc.). About 461 million acres were in commercial forest-producing land. Parks, military reservations, and similar installations included 9 million acres of the total forest area.

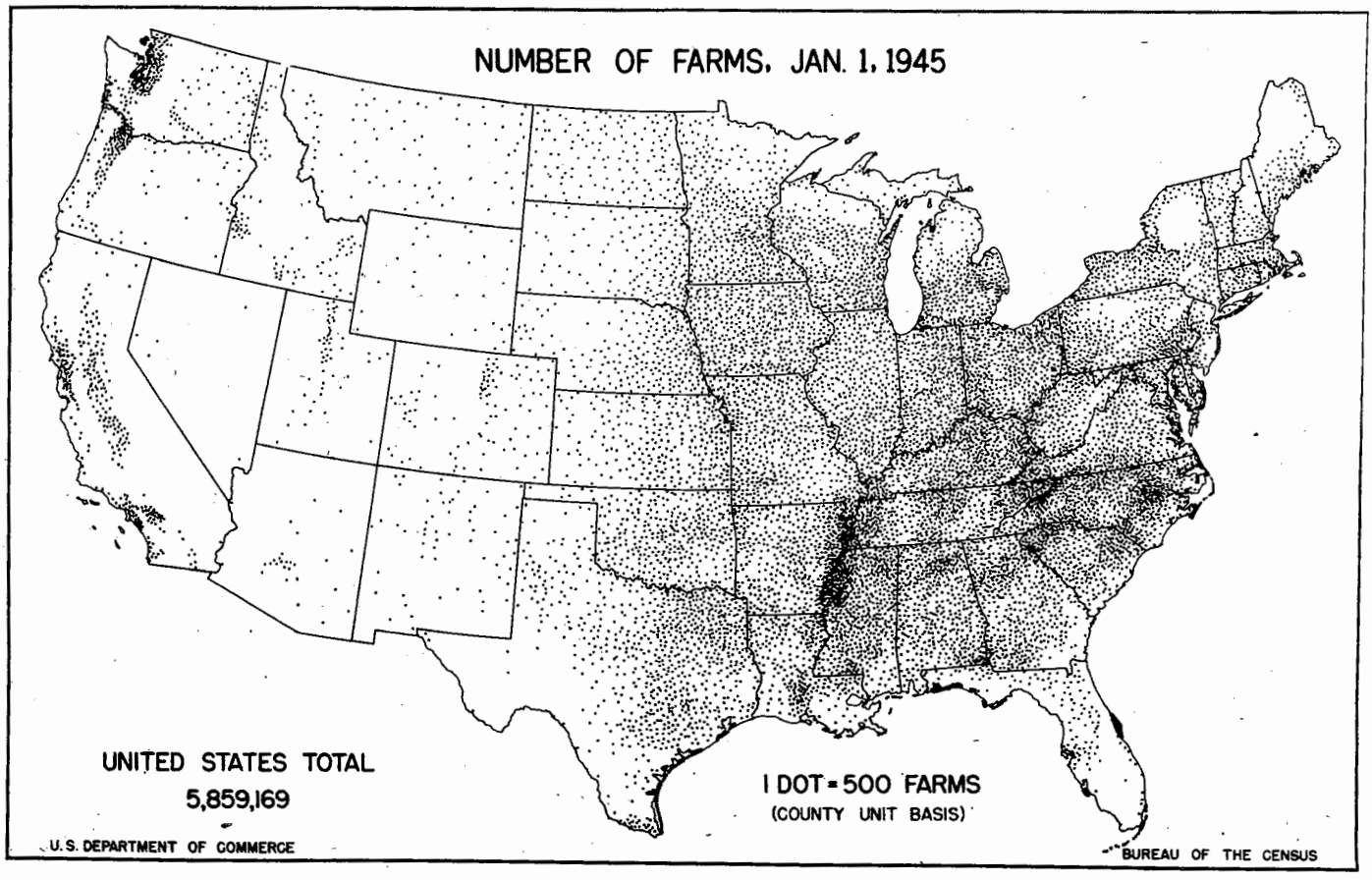
This area of available forest-producing land in 1945 was only 56 percent of the 820 million acres which comprised the original forested area of the United States. The area in forest, at that, was tremendous in size but the forests themselves possessed many unsatisfactory characteristics compared with forests only a half century ago. Only about one-tenth, concentrated in the Western States, was old or virgin growth. About two-thirds of the area was in stocks of saw timber and pole dimensions. The remainder represented seedlings and saplings, and poorly restocking and denuded areas in about a 50-50 ratio.

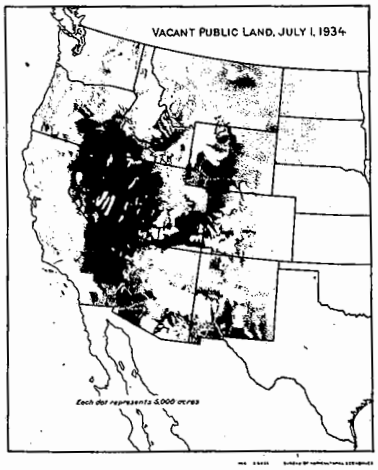
About 139 of the 166 million acres of farm woodland in 1944 were in one or other of the forest-producing categories. The principal exceptions were the woodland pastures of the oak-cedar breaks and the mesquite areas of west central Texas, the pinon-juniper of the Indian reservations in Arizona, and the chaparral of California. Farm woods on the 2.7 million farms reporting woodland were typically small tracts on poor, rough, or steep land, or consisted of farm woodlots reserved to meet farm needs. Farm timber is not generally as heavy as in the larger tracts outside farm ownership. The value to farmers of their farm forests and woodlots as a source of income was demonstrated by the nearly 222 thousand farms reporting sale of forest products amounting to 78 million dollars in 1944. This excluded the annual value of the timber and wood used for farm purposes, the pasturage for livestock, the protection afforded farm land and farmsteads, and the employment provided by forest products industries.

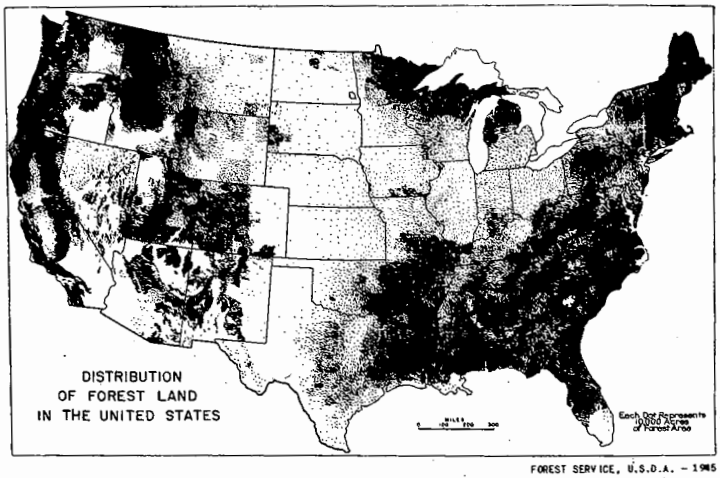



ALL LAND IN FARMS AS A PERCENTAGE OF APPROXIMATE LAND AREA, JAN. 1, 1945
(COUNTY UNIT BASIS)
LEGEND
PERCENT
UNDER 10
10 TO 19.9
20 TO 39.9
40 TO 59.9
60 TO 79.9
80 TO 89.9
90 AND OVER
UNITED STATES AVERAGE
59.9 PERCENT
U. S. DEPARTMENT OF COMMERCE
BUREAU OF THE CENSUS


ALL LAND IN FARMS
ACREAGE, JAN. 1, 1945
UNITED STATES TOTAL
1,141,615,364
1 DOT = 50,000 ACRES
(COUNTY UNIT BASIS)
U. S. DEPARTMENT OF COMMERCE
BUREAU OF THE CENSUS







FOREST SERVICE, U.S.D.A. - 1945

LAND UTILIZATION

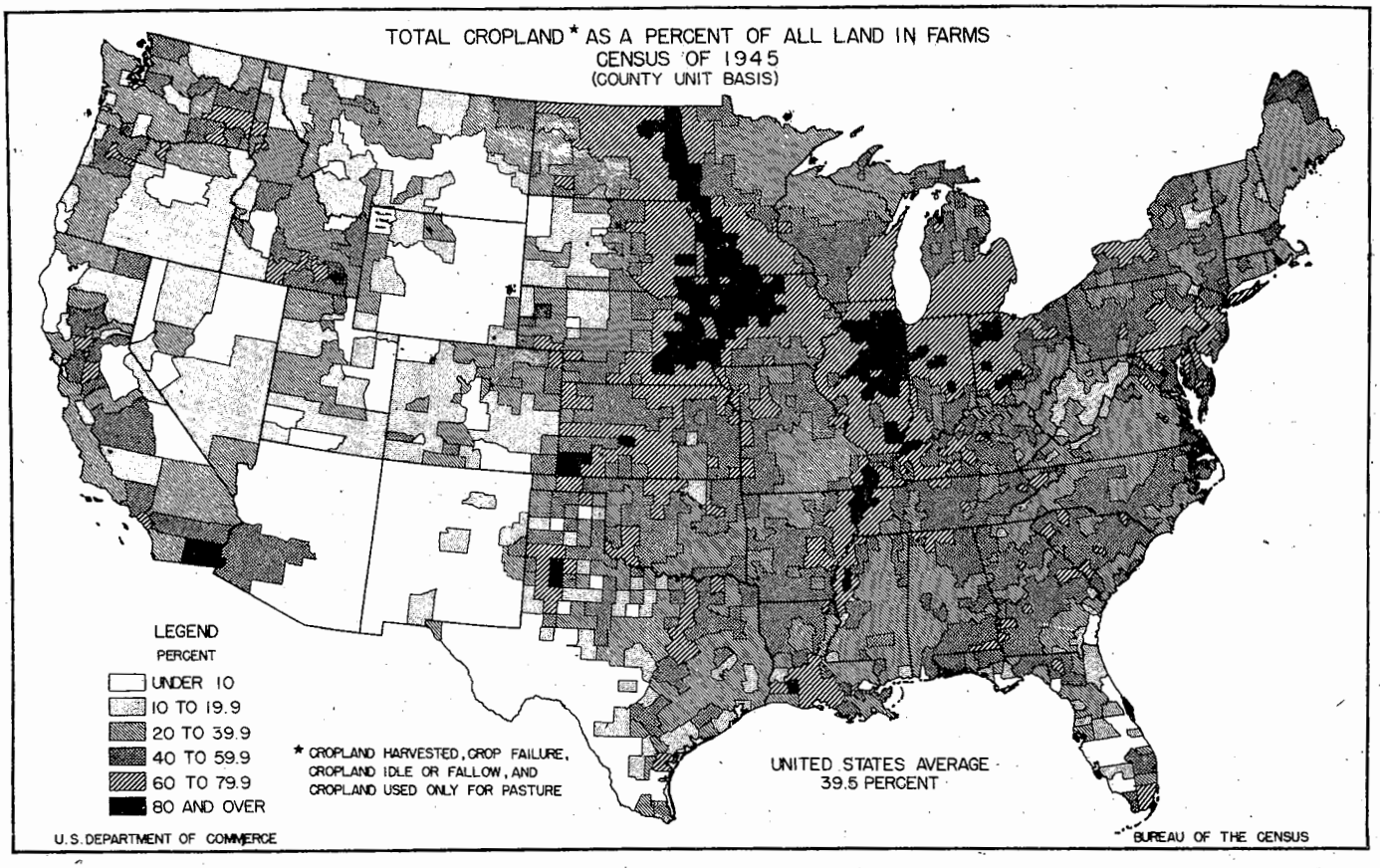
Six out of every ten acres of the land area of the United States were under farm or ranch ownership or lease, as reported in the 1945 Census of Agriculture. The proportion of the land area in farms was greatest in the corn, wheat, cotton, dairy, and livestock-feeding centers of the Mississippi Valley. This area, where a high proportion of the land was in farms, encompassed most of the North Central States and extended into adjoining sections of the western and southern Great Plains and the valleys and basins of Kentucky and central Tennessee. All of the land in these areas was under farm operation except that occupied by towns and cities, public services and facilities, and by rural nonfarm residences and miscellaneous tracts. A small proportion of the land area was in farms within the rough and mountainous areas of the Western States; the Adirondacks, the Maine woods, and other eastern highlands; the arid to desert areas; the stony, sandy, and swampy lands of the upper Lake States; and within the low-elevation and poorly drained areas bordering the Atlantic and the Gulf Coasts.

The mixture of farming, forest, and urban uses in the Northeastern States is indicated by the varying acreage of land in farms in individual counties. Extensive areas of forest land outside farms in the Ozarks and associated highlands were used as free or open range and were closely interwoven into a local farm-forest economy. Land reported in farms throughout the Southern States tended to be concentrated in areas of crop specialization. It included a varying proportion of small, interspersed forest or wooded tracts and of larger areas of forested, cut-over, or burned-over land used for grazing of farm livestock. Land reported in farms in the Western States, as elsewhere, included only the land under farm or ranch ownership or lease. Large additional areas of publicly,* and some privately, owned land were used in common with other farmers and stockmen under permit for seasonal grazing. The special treatment accorded land under ownership and lease, as contrasted with use by permit, explains many of the variations in land in farms between areas of comparable resources.

Distribution of farms reflected variations in individual size and scale of farming and ranching operations. Farms were numerous in the tobacco-producing sections, the peanut-growing areas, and the cotton-farming areas of the Southern States. Many of these farms were operated by croppers and share tenants and contained a high ratio of cropland to other classes of farm land. Farms were also numerous in the parts of the Southern Appalachians where farms are typically small and cropland is limited to a few acres per farm. The concentration of farms around Birmingham, Alabama, was indicative of the small rural residential type of unit found around many large population centers.

There was a progressive lessening of number of farms per unit of area from central Ohio westward across the Corn Belt and into the extensive wheat-farming and grazing areas of the western Great Plains. Farms in the Western States were most frequent in the irrigated areas, in the Willamette Valley of Oregon, and in the Puget Sound area of Washington. Fewer farms, but a larger acreage farmed per unit, characterized the dry-farming areas. Livestock ranches were even fewer and combined still larger acreages under individual operation.

*The 170 million acres mapped as vacant public land in 1934 have been relatively unchanged since that date.



CROPLAND UTILIZATION

Over one-half of the Nation's 451 million acres of all cropland in 1944 were located within one-fifth of the land area comprised by the triangular-shaped Central Plains, extending westward from central Ohio and expanding into the northern and southern Great Plains. The concentration of cropland within this mid-continental area, the granary of the United States, reflected an advantageous combination of physical factors—favorable climate, productive soil, and smooth surface of the land. Mechanization of farm operations has been favored by these conditions. Cropland concentration in this area has increased considerably in recent years.

The relative proportion of cropland was high throughout the farming centers of this general area. As much as 85 percent or more of the area of individual counties on the level, productive land in east central Illinois was classified as cropland and four-fifths was actually used for crops. This preponderance of cropland decreased in central and western Wisconsin and central Minnesota where a larger proportion of the farm land was utilized for pasture for dairy herds. The proportion of the farm area classified as cropland was also lower in southern Iowa and northern Missouri where the erosion hazard has been recognized by shifting a large acreage of former cropland to pasture. Cropland concentration was localized rather than widespread in the adjoining areas to the north, east, and south represented by the cut-over land of the upper Lake States, the hills of eastern and southern Ohio and southern Indiana and the Ozarks of southern Missouri. Wheat and other farm crops in the western Great Plains were confined to such favorably situated localities as the smoother and broader interstream divides and the irrigated valleys. The distribution of cropland was enlarged by the cutting of native grasses for hay in areas such as the sand hills of Nebraska.

Cropland concentration was not so extensive in the eastern and southern part of the United States because of the more pronounced local variations in soils, slopes, drainage, and other physical conditions. Concentrations of cropland are evident in areas such as the Piedmont and valley areas of Pennsylvania and Maryland, lowlands adjacent to Lake Ontario in northwestern New York, the Delta and adjoining uplands in western Tennessee, northwestern Mississippi, and eastern Arkansas, the coastal prairies of southern Louisiana, and the black prairies of Texas. The incidence of cropland within the valleys and basins of Kentucky and Tennessee contrasts with the small and localized acreage within the adjoining highlands. Cropland west of the Continental Divide was concentrated within the irrigated valleys, the Palouse country of the outer Columbia Basin, the dry-farming areas of Idaho and Utah, the central and coastal valleys of California and the Willamette Valley of Oregon.

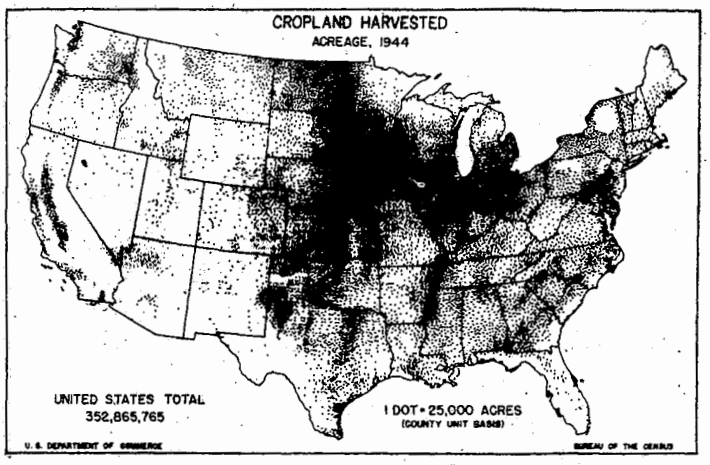
The acreage losses through crop failure in 1944 and during the other war years were lower than at any time since the predrought years about 1930. The distribution of the 10 million acres of crop failure in 1944 evidenced the local rather than general prevalence of adversities such as floods, a wet spring, and drought, storm, disease and insect destruction later in the season. Acreage losses from floods were greatest along the Red, the Minnesota, and the Upper Missouri Rivers, in southern Nebraska, and in northern and western Kansas. Drought, storms, black rust, and insect ravages resulted in additional losses in a number of areas.

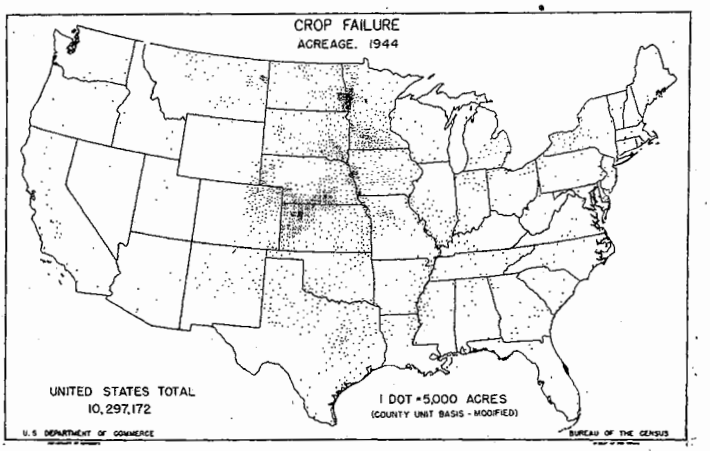
About one-half of the 40 million acres of idle or fallow cropland in 1944 were located within the spring-wheat areas of Montana and the Dakotas; the winter-wheat areas of Kansas, Nebraska, and Colorado; and other nonirrigated farming areas of the 17 Western and Plains States where alternate summer fallow is practiced as a moisture-saving and -storing measure. It also included the cropland customarily lying idle or being rested under soil, slope, and rainfall conditions prevailing throughout much of the area from the Virginia Piedmont to eastern Texas. Land in this category also included fields unplanted because of floods and prolonged wetness—particularly on the river bottoms in Minnesota—unseasonable spring and early summer weather elsewhere, and individual shortages of labor or equipment.

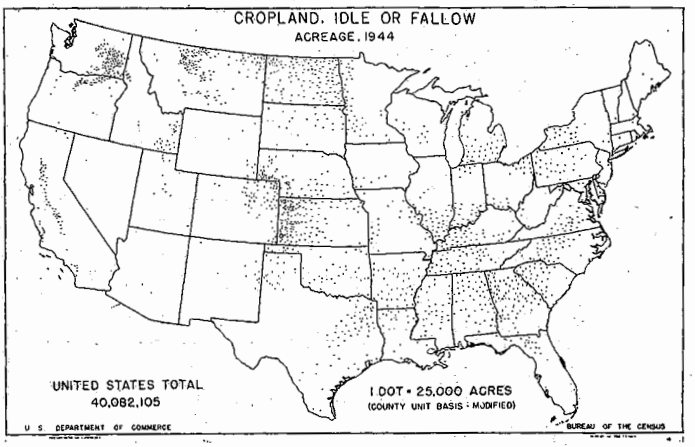
The 48 million acres of cropland used only for pasture in 1944 represented land pastured during the year which, although not used for crops in that year, had been plowed sometime during the 7 years preceding 1945. The principal concentrations included the crop-pasture land on the limestone soils of the Appalachian valleys and basins, the rice fallow land in southern Louisiana and southeastern Texas, the rotation pastures of the Corn and Dairy Belts and the irrigated valleys.

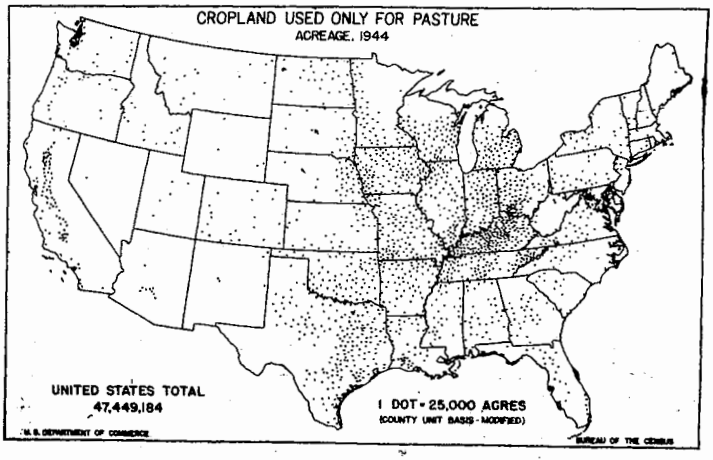
The 387 thousand farms with 200 acres or more of cropland harvested in 1944 were concentrated on the productive and level to rolling land of the Central Plains. These units actually exceeded in number all other farms in the two Dakotas. Moderately large crop farms with from 50 to 199 acres of cropland harvested were concentrated in the Corn Belt and Lake States, and in the eastern portion of the Plains States. Together these two classes included only one-third of the total number of farms in the United States but contained four-fifths of the cropland harvested.

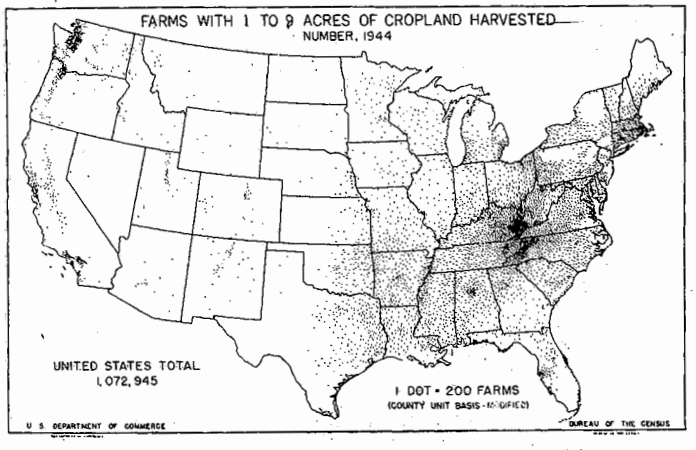
Farms with from 10 to 49 acres of cropland harvested were distributed throughout the eastern humid areas exclusive of the Central Plains and within the irrigated valleys of the West. They were especially numerous where hand labor requirements were high, such as in the tobacco-and cotton-farming areas. Farms with 1 to 9 acres of cropland harvested were concentrated within the mountain valleys in eastern Kentucky, western North Carolina, and eastern Tennessee. They were numerous around population centers from lower New England to the Pacific Coast. The location of these farms with small acreages of cropland also evidenced intensive crop specialization, off-farm employment, and lack of equipment.

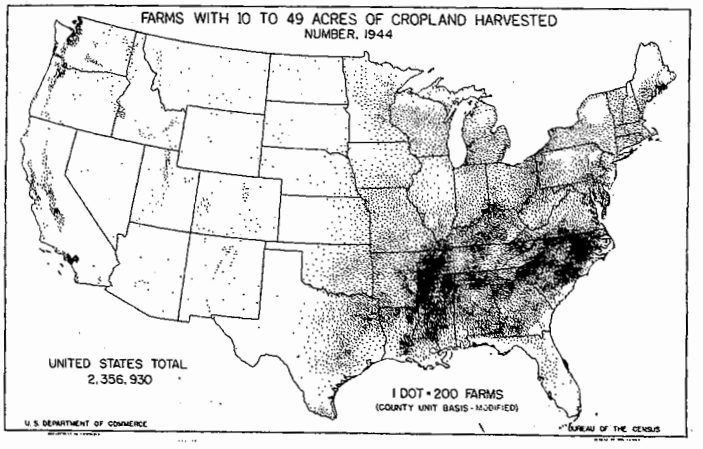

CROPLAND HARVESTED
ACREAGE, 1944
UNITED STATES TOTAL
352,865,765
1 DOT = 25,000 ACRES
(COUNTY UNIT BASIS)
U. S. DEPARTMENT OF COMMERCE
BUREAU OF THE CENSUS

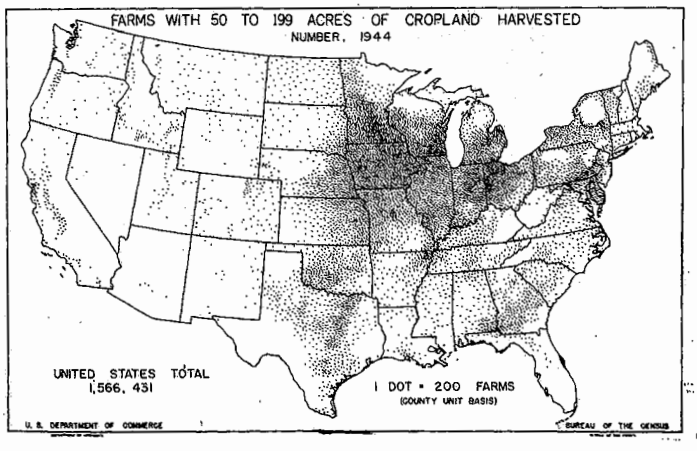

CROP FAILURE
ACREAGE, 1944
UNITED STATES TOTAL
10,297,172
1 DOT = 5,000 ACRES
(COUNTY UNIT BASIS - MODIFIED)
U. S. DEPARTMENT OF COMMERCE
BUREAU OF THE CENSUS

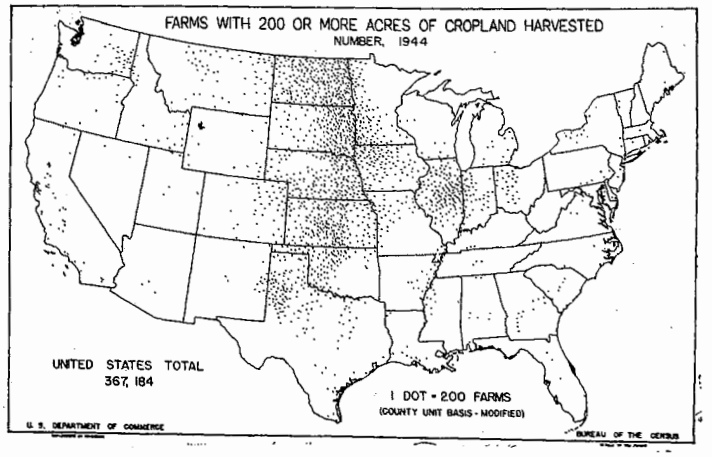

CROPLAND, IDLE OR FALLOW
ACREAGE, 1944
UNITED STATES TOTAL
40,082,105
1 DOT = 25,000 ACRES
(COUNTY UNIT BASIS - MODIFIED)
U. S. DEPARTMENT OF COMMERCE
BUREAU OF THE CENSUS


CROPLAND USED ONLY FOR PASTURE
ACREAGE, 1944
UNITED STATES TOTAL
47,449,184
1 DOT = 25,000 ACRES
(COUNTY UNIT BASIS - MODIFIED)
U. S. DEPARTMENT OF COMMERCE
BUREAU OF THE CENSUS

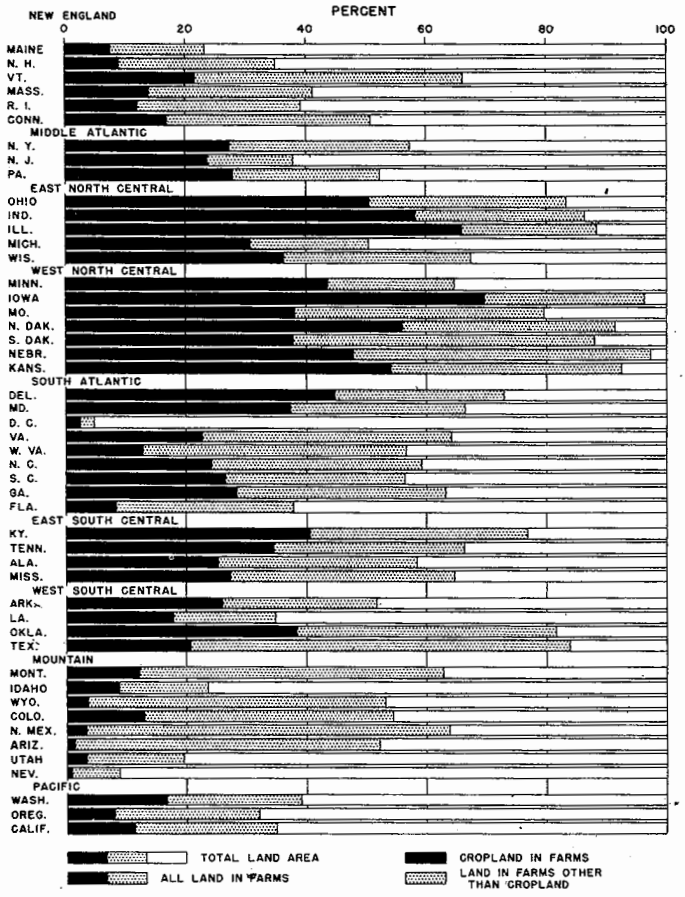

FARMS WITH 1 TO 9 ACRES OF CROPLAND HARVESTED
NUMBER, 1944
UNITED STATES TOTAL
1,072,945
1 DOT = 200 FARMS
(COUNTY UNIT BASIS - MODIFIED)
U. S. DEPARTMENT OF COMMERCE
BUREAU OF THE CENSUS


FARMS WITH 10 TO 49 ACRES OF CROPLAND HARVESTED
NUMBER, 1944
UNITED STATES TOTAL
2,356,930
1 DOT = 200 FARMS
(COUNTY UNIT BASIS - MODIFIED)
U. S. DEPARTMENT OF COMMERCE
BUREAU OF THE CENSUS

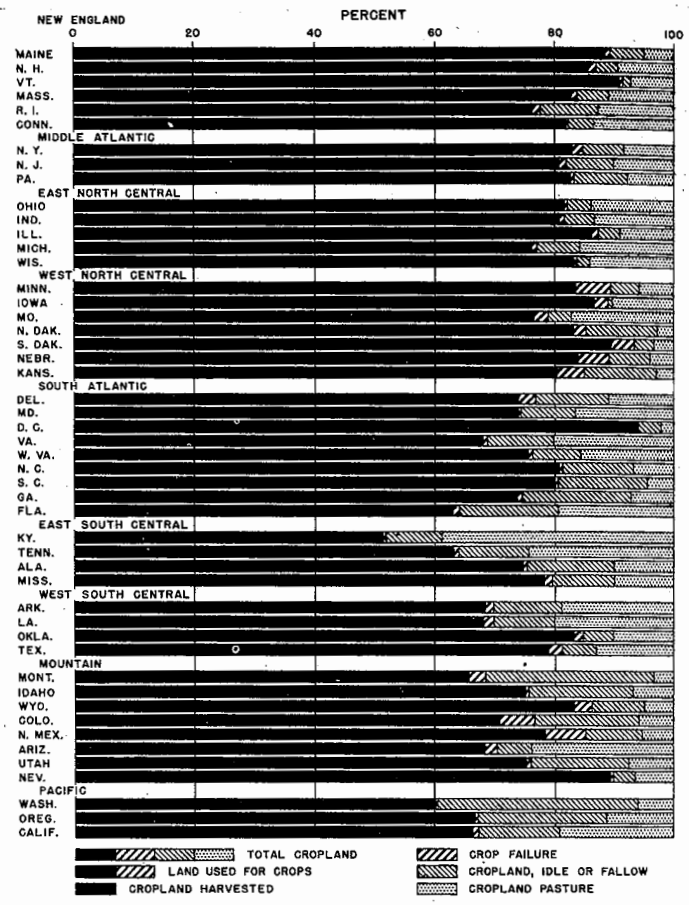

FARMS WITH 50 TO 199 ACRES OF CROPLAND HARVESTED
NUMBER, 1944
UNITED STATES TOTAL
1,566,431
1 DOT = 200 FARMS
(COUNTY UNIT BASIS)
U. S. DEPARTMENT OF COMMERCE
BUREAU OF THE CENSUS


FARMS WITH 200 OR MORE ACRES OF CROPLAND HARVESTED
NUMBER, 1944
UNITED STATES TOTAL
367,184
1 DOT = 200 FARMS
(COUNTY UNIT BASIS - MODIFIED)
U. S. DEPARTMENT OF COMMERCE
BUREAU OF THE CENSUS

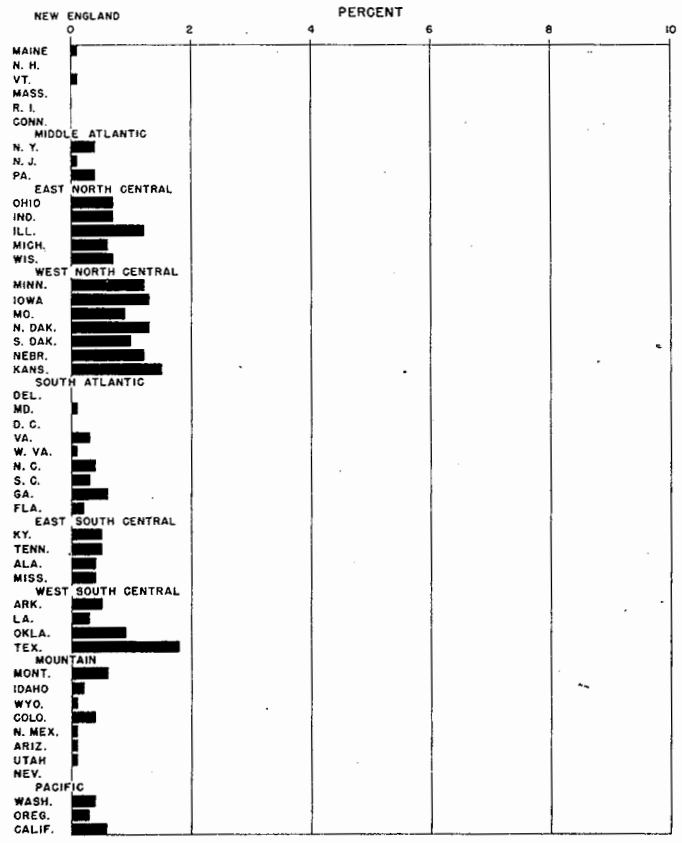
PERCENT OF TOTAL LAND AREA REPRESENTED BY CROPLAND AND OTHER LAND IN FARMS, BY STATES: CENSUS OF 1945



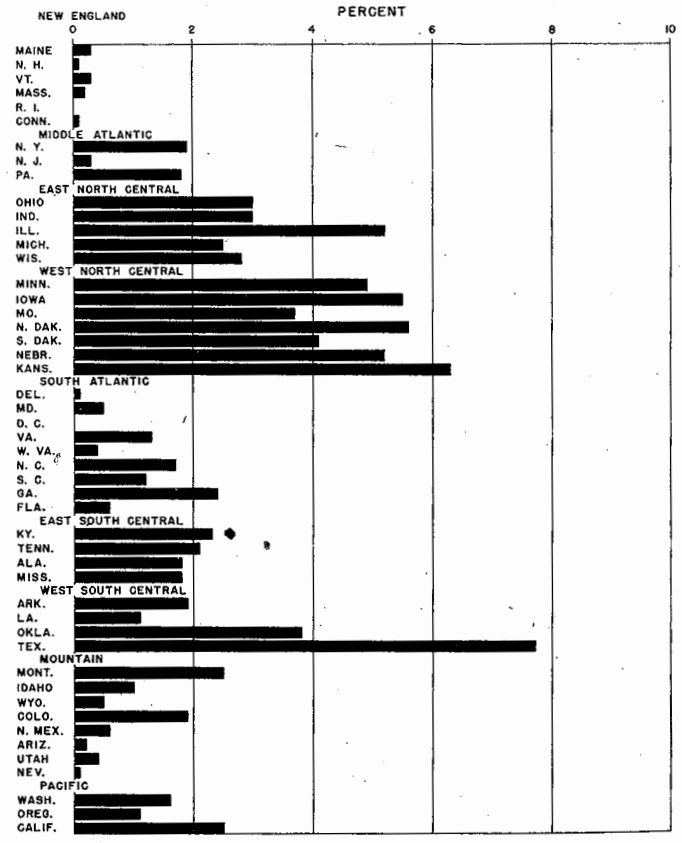
PERCENT OF CROPLAND IN FARMS REPRESENTED BY THE SEVERAL CLASSES, BY STATES: CENSUS OF 1945



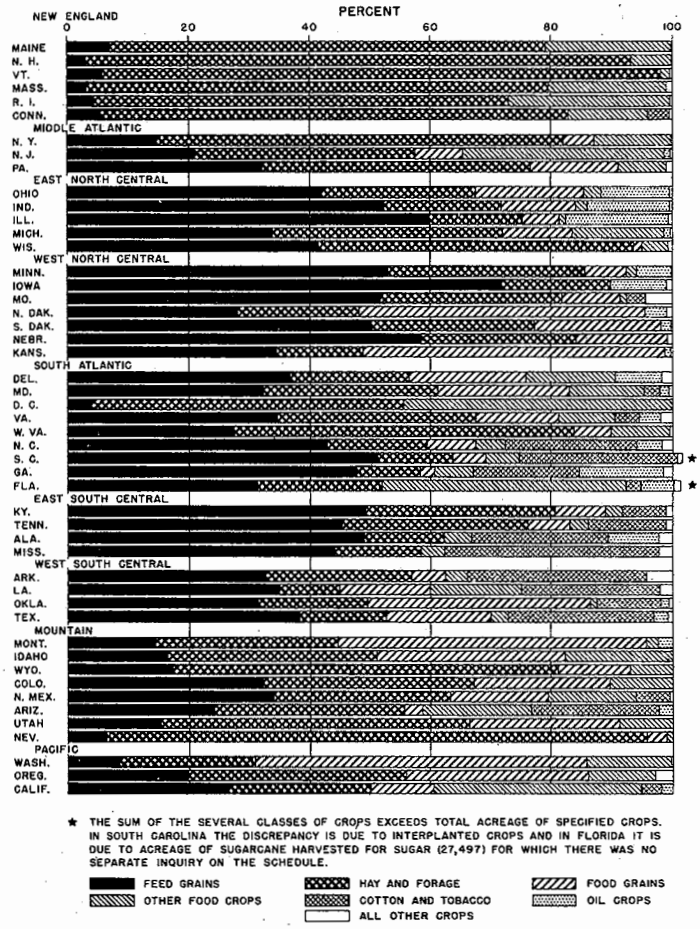
PERCENT OF TOTAL LAND AREA OF THE UNITED STATES REPRESENTED BY CROPLAND IN FARMS IN EACH STATE: CENSUS OF 1945



PERCENT OF CROPLAND IN FARMS FOR THE UNITED STATES REPRESENTED BY CROPLAND IN EACH STATE: CENSUS OF 1945

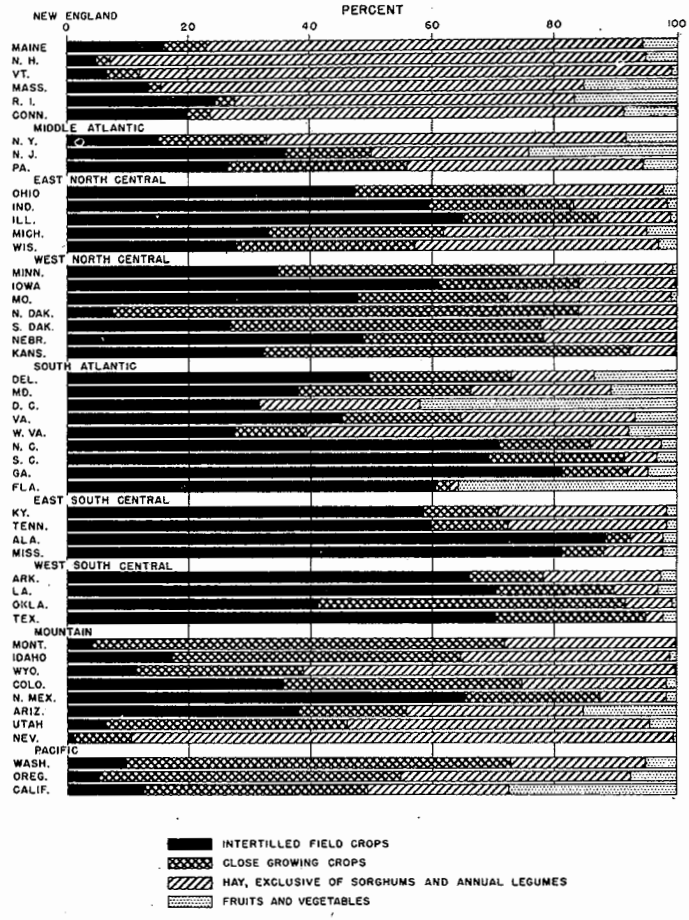


PERCENT OF TOTAL ACREAGE OF SPECIFIED CROPS REPRESENTED BY FEED GRAINS AND OTHER SELECTED GROUPS OF CROPS, BY STATES: CENSUS OF 1945



★ THE SUM OF THE SEVERAL CLASSES OF CROPS EXCEEDS TOTAL ACREAGE OF SPECIFIED CROPS. IN SOUTH CAROLINA THE DISCREPANCY IS DUE TO INTERPLANTED CROPS AND IN FLORIDA IT IS DUE TO ACREAGE OF SUGARCANE HARVESTED FOR SUGAR (27,497) FOR WHICH THERE WAS NO SEPARATE INQUIRY ON THE SCHEDULE.

PERCENT OF TOTAL ACREAGE OF SPECIFIED CROPS REPRESENTED BY INTERTILLED AND OTHER SELECTED GROUPS OF CROPS, BY STATES: CENSUS OF 1945



CROPLAND UTILIZATION, BY STATES

Less than one-quarter of the total land area of the United States was reported as cropland in farms in 1945. About 63 percent was concentrated within 37 percent of the land area comprised by the North Central States, Oklahoma, and Texas. The Western States occupied two-fifths of the land area but contained only one-eighth of the cropland. Texas, with the largest acreage of cropland, had only about one-fifth of its total area in this category. Iowa, the fourth ranking State in acreage of cropland, had seven-tenths of its total area in cropland. Cropland exceeded 50 percent of the total land area in the six States of Iowa, Illinois, Indiana, North Dakota, Kansas, and Ohio. Cropland exceeded the sum of the acreages of all other classes of land in farms in all of the North Central States, except South Dakota, Missouri, and Nebraska, and in New Jersey, Delaware, Maryland, Pennsylvania, Kentucky, Tennessee, Louisiana, and Arkansas. Cropland represented less than 20 percent of the area in farms only in the six Mountain States exclusive of Idaho and Colorado.

The proportion of all cropland from which a crop was harvested in 1944 ranged from 91 percent in Vermont to 51 percent in Kentucky. The acreage in cropland harvested exceeded 80 percent of the total cropland in all the Northern States except Rhode Island, Michigan, and Missouri, Complete crop failure was recorded on 3 percent or more of the cropland acreage only within the six Mountain and Plains States of New Mexico, Colorado, Wyoming, Nebraska, Kansas, and South Dakota, and in Minnesota and Delaware. The ratio of idle or fallow cropland, in 1944 ranged from 33 percent in Washington and 28 percent in Montana to less than one percent in Iowa. Other States with a proportion in excess of 10 percent usually maintained in alternate summer fallow were Oregon, Idaho, Colorado, Utah, California, North Dakota, and Kansas. The cropland being rested or otherwise lying idle was also greater than 10 percent in all of the Southern States except Maryland, West Virginia, Kentucky, Oklahoma, and Texas.

Cropland used only for pasture in 1944 occupied two-fifths of the total cropland in Kentucky—a probable reflection of widespread development in recent years of pasture-crop rotation systems in this and the adjoining State of Tennessee. This type of utilization of cropland for pasture was prevalent in Virginia, Maryland, and West Virginia; in the Northeastern, Corn Belt, and Lake States; Arkansas; Louisiana; and within the irrigated areas of the Western States. The importance attached to the feed and forage crops in farm and ranch operations was apparent in their widespread geographic distribution in 1944 as dominant crops. They comprised two-thirds or more of the acreage of harvested crops in all of the Northern States except New Jersey, a leading market vegetable-producing State, and Kansas and North Dakota, the two leading wheat-producing States. This high ratio of feed and forage crops was maintained in West Virginia, Kentucky, Tennessee, and Virginia and in Nevada, Wyoming, and Colorado. The highest proportion in feed grains was recorded for Iowa, Illinois, and Nebraska and in hay and other forage crops for Vermont and New Hampshire. Feed grains exceeded forage crops in the eastern Corn Belt States, but in Michigan and Wisconsin this ratio was reversed. Feed grains were also important in the Southern States where the corn crop particularly supplies both food and feed.

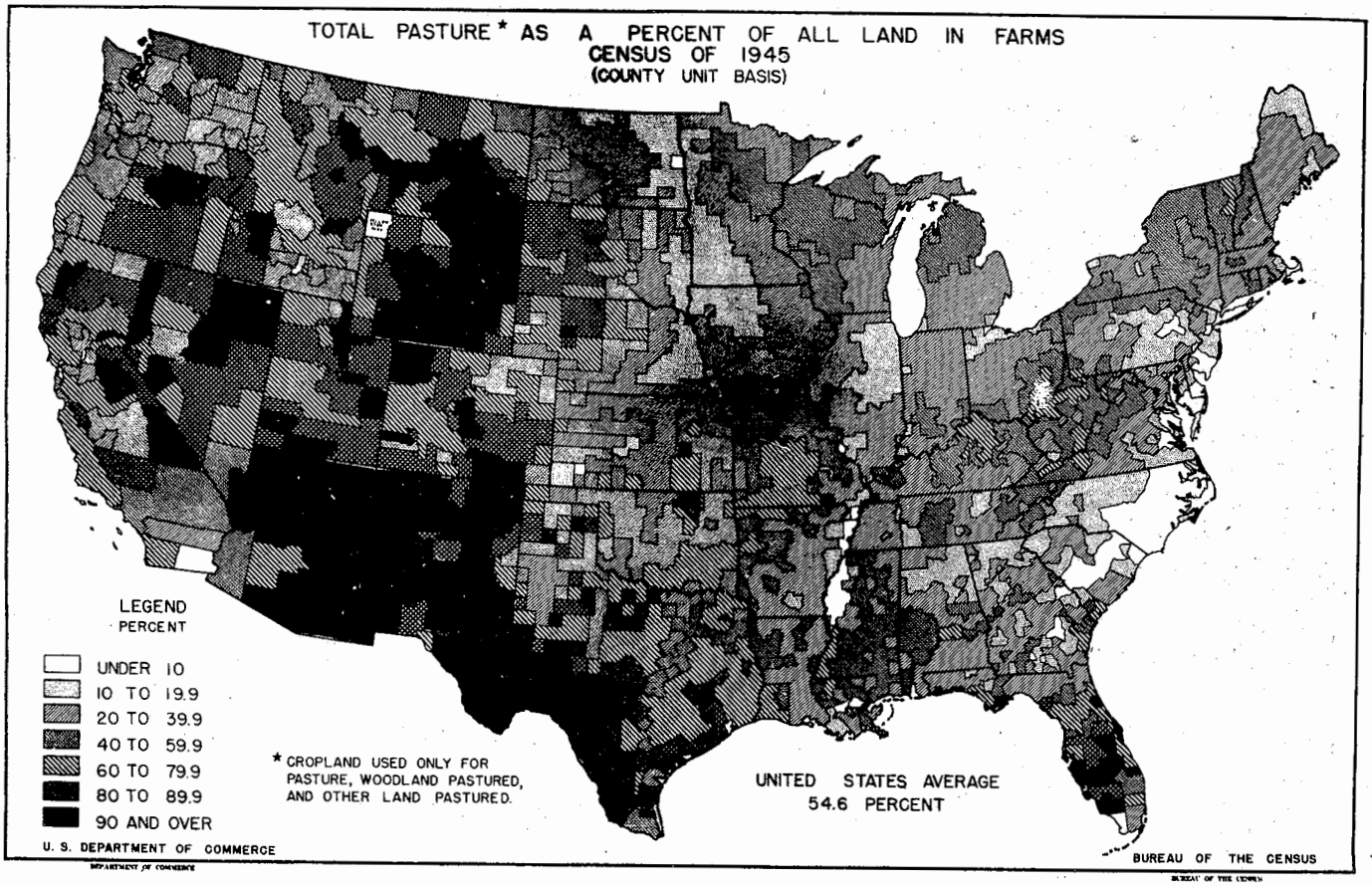
The highest proportion of harvested crops in the food grains was recorded in Washington, Montana, Kansas, and North Dakota. The importance of the wheat or rye acreage in other States like Oklahoma, Texas, South Dakota, and Nebraska and of the rice acreage in Louisiana, Arkansas, and Texas was less obvious, owing to the larger variety of crops grown. Florida, California, New Jersey, and Rhode Island were the leading States in the proportion of harvested crops in the food crops other than grains. California, Michigan, New York, and Texas had the largest acreages.

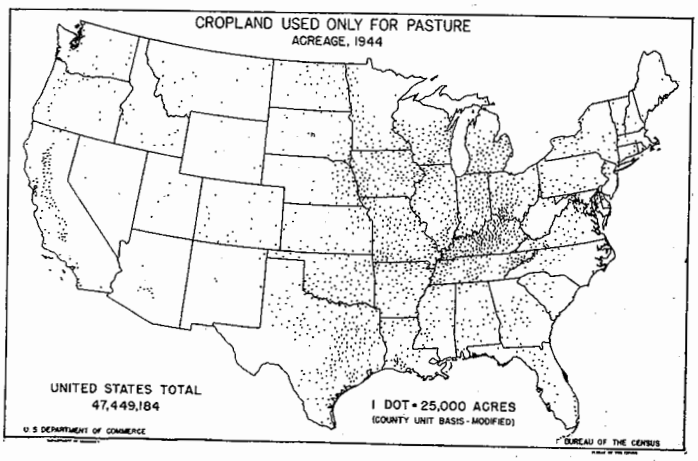
The acreage in cotton and tobacco crops was confined mostly to the Southern States, but included tobacco in Connecticut; cotton and tobacco in Missouri; and cotton in Arizona, New Mexico, and California. The oil crops were concentrated in the flax-producing areas of Minnesota and the Dakotas, the soybean-producing centers in the Corn Belt States, and the peanut-producing areas of Georgia, Texas, Alabama, North Carolina, Oklahoma, and Virginia.

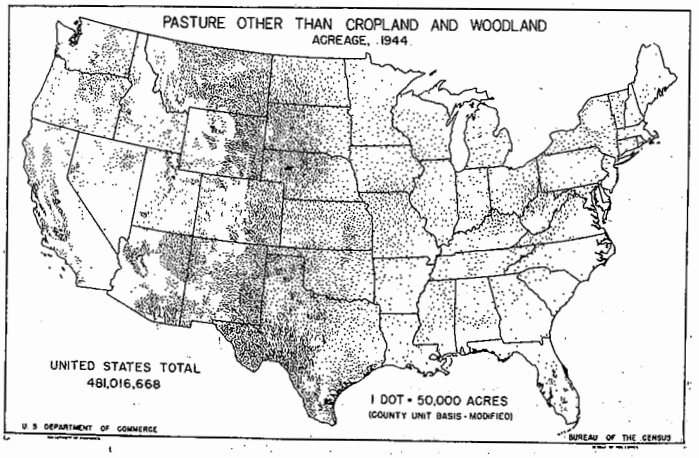
The intertilled field crops occupied from 60 up to nearly 90 percent of the acreage in specified crops in the general area of heavy and intense rainfall extending from North Carolina to eastern Texas. Illinois and Iowa, the two Corn Belt States with the most extensive areas of level to rolling land, were the only other States with as high a proportion in intertilled crops. The ratio of intertilled crops was relatively high in the Appalachian States, notably in Kentucky and Tennessee, but here, as in the other Southern States, acreage in all crops tended to be concentrated within areas of favorable soils and slopes. The ratio in close-growing crops was highest in the wheat-producing States of the Great Plains, and was conspicuous in the acreage of small grains in all the North Central States. The proportion in hay crops was highest in the New England States, New York, West Virginia, and the Mountain States.

Crops classified by commodity groups: (a) Feed grains—corn and sorghums harvested for grain, mixed grains, barley and oats, including oats cut for feeding unthreshed; (b) Hay and forage crops—corn other than for grain, sorghums other than for grain or sirup, chufas, and all crops cut for hay; (c) Food grains—all wheat, rye, and rice; (d) Other food crops—all dry field and seed beans and peas (except soybeans, cowpeas, and Austrian peas), Irish and sweet potatoes, fruits and nuts, vegetables harvested for sale, and sugar beets and sugarcane; (e) Cotton and tobacco; (f) Oil crops—soybeans for beans, peanuts picked or threshed, and flaxseed; and (g) All other crops—cowpeas except for hay, hops, vetches harvested for seed, and all crops in commodity groups comprising less than 1 percent of the total acreage in specified crops within the State.

Crops classified according to cultural practices: (a) Intertilled field crops—all corn, sorghums, annual legumes grown alone, and hops; (b) Close-growing crops—mixed grains, oats, barley, rye, flax, rice, and wheat; (c) Hay exclusive of sorghums and annual legumes; and (d) Fruits and vegetables, including vineyards and planted nut trees.







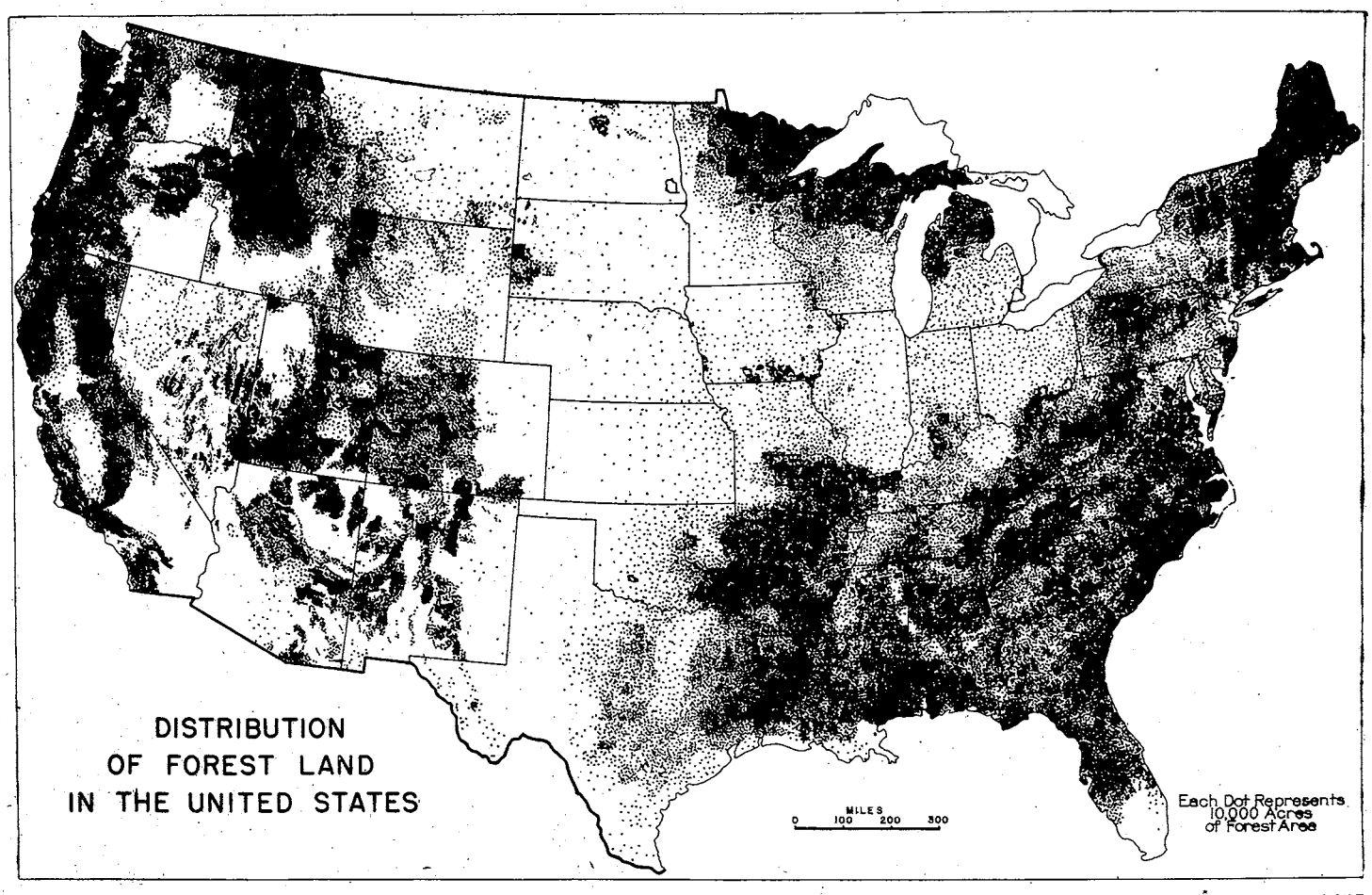
ALL PASTURE AND FOREST LAND

An aggregate of more than one billion three hundred million acres, or two-thirds of the Nation's land area, was in use for pasture, grazing, forest, and woodland purposes at the beginning of 1945 or had been utilized, or was available for these uses, during the preceding year. The remaining one-third was in cropland not pastured, in urban areas, in parks, and in miscellaneous uses. Only 696 million acres, or slightly more than one-half of this acreage, were reported under farm ownership or lease, of which 624 million acres, or 90 percent, furnished pasture or grazing for livestock. In addition 428 million acres in national forests, vacant public land, or other land not reported in farms, were available for pasture and grazing of farm and ranch livestock. About 186 million acres were in ungrazed forest land located outside of farms.

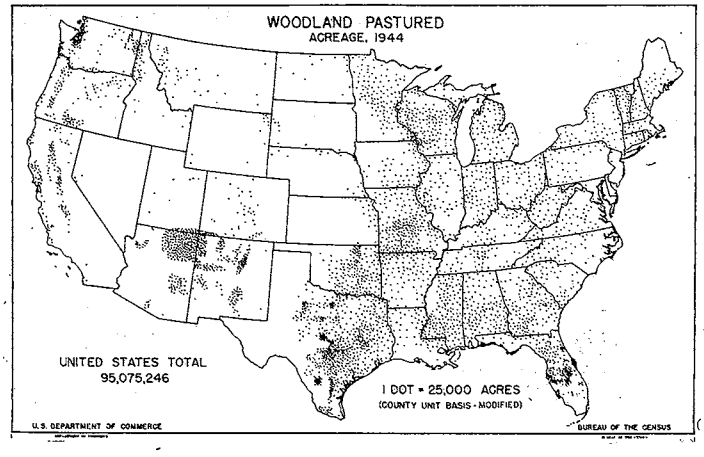
Four-fifths of the 481 million acres of farm pasture and grazing land (other than the cropland or woodland used for pasture) and practically all of the 178 million acres of nonforested grazing land outside farms were concentrated upon the dry, rough, or otherwise nontillable areas of the 17 Western and Plains States. Nontillable and nonforested pasture and grazing land was also widely distributed throughout the humid areas in tracts of open or unwooded land too poor, steep, swampy, or eroded to be of other than limited value for crops. An undetermined portion of this other pasture or grazing land had been, but no longer was being, used for crops. A relatively small proportion of this land in untilled but cleared pasture is suited to crops under a long-term rotation with a year or two in such crops as corn, wheat, and tobacco. This type of pasture in the Corn and Dairy Belts is maintained to provide pasture for dairy herds and other farm livestock. The 48 million acres of cropland in farms used only for pasture in 1944 (land plowed during the preceding 7 years) were mostly confined to the humid areas and to the areas under irrigation. An additional acreage of cropland furnished pasture or grazing, but if a crop had been harvested during 1944 the land was not included in the acreage in farm pastures.

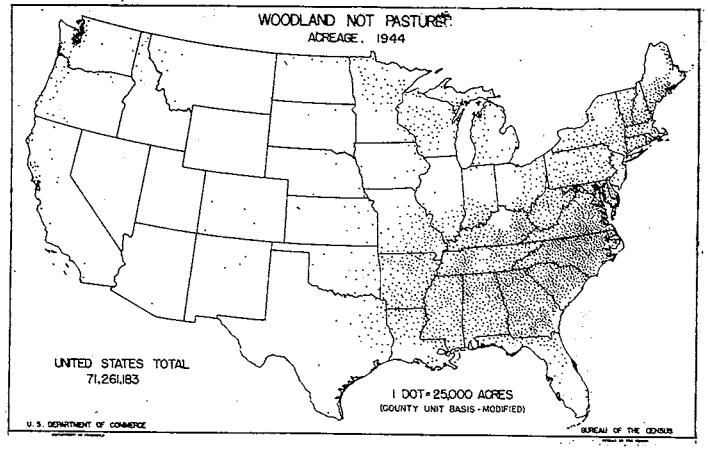
The 95 million acres of farm woodland pastured in 1944 also were concentrated in the humid parts of the eastern United States. This concentration was partially offset by the reporting as farm woodland of from 20 to 25 million acres of pinon-juniper, chaparral, mesquite, cedar, and post oak. Farm woodland not pastured was confined almost exclusively to the humid areas. Only a small or negligible acreage of all forest and woodland has been cleared and used for crops in such areas as the rougher sections of the Appalachians, the Ozarks and other eastern highlands, the cut-over land of the upper Lake States, the poorly drained and low-lying areas along the Atlantic and Gulf Coasts, and the mountain slopes and plateaus of the Western States. The present forest and woodland in other areas, especially in the earlier settled communities, represent varying degrees of maintenance or of reestablishment of forest vegetation on old crop and pasture fields.

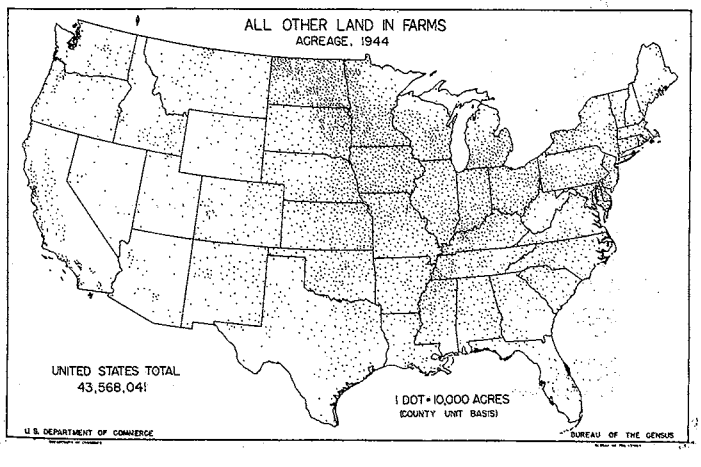
The 44 million acres of other land in farms in 1944 were distributed about equally among sites occupied by farmsteads, the areas of farm roads and lanes, and the acreage in miscellaneous farm wasteland.

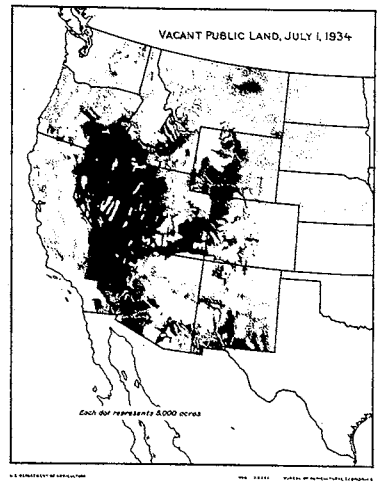


FOREST SERVICE, U.S.D.A. – 1945



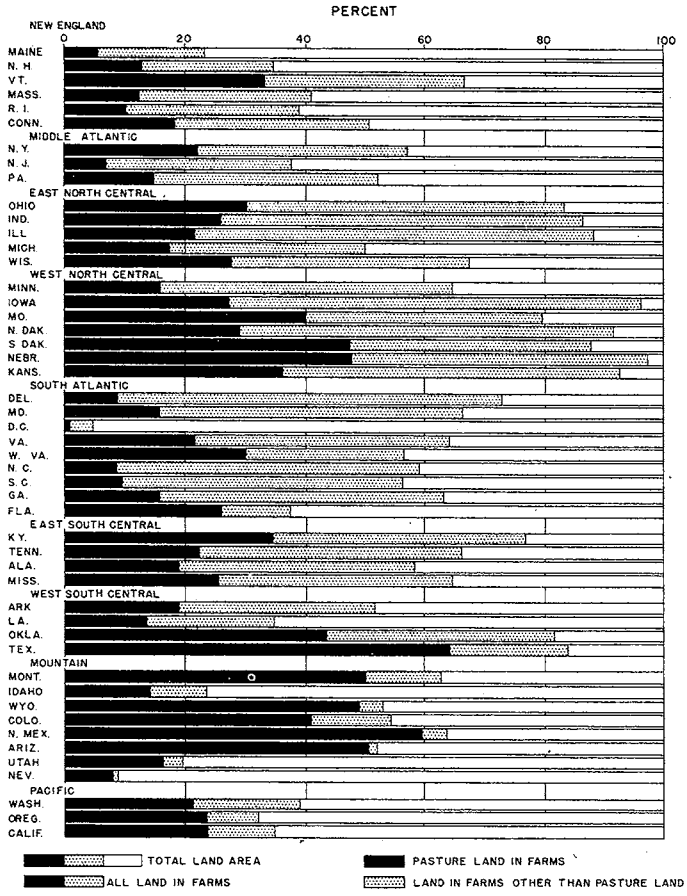




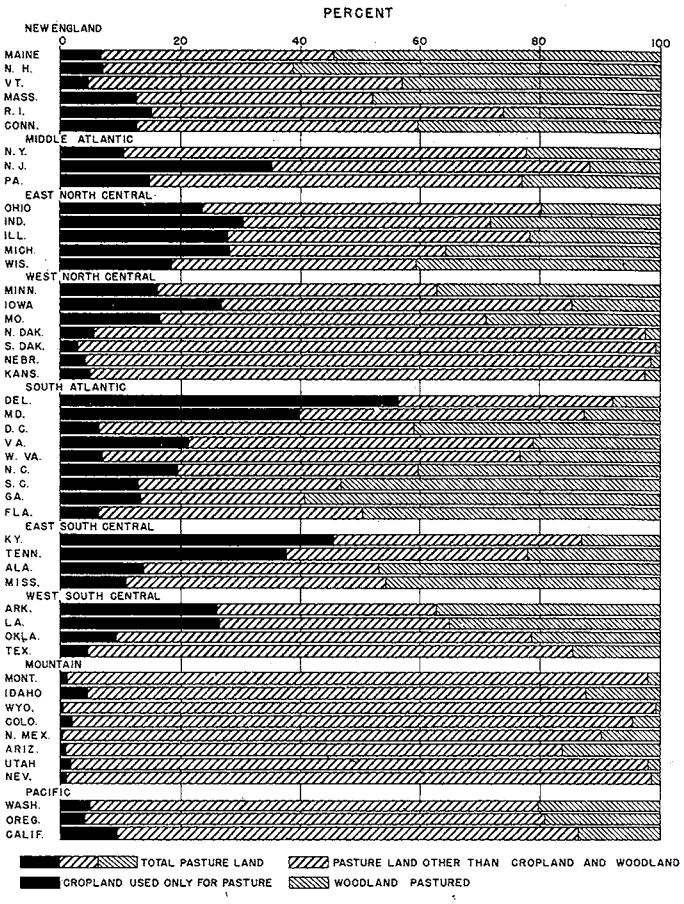


GRAPHIC SUMMARY

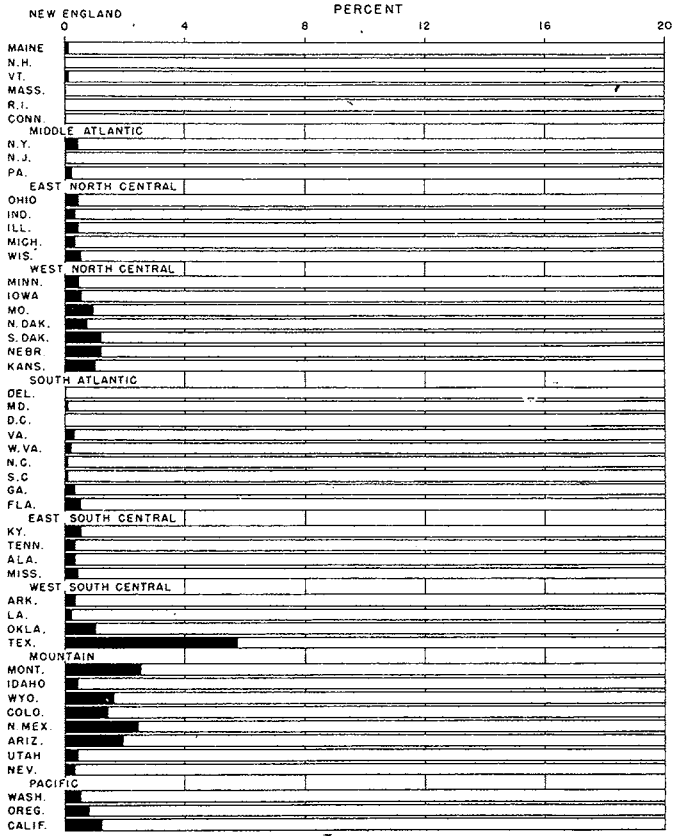
PERCENT OF TOTAL LAND AREA REPRESENTED BY PASTURE LAND IN FARMS, BY STATES: CENSUS OF 1945



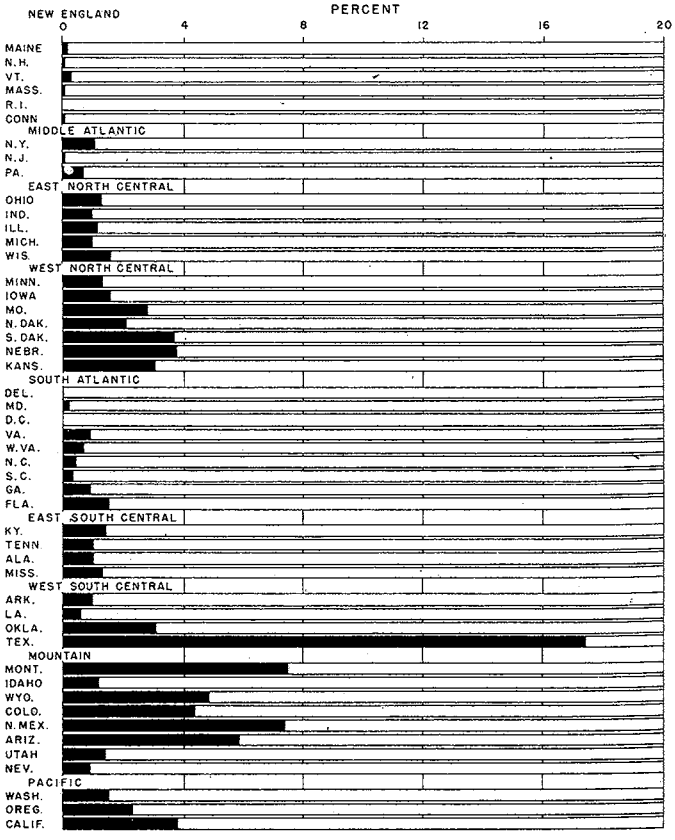
PERCENT OF PASTURE LAND IN FARMS REPRESENTED BY THE SEVERAL CLASSES, BY STATES: CENSUS OF 1945



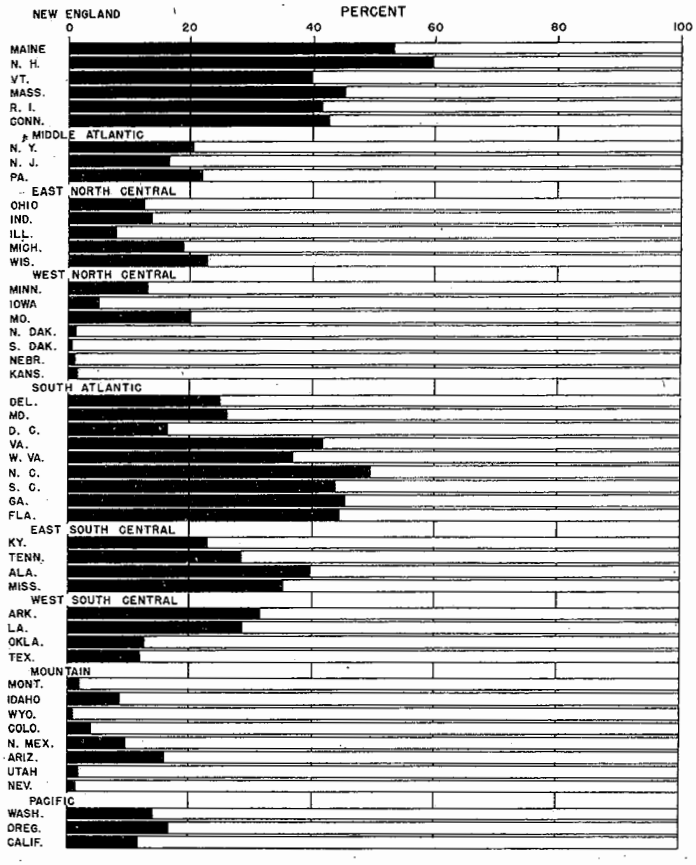
PERCENT OF TOTAL LAND AREA OF THE UNITED STATES REPRESENTED BY PASTURE LAND IN FARMS IN EACH STATE: CENSUS OF 1945



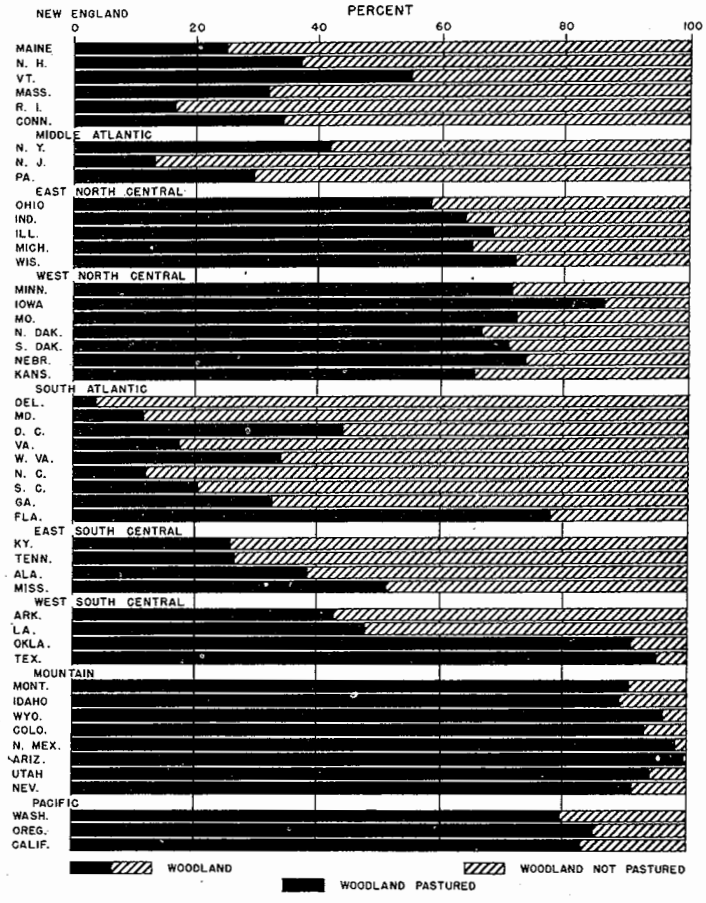
PERCENT OF PASTURE LAND IN FARMS FOR THE UNITED STATES REPRESENTED BY PASTURE LAND IN EACH STATE: CENSUS OF 1945



PERCENT OF ALL LAND IN FARMS REPRESENTED BY WOODLAND, BY STATES: CENSUS OF 1945



PERCENT OF WOODLAND IN FARMS REPRESENTED BY WOODLAND PASTURED AND WOODLAND NOT PASTURED, BY STATES: CENSUS OF 1945



PASTURE AND FARM WOODLAND, BY STATES

A total of 624 million acres or nearly 60 percent of the acreage used for pasture or grazing was reported under farm and ranch ownership or lease in 1945. Three-fourths of this acreage in farms and ranches was located within the 17 Western and Plains States. Combined with the additional acreage in grasses, arid shrubs, forests and woodland outside farms which was utilized for seasonal range, the pasture and grazing resource in these 17 States approximated 750 million acres or about two-thirds of their land area. The remainder was widely distributed throughout the States east of the Great Plains as improved as well as unimproved, and as rotation or permanent pastures. The acreage in farm pastures in these eastern States was greatest in Missouri, Iowa, Wisconsin, Florida, Kentucky, Minnesota, and Ohio. The highest proportion of the land area in farm pastures was reported in Missouri, Kentucky, Vermont, and West Virginia.

Public ownership of much of the dry, rough, and high-elevation land utilized under permit for grazing or for a combination of grazing, forest, and other purposes explains the low ratio of land in farms and ranches throughout much of the area of the Western States. In the four Northern Plains States—Nebraska, Kansas, and the Dakotas—practically all of the land available for agricultural purposes, including pasture and grazing, was under farm ownership or lease. Farm pasture was representative of the total pasture and grazing acreage in all those States where stock and fence laws prohibited free range of farm livestock.

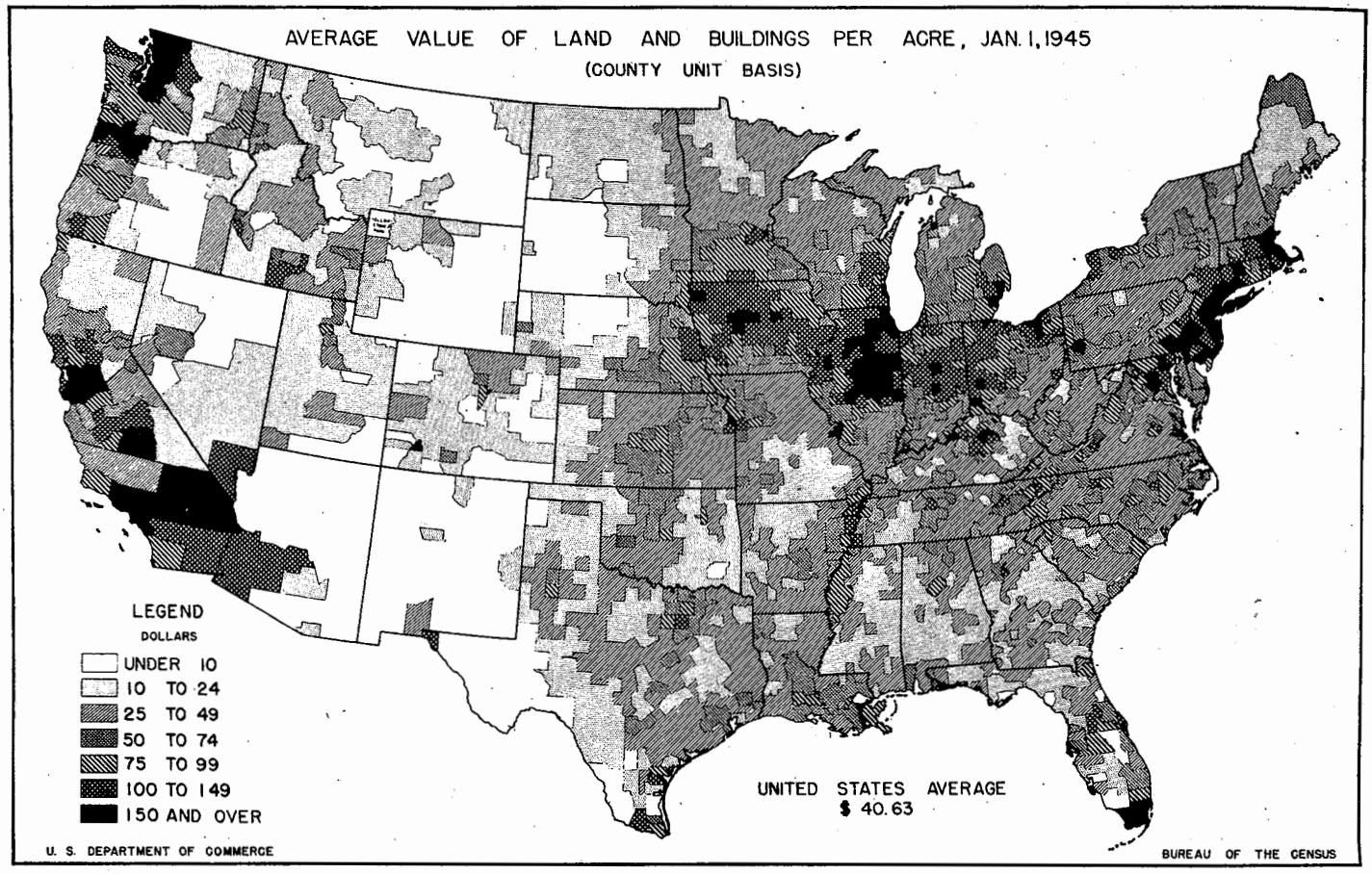
At least 40 percent or more of the land area was represented by pasture land in farms in the four Plains States of Texas, Nebraska, South Dakota, and Oklahoma; in Missouri; and in all the Mountain States except Nevada, Utah, and Idaho. The value of farm pastures in providing forage for livestock and as a method of utilizing nontillable land in farms was also evident in the high ratio of land in pastures in other States including Kansas, Kentucky, Vermont, Ohio, West Virginia, and North Dakota. Under 10 percent of the land area was in farm pastures only in Maine, New Jersey, and Delaware—three States of localized agricultural development; and in Nevada and the Carolinas. Land pastured exceeded the acreage in all other classes of land in farms or ranches in Texas, Florida, South Dakota, West Virginia, Oklahoma, Missouri, Vermont, and in the 11 Western States. This class of land included less than one-fifth of the land in farms only in Delaware, North and South Carolina, and New Jersey.

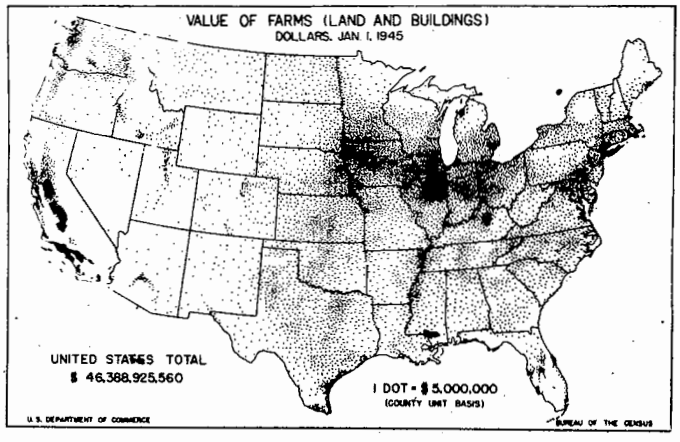
Kentucky, Maryland, Tennessee, Indiana, and New Jersey had two-fifths or more of farm pastures in the crop-pasture category. The prevalence of pastures that had been rotated with crops in these States and in the Corn Belt and the Lake States, and on the rice fallow land in Louisiana and Arkansas was in sharp contrast to the limited ratio of this type to total pasture land in the Western Plains and States. Cropland used only for pasture comprised less than 10 percent of the land in farm pastures in all of these States; in the three New England States of Vermont, Maine, and New Hampshire; and in Florida and West Virginia.

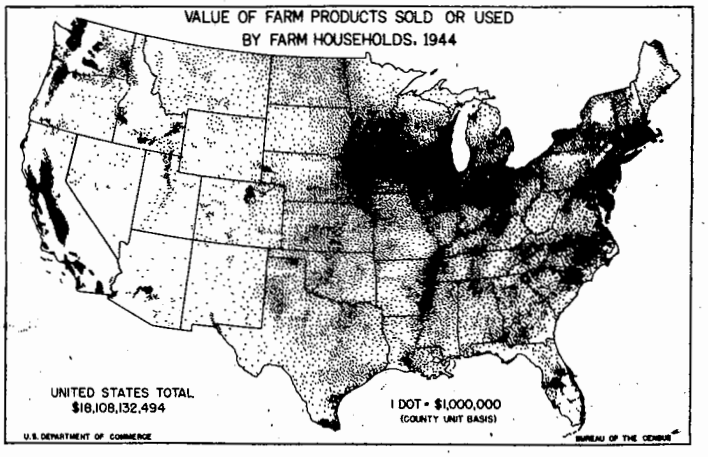
Land used for pasture (other than cropland and woodland) aggregated two-thirds or more of the pasture land in all of the Western and Plains States and in West Virginia and New York. This type of noncropped or nonwooded farm pasture was widely distributed throughout the remaining Northern States and to a lesser extent in the Southern States. It comprised at least one-fourth of all farm pasture in every State. In the West, this other pasture acreage consisted primarily of land in native grasses and other plants which had never been plowed, and of about 30 million acres of former cropland which had been restored to grass. In the humid parts of the East, this type of pasture consisted of cleared land which had never been used for crops, or had been last plowed during World War I, or possibly as late as the drought years of the 30's. Some type of forest growth has been reestablished over fields or parts of fields, particularly on hill pastures.

Farm woodland pastured was prevalent throughout all of the States east of the Great Plains, both in areas where original forests had been cut over or burned over but never cleared, and where reversion to forest had followed former crop or pasture usage. This type of farm pasture exceeded acreage in all other classes in the two upper New England States of New Hampshire and Maine, and in Georgia and South Carolina. Delaware, New Jersey, Maryland, Kentucky, Iowa, and Ohio were the only States outside the 17 Western and Plains States where farm woodland pastured comprised less than one-fifth of the total farm pasture.

The proportion of land in farms represented by all woodland was highest in the New England and the Southeastern States. There are few trees in the Northern Plains States and a correspondingly small acreage in farm woodland. Much of the commercial forest land in the Western States is either under public ownership or is owned by private lumber companies.





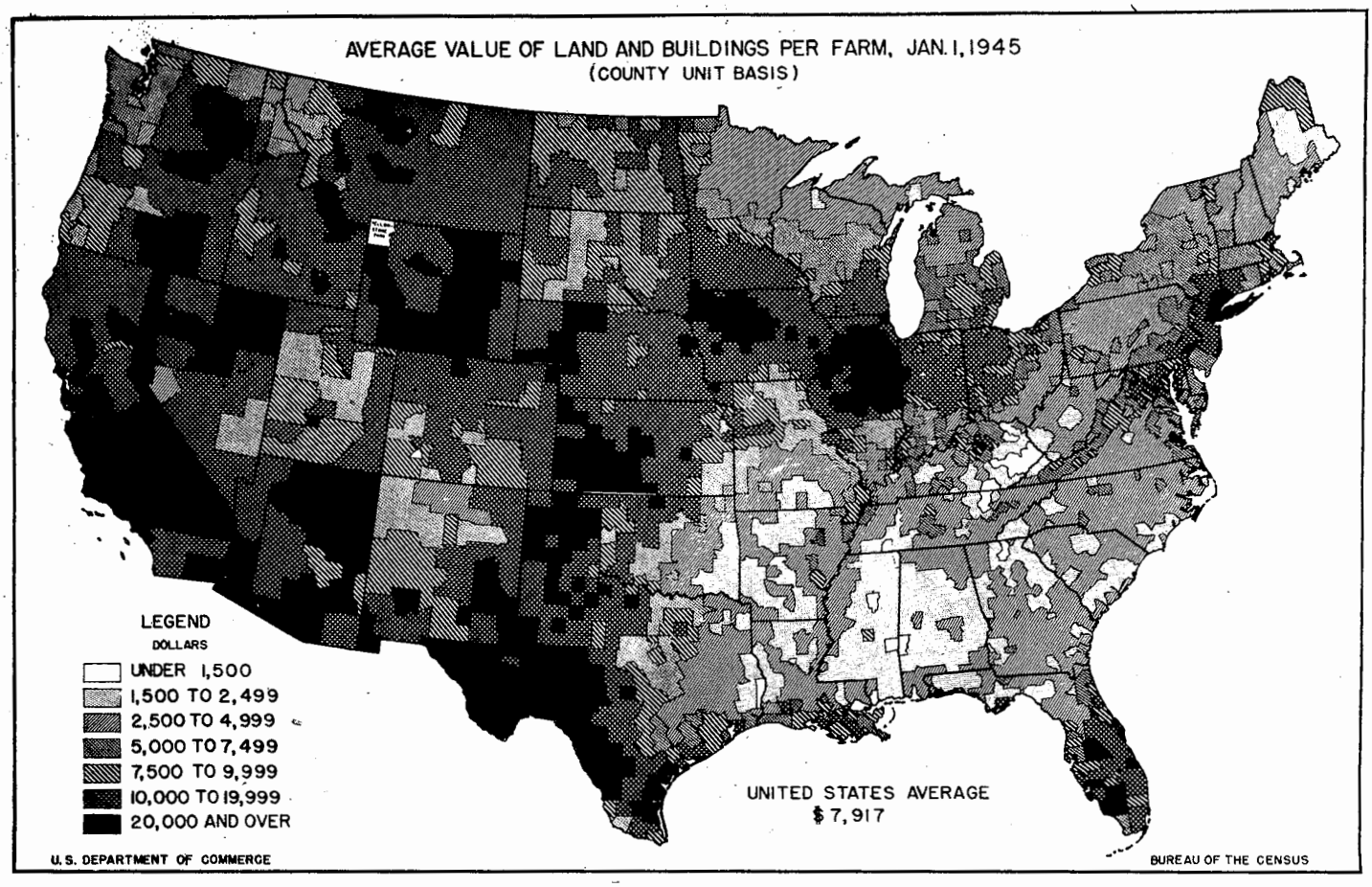


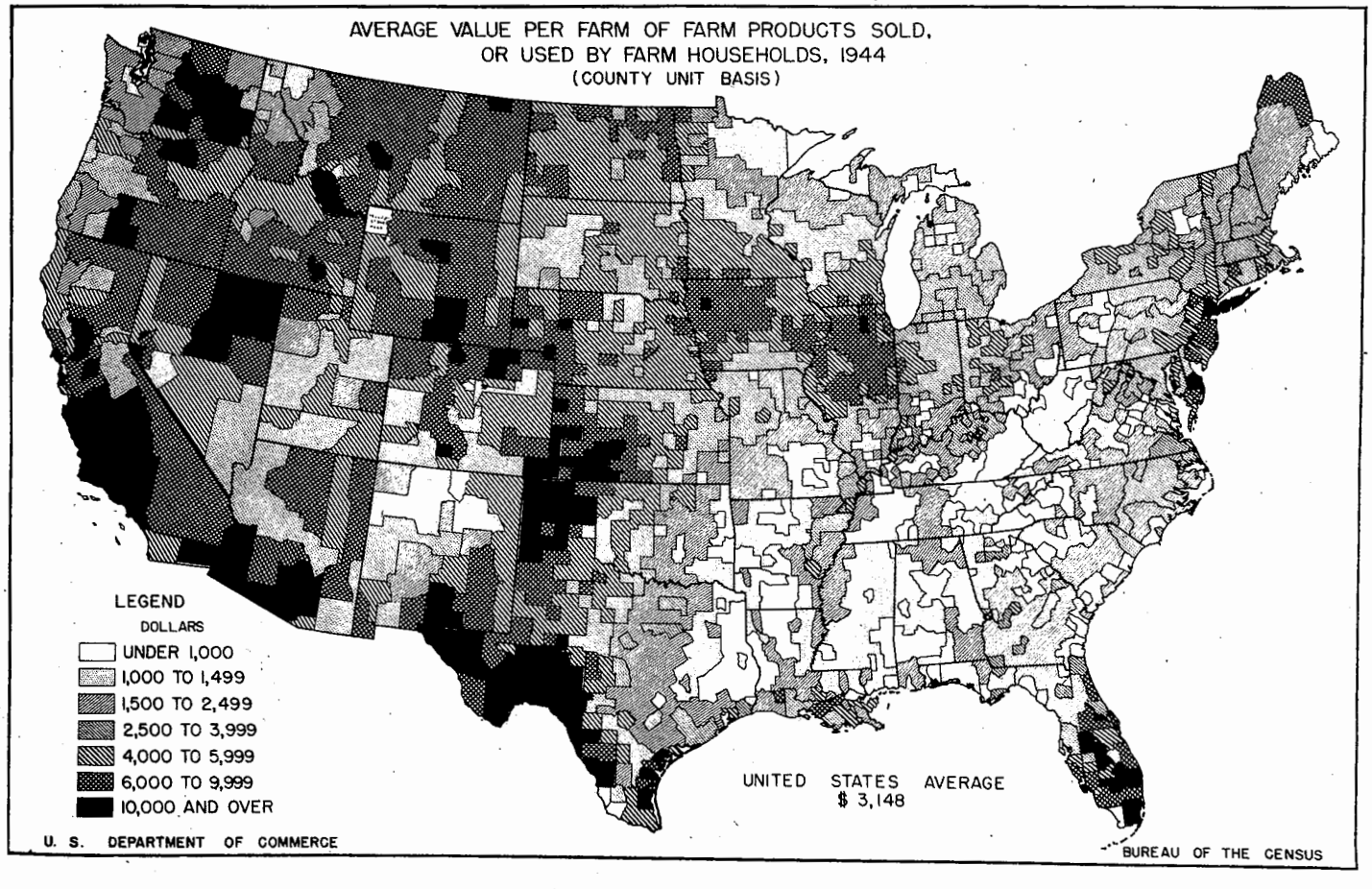
Farm Real Estate Values.—Record levels of agricultural production at increased prices during and subsequent to World War II brought gross farm incomes to the highest levels ever recorded. Land values in the same period tended to follow the increases in net incomes but not to the same degree. For the country as a whole, the low point in farm real estate values, since about 1910, was reached in 1933. Values have since maintained an upward trend with the exception of the period from 1937 to 1941 when there was little change. Values by March 1, 1947, had surpassed 1920 levels in 24 States, although the average for the United States was 6 percent below the 1920 figure. Land values in Iowa in 1947 were less than two-thirds of the peak values of 1920, while those in New Jersey were two-fifths higher.

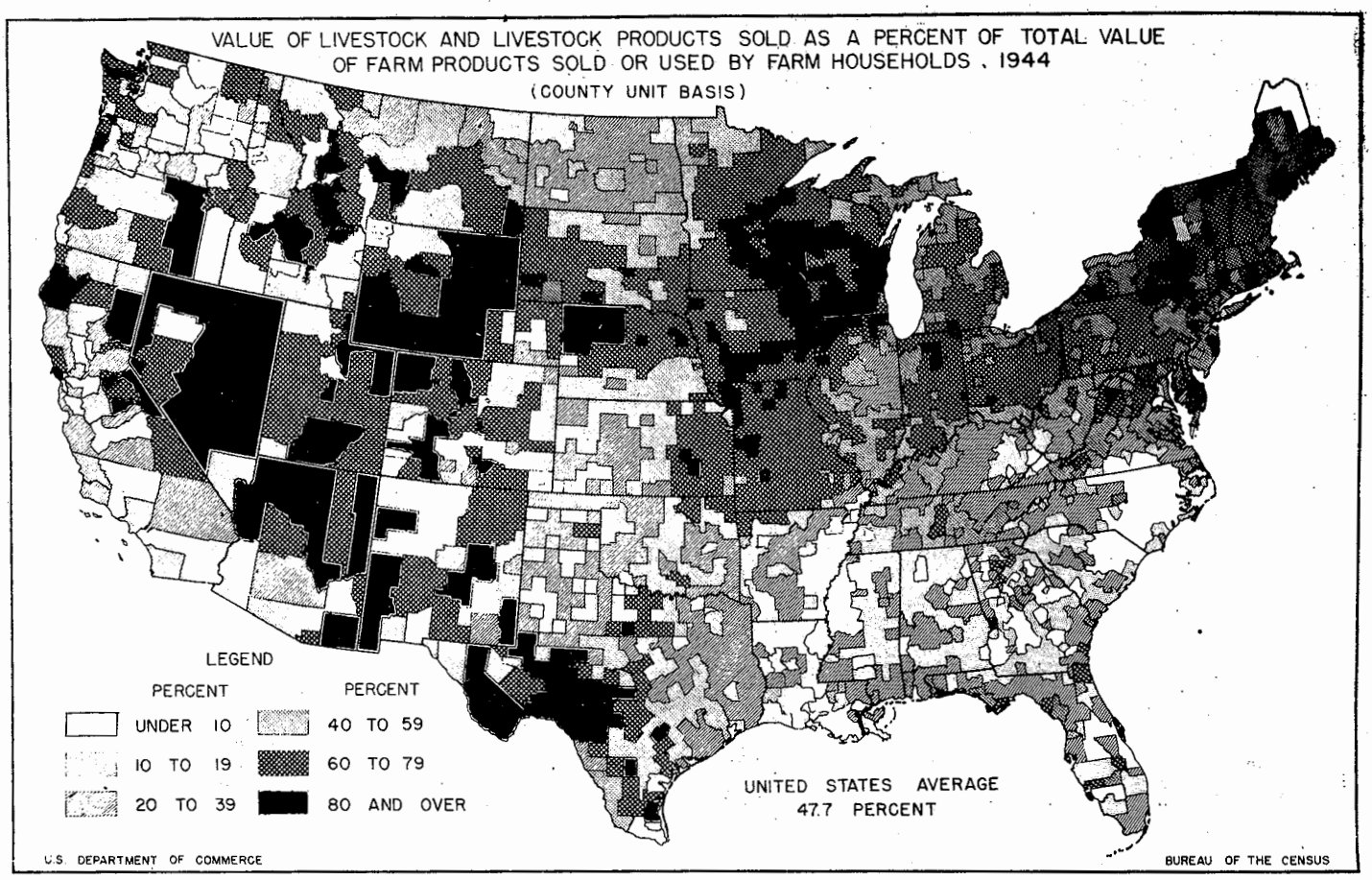
According to the Census, farm land values at the beginning of 1945 averaged $40.63 per acre as contrasted with $31.71 in 1940. The addition to the farm area between 1940 and 1945 of nearly 81 million acres, mostly low-value lands, has hidden a part of the relative increase which would otherwise have been shown. Highest acre values in 1945 were recorded for the Corn Belt and for the areas of the eastern seaboard from Massachusetts to northern Virginia, encompassing the truck crops, poultry-raising, and fluid milk-producing centers but including some country estates and other rural-urban developments. The largest expanse of low-value lands was shown for the mountainous and semiarid to arid areas of the Western States.

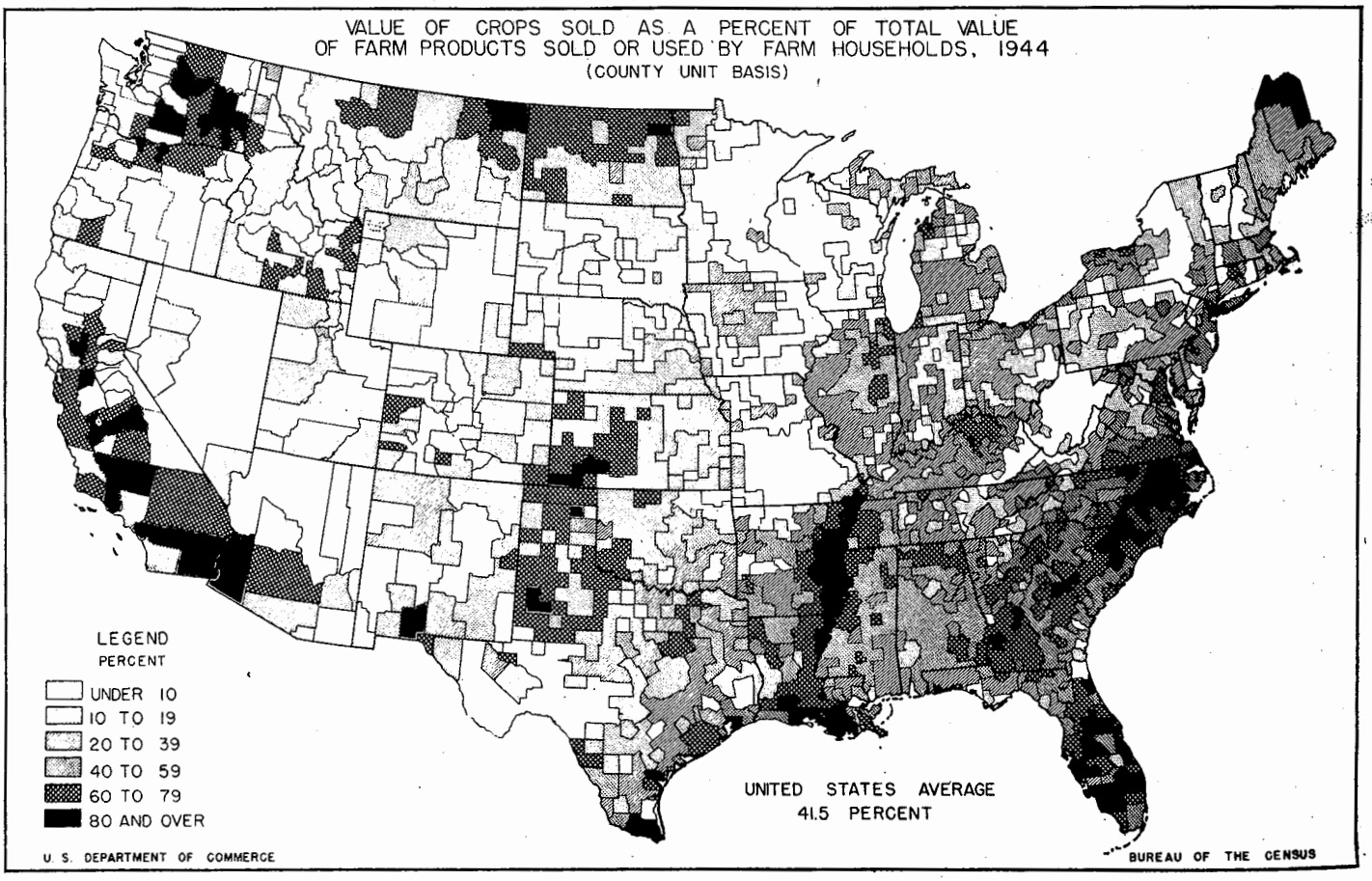
Land and buildings and other permanent improvements represented a capital investment of $7,917 per farm at the beginning of 1945. These average values were closely correlated with the size of units and with the scale of operations as measured by labor requirements and the opportunity to supplement hand labor with mechanical equipment. The fairly large average values of real estate per farm in the Corn Belt resulted from high per-acre values applied to holdings of moderate size. A fairly high investment in the average holding of real estate was maintained in the areas to the west and fanning out northward and southward, first in the Great Plains and then in the vast acreages given over to livestock ranching, where farms and ranches encompassed larger and larger acreages but were identified with successively lower per-acre values. Good buildings have been associated with small acreages of arable land in much of the Northeast, and in localized areas particularly around population centers in which the dwelling has added materially to the investment in real estate. In areas adjacent to cities, improved transportation has given additional outlying farm lands an increased value for site and residential purposes.

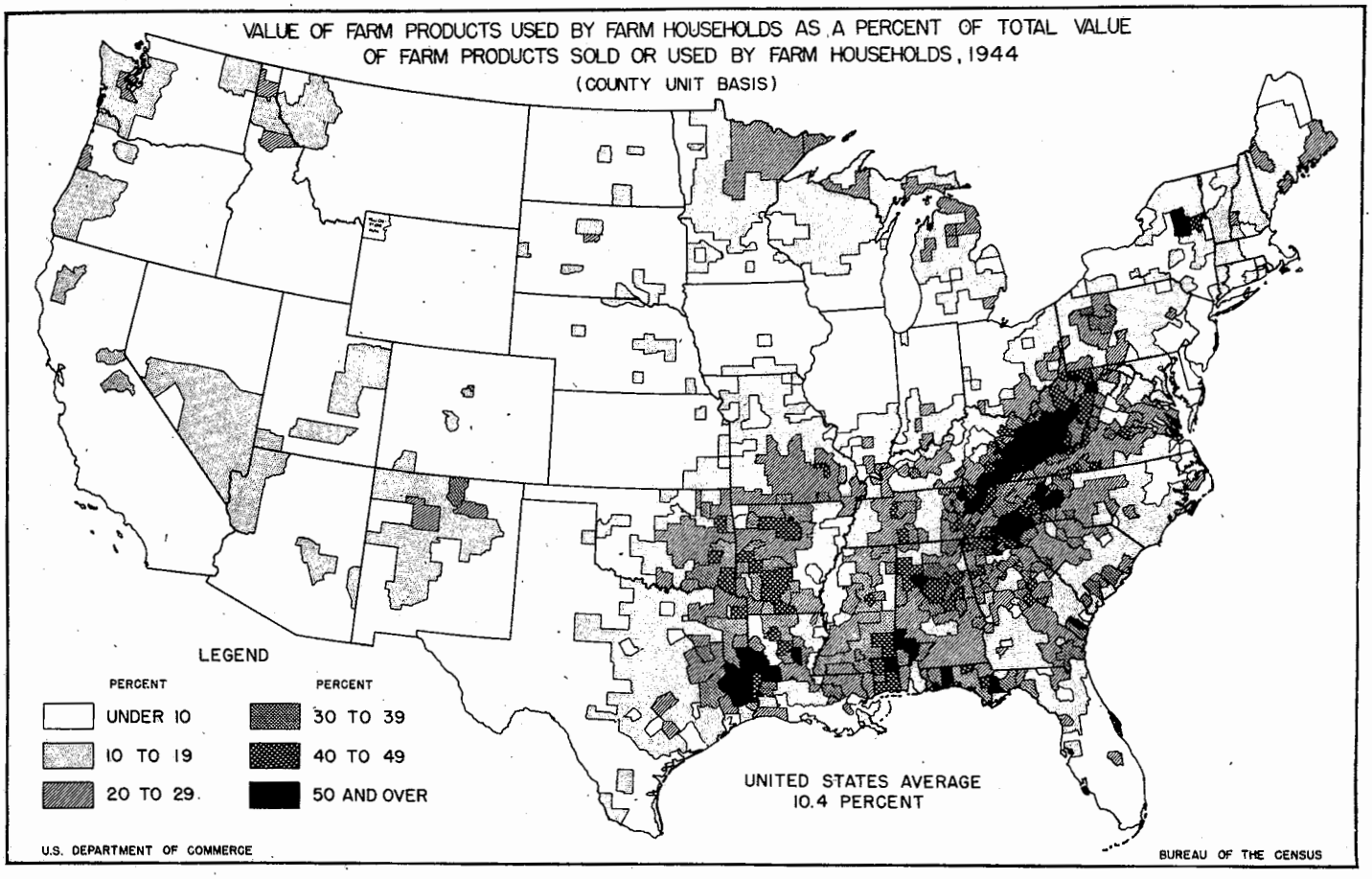
Value of Products Sold or Used by Farm Households.—The cash income from the sale of farm products in 1944 was somewhat in excess of 16 billion dollars and the value of products of the farm used by households on the farm was 1.9 billion dollars, as recorded by the Census. The average value (per farm reporting) of the products sold or used was $3,148. In the case of a tenant-operated farm this included any share accruing to the landlord. About 1 farm in 10 had a total product (sales plus home use) of less than $250. On nearly two-fifths of the farms, the value of products sold or used was less than $1,000 and these farms contributed about 6 percent to the total value. The largest contiguous areas, where the value of products sold and used was in these low-income categories. were the Appalachians, the Ozarks, and associated highlands. Farms with a value of products of $10,000 or more represented about 5 percent of all farms and had 36 percent of the total. These high-income farms were about equally divided between crop and livestock producers. More than two-thirds of the total value of all farm products sold or used for the country as a whole was produced on one-fifth of the farms, each having $4,000 or more total value of products.


AVERAGE VALUE OF LAND AND BUILDINGS PER FARM, JAN. 1, 1945
(COUNTY UNIT BASIS)
LEGEND
DOLLARS
UNDER 1,500
1,500 TO 2,499
2,500 TO 4,999
5,000 TO 7,499
7,500 TO 9,999
10,000 TO 19,999
20,000 AND OVER
UNITED STATES AVERAGE
$ 7,917
U.S. DEPARTMENT OF COMMERCE
BUREAU OF THE CENSUS


AVERAGE VALUE PER FARM OF FARM PRODUCTS SOLD,
OR USED BY FARM HOUSEHOLDS, 1944
(COUNTY UNIT BASIS)
LEGEND
DOLLARS
UNDER 1,000
1,000 TO 1,499
1,500 TO 2,499
2,500 TO 3,999
4,000 TO 5,999
6,000 TO 9,999
10,000 AND OVER
UNITED STATES AVERAGE
$ 3,148
U. S. DEPARTMENT OF COMMERCE
BUREAU OF THE CENSUS


VALUE OF LIVESTOCK AND LIVESTOCK PRODUCTS SOLD AS A PERCENT OF TOTAL VALUE OF FARM PRODUCTS SOLD OR USED BY FARM HOUSEHOLDS . 1944
(COUNTY UNIT BASIS)
LEGEND
PERCENT
UNDER 10
10 TO 19
20 TO 39
PERCENT
40 TO 59
60 TO 79
80 AND OVER
UNITED STATES AVERAGE
47.7 PERCENT
U.S. DEPARTMENT OF COMMERCE
BUREAU OF THE CENSUS


VALUE OF CROPS SOLD AS A PERCENT OF TOTAL VALUE OF FARM PRODUCTS SOLD OR USED BY FARM HOUSEHOLDS, 1944
(COUNTY UNIT BASIS)
LEGEND
PERCENT
UNDER 10
10 TO 19
20 TO 39
40 TO 59
60 TO 79
80 AND OVER
UNITED STATES AVERAGE
41.5 PERCENT
U. S. DEPARTMENT OF COMMERCE
BUREAU OF THE CENSUS



INCOME FROM FARM PRODUCTION IN RELATION TO LAND USE

Record farm incomes in the years during and subsequent to the war stemmed from increases both in price levels and in the production of most crop and livestock products. In 1944, about 90 percent of the more than 18 billion dollars reported as the value of farm products sold or used by farm households represented products sold; the remaining 10 percent, products used by farm households. Crops accounted for 46.2, livestock and livestock products for 53.3, and forest products for 0.5 percent of the sales. Field crops comprised three-fourths of the value of crop sales and dairy and poultry products nearly one-half the value of sales of livestock and livestock products. In considering these data, as reported by the Census, it should be noted that (a) inventory changes are not reflected; (b) value of sales of livestock and livestock products do not account for any purchasing of livestock but include returns from crops fed, both of which tend to increase the relative value of this item; and (c) values of farm products were understated in some instances where net rather than gross values were reported.

The ten leading States in value-of-crop sales were, in order, California, Texas, North Carolina, Illinois, Kansas, North Dakota, Mississippi, Washington, Iowa, and Georgia. Utilization of a high proportion of the cropland in all of these States is identified with the production of such crops as wheat, fruits, vegetables, cotton, and tobacco; and in Illinois and Iowa, of corn and other grains for cash sale. The ten leading States in the value of sales of livestock and livestock products were Iowa, Illinois, Wisconsin, Minnesota, Texas, California, Missouri, Ohio, Indiana, and New York. When the values of sales of crops and sales of livestock and livestock products were combined, the ten leading States, again in order, were California, Iowa, Texas, Illinois, Minnesota, Wisconsin, Kansas, Nebraska, Ohio, and New York. The correlation of values of sales of farm products with geographic concentration of cropland harvested, particularly of forage and feed crops, can be visualized when it is noted that one-half the values from all sales, and over three-fifths of the values from livestock and livestock products sales were reported in the Corn Belt, the Lake, and the Plains States. Cropland harvested in these 14 States comprised two-thirds; feed crops, three-quarters; and forage crops, three-fifths of the Nation's total.

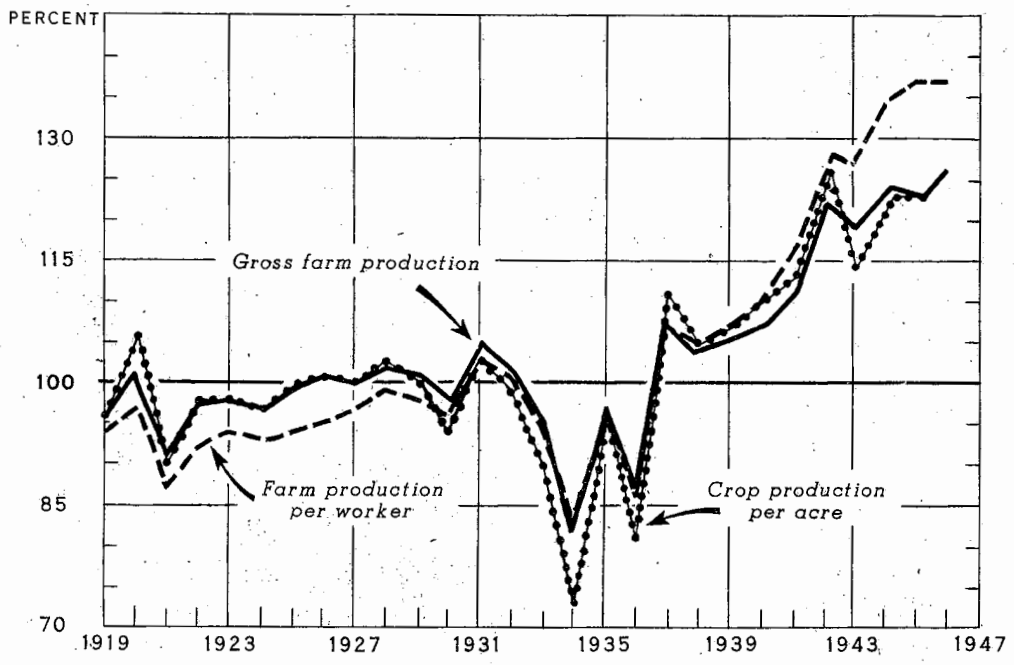
The value of crop sales in proportion to the value of all farm products was highest in (a) cotton- and tobacco-farming areas of the Piedmont and the Coastal Plains provinces of the Southeastern States; (b) Florida citrus fruit and winter vegetable areas; (c) Tennessee valley in northern Alabama; (d) tobacco-farming areas of southern Maryland and central Kentucky; (e) feed grains area in east central Illinois; (f) Mississippi Delta and adjoining uplands; (g) rice and sugarcane areas of southern Louisiana; (h) cotton- and wheat-farming centers of the High Plains of western Kansas, the Panhandle, southwestern Oklahoma and northwest Texas; (i) spring-wheat areas of North Dakota and Montana; (j) Columbia Basin wheat-farming area of the Pacific Northwest; and (k) other areas of specialization in crops extending from the Aroostook potato country in northern Maine to the Western States where a wide range of special crops, such as fruits and vegetables, cotton, and sugar beets, were grown under irrigation. The proportionate value of all farm products reported which accrued from crop sales was lowest in areas dominated by the dairy industry in the Northeastern and the Lake States; in the hill and mountain areas of West Virginia, eastern Kentucky, and the Missouri Ozarks; and in the counties of the West where the range industry provides the main source of income.

The proportion of the value of farm products provided by sales of livestock and livestock products was greatest in those sections of the country where utilization of the land is identified with emphasis upon feed and forage production. In the Northeastern, the Corn Belt, and the Lake States, the use of feed or forage crops for dairy, poultry, and other farm livestock was in the ascendancy over all uses of farm land, although pastures occupied a substantial proportion of the area in all these States. This same primary reliance of the livestock industry upon production from land in feed and forage crops was also evident in southeastern South Dakota and in northeastern Nebraska. West of the Missouri River in South Dakota and in the sand-hills area of Nebraska, the beef-cattle industry, in contrast, relies upon utilization of the large acreage of nontillable land for grazing purposes, supplemented principally by forage provided by the cutting of native grasses for hay. The beef-cattle industry in the Flint Hills of southeastern Kansas and northeastern Oklahoma and in the Missouri Ozarks is similarly based upon a combination of grazing, supplementary crop uses, and, in the latter, of a combination of these uses with forest utilization. The preponderance of values of farm products from sales of livestock throughout the Western States and in southwest Texas was associated with the long-standing utilization of the rough and dry areas which comprise the western range for grazing of beef cattle, sheep, and, on the Edwards Plateau of Texas, of goats.

The proportion of the value of farm products used by farm households was greatest in 1944 where production for home subsistence has long been characteristic of the farm economy and where values of sales have customarily been lowest. This production for home use has traditionally been associated with such factors as limited cropland resources and with remoteness or inaccessibility to markets. Farms with a high proportion of the value of products used by farm households were prevalent throughout much of the originally forested area of the eastern and southern parts of the United States, the upper Lake States, the shoe-string valleys of the Pacific Northwest, and in a number of areas of the Southwest.

GROSS FARM PRODUCTION, PRODUCTION PER WORKER, AND CROP PRODUCTION PER ACRE, UNITED STATES, 1919-46

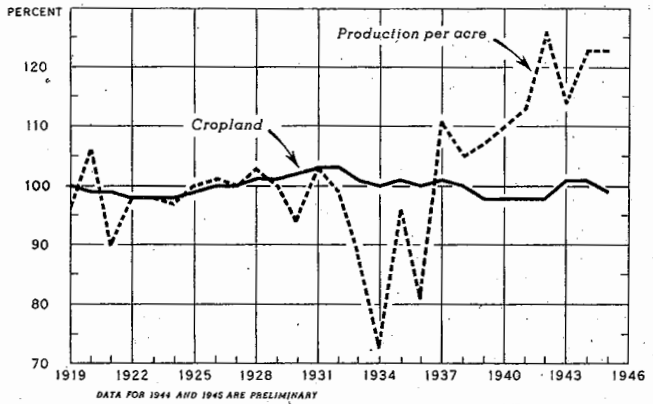
INDEX NUMBERS, (1935-39=100)



U.S. DEPARTMENT OF AGRICULTURE NEG. 46001 BUREAU OF AGRICULTURAL ECONOMICS

TOTAL CROPLAND, AND CROP PRODUCTION PER ACRE, UNITED STATES, 1919-45*

INDEX NUMBERS (1935-39=100)



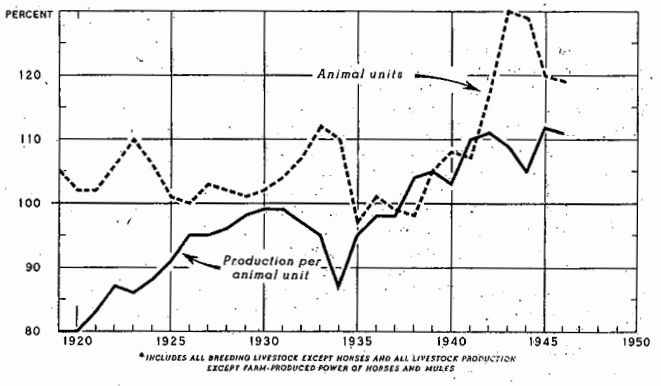
DATA FOR 1944 AND 1945 ARE PRELIMINARY

* TOTAL CROPLAND IS THE SUM OF THE ESTIMATED ACREAGE OF LAND FROM WHICH ONE OR MORE CROPS WERE HARVESTED PLUS ESTIMATED CROP FAILURE AND SUMMER FALLOW ACREAGE.

U.S. DEPARTMENT OF AGRICULTURE NEG. 45849 BUREAU OF AGRICULTURAL ECONOMICS

ANIMAL UNITS OF BREEDING LIVESTOCK AND LIVESTOCK PRODUCTION PER BREEDING UNIT, 1919-46*

INDEX NUMBERS (1935-39=100)



* INCLUDES ALL BREEDING LIVESTOCK EXCEPT HORSES AND ALL LIVESTOCK PRODUCTION EXCEPT FARM-PRODUCED POWER OF HORSES AND MULES

U.S. DEPARTMENT OF AGRICULTURE NEG. 45814 BUREAU OF AGRICULTURAL ECONOMICS

CHANGES IN AGRICULTURAL PRODUCTION

The pronounced increases in agricultural production during recent years stemmed from such influences as improvements in technologies in farm and land management and from changed economic conditions resulting from the war and other related factors. These influences accelerated previous tendencies toward fewer workers on farms, accompanied by fewer acres per capita for the population as a whole and, conversely, toward higher yields per acre and increased production of farm livestock. Gross farm production (production of all crops and of pasture consumed by livestock plus the product added in converting feeds to livestock and livestock products) in 1944 was one-fifth greater than during 1931, the peak year of the predrought period, or during 1920, following conclusion of World War I. Stimulation of the long-time decline in farm employment, as a result of departures of workers from farms to the services and to war industries, was reflected in even more pronounced increases in production per worker, a productivity in 1944 which was nearly one-fourth above 1939 and two-fifths above 1920.

The land actually used for crops in 1944, although more than 20 million acres above the total used in 1939, was about 10 million acres under the predrought peak of the early 1930's. There has been little change in recent years in the acreage used for pasture and grazing. Increases brought about by shifts to grassland from crops such as cotton and from poorly adapted cropland were offset during the war years by the plowing of farm pastures for crops and as a result of purchases of land for military and similar purposes.

Increased production per crop acre was associated with such developments as the (a) introduction of higher-yielding, and drought-, cold-, and disease-resistant varieties; (b) increased use of fertilizers and of lime or other amendments; (c) improved cultural practices; (d) establishment and maintenance of soils and moisture safeguards; (e) concentration of crops on more productive and dependable land; and (f) increases in acreage of crops from which high per-acre yields are obtained.

Increases in livestock production during the war years were associated with both increases in numbers of breeding stock and productivity per unit. More milk per cow, eggs per hen, pounds per litter, and meat produced per hundredweight of feed consumed were correlated with progressive and long-standing technological improvements. Numbers of units of livestock, exclusive of farm work stock, as well as productivity per unit, were expanded along with both long- and short-term increases in output of feed and forage crops and improved condition and carrying capacity of farm pastures.

CHANGES IN LAND UTILIZATION PRECEDING AND DURING WORLD WAR II

The period of World War II climaxed a quarter-century of dynamic changes in agricultural production and of pronounced readjustments in the utilization of the Nation's land resources. Agriculture at the beginning of World War I was at the cross-roads between the old and the new. Enlargement of agricultural production by geographic expansion onto highly productive and readily available new land had virtually come to an end. As a consequence, demand and price levels stemming from the war spurred the plowing of much of the remaining native grassland in the sections of limited and variable rainfall in the Great Plains. During this same period, land last used for crops as early as the beginning of the century was rebroken throughout the eastern part of the country. The agricultural industry, between the two world wars, weathered the depression which followed the restoration of the devastated agricultural areas of Europe and expanded competition in world cotton, wheat, and other commodity markets. It had to withstand the even more serious general depression and the series of years of low prices and drought of the 1930's. Agriculture not only came through these crises, but also developed meanwhile an enlarged productive capacity per acre and per worker which placed it in readiness to meet the unprecedented demands for agricultural products during and subsequent to World War II. Only in the instance of the Nation's forest land has current productive capacity been curtailed rather than expanded as a result of the using of much of the remaining merchantable timber supply during the two wars and the intervening years of heavy demand for forest products.

The accomplishments of agriculture in improving production, yields, and carrying capacities have been a source of pride for many years to farmers and ranchers. Increased production per head, per acre, and per man-hour of work has long been evident locally and on individual farms. These increases, as contrasted with the previous enlargement of production through geographic expansion, first became apparent nationally during the 1920's. The influence of increased productivity even then was somewhat offset by the effect of additions of land of lower and more variable yielding capacity, and by the incompleteness of the adjustments in land use. A situation existed around 1930, where a large acreage of productive land in such areas as the Corn Belt centers of Ohio and Indiana and adjoining areas in Michigan was underutilized or was actually lying idle. In areas of poor, hilly, or badly eroded land, operators were vacating farms in large numbers, but the older farmers often remained, to continue what had been their lifelong occupations.

The low prices, curtailed market outlets, widespread crop failures, and low yields of the 1930's provided a poor foundation for realization of any gains from previously developed improvements in productive capacity. These were by no means lost years, however, for it was during this period that technological advances and the know-how of scientific farm and land management attained much of their present widespread application and dissemination. By 1940, dislocations in land occupancy and use which had accompanied the large-scale movement away from farms in the 1920's, and which had resulted from the widespread foreclosures and from farm abandonment in areas of high climatic risk during the 1930's, had been stabilized. Farmers and ranchers had had the benefit of a relatively long period of experience in adjusting to changing requirements for land. Earlier gains in concentration of cropland within areas and within parts of individual farms best suited to crops were consolidated and expanded as a result of increased conservation-mindedness. Improved markets and prices provided an incentive to redoubled efforts by farmers and ranchers during the wartime years as well as a source of income with which to purchase all the machinery, equipment, and fertilizer which could be manufactured after making provisions for war essentials.

Changes in all land in farms.—About 186 million acres were added to the over-all acreage of land in farms between 1920 and 1945. Changes in the proportion of the land area in farms were not uniform, but the contrast in the situation between the eastern and western parts of the country was well defined. The additions to the land under farm or ranch ownership or lease during this 25-year period were confined principally to the semiarid and arid sections of the Western and Plains States. Four-fifths of the 196 million acres added to land in farms in these 17 States consisted of previously grazed land—either homesteaded since 1920 and, in many instances, later sold to stockmen; land purchased from State governments, railroads, and other private land companies; or land located within the Indian reservations. Increases in the States east of the Great Plains were confined primarily to the new ground areas of the Mississippi Delta, the margins of the cut-over land in north central Wisconsin and Minnesota, and to central and south Florida where about 7 million acres were added to farm pastures.

About 45 million acres went out of farms in the eastern portion of the country during the 1920 period of postwar decline in agricultural activity and expansion of industrial employment. Decreases were widespread in the hill-farming areas, in parts of the Piedmont of Georgia and South Carolina, and around growing cities, such as Detroit, Cleveland, and Chicago. Some of the acreage abandoned during or even prior to the 1920's was temporarily reoccupied during the depression years of the succeeding decade. This did not prove to be permanent, for by 1940, and especially by 1945, increases had persisted only in the areas of additional agricultural development and in those areas of the Southeastern States, where increased acreage in farms was associated with pasture development and expansion of the dairy- or beef-cattle industries.

Changes in number and size of farms.—The number of farms declined by nearly 600,000 during the past quarter-century, but the average size, owing in large measure to the additions since 1930 of land to farms or ranches in the 17 Western and Plains States, increased by approximately one-third. Other factors also were operative to increase the size of units, especially in the Corn Belt and Plains States. Consolidation of farms proceeded rapidly from 1920 through the wartime years under the impetus of mechanization following the years of drought and low prices, and also as a result of wartime dislocations in the farm population. Few of the typically small hill farms vacated prior to 1930 had been reoccupied and maintained under occupancy in 1945. The number of croppers and other tenants in the South decreased by more than 400,000 during the 25-year period. The only additions which were sustained to 1945 occurred in connection with increases in irrigated farms, the rural-residential type units around population centers and in the small farms located in such areas as eastern Kentucky and southern West Virginia.

Changes in cropland in farms.—The acreage in the cropland base, including land from which crops were harvested as well as all other cropland exclusive of the acreage pastured, has remained virtually unchanged during the past 25 years. While the national or over-all cropland acreage has remained relatively constant, its quality or character has been markedly

altered by the pronounced shifts to and from crops which have taken place during the past quarter-century.

A large proportion of the increase since around 1920 in all cropland in farms (exclusive of the acreage pastured) occurred in the western parts of the Great Plains. Increases during the 1920's and even later represented a continuation of the plowing of additional native sod which derived its impetus from economic conditions arising out of the period of World War I and from increasing mechanization. Cropland was expanded between 1929 and 1944 only in such areas as the Montana triangle and the wheat- and cotton-farming areas of the High Plains of western Kansas, northwest Texas, and east central New Mexico. Increases in cropland in the wheat-farming areas have been especially pronounced in the summer fallow category.

The drastic reduction during the 1930's in the acreage planted or seeded to crops throughout the grain-farming areas of the Plains States was largely reversed during the wartime years. This expansion of acreage after 1940, combined with the scaling down of losses of planted or seeded crops and improvements in yields per acre, contributed to a remarkable restoration of grain production. Corn production in the Northern Plains States was nearly tripled and wheat production practically doubled during the 5 years from 1942 to 1946 as contrasted with the 1935-1939 period. Acreage used for crops in 1944 approximated previous all-time peaks except in the areas of extremely high climatic risk and those containing a preponderance of third and fourth grade farming or poorer land. There was some replowing of cropland which had been reseeded to grasses, but such instances, or those where additional native grassland was plowed-out, were localized and inextensive in acreage.

Land clearing in north central Wisconsin, Minnesota, and the Pacific Northwest; flood protection, drainage, and clearing of new ground areas in the Mississippi Delta; and additional irrigation, particularly in the San Joaquin Valley of California, contributed much of the remainder of the new land added since 1920 to the cropland base. Productive land in the Corn Belt and Lake States which had been underutilized during the preceding two decades was also used to expand the acreage in corn, soybeans, and other farm crops. Average yields for corn during the 5-year period from 1942 through 1946 exceeded the averages for any other 5-year period since 1900 by from one-quarter to two-fifths or more in the grain-producing centers of Ohio, Indiana, Illinois, and Iowa.

Decreases in all cropland exclusive of acreage pastured have been widespread during the past quarter-century throughout the Appalachians and other eastern hill-farming areas, the Ozarks, and in the cotton-farming uplands extending from South Carolina and Georgia to central Texas and Oklahoma. Much of the abandonment of cropland in the Northeastern States, in the areas along the southern margin of the Corn Belt, and in the Southern Appalachinas occurred during the 1920's. Abandonment of cropland in the Ozarks and adjoining areas has been most pronounced since around 1930. Decreases in cropland in the black prairies of Alabama and Mississippi were centered in the decade following the boll weevil infestation shortly after 1910. This decline was most pronounced during the succeeding decade in the fall-line or old plantation areas of Georgia and South Carolina. The decrease in acreage of cropland in eastern and central Texas and Oklahoma was pronounced during the 1930's, and continued during the war years. The tendency in the hill-farming areas has been toward further contraction of the cropland acreage. In a number of cotton-farming areas of the South, recent tendencies to enlarge the acreage in hay crops and to expand dairy or beef cattle numbers indicates that a part of the recent wartime declines may have been temporary.

Changes in pasture and grazing land.—There has been little change during the past 25 years in the combined acreage, within and outside farms, available for pasture and grazing purposes. The increase between 1929 and 1944 of 159 million acres in the pasture land reported in farms or ranches represented only minor gains in the over-all area available for providing forage for livestock. Increases, particularly in the 17 Western and Plains States, generally represented land previously grazed in common by farmers and stockmen. Some enlargement after 1930 of pasture acreage in the Great Plains resulted from restoration of grassland on crop fields plowed-out by around 1930 and subsequently shifted from crops. In areas such as the black prairies of Alabama and Mississippi and the loess hills of southern Iowa and northern Missouri, the gain in acreage in farm pastures accrued from the shift away from crops on land of strongly erosive characteristics. Increases in pasture land in eastern and central Texas and Oklahoma were correlated both with reductions in cropland and increased utilization of farm woodland for pasture purposes. Counterbalancing these increases was the widespread decline in farm pastures associated with abandonment of farm land in the older settled and hill-farming areas in the eastern part of the country.

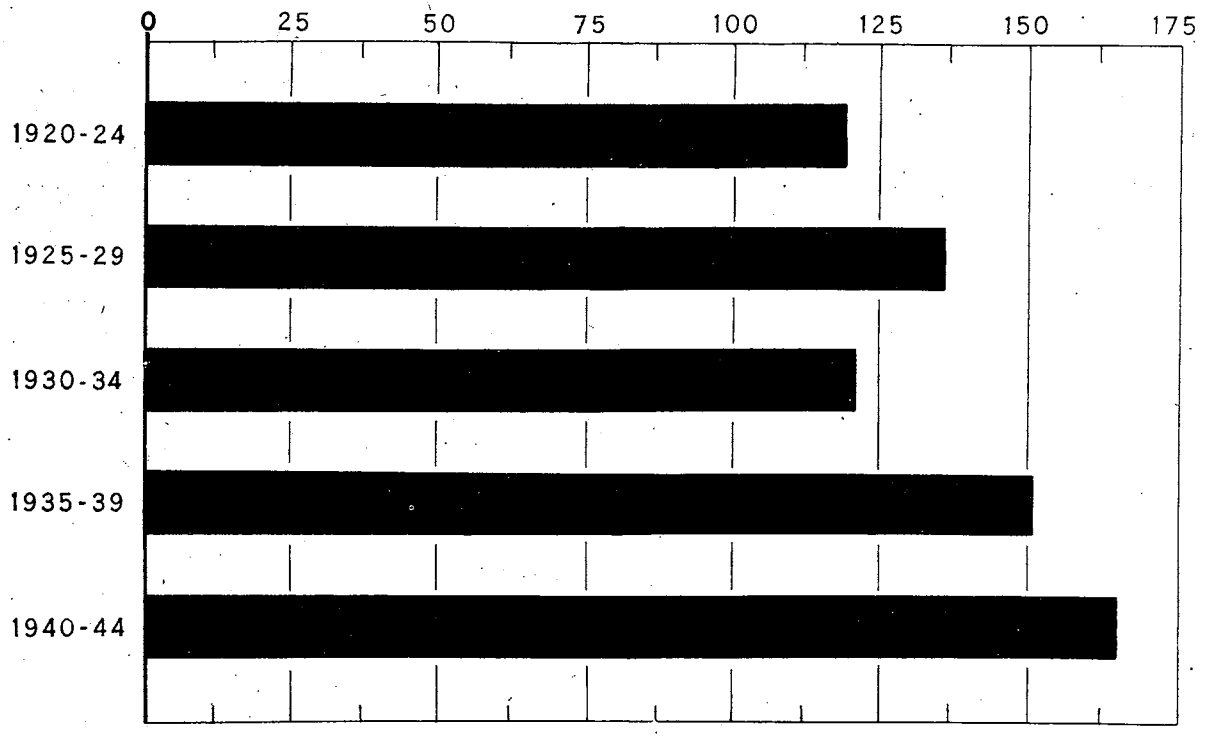
This abandonment of land in farms, as has been indicated, was most prevalent during the 1920's, while the additions to land used for pasture followed the period around 1930 when cattle numbers were at the low point of the cycle. The expansion since then in the consumption of dairy and other products from forage-consuming livestock, by increasing the utility or value of pastures, has also contributed to an improvement in condition and carrying capacities. Under this stimulus and aided by the positive measures for pasture improvement which have been introduced in recent years, the general condition of late-summer pastures has been restored to the levels prevailing around 1920.

Changes in livestock on farms and ranches.—Changes in numbers of livestock on farms and ranches during the past quarter-century have been associated, in many instances, with geographic shifts in crops and pastures and with improvements in yields of feed and forage crops and carrying capacities of pasture and range land. This correlation is more apparent regionally than within local areas, due to the influence of other factors such as increased specialization and centralization of the various livestock industries, developments in purchasing as contrasted with the home-growing of feeds and increases in amounts and quality of feed and forage fed per animal unit.

One of the most significant developments during the period was the decline by nearly three-fifths in the number of horses and mules since the peak reached in 1918. This decrease in farm work stock was confined almost exclusively to the Central Plains and to other areas throughout the country where the progress of mechanization during the past quarter-century has been greatest and where much of the land area is adapted to crops. Only in local instances, principally in the hill-farming areas, have decreases been identified with declines in crop farming activity. Based upon current feed and forage requirements and yields during the 5-year period from 1941 to 1945, this shift from work stock had the effect of releasing approximately 30 million acres of cropland and another 40 million acres of pasture land (humid area equivalent), at least one-half or more of which was tillable, for other uses during the wartime years. The acreage released represented essentially the most productive of the Nation's crop and pasture land.

Cattle on farms and ranches in 1945 exceeded by one-quarter the peak numbers at the close of World War I. The tremendous increases in the eastern part of the country reflected increased production of feed and forage from land currently being utilized for crops; the expansion since around 1930 of pasture acreages, and improvements in carrying capacities; and increased availability of crop and pasture land for feed and forage as a result of decreases in farm work stock. Pronounced increases were registered in the cattle-feeding centers on the Corn Belt as well as on the pastures of eastern Texas, Louisiana, Mississippi, Alabama, and Florida. An outstanding development of the period was the expansion of dairying in the areas of new land development in north central Wisconsin; the crop-pasture land of the valleys and basins of Kentucky and Tennessee; within the Springfield uplands of southwestern Missouri; and in the irrigated valleys of the West. Changes in the western part of the country reflected shifts in the seasonal use of the range and increased concentration of cattle and sheep in the irrigated areas for supplementary winter feeding. Increases in cattle in the Great Plains were noteworthy to the extent that a pronounced recovery and stabilization of the range industry was indicated from the disasters of the drought years.

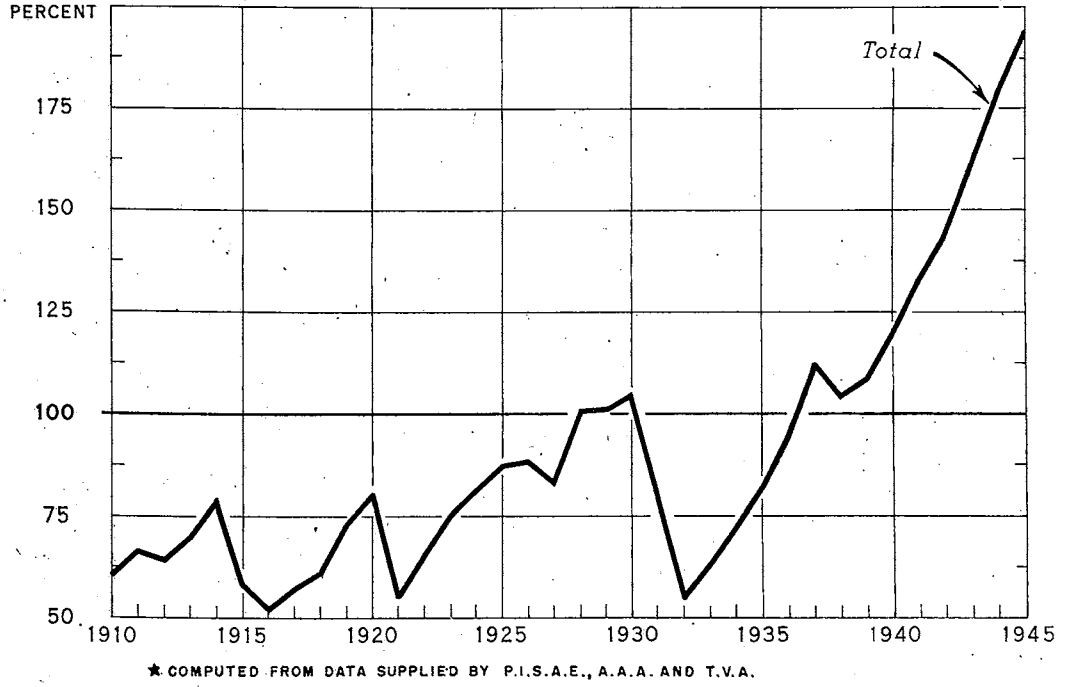
DIGESTIBLE PROTEIN AVAILABLE IN ALL HAY, UNITED STATES, 1920-44



U. S. DEPARTMENT OF AGRICULTURE NEG. 45091 BUREAU OF AGRICULTURAL ECONOMICS

FERTILIZER CONSUMPTION IN TERMS OF NITROGEN, PHOSPHORIC ACID, AND POTASH, CONTINENTAL UNITED STATES, 1910-45 ★

INDEX NUMBERS (1935-39=100)



★ COMPUTED FROM DATA SUPPLIED BY P.I.S.A.E., A.A.A. AND T.V.A.

U. S. DEPARTMENT OF AGRICULTURE NEG. 43920 BUREAU OF AGRICULTURAL ECONOMICS

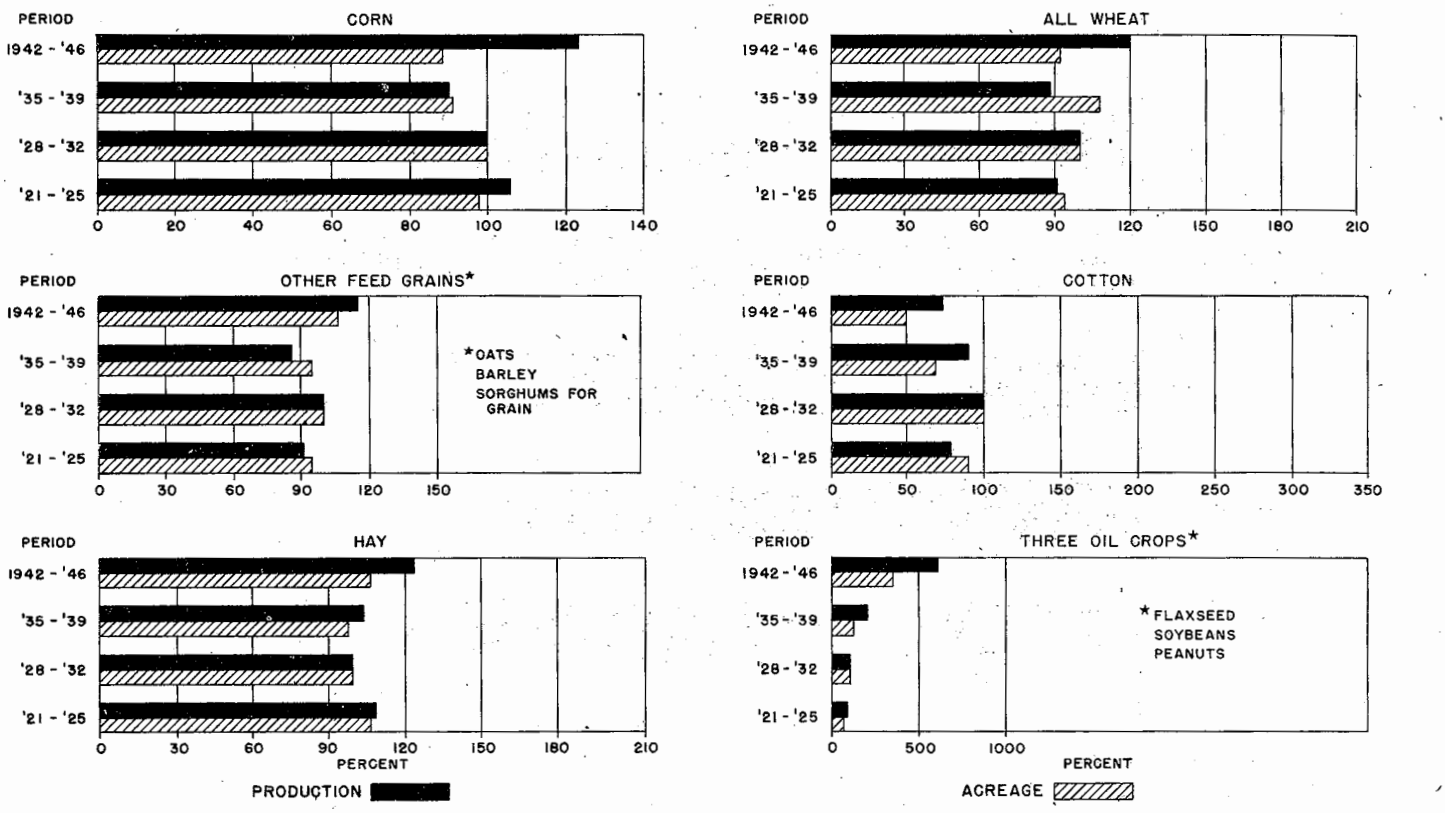
CHANGES IN HAY CROPS AND USE OF FERTILIZER

Significant changes have taken place in both the quantity and quality of the country's hay supply. During the last 5 years of the 1920-44 period, 39 percent more digestible protein was available per roughage-consuming unit of livestock than for the first 5 years of this period. The pronounced shift from grass to legume hays has been the largest contributing factor.

Another important change increasing agricultural production was the greater use of fertilizer. Use of nitrogen, phosphoric acid, and potash as fertilizer during World War II reached a level nearly double that of the 1935-39 average. The highest consumption before 1937 occurred in 1930, when the level reached was 5 percent above the average of the years 1935-39.

GRAPHIC SUMMARY

CHANGES IN PRODUCTION AND ACREAGE*
1928 - '32 = 100

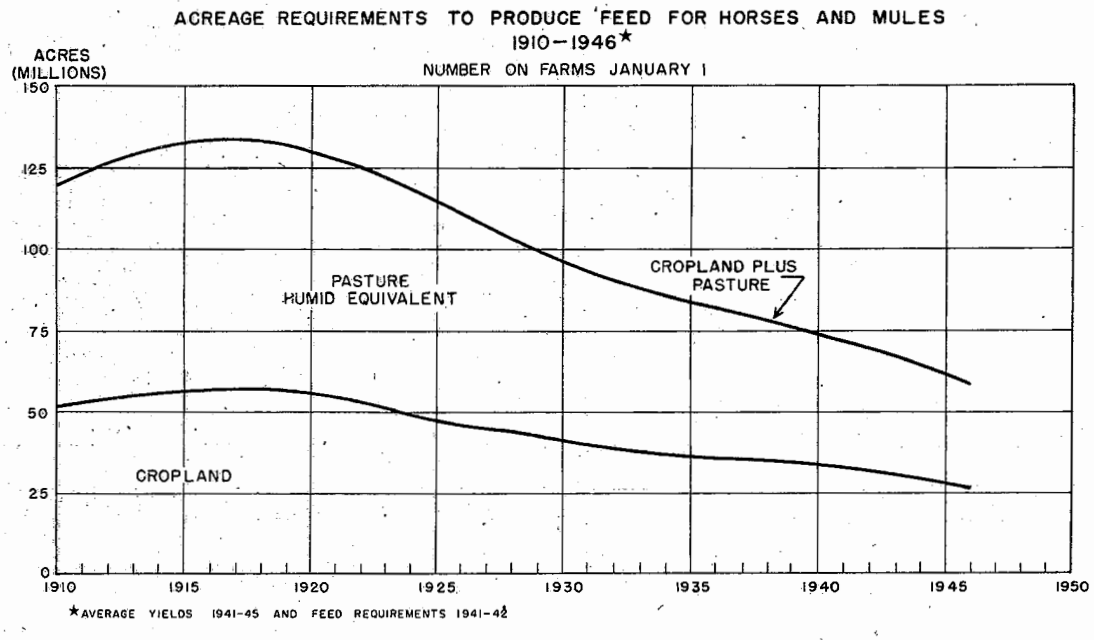


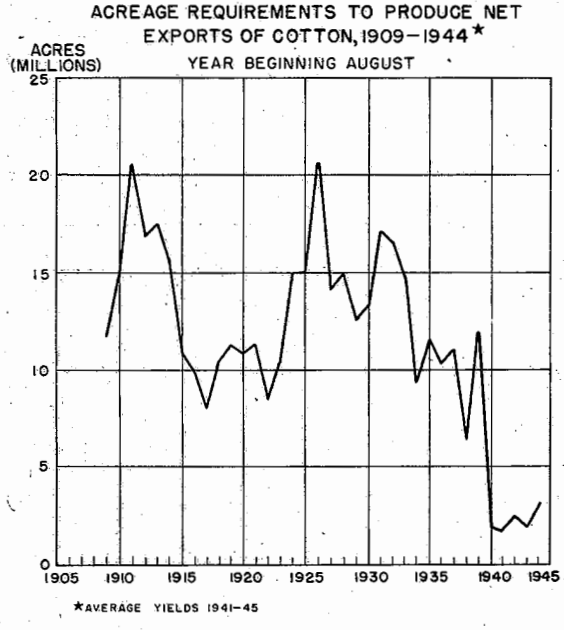
*COMPUTATIONS FROM BAE ESTIMATES OF PRODUCTION AND ACREAGE. PLANTED OR SEEDED ACREAGE FOR CORN, OATS, BARLEY, AND WHEAT; COTTON IN CULTIVATION, JULY 1.

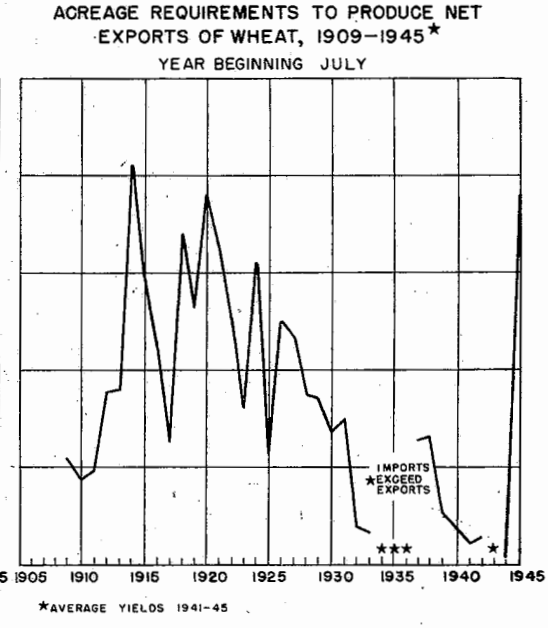
CHANGES IN THE ACREAGE AND PRODUCTION OF SELECTED CROPS

Changes during the past twenty-five years in the acreage and yields of individual crops have had a significant bearing upon the recent expansion of agricultural production. There was a net decrease of more than 20 million acres in the land in cotton and 10 million acres in the land planted to corn for the 5-year period 1942-1946 as contrasted with the 5-year period centering around 1930. These decreases were only partially indicative of the shifts since 1920 from land poorly adapted to these intertilled crops. Such shifts would probably exceed 50 million acres if all changes were accounted for, including geographic expansions and contractions of cropland, as well as the modifications of cropping practices on individual farms. The influence of this increased selectivity in the use of the land plus the recovery from the devastating impact of the boll weevil infestation were especially evident in the changes which have taken place in the acreage and yields of cotton. While the acreage of cotton during recent years was only slightly more than one-half that of the early 1920's, production was only about 5 percent under that of the former period. The influence upon production of shifting hill land out of corn and of the contraction of acreage in areas of high climatic risk has been overshadowed by the spectacular gains in corn production resulting from such factors as use of hybrid seed and adoption of improved cultural practices. Increases in the yields of corn above those of the early 1920's have been most pronounced in those parts of the Corn Belt where the effect of unseasonable spring weather, for example, has been modified by the introduction of earlier maturing varieties and greater timeliness of operation provided by use of power machinery.

Reemphasis on oats production and the introduction of improved varieties of grain sorghums account for recent increases in the acreage in the feed grains other than corn. The percentage increase in tonnage of these other feed grains above that of the early 1920's was even greater than that for corn. This resulted not only from additions to acreage, but also through the use of improved varieties, replacement of barley by higher-yielding oats, and lessened diversion to forage uses. After the disastrous experience with drought and low prices during the 1930's, wheat acreage in recent years has been curtailed to about the level of the early 1920's. Production exceeded this former period by one-third as a result of the use of improved and rust-resistant varieties, increased summer fallowing, and the shifting back eastward of wheat farming in the Great Plains from the areas of high climatic risk and poorer grade soils. The acreage in all hays was restored during the early 1940's to the level following 1920. The acreage in the more recent period would have been even higher if sorghums for forage were included and had it not been for shifts in such crops as soybeans harvested for beans rather than for hay, and for labor and seed shortages. An outstanding development during the war has been the increased acreage and production of the oil-bearing crops—soybeans, flaxseed, and peanuts. While not shown above, it should be noted that production of vegetables for processing and as fresh vegetables for the market has been almost doubled since the early 1920's.



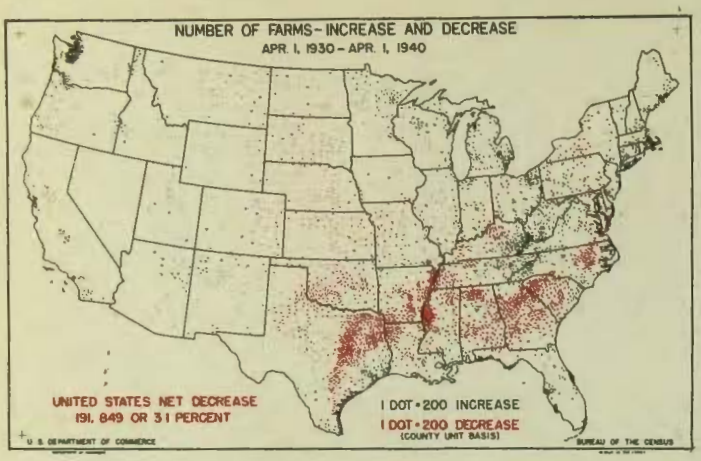


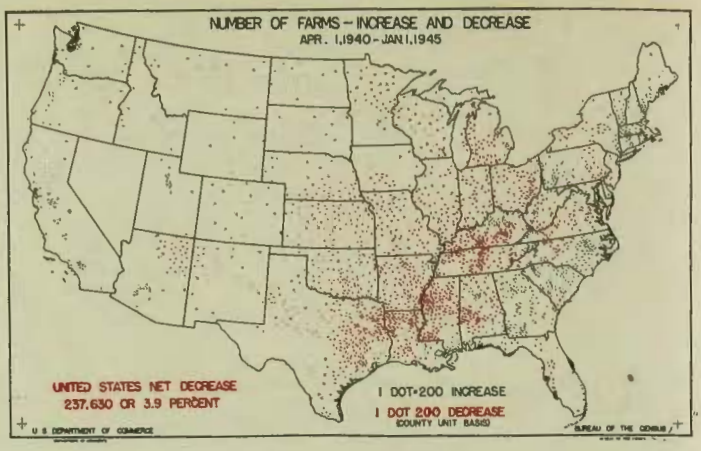


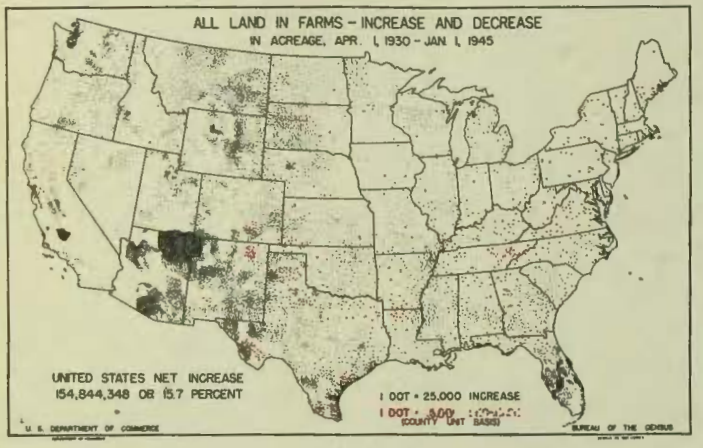
CHANGES IN REQUIREMENTS FOR LAND

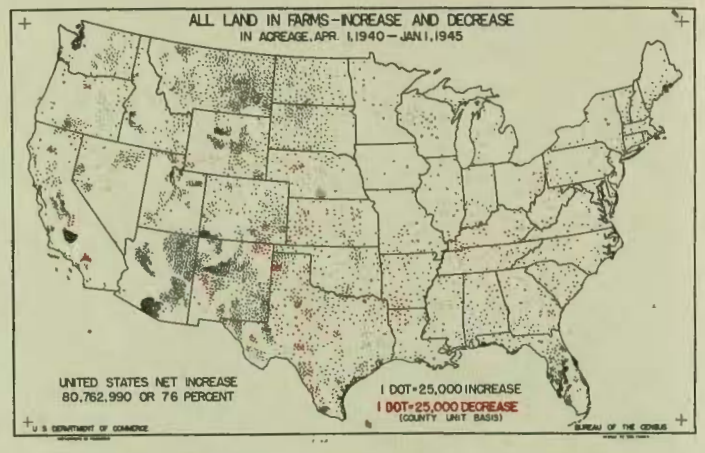
The population of the United States increased by approximately one-third during the past quarter-century. Provided the same ratio per capita of population had been maintained as prevailed around 1920 (nearly three and one-half acres), an addition of about 110 million acres would have been required for crops in recent years. That national requirements for land for crops have remained practically stationary since then is attributable to a number of factors. Already noted have been the geographic shifts in crops and in pasture uses, the increases in yields and production of many of the major farm crops, the greater productivity of farm animals, and the improved carrying capacities of pastures. Changes in consumer preference for foods provided directly from crops have generally resulted in increases in those crops producing high per-acre volumes. Expansion in the consumption of dairy, poultry, and similar products has enlarged the outlets for the increased production of the feed grains. Where the tendency has been toward increased consumption of products from milk cows and other forage-consuming farm livestock, the effect has been to augment the value or utility of the tremendous acreage available for producing hay and other forage crops and for pasture and grazing.

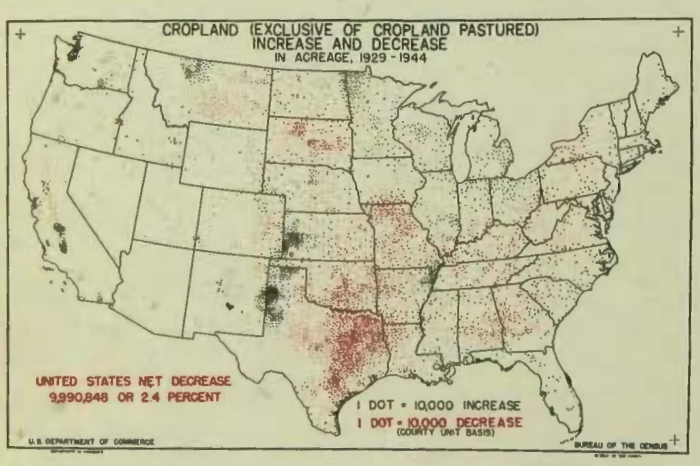
Added to the above factors, instrumental in scaling down the requirements for cropland, were the reductions which have taken place in the acreage required to produce farm power and to produce agricultural exports. The above charts are indicative of the additions to the acreage used for crops which would have been required, during the war years, to have maintained the same number of horses and mules as were on farms and ranches at the peak in 1918 and to have sustained previous net export levels for wheat and cotton, the two principal agricultural exports. Reductions in these requirements by 1944, after further declines since 1940, aggregated 60 million acres of cropland and 40 million acres of farm pasture (humid equivalent). It should be noted that these computed requirements were based upon current yields per planted or seeded acre, except for hay. In the instance of acreage requirements to feed horses and mules, these computations were based upon feeding practices as well as upon current yields by groups of States. These computed annual requirements, accordingly, are constant with respect to such factors as annual and periodic changes in the relative levels of production, carry-overs from preceding seasons, and improvements in yields and in feeding practices.

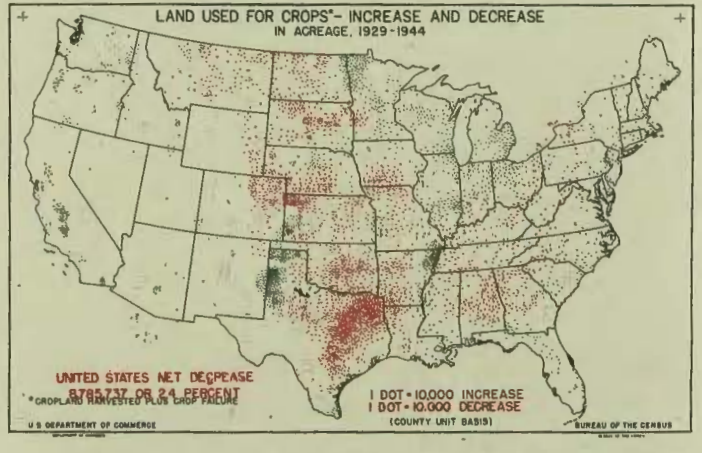

NUMBER OF FARMS - INCREASE AND DECREASE
APR. 1, 1930 - APR. 1, 1940
UNITED STATES NET DECREASE
191,849 OR 3.1 PERCENT
1 DOT = 200 INCREASE
1 DOT = 200 DECREASE
(COUNTY UNIT BASIS)
U. S. DEPARTMENT OF COMMERCE
BUREAU OF THE CENSUS

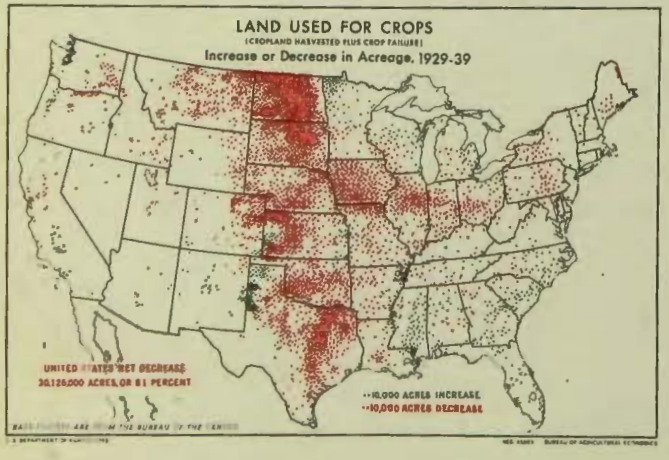

NUMBER OF FARMS - INCREASE AND DECREASE
APR. 1, 1940 - JAN. 1, 1945
UNITED STATES NET DECREASE
237,630 OR 3.9 PERCENT
1 DOT = 200 INCREASE
1 DOT 200 DECREASE
(COUNTY UNIT BASIS)
U. S. DEPARTMENT OF COMMERCE
BUREAU OF THE CENSUS

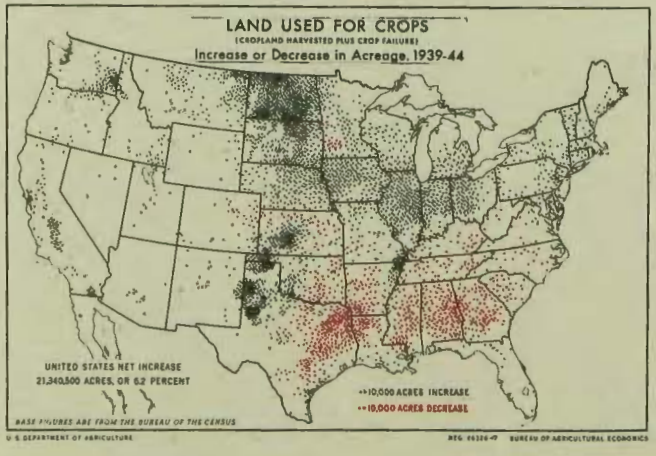

ALL LAND IN FARMS - INCREASE AND DECREASE
IN ACREAGE, APR. 1, 1930 - JAN. 1, 1945
UNITED STATES NET INCREASE
154,844,348 OR 15.7 PERCENT
1 DOT = 25,000 INCREASE
(COUNTY UNIT BASIS)
U. S. DEPARTMENT OF COMMERCE
BUREAU OF THE CENSUS

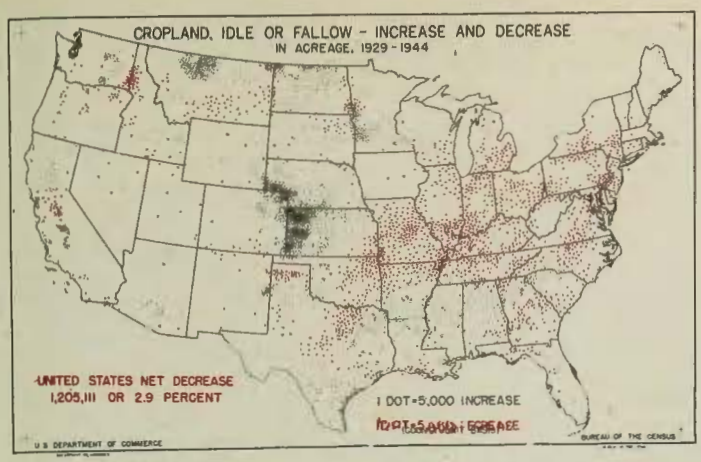

ALL LAND IN FARMS - INCREASE AND DECREASE
IN ACREAGE, APR. 1, 1940 - JAN. 1, 1945
UNITED STATES NET INCREASE
80,762,990 OR 7.6 PERCENT
1 DOT = 25,000 INCREASE
1 DOT = 25,000 DECREASE
(COUNTY UNIT BASIS)
U. S. DEPARTMENT OF COMMERCE
BUREAU OF THE CENSUS

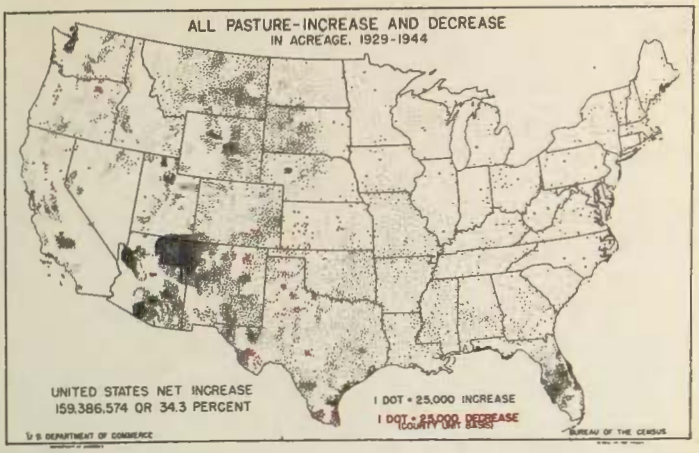

CROPLAND (EXCLUSIVE OF CROPLAND PASTURED)
INCREASE AND DECREASE
IN ACREAGE, 1929 - 1944
UNITED STATES NET DECREASE
9,990,848 OR 2.4 PERCENT
1 DOT = 10,000 INCREASE
1 DOT = 10,000 DECREASE
(COUNTY UNIT BASIS)
U. S. DEPARTMENT OF COMMERCE
BUREAU OF THE CENSUS

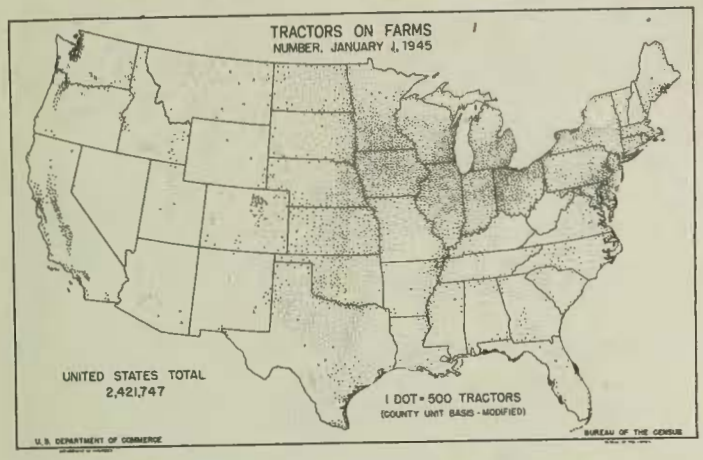

LAND USED FOR CROPS* - INCREASE AND DECREASE
IN ACREAGE, 1929 - 1944
UNITED STATES NET DECREASE
8,785,737 OR 2.4 PERCENT
*CROPLAND HARVESTED PLUS CROP FAILURE
1 DOT = 10,000 INCREASE
1 DOT = 10,000 DECREASE
(COUNTY UNIT BASIS)
U. S. DEPARTMENT OF COMMERCE
BUREAU OF THE CENSUS

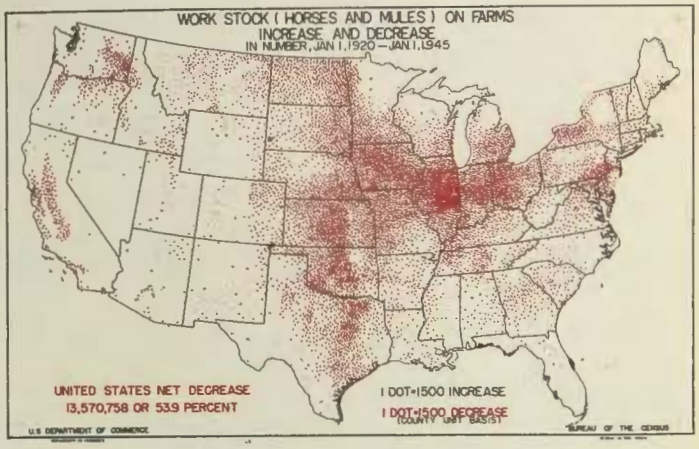

LAND USED FOR CROPS
(CROPLAND HARVESTED PLUS CROP FAILURE)
Increase or Decrease in Acreage, 1929-39
UNITED STATES NET DECREASE
30,126,000 ACRES, OR 8.1 PERCENT
10,000 ACRES INCREASE
10,000 ACRES DECREASE

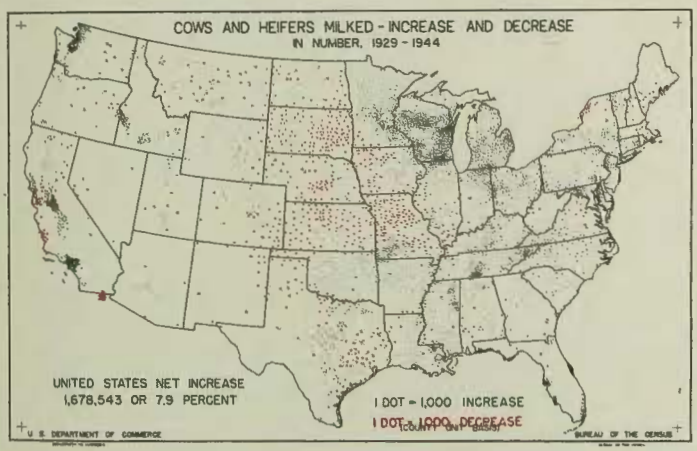

LAND USED FOR CROPS
(CROPLAND HARVESTED PLUS CROP FAILURE)
Increase or Decrease in Acreage, 1939-44
UNITED STATES NET INCREASE
21,340,500 ACRES, OR 6.2 PERCENT
10,000 ACRES INCREASE
10,000 ACRES DECREASE
BASE FIGURES ARE FROM THE BUREAU OF THE CENSUS
U. S. DEPARTMENT OF AGRICULTURE
BUREAU OF AGRICULTURAL ECONOMICS

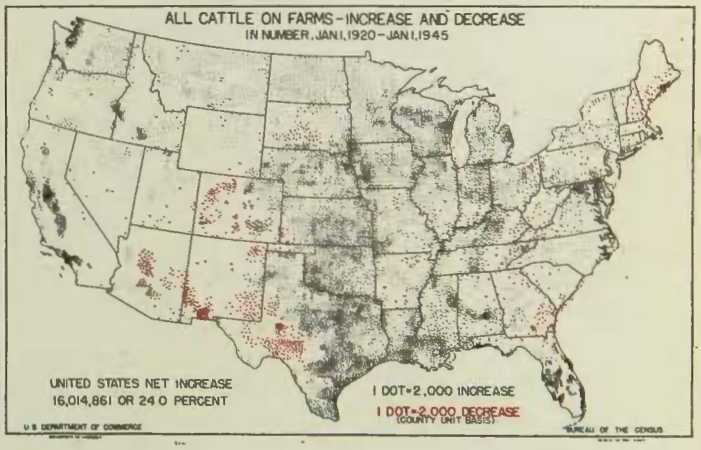












CHANGES IN LAND USE

Major changes or shifts in the use of the Nation's land resources have taken place during the past quarter-century, a part of which are illustrated by the above series of maps. There has been a pronounced expansion since 1930 in the grazing land reported in farms and ranches in the 17 Western and Plains States. Increases in the land in farms in the States east of the Plains were confined principally to (a) areas of additional land development; (b) areas of restoration of land to farms; and (c) central and south Florida. Land abandoned prior to 1930 has generally remained outside of farms since then.

The number of farms in the cotton-farming areas has continued to decline since 1930. Farm abandonment during the years of drought and low prices, and the consolidation and enlargement of units since then, was reflected in fewer farms in 1945 throughout much of the area of the Great Plains. A temporary or perhaps a permanent enlargement of farms transpired under wartime conditions in the Corn Belt and the Lake States. Some decreases were recorded during the war years in the hill-farming areas, but not on a scale comparable to the 1920's.

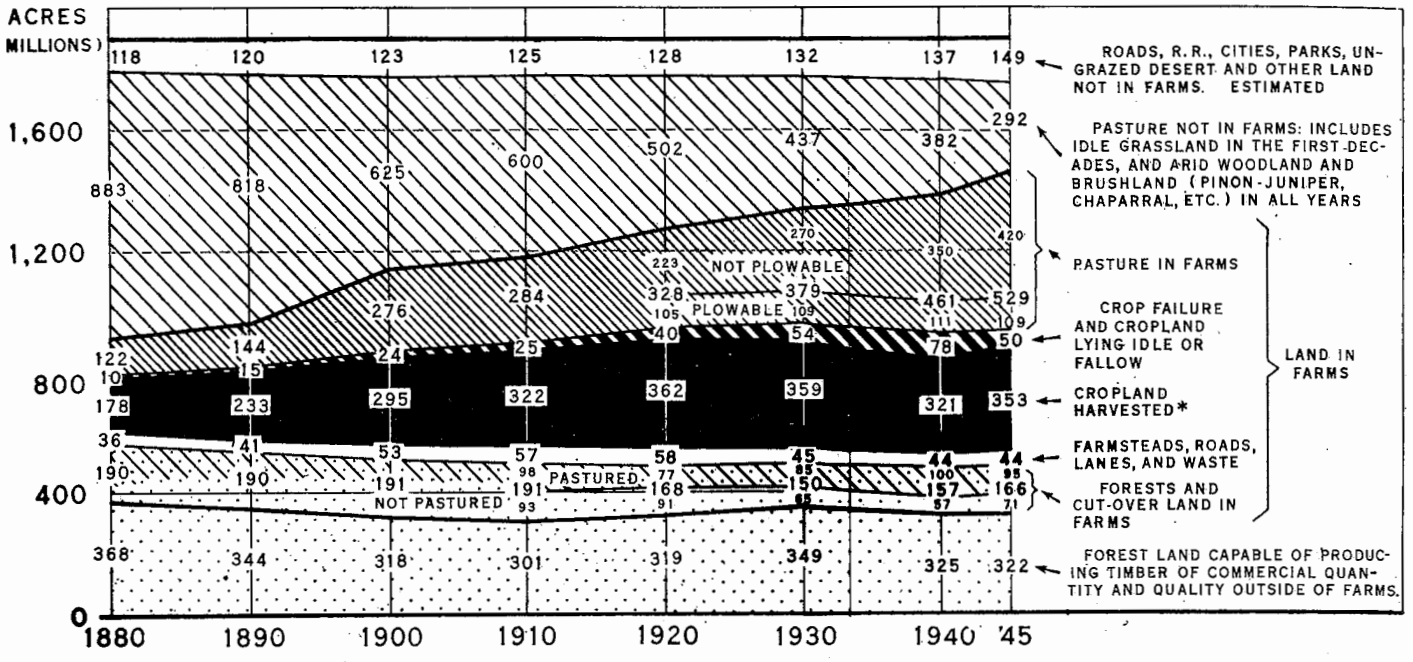
The processes of geographic expansion and contraction of cropland since the conclusion of World War I were largely consummated by 1930. Some further increases in cropland (exclusive of that pastured) were recorded in central Montana and within the High Plains. These increases were more than offset in areas of excessive climatic risk or poorer grade soils. Increases elsewhere were most prominent in the upper Lake States, the Mississippi Delta, and in the irrigated areas such as in the San Joaquin Valley in California. Additional decreases in cropland occurred in a number of the hill-farming areas east of the Mississippi. Shifts from cropland (to farm pastures in these instances) were most pronounced since around 1930 in the somewhat comparable areas of strongly rolling to hilly topography or erodible soils west of the Mississippi.

The impact of drought and economic conditions on the land used for crops during the 1930's and the resurgence during the war years in the Corn Belt, the Lake, and the Plains States is evidenced by the series of maps depicting changes in land used for, or planted to, crops. The declines registered during the 1930's were regained during the wartime years in all of the Great Plains except along the grazing farming margin and in the westernmost extensions of the Corn Belt. Productive land in the Corn Belt and the Lake States was returned to crops.

Declines in horses and mules and the consequent reductions in feed and forage crops have been a salient factor in meeting recent needs without disrupting the balance achieved in the use of cropland and other resources. It should be noted that these decreases were most widespread in the Central Plains and the more localized areas elsewhere within which land is suited to operation of power machinery and is generally regarded as the Nation's most productive cropland. The geographic incidence of increases in cattle on farms and ranches was indicative of the influence of such factors as (a) greater availability of feed and forage, (b) additional land development and expansion of dairying in the upper Lake States, (c) specialization and localization of dairying and other livestock industries, (d) increased purchasing of feeds, (e) shifts from nonfeed crops such as cotton to pasture in eastern Texas and Oklahoma, (f) more pasture land and improved carrying capacities in the Great Plains, and (g) shifts from sheep to cattle in the Western States and increased winter feeding within the irrigated areas.

THE TREND IN LAND UTILIZATION

United States, 1880-1945



FIGURES PRIOR TO 1930 ARE MOSTLY ESTIMATES BASED ON THE CENSUS

**CROPLAND ACREAGES ARE FOR THE YEAR PREGEDING THE DATE OF THE CENSUS*

U. S. DEPARTMENT OF AGRICULTURE NEG. 19123 BUREAU OF AGRICULTURAL ECONOMICS

Important shifts have taken place since 1880 in the use of land for the country as a whole and for the main geographic regions. While the total land in farms, in crops, and in pasture has increased generally in the West there have been significant decreases in land in farms in many areas of the East. Incorporation of large areas of grazing land into farms and ranches in the West, in many instances, has not resulted in a changed use; but in the East abandonment of cropland usually has meant a shift to pasture and eventually, in many cases, to woodland within and outside farms. Between 1880 and 1920, the acreage of crops harvested for the Nation as a whole more than doubled, but between 1920 and 1930, it decreased 3 million acres, the first decrease recorded by a decennial census. Between 1930 and 1940, there was a decrease of cropland harvested of 38 million acres, owing principally to retrenchment during the depression, to increased conservation farming, and to improved farm practices which sustained production; but, between 1940 and 1945, it increased 32 million because of a larger acreage planted to meet war needs and the unusually good weather which reduced crop failure over many former years. The increase in cropland planted was taken chiefly from cropland idle or fallow and plowable pasture.

LONG-TIME TREND IN LAND UTILIZATION

The geographic expansion of the Nation's agriculture was largely accomplished during the span of less than a hundred years from around the middle of the past century to the period shortly after the conclusion of World War I. A total of less than 300 million acres was reported by the first census of land in farms in 1850, and of this only 113 million acres, or slightly more than one-third, were classified as improved land. Land in farms had more than tripled by 1920, and the farm acreage classified as improved land increased to over 500 million acres. At that, increases in land in farms since the turn of the century had come to include an increasing proportion of nontillable land, and to be partially offset each succeeding decade by land going out of farms in the eastern part of the country. New land brought into cultivation was provided by extension of crop farming into areas of high climatic risk and into areas by-passed or sparsely occupied in the course of settlement. These additions, plus those provided by drainage and flood protection and by irrigation development in the arid valleys of the West, were offset by declines in crop farming elsewhere. Former cropland, particularly in the older settled and the hill-farming areas of the eastern United States, had been rapidly reverting, since around 1880 and even before, to pasture or farm woodland uses or had been going out of farms entirely. Industrial, urban, residential, and similar uses encroached upon long established farming areas and created an enlarging periphery within which agricultural uses were subordinated to existing or prospective suburban and similar nonfarm developments.

The disposal of public lands.—The imperial and colonial governments encouraged settlement of unoccupied land by grants of large tracts to land companies and promoters or directly to individuals. In Pennsylvania, particularly, recognition was given to settlers' rights to land occupied without title. Opening to settlement of the Northwest Territory and the Louisiana Purchase served the practical purpose of insuring that the mid-continent would not fall into unfriendly hands. These and succeeding acquisitions to the public domain beyond the original States eventually reached a total of over 1,400 million acres. As time went on, occupancy and development became increasingly identified with the needs for additional agricultural land. Settlement was encouraged by sales at low prices; granting of military bounty lands to veterans of the Revolutionary War, the War of 1812, and subsequent campaigns; and issuance of warrants, and by recognition of pre-emption rights. These previous measures were culminated by the enactment of the first Homestead Act in 1862 and subsequent enlargements, all of which were designed to provide free land to prospective farmers. Sales at low prices of land-grant tracts by the railroads and of land-grant scrip by the States concurred with homesteading in the rapid turn-over of land to settlers during this latter period.

The most comprehensive land survey ever undertaken accelerated the pace with which well over a billion acres of this immense land area was transferred into private ownership. Under this system, based upon a system of rectangular coordinates, individual tracts could be located and identified within a specific township, range, and section. This largely precluded repetition of the situation prevalent during colonial times, when surveys less exactly made, according to metes and bounds, had frequently led to disputed boundary lines and conflicting titles. These public measures for disposal of land did not prevent speculation, but speculation probably was inevitable under the tempo of geographic expansion and agricultural development maintained until after 1900.

Settlement and occupancy prior to 1850.—The progress of settlement during colonial and early national times had carried the pioneers, by the decades just before 1850, to the edge of the central prairies, along the Ohio and up the Missouri to the present site of Kansas City; into the valleys and basins of Kentucky and Tennessee; the length of the Piedmont and the limestone valleys; and onto the fertile prairies of Alabama and Mississippi. This was a remarkable accomplishment, representing as it did the consummation of around two centuries of slow penetration of dense and uncharted forests, stretching in well-nigh unbroken length across the pathway of the pioneers. The tools and worldly goods of the new settlers in many instances consisted of little more than a gun, an axe, a hoe and other simple tillage tools, seed for the first crop, a few household effects, and possibly a few head of livestock. Offsetting these material shortages, was a sturdiness and self-reliance which discounted the small comforts and conveniences existing in established settlements. When land became crowded, high priced, or worn out in the older communities, there was always other land to be had a few miles up the stream or farther into the interior.

Transportation was slow and difficult throughout the entire colonial and early national periods, with the waterways continuing to be the most efficient means of pushing into the wilderness and of getting farm products to the coastal points. The broad, deep tidewater streams extended far into the interior in the southern colonies, but in the middle and New England colonies, the rivers ran from north to south, and some had their headwaters in the mountains. Once the summits of the Alleghanies had been passed, however, the Ohio River provided a route for extension of settlements all the way along the Ohio and its tributaries and up the Mississippi and Missouri Rivers. The route back was another matter, hence the lower Mississippi for a long period became the principal route for getting products to market. It was not until the completion of the Erie Canal in 1825 that a new era was ushered in, when transportation from east to west became two-way, bringing new settlers westward and carrying the produce from the new agricultural lands eastward.

Settlement and agricultural development of the prairies.—The delay in occupying the rich central prairies until around 1850 and thereafter has frequently been associated with the habits established in the course of two centuries of pioneering in the forests, and with such factors as dependence upon forests for wood and fuel and the remoteness of the prairies from watercourses and the sources of water provided by rivers and hillside springs. Prairie farming required more oxen or horse power to break the tough sod, neither the wooden mold-board or even the cast-iron plow was adapted to the job, and crops on the grass mold during the first seasons were small and disappointing. Railroad building after 1850; the successive waves of arriving immigrants; the invention and adoption of the steel-share plow, the reaper, the thresher, seed drills, planters, and other forerunners of the mechanized age of farming; and the expansion of markets at home and abroad paved the way for rapid occupancy and establishment of farming from the half-way mark of the century to around 1900.

Even then, development of the level and productive land, now regarded as the heart of the Corn and Central Dairy Belts, was far from complete. Farm roads were nearly impassable during the rainy season in the spring months. As late as 1900 in western Ohio and even later in Indiana, Illinois, Iowa, and in the lower Lake States water stood on fields well into the summer. A large proportion of the open-ditch and tile drainage designed to relieve the effect of wet springs was established after 1900. It has only been with the increased use of power machinery in recent years that the effect of adverse spring weather has been further overcome by speeding planting and seeding once fields could be worked.

The self-sufficing agriculture developed under conditions of forest pioneering had provided some surplus, over home needs, for market in the growing industrial and trade centers of the Northeastern States or for export. The greater production provided, after farming was established on these new agricultural lands, plus such other factors as expanding market outlets and improved price levels, contributed to the almost immediate development and progressive enlargement of an agriculture geared to production for market rather than for home use. There was no immediate change in crops or livestock products marketed, but the centers of wheat farming and the livestock range continued to shift westward. Livestock feeding in the Corn Belt States and dairying in the lower Lake States were firmly established by 1900. This commercial, as contrasted with a self-sufficing agriculture, had both advantages and disadvantages. New farming areas were brought into production so rapidly that farm products periodically glutted markets. Incomes from farming were generally higher, there was a greater accumulation of assets than had been true in agriculture up to then, but capital requirements were higher and many farmers went heavily in debt. Periodic depressions resulted in widespread dispossession of farmers along with unemployment in the cities, thereby setting the stage for further expansion to the West.

Intensification of agriculture in the Northeastern States.—The first-settled communities faced competition for home and foreign markets to around 1850 as a result of the extension of settlement and the development of farming in upper New England, western New York, and Pennsylvania. As a consequence, declines in farming had occurred in areas such as lower New England by early national times. From 1850 onward, competition for the markets for farm products came primarily from the new western lands being brought into agriculture. Response to employment opportunities in growing industrial and trade centers was furnishing another alternative to the previous custom of pulling up stakes and moving westward. Declines in farms, farm population, land in farms, acreage in wheat and other grain crops, and in numbers of sheep, beef cattle, and other livestock became general throughout the Northeastern States after 1880.

These decreases, in the sense that they denoted fewer farms and fewer acres in farms, have been accepted by many as evidence of a decline in agricultural activity. Actually, there has been a tremendous intensification of farming since 1830, an intensification associated with such developments as the expansion of acreage in truck and fruit crops, intensive dairying, restriction of crops to better qualified land, increased emphasis upon livestock and plant breeding, and improved cultural and feeding practices. This intensification has contributed to an expansion of agricultural production and of incomes far beyond levels prevailing when many more people were engaged in farming.

Trends in the Southern Appalachians, the Ozarks, and adjoining areas.—As settlement proceeded along the Ohio and Missouri Rivers and in the valleys and basins of Kentucky and Tennessee, many settlers penetrated the less accessible areas of the Southern Appalachians, the Ozarks, and related highlands, and established farms in the mountain valleys, coves, and on the wider ridges. There was some movement out of the hill-farming areas along the Ohio and onto the prairies and even farther west, but migration from such areas sufficient to lower farm population levels first became prevalent around 1900. Expanding industrial employment initially had little effect upon people in the more isolated areas. Building-up of farms and farm population continued in areas where only a limited supply of agricultural land had originally been available. After World War I, the pace with which farms were vacated was accelerated and since has reached into the previously isolated sections.

The trend in the agriculture of the valleys and basins, as in the Northeastern States, but more recently, has been toward intensification, restriction of crops to better situated fields, shifting of steep and eroded land to pasture and forest uses, and expansion of dairying and other farm enterprises. In contrast, abandonment of farms in the hill- and mountain-farming areas has been widespread and in many instances has eventuated in disppearance of farmsteads and reversion of the land to forest. A new element also has been interjected into the occupancy and use patterns of these latter areas, one associated with high replacement ratios among the population and with the pronounced fluctuations in economic activity during recent decades. During periods of prosperity, these areas provided a reservoir of manpower for factories and machines. During periods of economic distress, they provided home sites and a few acres of land upon which to make a living until times became better. Opportunities for off-farm employment have been expanded in these and nearby areas with the decentralization of certain industries in recent years. Despite these local increases, periodic vacancy and reoccupation has continued to be identified with the employment situation in what were once-far-away industrial centers like Detroit, Cleveland, and St. Louis.

Trends in Southern Agriculture.—The march across the continent, from the tidewater settlements along the Atlantic Coast to the fertile prairies of central Texas, was consummated in about the same time required to reach the western edge of the central prairies. The decline in the agriculture of many of the original settlements was noteworthy, even during colonial times, as cotton and tobacco farming were extended into and along the Piedmont and over into the valleys and basins of Kentucky and Tennessee. The productive soils of these areas provided an appropriate physical setting for these crops and for the development of what has customarily been described as a single- or cash-crop agriculture. Somewhat the same difficulties were encountered in the development of the black prairies of Alabama and Mississippi as were experienced in the central prairies. Expanding market outlets stimulated development here and rapid expansion onto the productive but somewhat hilly uplands bordering the Mississippi River bottoms in Mississippi and Tennessee. After the restoration around the 1880's, cotton farming continued to be maintained in the southeast and in these newer areas and to expand westward throughout the black prairies and adjoining areas in Texas and Oklahoma.

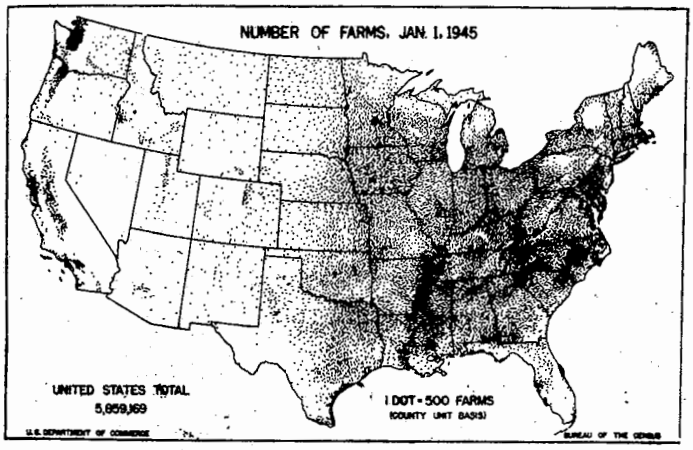
The combination of declining fertility, soil exhaustion, and the advent of the boll weevil, particularly damaging on sticky-clay land have contributed to a sharp decline, since the turn of the century, in many of the cotton-farming uplands. Such influences as increased use of commercial fertilizers and introduction of earlier-maturing or improved varieties contributed to expansion of both cotton and tobacco farming on previously undeveloped land in the Coastal Plain and of cotton farming on the Cumberland Plateau in northern Alabama and northward on the Carolina Piedmont. Flood protection, drainage, and clearing in the Mississippi Delta, and extension of cotton farming onto the high plains and into the irrigated areas of the southwest have greatly enlarged the supply of land capable, particularly under mechanization, of producing cotton at low cost. Tobacco farming during this same period also has been expanded along the Coastal Plains of the Carolinas and Georgia. Movement of farm population from the region or to growing industrial centers, such as those along the Piedmont, Birmingham, Alabama, and the cities of Texas and Oklahoma, has been more or less continuous since around 1910.

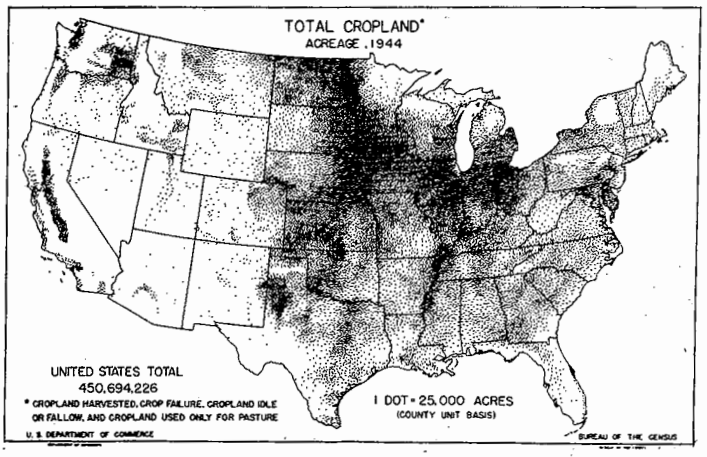
Developments in the Great Plains.—The open range, for livestock, persistently crowded by the expansion of grain farming, was steadily pushed westward each succeeding decade after 1850. By the 1880's, farming had been extended into central Kansas and Nebraska and along the Missouri and Red River valleys into the Dakotas. Westward to the Continental Divide and from the Dakotas to Texas stretched a vast, and what then seemed, an unlimited livestock range. Large-scale ranching on this immense unfenced range reached a peak only shortly thereafter. Initial reserves of grassland were rapidly exhausted. A series of severe winters and protracted droughts depleted cattle numbers. Homesteading, following both the watercourses and the routes of the railroads, had dissected much of the open range territory and resulted in the plowing-out of much of the better quality grassland by around the turn of the century.

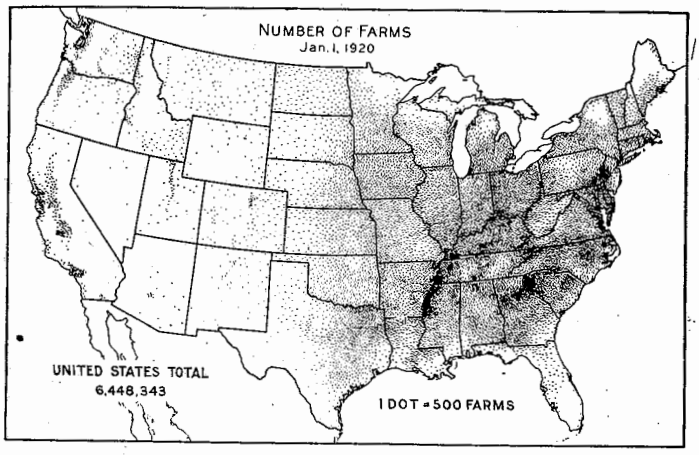
The tempo of development of crop farming increased after 1909, the year an enlarged homestead act (320 acres) went into operation. A series of years of relatively abundant rainfall, high wheat prices, and the introduction of power machinery spurred expansion into the westernmost sections of the Plains. Many homesteaders remained only long enough to prove-up and sell their claims. Others held on until the recent series of drought years when many farms were abandoned and large numbers of farm people left the Plains. Even prior to the drought years, decline in export requirements for wheat had aggravated a situation created by inadequate-sized holdings and an intricate pattern of ownership and tenure. Greatly increased stocking of the remaining grassland resulted in widespread distress-selling during the drought years when carrying capacities were drastically reduced and supplemental feed was unavailable. During the wartime years, the ownership and operation pattern became more stabilized and crop-farming operations per unit were enlarged. Cattle numbers have been expanded to, or near, the highest point in history, primarily as a result of improved weather, restoring to grassland, and improvement measures which have greatly increased carrying capacities.

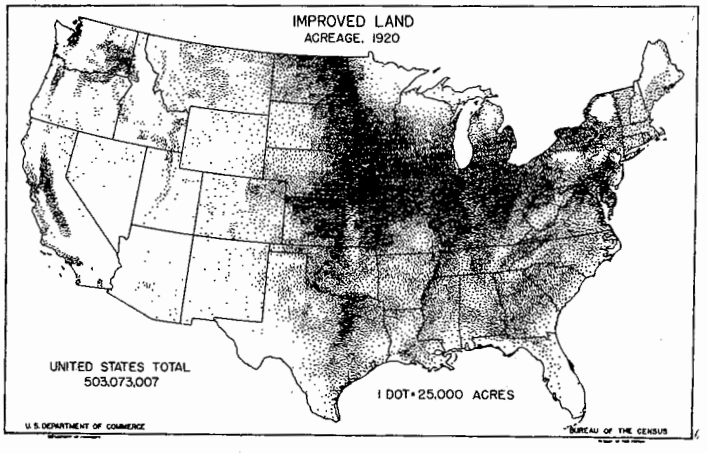
Developments in Western Agriculture.—Settlement and agricultural development of the western part of the country has been most recent in time. They have been contingent as nowhere else upon a single factor--local availability of water for crops and for livestock. Farming was established in the California valleys following the gold rush of 1848 and at about the same time in the Willamette Valley. Early settlements along the overland routes usually were located near forts and trading posts, to the extent that by 1880 crop farming was relatively widespread only in the valley of the lower Platte River, the upper Rio Grande Valley, the Utah valleys at the base of the northern Rockies, and in the outer Columbia Basin. Irrigation by local facilities had been relatively well established by the turn of the century. Grazing by cattle and sheep, then as now, was the principal use made of much of the arid land of the mountain-locked basins and plateaus, with ascendancy among stockmen being determined primarily by rights acquired to strategic waterholes and stock-watering places.

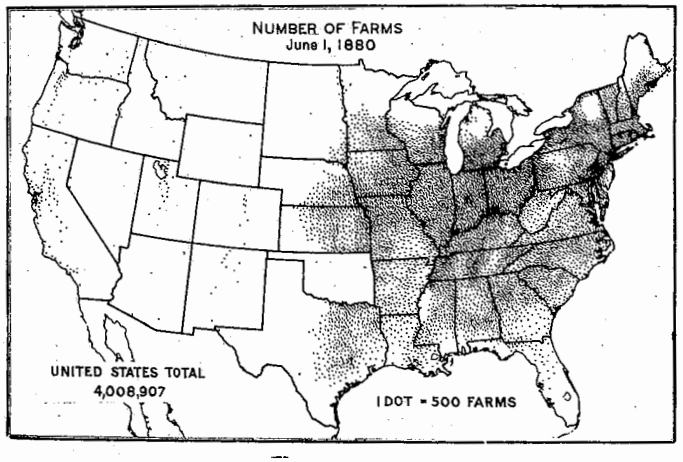
Summer range has been greatly expanded since 1900 in the relatively open parks and on the forested and wooded slopes of the mountains, and the higher plateaus. Crop farming, along with grazing development, has also been extended onto the cut-over lands left in the wake of the lumber industry in the Pacific Northwest. The greatest impetus to agricultural development in the West, however, came from the building of large-scale reclamation projects which have supplied water to millions of acres of dry and arid land as well as power for expanded industrial development. Irrigation water is basic to the fruit, vegetable, sugar beet, cotton, and other special crop industries and to production of supplementary feed to winter-over and feed-out an increasing proportion of livestock in the Western States.

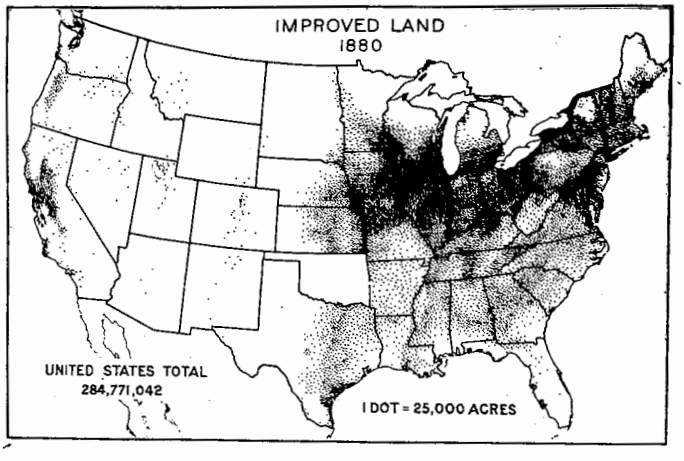








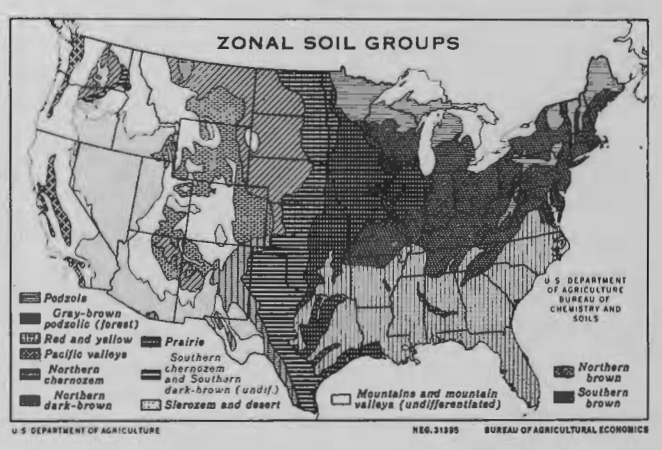


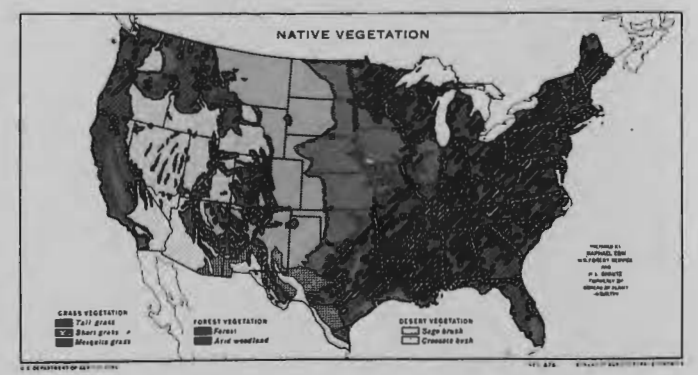


GEOGRAPHIC TRENDS IN LAND UTILIZATION, 1880-1945

Land occupancy and establishment of crop farming was approaching completion around 1880 in the humid parts of the eastern United States. Remaining to be developed east of the Great Plains were the potentially valuable, but then poorly drained, lands of parts of northwestern Ohio, northern Indiana, north central Iowa, and southwestern Minnesota; much of the alluvial bottom land along the lower Mississippi; and the previously undeveloped land of parts of the Coastal Plain of the southeast and that along the southern margin of the heavily forested areas of the upper Lake States. There was a relative absence, then and at the present time, of agricultural development in the rougher and more mountainous areas of the Appalachians and other eastern highlands. To be noted was the sharp decline in all cropland reported in 1945 as contrasted with the improved land in 1920 in the northeastern States, in the hill-farming areas of the Ohio Valley, and in the loess hills of southern Iowa and northern Missouri. Also to be noted were the shifts from cropland in the former centers of cotton farming along the fall-line in South Carolina and Georgia and in south central Alabama.

The outstanding geographic development in agriculture during the past 60-odd years has been the shifting westward of crop-farming. As can be seen from the above maps, this expansion was not completed until after 1920 in such areas as eastern and north central Montana, the interstream divides southwest of the Missouri in North Dakota, and the High Plains of western Kansas and northwest Texas. West of the Continental Divide, crop-farming development has been most pronounced where irrigation has furnished the water for the establishment of intensive agriculture in former arid valleys.





PHYSICAL CHARACTERISTICS

The map showing the land relief of the United States illustrates the general contrasts between the mountainous West, the Appalachian and other eastern highlands, and the plains, interstream divides, and the river networks along the Atlantic and Gulf Coasts, and throughout much of the interior of the continent. This map, photographed from a relief model supplied by the United States Geological Survey, does not fully indicate the high altitude of the mountain chains or of the mountain-locked and semiarid to arid plateaus and interior basins in the West. Much of the western United States, including the western parts of the Great Plains, is above 5,000 feet in elevation. The Ozark uplift in the Mississippi Valley can be noted, but the rough character of such areas as the Edwards Plateau in Texas and the badlands along the Little Missouri River in North Dakota is not shown.

The zonal soils reflect the regional incidence of climatic influences and of natural vegetation on soils formation. In the western United States, the influence of topography and elevation is expressed in the mountains and mountain valleys. The areas of the generally poor podzols—usually developed under coniferous forests in a cool moist climate—consist mainly of rough, stony, sandy, or swampy land which has sustained little permanent agricultural development. The gray-brown podzolic soils—developed under a deciduous or broad-leafed forest cover in a humid, temperate climate—exhibit a wide range in productivity from the level to rolling land of the originally timbered drift flats of northwestern Ohio, northern Indiana, lower Michigan and eastern Wisconsin, and the limestone valleys and basins, to the shallow, steep, and stony lands characterizing much of the area of the Appalachians, the uplands of New England and the Ozarks. The red and yellow podzolic soils—the former typically developed under oak and other hardwoods, the latter under pines and under climatic and other conditions which have resulted in pronounced leaching and a low organic matter content—extend in a broad belt across the Southern States. Within the areas of the podzolic soils, variations in such characteristics as lay-of-the-land and drainage prescribe a relatively localized adaptability to crop, forest, and pasture uses. The geographic location of the prairie, chernozem, and the chestnut-colored soils—developed under grassland vegetation—is indicative of decreasing and less predictable rainfall from east to west across the midcontinent. The western limits of the chernozems are generally coextensive with the westernmost limits of an average annual expectancy of 20 inches of precipitation. As far as crop-farming development has been concerned, variation in temperatures with changes in latitude has been an equally critical factor. Wheat farming has been extended into areas of the northern Great Plains where annual precipitation is around 15 inches. Crop farming in the lower Rio Grande Valley has been generally limited to the irrigated areas.

The map of natural vegetation rounds out the picture of the regional incidence of some of the broader or more pervasive physical characteristics. Much of the area in the original forest and tall grass vegetation was confined to that part of the United States east of the 100th meridian. The natural vegetative covering in the western part of the country provides a relatively detailed indication of the combined influence of such factors as rainfall, wind direction, and elevation.

PHYSICAL CONDITIONS INFLUENCING THE UTILIZATION OF LAND RESOURCES

An impressive and varied array of physical features or elements forms the natural environment or physical setting for use and occupancy patterns throughout the nearly three million square miles comprising the land area of the United States. There are both contrasts and uniformities in relief and elevation conditions within the length and breadth of this vast area; between the mountains of the interior and the low, flat elevations along the coastline or those of the southwestern deserts; and between hills and valleys, bluffs and smooth plains. Soil characteristics are not as apparent to the eye, but are expressed by such factors as color, depth, texture, structure, organic matter and mineral content, drainage, slope, and stoniness. There are moist and dry, warm and cool climates within this expanse of the North Temperate Zone; yearly, daily, and hourly variables of sunshine and rain or snow, wind, temperature, and humidity. Soils and topography or lay-of-the-land represent the surface forms or earth features. The climatic or atmospheric elements include the more widespread and prevalent aspects of moisture and temperature as well as the less predictable changes in the weather. The annual and seasonal characteristics of climate and the land forms expressed by mountains, hills, and plains are comparatively uniform, fixed, and region-wide in their extent and coincidence. The characteristics of individual soils and the variables of the weather are of local and of widely varying constancy.

The combined influence of these sets of physical characteristics or forces was expressed by a natural vegetation consisting of about 800 million acres in forests, 700 million acres in grassland, and 400 million acres in arid and desert vegetation. The specific location or incidence of forests, grassland, woodland or shrub vegetation was correlated to a high degree with moisture supplies. Geographic differentials between major forest regions or associations—between the varieties predominating in the northern, the central hardwood, and the southern forests of the humid parts of the East and the Rocky Mountain and Pacific Coast forests of the West—also reflected the influence of temperature conditions and of variations in such other factors as soils productivity and natural drainage. Moving westward, the prairie grasses of the humid areas were succeeded by the plains or short grasses, and then by the sagebrush and other shrubs of the mountain-locked basins and lower plateaus. Locally, varieties like yellow poplar and black walnut tended to predominate over other hardwoods on the more productive land. In the southern forest region, longleaf, slash, shortleaf, and loblolly pine developed in preference to hardwoods on the sandy, porous land of the Coastal Plains; cypress, tupelo, sweetgums and other bottom land hardwoods predominated within the poorly drained areas. The prairie grasses of the humid areas extended westward on favorably situated sites along the watercourses and within the depressions and other points where moisture from each rain collected.

The agricultural conquest of the continent has fundamentally altered this natural ecology of forest, grassland, and other vegetation. The needs for land to plant or seed to crops have resulted in the clearing or plowing of more than 600 million acres of this original forest and grassland during the course of three centuries of settlement and occupancy. That an excess of 100 million acres, used at one time or another for crops, has ultimately reverted to forests or has been restored to grassland is indicative of the long period of time which has been required to build a store of experience and facts concerning the physical qualities or capabilities of land. The pioneers had to rely upon their own judgment and limited experience in the selection of a home and farm site. Their immediate problem was to clear land in a situation where differences in quality became apparent only with actual experience in using the land. Settlers in the Great Plains found the experience acquired under the humid conditions in the east had to be relearned under the new conditions of limited and uncertain rainfall. Out of all of these experiences has emerged an agriculture wherein there is now a high degree of correlation between the use of land and its physical suitability. Farm land abandonment has been widespread where increasingly competitive conditions have placed farmers on poor, hilly, or eroded land or in high climatic risk areas at a serious disadvantage. Diversification elsewhere has been established and maintained as a means not only of spreading the risk and allocating time and labor, but also for providing for a fuller and more complete utility of the variety of land found within many individual farms. Specialization has developed, both where a high proportion of the land is adapted to crops, or in relation to advantages of site or location, as well as where land is adapted to an extensive use such as grazing.

Farm crops.—The influence of physical conditions upon the incidence and distribution of farm crops is accentuated by reason of the many compromises which have to be made between the needs for crops and the physical suitability or use capabilities. The cultivated crops have been greatly modified from their native counterparts by generations of plant breeding. Most crops require annual reseeding or replanting, must be kept free of the competition of weeds, and protected from disease and insect pests. Many of the cultivated crops are grown with the expectation of a large annual product or yield, and are either larger, more closely grown, or develop less extensive root systems than the grasses or similar plants native to the locality. Plants with strongly resistive qualities to cold or heat, moisture or dryness, rarely meet the food, feed, fiber, and other requirements of crops. Cold- and drought-resistant varieties enlarge tolerances, yet must preserve the characteristics for which the particular crop was developed. Crop needs for plant nutrients rapidly exhaust the limited supply available in shallow and other poor soils. Land which is difficult to till or which cannot be easily farmed with labor-saving machinery increases the work load in planting, cultivating, and harvesting farm crops. Crops such as corn, cotton, and tobacco provide little cover from the elements during the growing season and do not leave even the stubble after harvest of crops as do wheat and oats and particularly the hay crops. Cropland used for these purposes, without adequate safeguards, is of short-term durability where rainfall is intensive, where the ground is not frozen or protected by snowfall during the winter months, and as slope gradients become critical.

Needs for livestock feed and forage on most farms favor a widespread distribution of corn acreage. Physical advantages of deep, level, and productive soils, and well spaced rains throughout the summer-growing season, contribute to a concentration of about 60 percent of total production in the Corn Belt. Shortening of the frost-free season results in a more or less definite demarcation from south to north between the amounts of corn grown for grain in the Corn Belt and corn for silage or fodder in the Lake and Northeastern States. Variability in summer rainfall within the western margin of the Corn Belt influences the proportion of the corn crop harvested for grain in a particular season. The moisture requirements of wheat and sorghums are not as specific as those for corn, but they do necessitate resort to alternate summer fallow, contour listing, and other water-storing and water-saving measures as moisture supplies become scarcer and less predictable. Wheat sown in the fall would stand a high chance of winter killing under severity of the winters in the northern Great Plains. Wheat, oats, barley, and flax sown in the spring would not withstand the high temperatures of most summers in the southern Great Plains.

Cotton requires a minimum frost-free season of about 200 days, but withstands the summer temperatures and subhumid rainfall conditions of the High Plains of western Texas. The crop goes to leaf and the quality of the lint is further impaired by heavy fall rains as the growing season approaches the tropical along the lower Gulf Coast. Tobacco makes a rank growth upon heavy limestone soils, produces a bright, lighter textured leaf under heavy fertilizing practices upon the sandy soils of the Coastal Plains and those soils elsewhere which are light in

texture and deficient in humus. The citrus fruits are intolerant of freezing temperatures. Apples, peaches, cherries, and other fruits are less subject to spring freezes along the eastern and southern shores of Lakes Ontario, Erie, and Michigan, where a moderating influence is exerted upon climate, and on the valley slopes of the Appalachians, where temperatures are not as subject to abrupt changes. The vegetable and truck crops are grown upon a wide variety of soils and with varying applications of fertilizer. They are also grown in locations where the comparative advantage of one area over another may be represented by only a few days difference in the time the crop can be ready for market.

Weather forecasting aids farmers in anticipating and guarding against the major catastrophes and the day-by-day uncertainties of the weather, but as yet no one has succeeded in preventing or controlling them. Floods, wind, and hail storms, unseasonable wet weather during the planting, cultivating or harvesting periods, late or early frosts, protracted dry spells, and excessive temperatures during the growing season are only a few of the many factors attributable to the weather which contribute to either complete failure or to reduced yields of farm crops.

Certain soils, even within an individual field, warm and dry earlier in the spring, or because of slope conditions or surface or internal texture or structure, are more capable of holding reserve moisture supplies to tide the growing crop over a dry spell. Soils underlain by hardpan are slow dryers in the spring, and tend to be droughty during the summer months. A wet spring in connection with the flat terrain of parts of the Corn Belt may retard corn planting to a point where the maturity of the crop is endangered by the first killing frost in the fall. A wet spring in connection with slow-drying soils delays cotton planting, increasing the prospects of boll weevil damage later in the season.

Pasture and grazing land.—The most distinguishing characteristic of pasture grasses and other succulent plants is their utilization by livestock for forage purposes. Many also have the added protective value of stabilizing hilly or loose soils and retarding run-off. The native species included a large variety of grasses and other plants, developed under a wide range of climatic, terrain, and soil conditions. The most conspicuous and widespread were the prairie and plains grasses, once centers of vast livestock empires, but now largely plowed-out and replaced by crops.

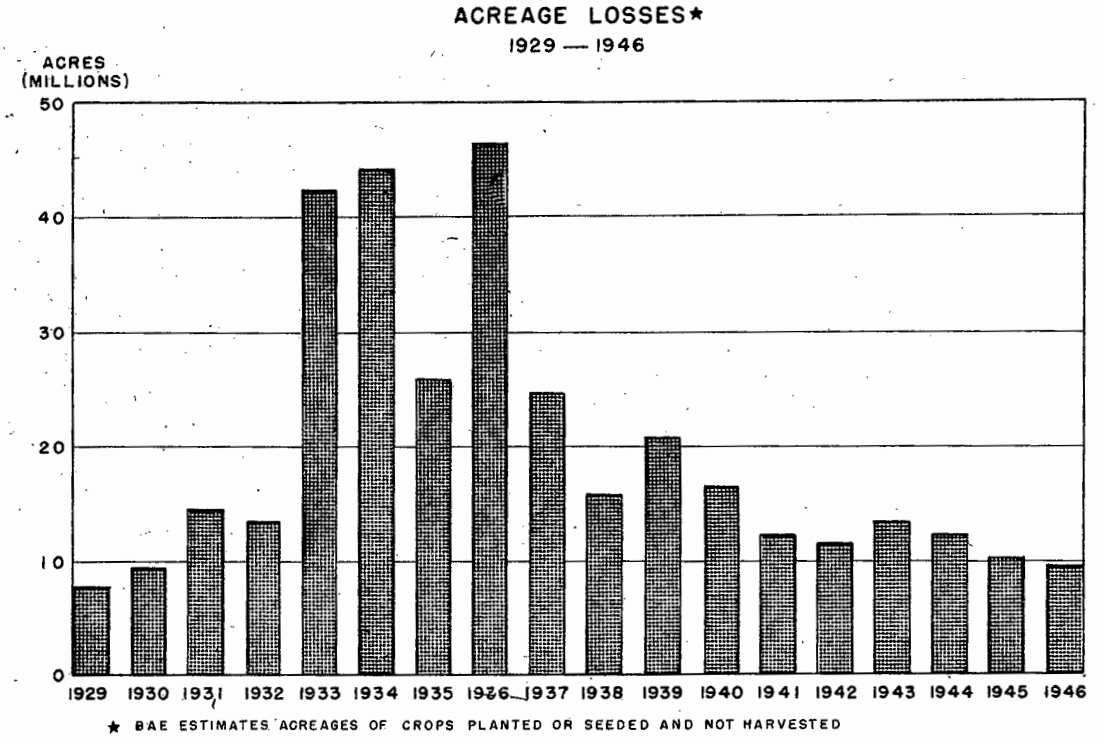
Throughout much of the originally forested eastern United States, dense and almost universal forest cover dominated the natural landscape. Most of the present tame pasture grasses, as a consequence, are introduced species, such as bluegrass, white and ladino clover, lespedeza, and carpet grass. A number of the clovers, bluegrass, Johnson, Bermuda, and carpet grasses are self-propagating when once started and extend into adjoining fields when conditions are favorable. Such grasses as timothy, red top, orchard grass, and alfalfa tend to be replaced by volunteer grasses unless reseeded. Pasturing frequently represents a fall or seasonal use following removal of hay and grain crops or, particularly where the growing season is short, of a use following hay or a nurse crop in the rotation system. Corn and other crop fields abandoned in a particular season may later be pastured or mowed. The volunteer grasses and bushes established upon cleared but unimproved land and on old crop fields provide a grazing of uncertain quantity and varying quality. In many instances these unimproved or volunteer pastures differ only slightly in the amount and quality of forage from that provided by the undergrowth of adjoining forested or wooded tracts.

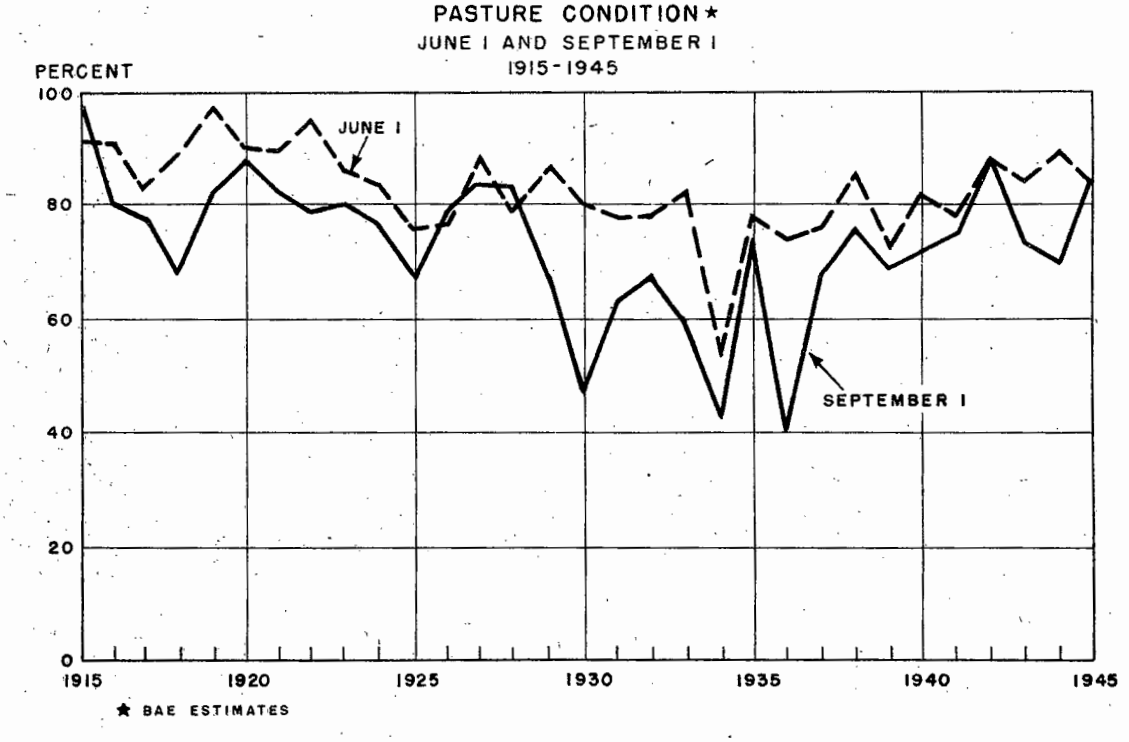
Grazing by livestock of the native grasses and other forage plants represents the use, alone or in combination with forest and woodland and the protective uses, of much of the land area of the western United States. East of the Continental Divide, the western portion of the Great Plains and the Edwards Plateau receive a limited and highly variable supply of moisture and much of the land is not only too dry but too rough to be farmed under even a dryland agriculture. The tremendous area between the Rocky Mountains and the Cascades and the Sierra Nevada ranges receives a meager to scant precipitation, itself highly localized under the influence of changes in elevation, once a large share of the moisture carried by the winds from the Pacific has been discharged upon the western slopes of these western barriers. Hot and dry as compared with moist winds influence the Southwest, exerting a further modifying influence upon the kinds of grasses and other forage plants available for grazing purposes. The most widespread incidence of year-round grazing is in the Northwest. Here the growing season is relatively short for crops, but the influence of the winds from the Pacific moderate temperatures and contribute to a comparatively uniform seasonal distribution of rainfall. Summer range is provided by the grassy growth of the open parks and the brushland of the accessible locations in the mountains and plateau areas. During the winter months these areas are covered by snow, but at the same time moisture conditions, either as a result of light rainfall or snow, are more favorable than at any other time of the year in the winter ranges. Sagebrush, shadscale, and other arid-grass species of the basins and plateaus, and wheat, oat grasses in the valleys of California, attain their maximum growth during this period. Of as great or even greater importance in many of these areas, this period of the year provides sufficient water for livestock. The drought-resistive qualities of these arid and near-arid plants are conditioned by an adaptation which did not include the effect of other than little or occasional utilization by native grass-eating animals. Both summer and winter ranges may be overcrowded in the sense that the palatable are destroyed, the unpalatable and obnoxious species survive during periods of protracted drought. How the range resource is utilized is further conditioned by the preferences of sheep and cattle for various grasses and bushes, and by their relative ability to traverse difficult terrain.

Forest and woodland.—Forest growth extends over a long period of years compared with the life span of crops and most of the forage grasses. Root systems are deeper or more firmly established; the protective leaf mantle overhead and the mold beneath enable them to withstand the seasonal and daily variations in the weather. These same qualities give them an important added value as soils and moisture stabilizers, for moderating downstream floods, preventing the silting over of valuable bottom lands, and for regulating the supply of water available for irrigation.

Moisture availability has been a critical factor in the location of forests. Temperature, soils, topographic and drainage conditions, owing to the great variety of forest species and other woody plants, have had little effect upon their distribution. The influence of moisture conditions was evident in the concentration of two-thirds of the original forests in the humid areas of the eastern United States, and of much of the remainder within the special moisture and elevation situations prevailing on the mountains and ranges of the western United States. The juniper-pinon, chaparral, and other arid woodlands represent the adaptation of these woody plants to the more limited moisture supplies on the lower or less well situated elevations. Woodlands also developed under the more favorable moisture and drainage conditions along the streams in the Great Plains. Establishment of shelter belts and windbreaks on the treeless plains and the extension westward of forests in recent years onto former prairies indicate that this range can be extended for specially adapted varieties under favorable circumstances.

Varying temperature conditions have not excluded forests, but have influenced, along with changes in latitude and elevation, the incidence of the various major forest associations. The oak and other central hardwoods are superseded by the spruces, firs, and other coniferous trees in the Northeast, the Lake States, and the higher elevations of the Southern Appalachians. In the South, the coniferous trees, with their long taproots, dominate the forest vegetation on the sandy, porous soils of the Coastal Plains. There is an admixture of hardwoods and pine under the locally varying conditions within the Piedmont province. The pine and fir forests in the West usually extend down the mountain slopes to the zone where annual rainfall is below 20 inches. While there are variations with changes in latitude, the timberline throughout the mountains and ranges typically extends up the slopes to the foot of the rocky peaks and the sheer rock walls. There are variations in growth rates on different grades of land and among various varieties, but the outstanding feature of forests is that they will yield a crop on rough, stony, swampy, or sandy land which produces, if at all, poor farm crops and pastures.

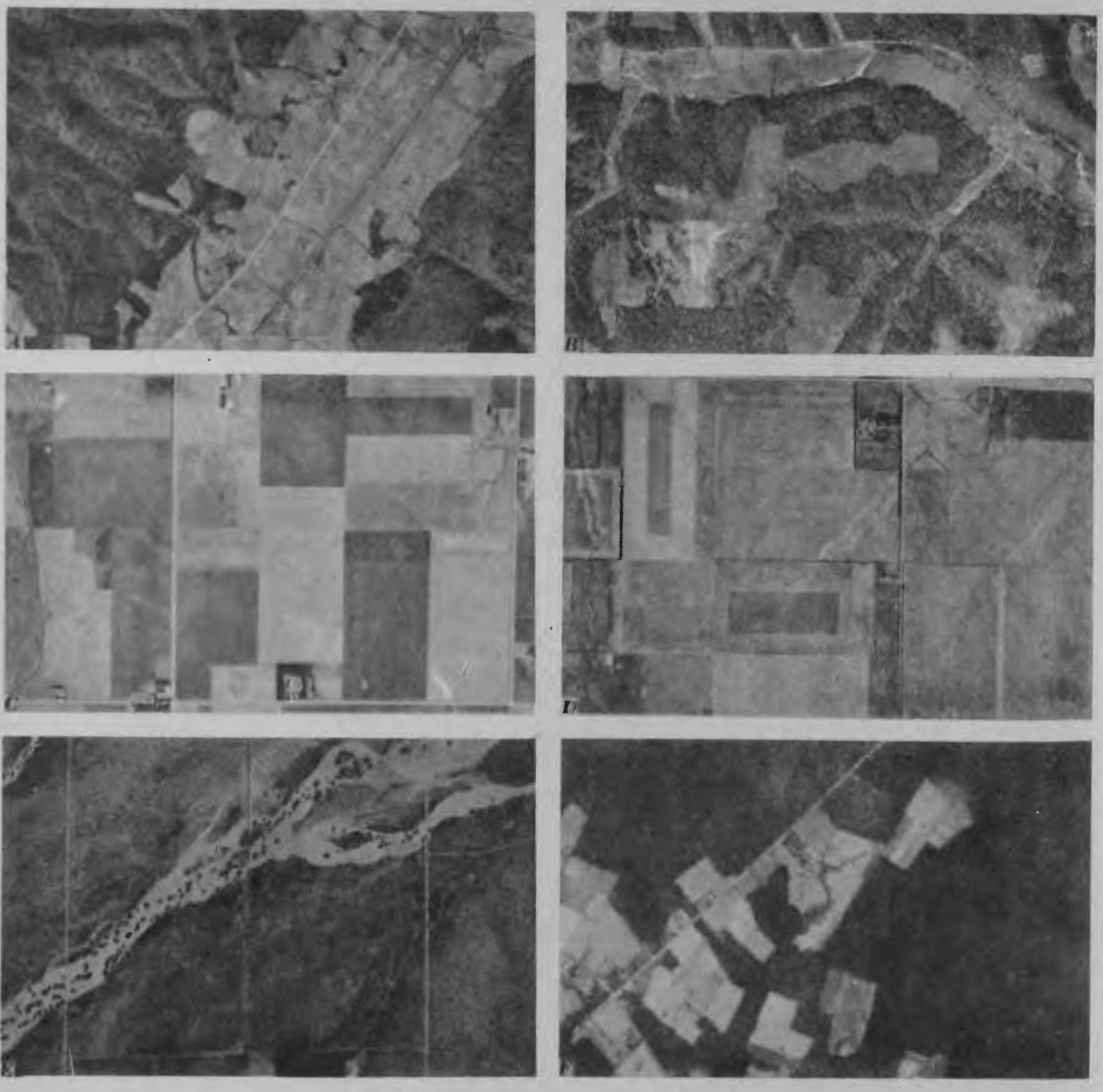




INFLUENCE OF WEATHER

Crop losses.—Adverse weather exacts an annual toll of crop acres failing to be harvested or producing low yields. While other factors are also operative, floods, unseasonably wet or dry spells, excessive temperatures, storms, late or early frosts, and damage from blight, rust, and other diseases in off-weather years result in crop failures, or reduced yields, every year. During protracted droughts, such as in 1934 and 1936, acreage losses were widespread and yields, even when the crop was harvested, were drastically reduced. The acreage losses shown above were not indicative of the full magnitude of the influence of weather. These losses did not include the acreage failing to be planted or seeded owing to such factors as wet or dry fields, failures on land planted or seeded which was later replanted to the same or other crops, nor have they reflected fluctuations in the acreage of wild hay mown during favorable, as contrasted with unfavorable, seasons for grasses.

Pasture condition.—The influence upon pastures of variations in the weather are even more pronounced than upon crops. Farm pastures, particularly those included within the present land area reported in farms, contain a high ratio of land receiving a limited and variable moisture supply or of land which tends to droughtiness. The condition of pastures reported as of September 1, after withstanding summer rainfall deficiencies, high temperatures, and transpiration rates, as well as grazing by livestock, generally shows a deterioration from the condition reported earlier in the season. To the extent that the condition of pastures in the late summer months is indicative of moisture reserves, it serves as a barometer of prospects for the winter wheat and, to some extent, the spring wheat crop.



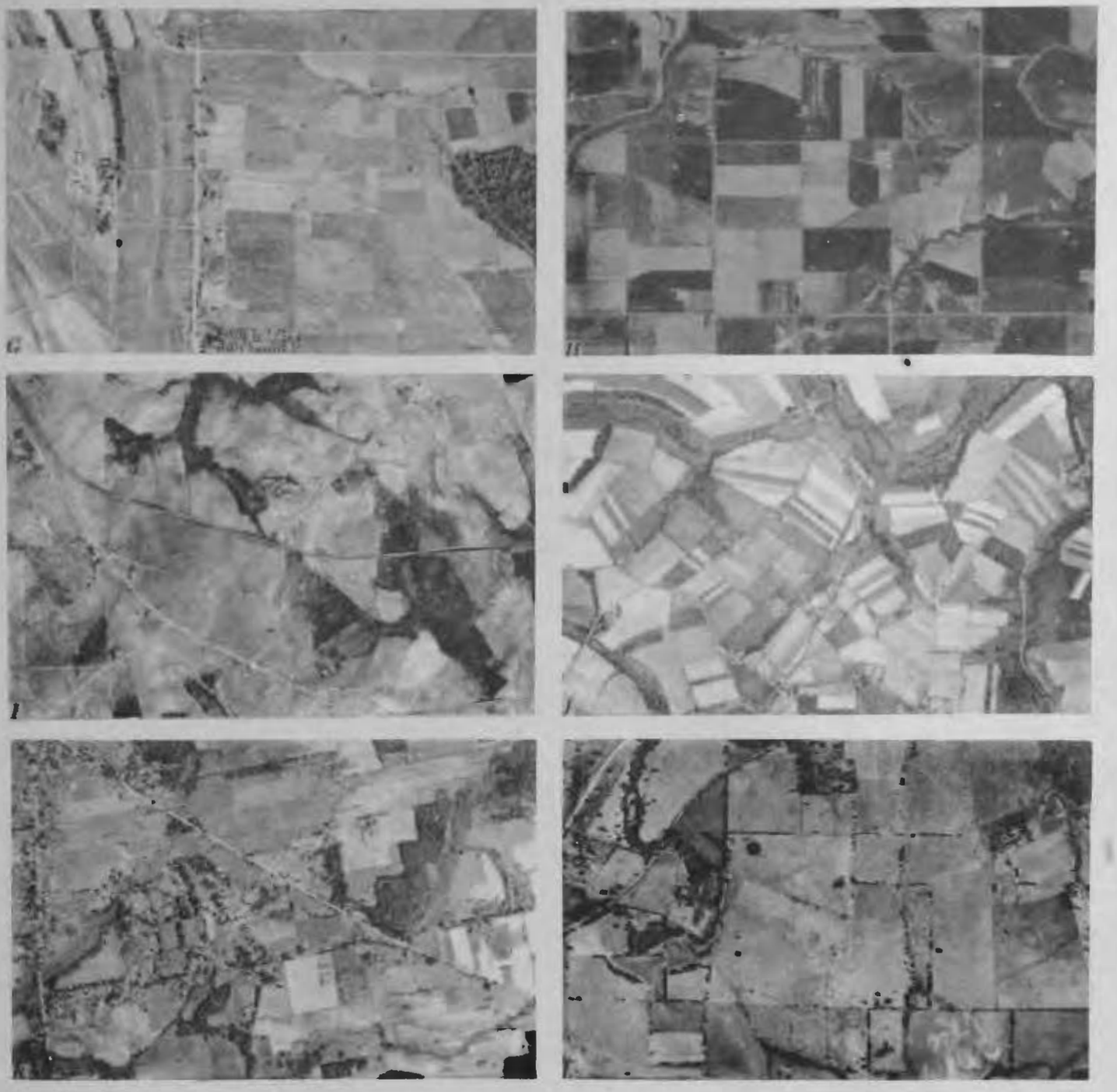
INFLUENCE OF PHYSICAL FACTORS ON PATTERNS OF LAND USE

The above series of aerial photographs illustrate a number of contrasting conditions of topography, soils, and availability of moisture supplies which influence the use of the land for crops or for other purposes. The cross-section (A) of the Appalachian Valley and Ridge province in northeastern Alabama is indicative of the sharp contrasts between use of the land on the valley floor and that on the steep and rocky paralleling ridges. The limestone soils in the valley are nearly all cultivable. They are also well adapted to pastures, forming the physical setting, along with comparatively small farms and small fields, for a diversified system of farming. There is little evidence of farming on the sandstone ridges which correlates with their suitability primarily for the present use, namely, forests. An elevation differential of 600-700 feet between the valley floor and ridge tops explains the longitudinal pattern of roads and the railway. The ridge tops in parts of the Ozarks (B) tend to be wider and longer than those illustrated in (A) and land clearing has proceeded both on the ridges and in the broader river and stream valleys. The steep and rocky slopes have generally remained under forest cover. In a number of instances forest restocking is occurring on former crop fields.

A high proportion of the comparatively level Corn Belt land in northern Iowa (C) and that in the hard winter-wheat region in central Kansas (D) is used for crops. Both represent former prairie country, but much of the former area required tile or open drains to attain maximum utilization. Mechanized operation is relatively complete in areas such as these. Farms in the area illustrated by (C) are moderately large, and are somewhat larger in the wheat-farming centers illustrated by (D).

Terrain may be favorable but precipitation may be so limited and the transpiration rate so high that land cannot be utilized for crops without copious irrigation (E). The braided stream channels in this cross-section of the edge of the southwestern desert in California carry little water most of the year, although they are occasionally filled by flash floods. The contrasts in vegetation illustrate the critical importance of local moisture supplies throughout the arid to desert sections of the West.

Terrain may be nearly flat but elevation and soils depth be so critical that only a few feet variation in elevation may spell the difference between successful drainage and a costly failure (F). The forested areas on the flat tracts or depressions outside the farming areas are known in North Carolina as bays or pocosins. Extensive swamps are also found in this general region of 40 to 50 inches or more of annual rainfall.



MODIFICATIONS OR ADJUSTMENTS TO PHYSICAL CONDITIONS

About one-quarter of the Nation's cropland has been developed to its present high degree of usefulness as a result of drainage, irrigation, and establishment of flood protection. Adjustments to physical conditions through strip cropping, contouring, and other soil- and moisture-conserving measures, and the balancing of crop and other uses with resource potentials have contributed to the maintenance of crop farming.

This area in northwestern Mississippi (G) is illustrative of a situation where the development of flood protection and drainage has been relatively complete. It will be noted that even some of the old river channels (left) are now in cultivation. The conformation of the fields gives evidence of frequent adjustment to old drainage courses. Only the low elevation back-swamps or brakes (right) have remained in forest and swamp. Precipitation is too low and too uncertain throughout much of the West even for dry-land farming. With irrigation, a variety of crops can be grown. The area in Idaho indicated by this cross-section (H) is somewhat rolling, so that the higher irrigation canals (upper right) follow a winding course along the contour.

Precipitation is heavy and intensive throughout much of the southern United States, and terracing and contour plowing are necessary in order to preserve the land. This is especially true in the Southern Piedmont (I) where the land is strongly rolling, and mostly row crops are grown. The Pennsylvania and Maryland Piedmont (J), maintained in cultivation for around two centuries, still remains among the most intensively cultivated land in the United States. Neither the diversified system of farming nor the practice of strip cropping is a recent innovation, but their present incidence, particularly of the tilled strips following the approximate contour of the slopes, can be seen in the above illustration.

Expansion of industrial and suburban developments has been associated typically with decline in farming activity. This has not been the case in the lower Connecticut Valley (K) and in other areas where crop farming has been maintained throughout a long period of time. This encroachment of urban influences has produced a variegated pattern—a mixture of rural nonfarm residences, full- and part-time farms, and of general as well as specialized farming in fruits, nursery products, and tobacco. The Kentucky bluegrass basin (L) is an outstanding example of a long-established balance in use of land resources. Nearly all the land is divided into fields, many of which have been in crops and bluegrass pastures for well over a century. Throughout this general area, farming is balanced between animal husbandry and specialized tobacco production.

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