

American Farms: Past, Present, and Future

*A Reading A-Z Level Z2 Leveled Book
Word Count: 2,461*

Connections

Writing

Use information from the book and outside resources to write an essay comparing traditional farming with modern-day farming.

Math

Choose a graph from the book to analyze. Write three questions that can be answered with data from the graph. Swap questions with a partner and answer those questions.

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American Farms: Past, Present, and Future

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Focus Question

How has farming changed, and how has it stayed the same?

Words to Know

agribusiness	mechanization
degrades	optimize
fertilizers	productivity
incorporated	surplus
irrigation	unsustainable
mass production	vulnerable

Title page: A Kansas farmer and two of his sons examine their wheat crop.

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Correlation

LEVEL Z2

Fountas & Pinnell	Y-Z
Reading Recovery	N/A
DRA	60



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A Nebraska homesteader family stands in their celery field in 1904.

Picture a Farm

In 1901, John and Magreta Hoefler started a family farm on 160 acres (0.65 sq km) near Elgin, Nebraska. Their five girls and two boys would wake early before school to do their chores: open the henhouse, milk the cows, slop the hogs, and feed the horses. After school—especially in spring, summer, and fall—everyone hitched up their suspenders to tend to the gardens and fields. Almost all the work was done by hand and muscle, with horses to haul the wagons. It was a big effort to grow and raise enough food for their sizable family, enough feed for their livestock, and some **surplus** to sell.

Today, John and Magreta would be astonished to see what their small farm grew into. Their children, grandchildren, and great- and great-great grandchildren expanded their holdings and now manage more than 1,000 acres (4 sq km) of land split between seven Hoefer-owned farms. Today's Hoefers do not need the whole clan to work the soil and tend to fields and livestock. They have a fleet of modern machinery and equipment, including big tractors, combines, and automated **irrigation** systems. Computers help them monitor and manage operations. They raise cattle and grow corn and soybeans as cash crops, along with specialty crops like popcorn and organic vegetables.

American agriculture—and the U.S. economy overall—has changed dramatically in the last two hundred years. These shifts fundamentally altered what people do for a living and how they feed their families. Where once most everyone lived on a farm, now only a small percentage of Americans work the land. Yet American farms feed the nation, ship tons of food overseas, and are an important part of a global system of **agribusiness**.

American farmers have shown a remarkable ability to adapt to change. They will need similar resilience to manage changes on the horizon.



A farmer guides a plow in Montana around 1900.

Past: The American Tradition of Farming

The United States was once a nation of farmers. In 1790, the great majority of American families—90 percent—lived and worked on small farms. Their main goal was to produce enough food and other products to supply their needs for the year. Growing and storing sufficient food to get through the winter required careful planning. A bad growing year due to drought, flood, or a disease of crops or livestock was not just a disappointment; it could mean hunger and financial disaster.

Draft animals such as horses, mules, and oxen provided the power in front of a wagon or ground-breaking plow. Working the land also required constant human labor. Entire families, from grandparents to young children, tackled the dawn-to-dusk chores that kept home and farm functioning. Even with hard work, success or failure was often in the hands of unpredictable elements like weather and farm product prices.

By the early 1900s, Americans were in the middle of a big social shift. The Industrial Revolution, which had begun in the late 1700s, was accelerating, with more and more people leaving rural farms for city factories. Interestingly, a revolution in farming helped make this possible. By 1900, farmers made up only 38 percent of the country's labor force. Yet even as that percentage shrank, farmers were able to grow enough food to feed millions in cities as well as their own communities.

Three developments ramped up farmers' **productivity** and allowed them to meet the growing nation's food needs. The first, **mechanization**, was the direct result of technological development. Powered farm machinery allowed one person to do the work of dozens. Second, improved farming practices made it possible to grow more crops on less land. Farmers utilized improved seeds, chemical **fertilizers**, weed killers, and irrigation technology. Third, modern transportation systems allowed farmers to distribute their products over great distances. No longer were they limited to selling crops locally or regionally. Instead, they could truck them to trains or ships to reach national and even international markets.

The development of American agriculture was also aided by the nation's expansion. Starting in the 1860s, the United States colonized the Great Plains. This wide region of prairies and other grasslands stretches westward from the Mississippi River to the Rocky Mountains. The land was mostly treeless with rich soil, making it ideal for farmers and ranchers to cultivate and exploit. It was easier to work than the rocky and forested areas back east. The Great Plains are still referred to as the "breadbasket" of the United States, even the world. This region is capable of producing vast amounts of food.

Present: Family Farms as Big Business

The trend toward fewer farmers producing more food has continued. Today, farmers and farm laborers make up only about 2 percent of American workers. Yet American farms produce more agricultural products than ever before.

Farm size helps tell the story of American agriculture today. According to the United States Department of Agriculture (USDA), midsize and large-scale farms make up only 9 percent of American farms. However, they account for a remarkable 65.2 percent—nearly two-thirds—of food production.

Despite the considerable size of some of these American farms, almost all of them continue to be owned and operated by families. Less than 2 percent of farms in the United States are “nonfamily farms” owned by outside corporations.

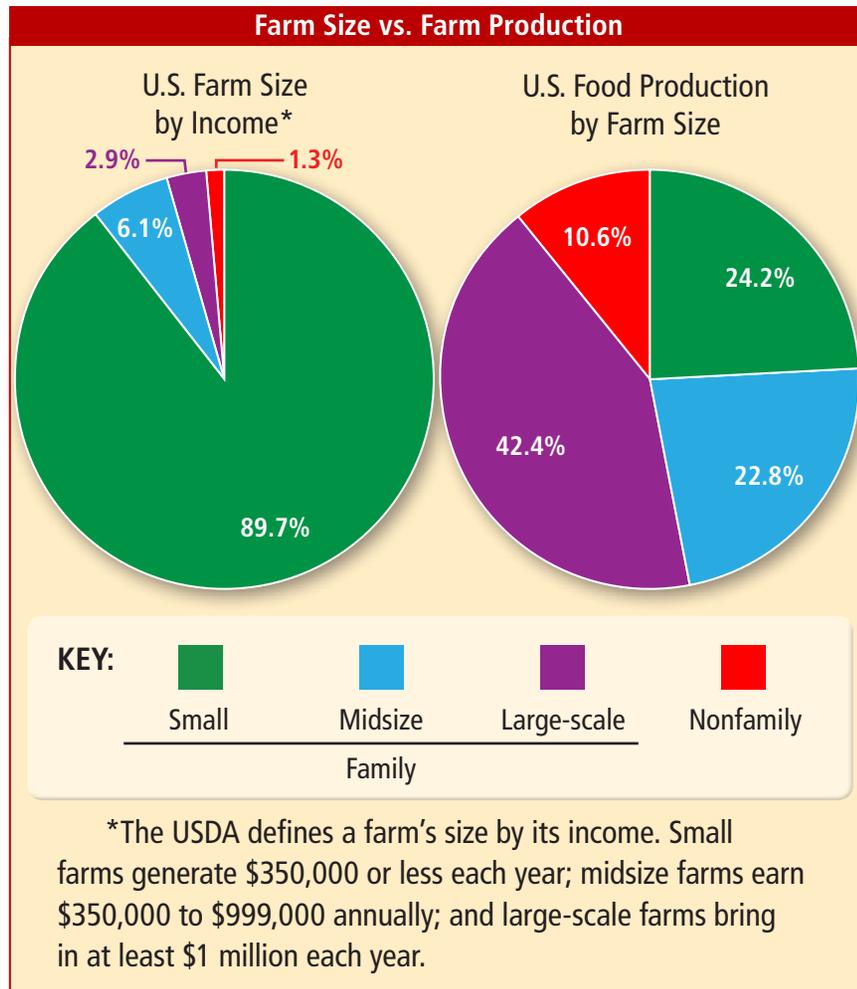


sorghum

soybeans

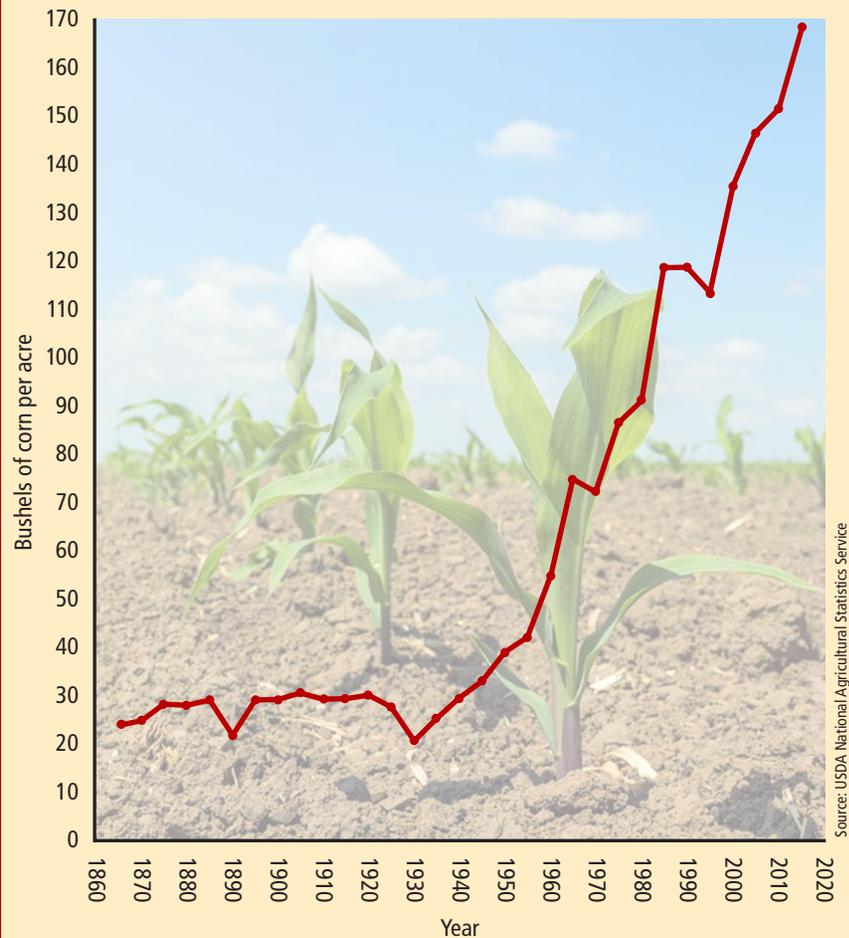
However, most family farms are **incorporated**, which can offer important business advantages. Owners may pay less in taxes, be better able to secure bank loans, and have more protections if they have financial problems or the owners retire or die.

Frahm Farmland Inc. is a prime example of a large-scale farm. Lon Frahm is its chief executive officer (CEO)—the top boss. His family has farmed in Kansas for six generations. When he took over the family farm in 1986, it had 5,000 acres (20 sq km) of cropland. Today, his team of about ten employees farms almost 27,000 acres (109 sq km). They grow corn, soybeans, wheat, and sorghum, a protein-rich grain used to feed livestock. Like many American farms, Frahm Farmland has greatly expanded its production in order to be successful and profitable.



Source: USDA, 2015 Agricultural Resource Management Survey

Corn, Cornier, Very Corny!



More Food in the Field

Productivity is a driving principle of every for-profit business, including agriculture. Through the years, American farms have continued to become more productive. Since the 1960s, the total number of U.S. farms has stayed fairly steady at about 2.1 million. The amount of farmland has stayed about the same as well. Yet during that period, American farmers have more than doubled their output of agricultural products.

Big farms like Frahm Farmland are the main producers of American foodstuffs. With good management, these operations are often more productive and efficient than smaller ones. They can produce more agricultural products per acre than smaller farms while on average spending less on land, equipment, supplies, buildings, and other operational costs.

To operate as efficiently as possible, bigger farms have been at the forefront of farming technology in order to save costs on human labor. Examples range from robotic cow-milking machines to drones that monitor livestock to driverless tractors that navigate by global positioning system (GPS) as they work in the fields. Sensors measure ground moisture and automatically start and stop irrigation systems. Specially developed seeds, fertilizers, pesticides, and herbicides are other technological ways to maximize crop production, or yields.



Many cows are milked at once in a milking parlor.



Migrant farm workers sort and pack red bell peppers in Southern California.

Keeping production costs low also helps explain why some large American farms have often employed immigrants as farm workers. Whether undocumented or legal guest workers, immigrants are often paid wages below those of American-born workers.

To **optimize** efficiency, many big farms also practice monoculture—the intensive growing of one farm product, be it a crop or a breed of livestock. This approach allows such farms to invest only in the equipment and facilities that serve their purposes. Owners also develop expertise in the production of that product.

The risks of this scheme include catastrophic weather events and disease outbreaks that can wipe out that single crop. The lack of diversity **degrades** the soil and requires heavy use of fertilizers. It also leaves farmers **vulnerable** to significant drops in the market price of whatever they grow or raise.

The Question of Factory Farms

Some big livestock farms are designed to produce as many animals for slaughter as fast as possible. They are sometimes called CAFOs, short for “concentrated animal feeding operations,” or “factory farms.” Animals at these facilities are often held in small indoor pens with no natural light and little room to move about. Dairy cattle, hogs, and chickens are the livestock most often managed this way. Criticism of CAFOs focuses on three main issues: (1) these operations produce tons of animal manure, which harms the environment; (2) the animals are often raised and slaughtered in cruel conditions; and (3) the crowded conditions can result in disease outbreaks in livestock. To counter this, animals are given high levels of antibiotics, but this can result in germs resistant to antibiotics. Since people take in those same antibiotics when they eat the livestock, it can ultimately put their health at risk.

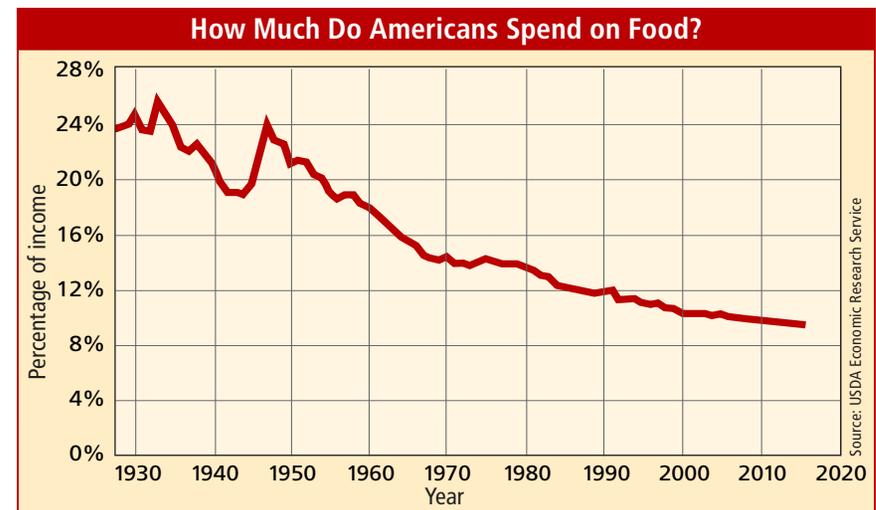


Hens are crowded together on a factory farm.

To offset their risks, about a third of American farmers sign production contracts with giant agribusinesses. The farmers agree to raise produce or plant seeds supplied by these powerful corporations. In return, the companies agree to pay the farmers a set price for the products. However, these contracts give the companies a great deal of control over pricing. They can also require farmers to make expensive upgrades to their facilities at the farmers' expense. Farmers may even be put out of business for complaining publicly about how the company treats them.

Farmers must weigh the costs and benefits of such production contracts. On one hand, these agreements offer some guaranteed financial backing for farmers' hard work and investments. On the other, farmers can be left at the mercy of giant agribusiness. Even large-scale farms have limited power to negotiate terms with these corporations, which increasingly control not only agriculture but the food industry as a whole.

How does the efficiency of big farms and food production affect the average American? In general, it means lower prices. The less it costs to produce milk, grow corn and wheat, or raise chickens and pigs, the more those savings can be passed on to consumers.



The cost of food has gone up a lot since 1930. Yet by 1997, the *percentage* of their income that Americans spent on food had dropped to less than half of what it was early in that century.

Future: Global and Local Farming

Farmers often try to see the future. They invest in crops or livestock for the promise of future financial returns. They calculate whether investing in more acreage or a high-tech tractor will benefit their productivity. They check the weather forecast as well as the clouds to see whether they should cut the hay now or wait for the thunderstorm to pass. Planning ahead is a fundamental part of a farmer's life.

So what does the future hold for American farms and farmers? That depends on where you look. Two significant trends are shaping the future of agriculture in the United States—one global, the other local.

Agriculture is now a global business, and most economists agree that globalization is shaping farming practices—in the United States and elsewhere. Globalization refers to the trade and movement of products and money between international businesses and banks. In many ways, it is already affecting what people buy and eat as well as how they make a living. For example, soybeans harvested in Nebraska or Iowa may be shipped to China, bringing Chinese capital, or money, to the United States. Avocados picked in Mexico are trucked to food distributors in the United States in exchange for U.S. dollars.

Globalization offers expanded economic opportunities for American growers to sell more of their products overseas. At the same time, it creates risks that events in other countries will affect American farms. If the United States and China get into a trade disagreement, for instance, China can limit imports of American soybeans and corn.

As part of globalization, giant agribusinesses are also reaching across borders and oceans like never before. They are buying or renting the resources they want and need wherever those resources may be.

In 2013, the Chinese conglomerate Shuanghui International purchased Smithfield Foods Inc. for \$4.7 billion. Based in Virginia, Smithfield is the biggest pork processor in the United States. After the sale, China controlled more than four hundred farms, thirty-three processing plants, and one out of every four hogs in the United States, according to the USDA. Such international business deals involving food processors and distributors are likely to grow more common as globalization extends its reach.



Even as large-scale farms go global, some smaller American farms are going in a very different direction—more local. Small farms make up almost 90 percent of American farms. However, they produce only 24.2 percent of farm products. About half of small-farm owners report that their main income comes from off-farm jobs. Some small farms are actually considered “hobby farms” that owners run more for enjoyment than profit.

Still, the “local food” movement is turning up in more communities in the United States. A growing number of these farmers are shifting



A farmer's market in Los Angeles offers local, organic vegetables.

away from the goal of **mass production**. Instead, they sell what they grow at nearby farmer's markets and restaurants. Many also choose to farm using more traditional methods, limiting or eliminating the use of chemical fertilizers, pesticides, and herbicides.

Whether large-scale or small, though, future farm owners in the United States will need to grapple with environmental challenges. Agricultural experts worry that current farming practices are **unsustainable** because they are depleting valuable resources. Research indicates that farms in some areas are pumping too much water from underground wells and draining their sources. Some large-scale animal operations are generating massive amounts of pollution that are poisoning waterways and harming air quality. Overuse of fertilizers, pesticides, and herbicides is damaging valuable soil.

Soil—A Precious Resource

Most people take for granted the ground beneath their feet. Not farmers. For them, soil is the lifeblood of a healthy farm. Without healthy land, crop yields tend to fall, along with the nutritional value of agricultural products. Good soil is much more than dirt. It contains organic matter—mostly decomposing plants and microorganisms that generate valuable nutrients for new growth. Research indicates that trying to replace these nutrients with chemical fertilizers has limited effectiveness and causes long-term harm to the soil.

A small but growing number of farmers are changing practices to protect and improve their soil. More and more are doing no-till farming, which does not plow up fields. Instead, it allows the plant matter from the previous crop to decay naturally. These farmers may also rotate nutrient-restoring crops and let cattle graze in harvested fields, both of which help make and keep soil healthy.



A boy sifts nutrient-rich compost into the soil.

Practices that may produce a large harvest in the short term may do lasting damage to the land itself. More farmers now recognize these threats to their long-term prospects and are introducing more sustainable practices. They know a farm's future is only as good as its land.



Climate change causes flooding (left) and desertification (right). Both hurt farmers.

A bigger environmental issue looms on the horizon as well: climate change. Average temperatures are rising around the globe, and weather patterns are changing. Areas that once could plan on regular rainfall are seeing less precipitation, while other regions are receiving much more. Worldwide, climate researchers are observing an acceleration of cropland loss and growing deserts, especially in arid regions. Climate change is a contributing culprit.

In the United States, studies indicate that climate change could greatly reduce farm productivity. By the year 2050, yields of corn and soybeans could drop by up to 25 percent in the Midwest. Such a decrease could have a significant effect on food supplies in North America and around the world.

By its nature, agriculture cannot adapt quickly to big, rapid changes. Farming, like most businesses, benefits from predictable conditions that allow for careful planning. However, the future is likely to bring bigger, more extraordinary variations in both economics and climatic patterns than American farmers have had to deal with in a long time—or maybe ever.

A Changing Way of Life

The business of American agriculture has been expanding since the nation's founding. Farms have grown in size and sophistication. Their productivity has supplied a growing nation and helped feed a world population that has doubled since 1970 to almost eight billion people.

Meanwhile, American farmers go about their daily work—planting seeds, growing crops, raising livestock, and producing the food we eat. Longtime farmers consider farming as much a lifestyle as it is a way to make a living. They find satisfaction in caring for their land, crops, and animals. That ethic has changed little in the last one hundred years.

However, a generational shift is underway in terms of who owns and operates American farms. The average American farmer is fifty-eight years

old—near the age when many American workers retire. Fewer young people are choosing to farm. Even those with farming in their blood are walking away from the hard work, long hours, and unpredictable outcomes and income.

Farmers will still be farming decades from now, adapting to whatever changes come. What their farms will look like at the end of this century—and who will be driving the tractors, picking the corn, and milking the cows—is more difficult to say.



A farmer teaches his grandson to drive a tractor. But will his grandson still drive a tractor when he grows up?

Glossary

agribusiness (<i>n.</i>)	a group of industries involved in the production, processing, and shipment of farming products (p. 5)
degrades (<i>v.</i>)	reduces something in quality or wears it down (p. 14)
fertilizers (<i>n.</i>)	natural or chemical substances that promote plant growth (p. 7)
incorporated (<i>v.</i>)	formed into and legally recognized as a large company or organization (p. 10)
irrigation (<i>n.</i>)	the practice of supplying water to land or crops to promote growth (p. 5)
mass production (<i>n.</i>)	the manufacture of large amounts of a product by machines in a factory (p. 19)
mechanization (<i>n.</i>)	the process of using machines to do things that used to be done by people or other animals (p. 7)
optimize (<i>v.</i>)	to make something as good or effective as possible (p. 13)
productivity (<i>n.</i>)	the speed at which work is completed or goods are made (p. 7)
surplus (<i>n.</i>)	an amount left over after needs have been met (p. 4)
unsustainable (<i>adj.</i>)	unable to last at the current rate of use, or involving practices that use up or cause permanent damage to a resource (p. 19)
vulnerable (<i>adj.</i>)	able to be hurt easily (p. 14)