

in American agricultural development. This table highlights scientific and technological breakthroughs, the course of labor productivity, and important legislative changes. Together these developments have revolutionized rural life and farm productivity.

FARMS AND FARM STRUCTURE

Alan L. Olmstead and Paul W. Rhode

It is currently popular to conceive of the American economy as undergoing a fundamental transition from an industrial to an information-based economy. Dramatic structural changes associated with globalization, de-industrialization, and rapid technological innovation have generated considerable controversy as old ways of living and doing business have been superseded by the new. History offers evidence on several earlier structural transformations, but few have been as significant as that summarized in the data contained in this chapter. The history of American agriculture is in large part the story of the transformation of the United States from a predominantly rural, agricultural economy to an urban, industrial, and service economy.

Farm Population and the Number of Farms

Figure Da-B displays national statistics on the farm population, the number of farms, and farm employment.¹ As these numbers show, the size of the agricultural sector continued to grow rapidly during the late nineteenth and early twentieth centuries while the country was industrializing. Of course, the farm sector's relative size fell over this period as the nonfarm sector grew even more rapidly. As one indication of these crosscutting trends, the farm population increased from 22 million people in 1880 to 32 million people in 1910 whereas the sector's share of the national population declined from 44 percent to 35 percent during this period.

The size of the farm sector, measured in terms of the value of agricultural output, has continued to grow over the long run. The nominal value of farm products sold rose from about \$858 million in 1925 to about \$196 billion in 1997 (series Da423). However, the size of the U.S. farm sector, measured in terms of the number of farmers and farms, reached a plateau in the period between 1910 and 1940. The number of farms varied between 6.4 and 6.8 million units throughout this thirty-year period while the farm population hovered in a range of 30.5 to 32.5 million persons. Although U.S. agriculture suffered "hard times" during much of the 1920s and 1930s, there was little tendency for the sector to contract. Indeed, as the figures on off-farm migration indicate, three quarters of a million people, on net, moved "back to the farm" between 1931 and 1933 (series Da3). After World War II, however, U.S. agriculture entered a period of rapid adjustment that witnessed wholesale changes in the labor force and the structure of farming. Between 1945 and 1960, more than 15 million people migrated out of the farm sector. By 1960, there were about 16 million people remaining on the nation's 4 million farms. By the eve of the new millennium, these numbers fell to fewer than 5 million people living on the

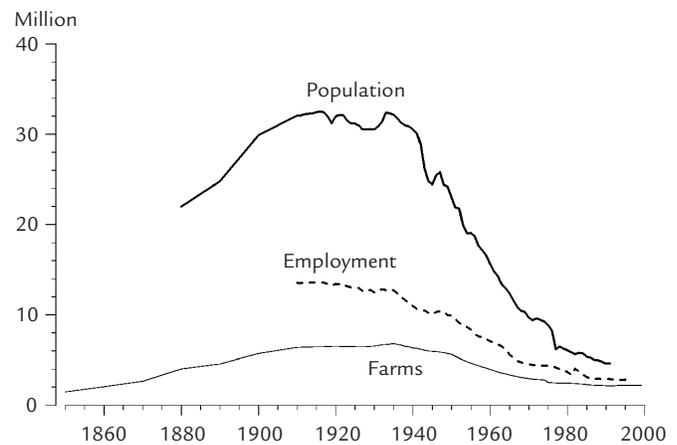


FIGURE Da-B Farms, farm population, and farm employment: 1850–1999

Sources

Farms: 1850–1900, series Da16; thereafter, series Da4. Population: 1880–1900, series Da14; thereafter, series Da1. Employment: series Da612.

nation's 2 million farms. Although the actual decline in the farm population was largely a post-1940 phenomenon, the decline in the relative size of the farm population dates back to the early nineteenth century. Every decade between 1880 and 2000 has witnessed at least a modest decline in the farm population as a percentage of the total population, with the ratio falling from about 42 percent in 1900, to 15 percent at midcentury, to less than 2 percent in 2000.²

The aggregate national data mask significant variations in agricultural development at the regional level (Olmstead and Rhode 1993). By its nature, farming is characterized by substantial differences (e.g., climate, terrain, soil quality, and distance from market) across geographic areas – avocados can be grown in Southern California but not in North Dakota. To highlight these important differences, this chapter departs from the general design of this volume, which focuses on the national picture, by including extensive data at the state and regional levels. The disaggregated series on the farm population and the number of farms included in the census (Tables Da28–158) make clear that over the early twentieth century, when the national aggregates were roughly constant, substantial regional differences existed. For example, the farm population in the (census's) Northeast and North Central states was declining after 1900, whereas that in the South and West continued to expand until 1935. Similarly, the numbers of farms in the Northeast, which peaked in 1880, and the East North Central states, which peaked in 1900, fell steadily during the early twentieth century, whereas those in the West North Central states, the South, and the West continued to grow. It is notable that after World War II, the farm population and the number of farms declined in virtually every state in the nation.

Figure Da-C shows the trends in the acreage of U.S. farmland over the past 150 years. The figure illustrates one of the most significant developments in U.S. agricultural history – the enormous

¹ The definitions of the many terms used in this chapter – such as the “farm population,” what constitutes a “farm,” and “farm employment” – can be found in the text for each table. Such notes also document how many of these definitions have changed over time.

² An important caveat is in order when using these data to assess productivity growth. The raw data showing the farm population, the number of farm operators, and farm employment do not take into account the changing productive quality of the agricultural population and thus may significantly overstate the actual decline in labor inputs. On average, farmers today have far more education and skills than did farmers in 1850 or 1900. As a result an hour of agricultural labor in 2000 embodies more inputs than an hour of labor in 1900.

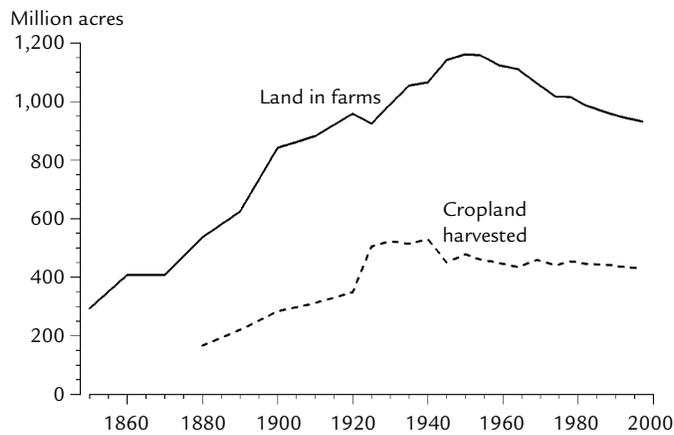


FIGURE Da-C Land in farms and cropland harvested: 1850–1997

Sources

Series Da17 and Da20.

expansion in total farm acreage. Between 1850 and 1910, land in farms more than tripled. This was not simply the result of the territorial expansion of the country, because throughout the nineteenth and early twentieth centuries a vast amount of land in already settled regions was converted to farmland. This often required a considerable investment in tree clearing or land drainage. The proportion of total U.S. land devoted to farming increased from 16 percent in 1850 to 39 percent in 1910 (and remains at roughly this percentage today).³

Two other important signs of intensification – that is, the shift of land to higher value uses – of American agriculture are evident over the late nineteenth and early twentieth centuries. First, the real, that is, inflation-adjusted, value of U.S. farmland per acre more than doubled between 1850 and 1910 (series Da27 shows the nominal value that needs to be adjusted for inflation). Indeed, although farm real estate values have often experienced dramatic fluctuations – such as the sharp run-up in prices during the late 1910s and collapse in the 1920s and a similar episode in the late 1970s and early 1980s – the long-term direction in land prices has been up (series Da13). The second piece of evidence for intensification over the late nineteenth and early twentieth centuries was the rise in the ratio of cropland harvested to total acreage. Between 1880 and 1930 the share of U.S. farmland devoted to crops rose from 31 percent to 53 percent (series Da17 and Da20). Since the 1930s, both acreage in farms and acreage in cropland harvested have contracted modestly, but these reductions have been small compared with the declines in the number of farms, farm population, and farm employment noted previously. For example, between 1940 and 1997, the acreage in farms decreased by 13 percent whereas the number of farms fell by 69 percent. Although acreage in farms has declined, the average quality of the land in farms has improved, as farmers tended to remove their less productive lands from production. More generally, in addition to endeavors in clearing and draining land, there have been enormous investments in leveling and irrigating farmlands, particularly in the western states. Conversely, soil quality in many

areas has declined owing to erosion and the buildup of salt and other toxic chemicals.

Farm Structure

A logical consequence of the decline in the number of farms since 1940, given the relatively constant farmland acreage, has been a major change in farm size and structure. Between 1940 and 1997, the average size of farms in the United States increased from 175 to 487 acres. During this period the proportion of farms with 1,000 or more acres rose from less than 2 percent to more than 9 percent of the total number of units (series Da596). These large-scale operations obviously accounted for a larger fraction of acreage. The share of U.S. farmland in farms with 1,000 or more acres increased from 34 percent in 1940 to 66 percent by 1997 (series Da611). Again, the disaggregated data in Table Da225–290 make it clear that there were substantial differences in average farm sizes across states, but that after 1940, the scale increased in virtually every region (Olmstead and Rhode 2000).

The increase in farm size was dictated by a number of forces. One was the attraction of nonfarm occupations for farmers and especially their children. Productive people would leave agriculture unless agricultural incomes and living standards rose fast enough to remain competitive with those in nonagricultural sectors. Larger farm sizes produced higher farm incomes for those who remained in agriculture (Gardner 1974). Increased mechanization also led to larger farms, given the need to spread the fixed cost of some types of machinery over larger production units. Some observers have expressed concern that the increase in farm size meant the loss of many family farms. It is important to emphasize that much of this concern over the increase in farm size is misplaced in the sense that many of the “lost farms” were never really commercially viable production units that could support a family. Readers are encouraged to consult the census and U.S. Department of Agriculture (USDA) definitions of what constitutes a farm, which are found in the general note for this section (see the text for Table Da1–13). Many of the “lost farms” were only a few acres in size, marketing a few hundred dollars in output per year. Another important cause of the decline in the number of farms stemmed from the decline in sharecropping in the cotton-producing states. The USDA and the census both defined land occupied by a sharecropper as a separate farm even though the landowner usually made many of the farming decisions and the croppers typically had a short tenure on the land. Nevertheless, even accounting for these definitional caveats, the last half of the twentieth century has witnessed a fundamental transformation in farm structure (Gardner 1992).

Another perspective on the change in farm structure comes from the evolution of the census and USDA classifications of farms into different categories based on their gross annual sales. In 1950 the largest sales classification was “\$25,000 and above.” Adjusting for inflation, this would be equivalent to about \$150,000 in 1995 dollars. A farm with receipts of this amount would not be considered a large-scale operation today. Data for 1988, shown in Table Da-D, divide American farms into several sales categories. The largest 1.4 percent of American farms (in terms of cash receipts) accounted for more than 36 percent of cash receipts and 43 percent of all net farm income. At the other end of the spectrum, 47 percent of all farms (those with cash receipts of less than \$10,000) accounted for only about 2.5 percent of cash receipts and –0.8 percent of net farm income. These small farmers actually lost money from farming;

³ On this and other issues the inclusion of Alaska after 1960 has a large impact on some trends. Without Alaska, about 50 percent of U.S. land in the 1990s was devoted to farming.

TABLE Da-D Farm structure in 1988 – percentage distribution of farms, cash receipts, and net income, by farm size

Farm size	Percentage of farms	Percentage of cash receipts	Percentage of net income
\$500,000 and over	1.4	36.6	43.3
\$250,000 to \$499,999	3.5	18.0	19.9
\$100,000 to \$249,999	9.8	22.0	21.6
\$40,000 to \$99,999	14.6	13.6	11.2
\$10,000 to \$39,999	23.9	7.3	4.7
Less than \$10,000	46.9	2.4	-0.8
All farms	100	100	100

Source

U.S. Economic Research Service, *Economic Indicators of the Farm Sector: National Financial Summary, 1988*, pp. 39–52.

their livelihood depended on income earned in off-farm pursuits. At the beginning of the new millennium, the general picture is that about 2 percent of all farms generate about one half of net farm income, while, as a group, one half of all farms typically lose money (USDA 1980; Olmstead and Rhode 2000).

Farms have not only grown in size, they have also become more specialized. Many tasks once done by farmers are now performed by others and traded in the marketplace. As an example, early in the twentieth century farmers typically produced most of their own food and fuel. In 1910 almost 90 percent of American farms reported raising chickens, more than 80 percent tended dairy cows, and more than 75 percent grew their own corn. By the early 1980s, 10 percent raised chickens, 15 percent tended dairy cows, and 32 percent grew corn. Farmers, like most Americans, found it more economical and more convenient to specialize in what they do best and buy much of what they need from someone else. Some may bemoan the loss of self-sufficiency, but the decision not to tend a small corn patch or to raise chickens to supply the family with eggs, meat, and feathers is to a large extent a matter of free choice. More generally, the ratio of purchased to nonpurchased inputs has increased more than sixfold since 1910. A similar increase in the division of labor has occurred on the output side as packagers, fast food chains, truckers, and refrigerated warehouses absorb a growing share of the consumer's food dollar; since 1913 the farmer's share has fallen from about 50 percent to about 20 percent.

It is notable that in one area – agricultural labor – U.S. farmers have not significantly increased their dependence on the market. The data on farm employment show that in 1910, nonpaid or family workers accounted for 75 percent of total employees (Table Da612–614). Despite all of the dramatic structural changes during the twentieth century, this proportion has changed little (see Figure Da-E). In the mid-1990s, nonpaid family workers still comprised roughly 70 percent of farm employment. On this issue, substantial regional variation exists, with the specialty crop producers in some states – such as California, Arizona, and Florida – relying extensively on hired labor, whereas Midwestern farms largely rely on operator and family labor.

Because farming requires detailed knowledge of local conditions, quick managerial response to changing situations, and effective supervision of a dispersed workforce, a decentralized family form of management continues to offer many advantages. In some activities, such as intensive livestock, poultry, and feedlot operations, significant economies of scale offset these advantages, leading to a more concentrated industrial structure (Schertz et al. 1979). But even with the spread of the corporate form of business

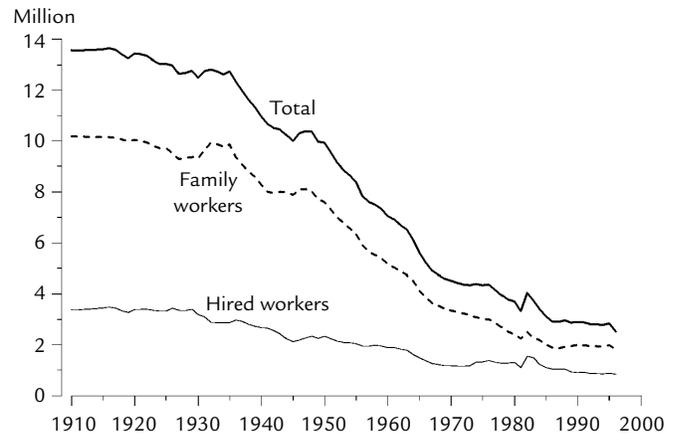


FIGURE Da-E Farm employment: 1910–1996

Source

Table Da612–614.

organization in agriculture, such concentration is not likely to become a dominant feature of the major cropping industries such as wheat, corn, and soybeans.

As a means of maintaining some control over their inputs and marketing activities, many farmers formed cooperatives in the first decades of the twentieth century (Table Da647–660). The organization of new cooperatives peaked in 1920, with about 2,000 marketing and purchasing associations formed in that year. Encouraged by favorable federal legislation, the movement continued to spread over the 1920s. The total number of co-ops peaked at about 12,000 in 1930; of these, about 10,500 were marketing organizations. Even as the number of organizations started to decline slowly, membership continued to grow, reaching 7.7 million by 1956. Obviously, it is possible for a single farmer to belong to more than one co-op, so this figure undoubtedly overstates the number of individuals involved. At the end of the twentieth century, farmer co-ops continued to play a major role in the farm economy. The roughly 4,000 co-ops in operation, with almost four million members, account for more than one third of the value of farm marketing (Knapp 1973).

Characteristics of Farmers

Characteristics of the typical farmer have changed substantially over time. As series Da541 shows, the number of farms in which the operator was nonwhite fell from almost one million (954,000) in 1920 to fewer than 48,000 today. This represents a decline from about 13 percent of all farm operators to about 2 percent. This trend was especially important in the South, where the number of nonwhite farm operators fell from 665,000 in 1945 to 272,000 in 1959 and then to fewer than 48,000 by 1974 (series Da495). The decline was largely concentrated among tenants. In 1920, nonwhite tenants operated 718,000 farms. This number slipped to 521,000 by 1940 and then fell to 86,000 in 1959 (Atack 1988; Wright 1988). By the early 1990s, nonwhite tenant farmers had virtually disappeared as a category; in 1997, there were only about 7,000 in the entire country.

Another feature of the agricultural transformation in the twentieth century has been a change in where many farmers chose to live and in key demographic characteristics. The series on farm residence show that the share of farm operators who lived off their farms increased from 5 percent in 1940 to almost 22 percent in 1997 (Table Da497–500). The population of farm operators has

tended to age and become more fixed in location. In 1910 roughly 29 percent of farm operators were younger than 35, whereas only 8 percent were in this age group by 1997 (Table Da501–512). Similarly in 1910, almost one half (47 percent) of farm operators reported having operated their present farm for less than five years (series Da514). By 1997 this share had fallen to about 11 percent. It is also interesting to note that while the number of male farm operators fell by 19 percent between 1978 and 1997, the number of female farm operators rose by 46 percent over this period (series Da490–491).

Farm Machinery and Farm Chemicals

Nineteenth-century inventors supplied farmers with a marvelous array of labor-saving devices, including steel moldboard plows, multibottom riding plows, seed drills, check-row planters, horse-powered hay forks, and balers, to name but a few (McClelland 1997). The cumulative effect was most impressive because in 1910 the real value of farm implements was almost seven times the value in 1870 (series Da24).⁴ Two of the most significant innovations in the history of agriculture were the grain thresher and the mechanical reaper (along with its close cousin, the mechanical mower). These machines, which first arrived on American farms in the 1830s, were nothing short of revolutionary in their day. People would travel for hours just to be able to marvel at early prototypes lumbering through the fields. As one indication of their importance, Cyrus McCormick, the principal inventor of the reaper, received the richly deserved acclaim as the “man who made bread cheap.” Even with all the excitement concerning more recent technological breakthroughs, one would be hard pressed to find anything more significant than dramatically lowering the cost of grain in an age when many people still spent as much as one half of their income on basic foodstuffs. The reaper also had profound effects on farm structure, vastly reducing the need for seasonal labor during the small-grain harvest. In a similar fashion, the thresher (which separated the grain from the chaff) dramatically reduced the need to retain a hired man over the winter months (Olmstead and Rhode 1995; McClelland 1997).

These breakthrough inventions often unleashed a wave of subsequent modifications and improvements (Rosenberg 1972). By the end of the nineteenth century, each of the agricultural machines described in the preceding paragraph had undergone numerous modifications that increased its usefulness and reliability. The crowning achievement was the commercial development in the 1880s of the combined harvester, or, as it became known, the combine. The combine merged a reaper and a thresher into one machine. Early combines were huge, cumbersome machines suited only for the large-scale ranches found in the arid West. Some of these harvesters had forty-foot-long cutting bars and were pulled by teams of forty or more draft animals (Olmstead and Rhode 1988).

⁴ The essay on agricultural productivity in this chapter deals in considerable detail with technological change as a source of agricultural productivity growth. Data on the diffusion of specific mechanical innovations are displayed in Table Da623–634. They pertain to the twentieth century because few consistent time series exist for earlier times. But the lack of quality data does not mean that little happened. On the contrary, American farmers in the nineteenth century were world leaders in the adoption of new agricultural machines and techniques. In fact, much of what came later was a direct consequence of path-breaking advances of an earlier era (Olmstead and Rhode 1988).

The evolution of the combine involved making the machines smaller and more versatile, and perfecting its components for use in harvesting corn, beans, peas, and other crops. In the Great Plains combines were not a frequent sight before 1918. The number of combines in the United States grew from 4,000 in 1920 to 61,000 in 1930, and then to 190,000 in 1940 (series Da629). By the late 1930s, combines harvested about one half of all wheat acreage in the United States. In the 1940s there was a reversal in the trend toward smaller machines as specialized custom harvesting services began to thrive. The share of national wheat acreage harvested by combines rose to more than 75 percent by 1945 and to almost 95 percent by 1950. By the 1980s, combines had become the dominant harvesting technology for virtually every grain and field legume (Quick and Buchele 1978).

The gasoline tractor was among the most far-reaching agricultural innovations ever. Like early combines, the first gasoline tractors were behemoths suitable for tasks such as plowing, harrowing, and beltwork. Also, as in the case of combines, the diffusion of tractors required a number of important refinements and the development of a variety of sizes suitable for a number of different tasks. Among the scores of innovations that increased the tractor's appeal was the development of the general-purpose tractor in 1924. This machine could cultivate among growing crops. At about the same time, the power takeoff became available, enabling tractors to transfer power directly to implements under tow. The emergence of pneumatic tires in the 1930s increased the tractor's effective power and enhanced its usefulness in hauling farm goods (Olmstead and Rhode 2001; Gray 1954; Williams 1987).

The number of tractors on American farms grew from about 1,000 machines in 1910 to 246,000 in 1920, and to 920,000 in 1930 (series Da623). With the exception of the first few years of the Great Depression, the number of tractors in use on farms continued to increase, first surpassing the 4 million mark in 1953. Since 1953, the stock of tractors on farms has remained relatively constant at about 4.5 million machines. Data on the number of tractors fail to capture important changes in tractor design and size that have resulted in significant quality improvements over time. As an example, tractor horsepower on farms more than doubled between the mid-1950s and the mid-1980s (when series Da626 ends), while the number of tractors changed little over these three decades. The trend toward larger and more powerful tractors has continued. More generally, in recent decades tractor manufacturers have built more efficient and more versatile machines, offered new driver amenities such as more comfortable seats and enclosed air-conditioned cabs, and added safety features.

There was a regional pattern to diffusion. By and large farmers in the Great Plains and California were the earliest adopters, followed by those in the Midwest and East. The South was the last region to achieve widespread adoption. By 1960, tractors had largely replaced horses on commercial farms across the United States. The stock of farm horses and mules declined from 26.5 million in 1915 to 3.1 million in 1960 (series Da983 and Da985).

The tractor greatly increased the amount of power available to farmers and saved the considerable amount of time that had been devoted to caring for animals. The extra power was particularly valuable during periods of peak activity or when the timeliness of the work was essential, as when plowing had to be finished before bad weather set in. Another effect of the tractor was to add significantly to America's net agricultural output, because about one quarter of U.S. cropland was converted from growing feed for

work animals to growing products for human consumption (series Da663).

Few innovations have affected the demand for labor as much as the mechanical cotton picker and the milking machine. There had been many attempts to devise a mechanical cotton picker before J. D. Rust succeeded in perfecting a spindle machine in 1928. In 1945, on the eve of diffusion, there were only 107 machines in the United States and almost all of these were employed outside the traditional Cotton South on the irrigated farms of the southwest. The number of cotton picking machines increased to roughly 4,000 in 1950 and then to 38,000 by 1961 (series Da634). By 1970, virtually the entire U.S. cotton crop was mechanically harvested (Street 1957; Musoke and Olmstead 1982). The flip side of the mechanization of the cotton harvest, coupled with the decline in cotton acreage, was to complete the restructuring of Southern rural labor relations that had begun in the 1930s with the spread of tractors. The number of Southern sharecroppers dwindled from 776,000 in 1930 to 121,000 in 1959 (series Da553).

Dairy farming was also a highly labor-intensive activity. As late as 1940, dairying in the United States required more than one and one half times more labor than that devoted to producing cotton. Milking machines employing the intermittent suction principle, introduced in 1905, promised a saving of about one fifth of the annual labor requirement per cow. However, the machines spread slowly at first owing to the structure of dairy farming, the lack of electricity, improper sanitary practices, and “hard times” on the farm. In 1910, about 12,000 farms possessed milking machines; this was less than one of every 400 farms reporting dairy cows. By 1940, the number of farms possessing milking machines had climbed to 190,000. Nonetheless, on the eve of World War II, perhaps 90 percent of all cows were milked by hand. In the postwar period diffusion accelerated, with one half of cows milked mechanically by 1950 and nearly all dairy cows in commercial operations by the mid-1960s. By 1965, some 500,000 farms reported possessing milking machines (series Da634).⁵ The spread of milking machines was the most visible part of a larger mechanical revolution on dairy farms (Forste and Frick 1979). Scores of other mechanical inventions, such as refrigeration, electric lights, and improved hay harvesting and handling machinery, transformed the farmer’s day-to-day life in the twentieth century. It should be emphasized that, as was the case with tractors, the data showing the number of various types of farm machines do not capture changes in quality. Most machines sold today are better than those of earlier years. A better accounting for quality changes would increase the effective quantity of mechanical inputs in the farm sector. The essay on agricultural productivity in this chapter grapples with just this type of issue.

In addition to the growing use of farm machinery, American agriculture also witnessed what is often called a “biological revolution” after 1930. This was associated with the first significant widespread wave of increasing yields per acre of the major staple crops and was driven by the adoption of improved seeds, such as hybrid corn, and the greater application of farm chemicals (Manglesdorf 1951; Griliches 1957). The use of commercial fertilizer in American agriculture skyrocketed after World War II (Tables Da635–646). Purchases of primary plant nutrients, which

had doubled between 1910 and 1940, increased eightfold over the next thirty years. Accompanying the growth was a shift from low-concentration, phosphate-based, mixed fertilizers to high-concentration, nitrogen-based, straight materials, such as anhydrous ammonia. The increased use of commercial fertilizer after 1945 was the result of several factors. First, the traditional approach of manuring, or using no fertilizer at all, was leading to soil exhaustion in many regions. Second and more important, the real price of fertilizer declined over much of the post-1945 period (the 1970s represented the most notable exception). Active antitrust policies and expansion during World War II of nitrate plants for the munitions industries increased capacity and competition in the postwar fertilizer industry. Third, technological changes such as the development of superphosphates by the Tennessee Valley Authority and the perfection of methods for the direct application of anhydrous ammonia contributed to the advance in fertilizer use. Finally, many of the new crop varieties, such as hybrid corn, were bred to be more responsive to fertilizer applications; thus, there was a high degree of complementarity between higher-yielding plant breeds and the greater use of fertilizer (Markham 1958).

There are strong indications that the biological–genetic revolution is still in its infancy. This is a new frontier, with the U.S. Patent Office extending patent protection to genetically engineered plants in 1985 and to animals in 1988. It is reasonable to assume that the types of productivity advances discussed in the essay on agricultural productivity in this chapter will continue; there will likely be new and better machines, chemicals, and even new sources of power if we look far enough into the future. More generally, one would expect there to be a continuation of the trend to improve the quality of agricultural labor, land, capital, and biological inputs. But the structural transformation is largely complete and the social impacts of any future changes are likely to be relatively small. A major feature of the past transformation was the movement of people off the farms, and today there are few farmers left. Even if half of all current farmers were to leave agriculture it would be a relatively small adjustment compared to what has already occurred. Although the data describe an incredible process of change that has largely run its course, the forces of invention, market restructuring, and changing demands are still reshaping the economy.

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⁵ Owing to the contraction of the number of dairy operations, this was below the peak of 712,000 farms in 1956.

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CROPS AND LIVESTOCK

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The dynamics of American agricultural development have been closely intertwined with the political and social evolution of the country and dependent on changing technological and market forces. This is clearly reflected in the composition of crop and livestock output and the prices that farmers received. The data in this section offer insights into many of the fundamental structural changes that transformed rural America.¹ As examples, one can track the spread of new activities, such as the immense growth in soybean production (series Da677), the takeoff in fruit and vegetable output (Tables Da791–967), and the growing importance of the broiler chicken industry in the twentieth century (series Da1045). The mirror image of these changes has been a fundamental change in the diet of most Americans. The data on commodity prices in this section also help document the extent of the agricultural crises of the 1890s and the 1930s. For example, the data show that between 1890 and 1896, as Populist agitators urged farmers to "grow less corn and raise more hell," nominal corn prices plummeted from 50 cents to 21 cents a bushel (series Da697). In

¹ Atack and Passell (1994, pp. 274–98 and 402–26). These structural changes include factors discussed elsewhere in this chapter such as the change in the location of production, the introduction and spread of new crops, the changes in farming technologies and increases in farm productivity, and the relative (and after 1940, the absolute) decline in the farm population.

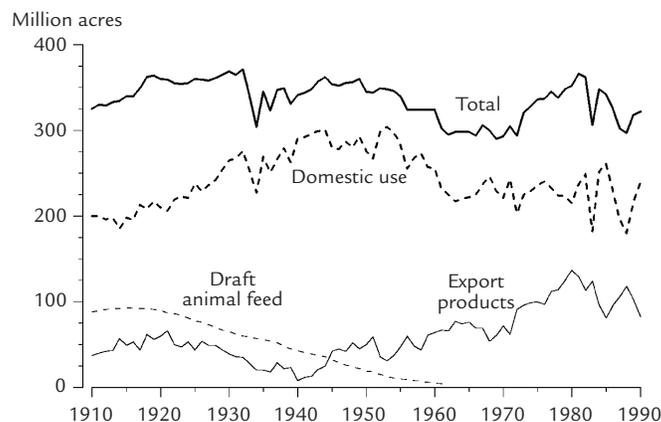


FIGURE Da-F Cropland harvested, by use: 1910–1990

Sources

Series Da661–664.

Documentation

Note that beginning in the early 1960s, as the importance of horses and mules declined, the U.S. Department of Agriculture ceased estimating the amount of cropland required to feed them.

a similar fashion, it is possible to chart the disastrous fall in commodity prices in the Great Depression. For instance, the nominal price of cotton dropped from almost 17 cents per pound in 1929 to less than 6 cents per pound in 1931 (series Da757). The data also reveal the sharp increase in commodity prices – for example, the doubling of wheat prices over the 1972 and 1973 crop years (series Da719) – that led some to call the 1970s the “Era of Limits to Growth.”

Crops and Land Utilization

Figure Da-F offers an indication of the change in the market for agricultural output over most of the twentieth century. The figure shows the U.S. Department of Agriculture’s (USDA) estimates of the acreage of harvested cropland devoted to three major categories – domestic consumption, feed for draft animals, and the export market – from 1910 to 1990. Over the twentieth century the total area harvested has fluctuated between about 290 and 370 million acres. The fluctuations in this indicator help trace the course of farm prosperity and farm policy. As an example, the sharp drop in acres harvested in the early 1930s was a result of the ravages of the Dust Bowl, the agricultural depression, and the acreage reduction programs discussed in the essay on farm policy in this chapter.² The total acreage harvested increased as a result of high demand during World War II and then inched downward with a slackening in demand and more aggressive federal land “conservation” policies.

² As a result of prolonged periods of deficient rainfall coupled with farming technologies that made the soil more susceptible to high winds, vast areas of the Great Plains suffered prolonged dust storms beginning in 1933. These storms did terrible damage to Western agriculture, with the dust darkening the sky as far away as New York City. The worst-hit regions included the panhandles of Oklahoma and Texas, eastern Colorado and New Mexico, and western Kansas. This area became known as the Dust Bowl. American agriculture suffered a prolonged period of hard times beginning shortly after World War I and continuing to the early 1940s.