

# Dairy

The dairy industry contributes to food security by supplying a significant source of protein, calcium, and essential vitamins through milk, cheese, yogurt, butter, and other dairy products.

## Life Cycle of Milk Production

Dairy cows are raised and cared for on farms. After the birth of a calf, cows begin producing milk and the calf is raised. Some female calves are used for replacement in the herd while others are reared for meat production. Milk is collected through milking machines. The milk is then transported to processing facilities where it undergoes pasteurization, homogenization, and packaging. The final dairy products, including milk, cheese, yogurt, and butter, are distributed to consumers through various retail channels. Throughout this cycle, animal care, nutrition, environmental management, and ethical considerations play crucial roles in ensuring sustainable and responsible milk production.



### **UPCYCLE WASTE**

Cows can digest waste from the food processing industry and transform it into nutrient-dense food products. Without cattle, the waste would go to a landfill.



### **GENERATE RENEWABLE ENERGY**

Methane gas, when captured and transformed from manure waste, can be utilized to generate renewable energy, offering benefits such as reducing greenhouse gases and air pollution.



### **SUPPLEMENT SOIL NUTRIENTS**

Cattle manure, a natural source of soil nutrients, serves as sustainable fertilizer for crop growth.

### **CONTRIBUTE TO BEEF SUPPLY**

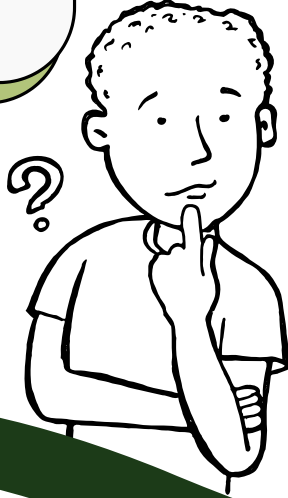
Dairy cattle contribute both meat and dairy products, supplying around 20% of the U.S. beef supply. <sup>1</sup>

# Production Styles

The majority of dairy farms in the U.S. are *conventional*. They use modern agricultural practices to feed and care for animals. Most are housed in freestall barns or dry lots and fed harvested forage/grain.

Some dairies are certified *organic* by following regulations concerning the use of antibiotic medication, feeding, and housing practices.

Find out how many [dairy cows](#) are in your state.



Organic dairies are required to offer grazing for a certain number of days per year as determined by their climate. Some conventional dairies graze their cattle as well.



Use the code on the container and [find out!](#)



# Environmental Impact

The environmental impacts from the dairy industry that need to be sustainably managed include:

- **Water Pollution:** Improper manure management can run off fields, contaminate water sources, cause algal bloom, and damage aquatic ecosystems.
- **Greenhouse Gas Emissions:** Cattle contribute to GHG emissions. Managing emissions is essential for mitigating climate change.
- **Air Quality:** Livestock operations can emit ammonia and particulate matter, affecting local air quality and creating odors.

## NATURAL RESOURCE USE



WATER

Dairy products carry a significant water footprint requiring an estimated [95 gallons of water](#) for each serving.



ENERGY

Automated equipment, milk cooling systems, and other operations consume fossil fuel energy.



LAND

Land is required to house the cows and calves and for fields to grow forage and grains for feed.



SOIL NUTRIENTS

Cattle eat hay and a mixture of grains. These fields require arable soil and replenished soil nutrients through the application of manure or synthetic fertilizer.



# Beef

The beef cattle industry contributes to global food security, providing a reliable source of protein and essential nutrients. When properly utilizing grazing lands, the beef industry also maintains ecosystems and helps prevent land degradation.



## Life Cycle of Beef Production

Beef cattle are raised on farms and ranches. These cattle undergo breeding and reproduction processes, leading to the birth of calves. Calves are nurtured and raised by their mothers while spending the majority of their lives grazing public or private land. As they mature, cattle are typically sent to feedlots for finishing where they are fed a diet designed to promote muscle development. Finally, the cattle are harvested at processing facilities where they are butchered into various cuts of beef that are packaged and distributed to consumers. Throughout this lifecycle, proper animal care, nutrition, and environmental management are critical elements for sustainability.



### **UPCYCLE WASTE**

Cows can digest waste from the food processing industry and transform it into nutrient-dense food products. Without cattle, the waste would go to a landfill.



### **PROVIDE BYPRODUCTS**

Meat is the primary product of the beef industry, but cattle also contribute to numerous secondary products known as "byproducts."



### **REGENERATE SOIL & GRASSLANDS**

Herbivores play an essential role in building soil that can hold more water and absorb carbon from the atmosphere.



### **USE MARGINAL LANDS**

Marginal lands are considered low value due to poor soil, steep terrain, or low water availability. 65% of lands used for cattle grazing cannot be used to grow crops. 2 Cattle convert low-value grass to high-value protein.

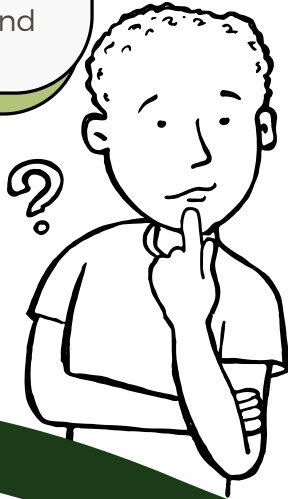
# Production Styles



All beef cattle spend most of their lives on open land eating grass. Most cattle move to feedlots to be fed harvested hay and grain during their last stage of growth to speed growth and add tenderness and flavor to the final beef product.

The majority of beef cattle ranches in the U.S. are *conventional*. Some follow protocol to certify as *organic* by following specific requirements in regard to health care and feed.

Find out how many [beef cows](#) are in your state.



All beef cattle are grass-fed for the majority of their lives. Some are also “grass-finished” which means they are not fed grain at a feedlot for their final stage of growth before harvest.

## Environmental Impact

The environmental impacts from the beef industry that need to be sustainably managed include:

- **Land Degradation:** Overgrazing and improper land management can lead to soil erosion, reducing soil fertility and impacting land productivity.
- **Greenhouse Gas Emissions:** Cattle emit methane, a potent greenhouse gas, during digestion and manure decomposition. Methane contributes to global warming and climate change.
- **Waste Management:** Improper management of manure and waste from feedlots can lead to odors, water contamination, and the attraction of pests.

## NATURAL RESOURCE USE



WATER

Beef products have a large water footprint estimated at [465 gallons of water](#) to produce every serving. 94% of this water is rainwater.



FORAGE & FEED

Quality forage, including grasses and hay, are essential for cattle nutrition. Feed crops provide proper nutrition for growth.



LAND

Ample land is required for grazing cattle and growing feed crops such as pasture grasses and hay.



AIR & CLIMATE

Good air quality and a suitable climate are necessary for cattle comfort and health.



# Pork

Pork farms offer a source of protein and essential nutrients by providing various cuts of pork for consumption. Additionally, the industry supports livelihoods throughout the supply chain, from pig farming and processing to distribution and retail.

## Life Cycle of Pork Production

The lifecycle of pork production begins with the breeding of pigs on farms. Sows give birth to piglets, which are nurtured until weaning. After weaning, piglets are raised in specialized barns where they are provided a balanced diet for growth. As pigs mature, they are transferred to finishing barns where they are fed a diet designed to promote muscle development. Finally, the pigs are harvested at processing facilities, where they are butchered into various pork cuts that are packaged and distributed to consumers. Throughout this lifecycle, proper animal care, nutrition, and environmental management are essential to sustainable and responsible pork production.



### **PROVIDE BYPRODUCTS**

Pork processing provides a wide range of products used in everyday life including leather, gelatin, pet food, glycerin, and more.



### **GENERATE RENEWABLE ENERGY**

Methane gas from manure waste can be captured and transformed into renewable energy while also decreasing greenhouse gases and air pollution.



### **SUPPLEMENT SOIL NUTRIENTS**

Manure from pigs (and other livestock) is a natural source of soil nutrients or fertilizer that can be used on fields to replace depleted nutrients.



### **MEDICAL RESEARCH**

Pigs provided the first insulin for diabetics. The structure of the pig heart is similar to humans. Pork heart valves have been used successfully to replace diseased valves in humans.

# Production Styles



The majority of pig farms in the U.S. house their pigs in climate-controlled barns. This housing style uses sophisticated technology to maintain air quality, manage manure waste, and provide a consistent climate.

There are a relatively small number of organic certified pig farms in the United States. They follow requirements such as using organic feed, providing outdoor access, and prohibiting antibiotics.

Find out how many **pigs** are in your state.



There are a small portion of pig farms that specialize in offering free range, outdoor housing for pigs. This housing style offers more space for pigs, but also proves challenging in colder climates.

## Environmental Impact

The environmental impacts from the pork industry that need to be sustainably managed include:

- **Water Pollution:** Improper manure management and runoff from pig farms can lead to water pollution and contaminating water bodies with pathogens and organic matter.
- **Air Pollution:** Improper handling and storage of pig manure can lead to odor issues and release of GHGs (such as methane and nitrous oxide),
- **Land Use:** The pork industry requires substantial amounts of land for feed crop production, which can contribute to deforestation, habitat loss, and land degradation.



## NATURAL RESOURCE USE



WATER

Pork products have a large water footprint estimated at [180 gallons of water](#) to produce every serving. 82% of this water is rainwater.



FEED CROPS

Pigs are fed protein-rich grains. Crops such as corn, soybeans, wheat, and barley are grown to provide the necessary nutrients for pig nutrition.



LAND

Space is needed for pig housing, outdoor areas, and feed crop cultivation.



AIR & CLIMATE

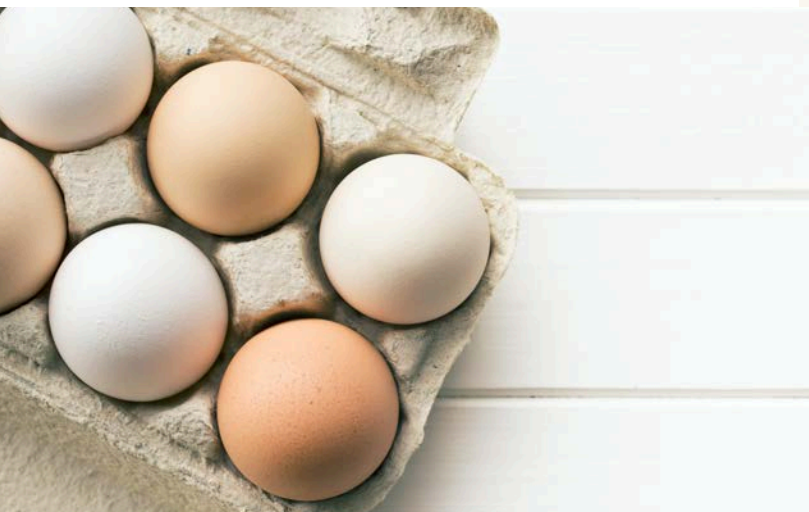
Proper ventilation and air quality management are essential for pig comfort and health.

# Eggs

Egg farms provide a consistent supply of high-quality, protein-rich eggs. These farms contribute to nutrition and food security, offering a versatile ingredient used in a wide range of culinary applications. The industry also supports economic livelihoods and jobs in farming, processing, and distribution. Egg production is efficient in terms of feed conversion and utilizing resources effectively to produce a nutrient-dense food source.

## Life Cycle of Egg Production

The lifecycle of egg production begins with hens that are raised in specialized barns. Hen housing can include cages, cage-free aviaries, or free range housing. These hens undergo natural reproductive processes, leading to the laying of eggs. The eggs are collected daily and carefully managed to maintain their quality and freshness. After collection, eggs are cleaned, inspected, and packaged for distribution to consumers. Throughout this lifecycle, proper animal care, nutrition, and biosecurity measures are crucial to ensure the well-being of the hens and the production of safe and nutritious eggs.



1

### BAKERY & FOOD SERVICE

Eggs are needed for a wide variety of foods. The entire bakery industry relies on eggs to serve as a thickener, binding agent, and leavening agent.

2

### ECONOMIC PROTEIN SOURCE

Eggs are often the most affordable source of protein when calculating average prices with grams of protein contained.

3

### SUPPLEMENT SOIL NUTRIENTS

Manure from chickens (and other livestock) is a natural source of soil nutrients and fertilizer that can be used on fields to replace depleted nutrients.

# Production Styles



The majority of laying hens in the U.S. are housed in a *conventional cage* system where hens are housed in small group cages inside large, climate-controlled barns. The barns have sophisticated technology to collect eggs, provide feed and water, and remove manure.

Egg farms have more diversity in their housing style than any other livestock. In addition to conventional cage systems, there are also cage-free aviaries, free-range systems, and pasture systems to house laying hens.

Find out how many [laying hens](#) are in your state.



Organic egg farms follow regulations in their feed selection, housing style, and healthcare. Most labels found on egg cartons at the grocery store refer to the housing system in which the hens live.

## Environmental Impact

The environmental impacts from the egg industry that need to be sustainably managed include:

- **Manure Management:** Managing the manure produced by laying hens is critical. Improper handling and disposal can lead to nutrient runoff, water pollution, and odors.
- **Air Emissions:** Ammonia emissions from manure can contribute to air pollution, affecting air quality and potentially causing respiratory issues in both animals and humans.
- **Waste Generation:** Egg production generates waste materials, including eggshells and packaging waste. Managing waste responsibly is essential to minimize environmental impacts.

## NATURAL RESOURCE USE



WATER

Eggs have a large water footprint estimated at [98 gallons of water](#) to produce every serving. 79% of this water is rainwater.



ENERGY

Energy is required for lighting, heating, ventilation, and egg processing. These nonrenewable energy sources contribute to carbon emissions.



LAND

Hens require space for housing, outdoor access if applicable, and cultivation of feed crops.



FEED CROPS

Hens are provided with a balanced diet that includes grains, protein-rich crops, and other feed ingredients.





# Lamb

The lamb industry plays a significant role in providing nutrient-rich protein and contributing to diverse diets and culinary traditions worldwide. Beyond its culinary value, the industry supports rural economies, provides livelihoods for farmers and related sectors, and contributes to sustainable land use through grazing management. Byproducts such as wool and leather also have various applications, while sheep farming can help maintain open landscapes and biodiversity.

## Life Cycle of Lamb Production

The lifecycle of a lamb begins with ewes that are raised on farms. Ewes undergo breeding and reproduction processes, resulting in the birth of lambs. Ewes and lambs are raised on grazing lands where they consume a diet primarily consisting of grasses. Lambs can mature on grazing or in a feedlot until they reach market weight, at which point they are harvested at processing facilities. The meat is then processed into various lamb cuts that are packaged and distributed to consumers. Throughout this lifecycle, proper animal care, nutrition, and environmental management are crucial to ensuring sustainable and responsible lamb production.



### **PRODUCE WOOL**

Sheep are a valuable source of wool, a natural fiber used in textiles. Without wool we would rely on synthetic fibers made with nonrenewable resources.

### **DO NOT REQUIRE GRAIN**

Sheep can reach prime condition by eating forage alone. They do not require grains to reach the proper meat-fat ratio for quality meat cuts.



### **USE MARGINAL LANDS**

Marginal lands are considered low value due to poor soil, steep terrain, or low water availability. Sheep grazing contributes to ecosystem balance and uses land that isn't suitable to other types of agriculture.



### **MITIGATE FIRE RISK**

Excessive plant growth fuels wildfires. Lands that have been grazed by livestock have a lower risk of burning out of control.

# Production Styles

Sheep spend the majority of their lives on open land eating grass. Some sheep move to feedlots to be fed harvested hay and grain during their last stage of growth, but sheep can be range-finished. The determining factors are the weather and quality of range available.

A niche market in the lamb industry is organic lamb. Farmers who sell organic-labeled lamb follow the requirements for this label as outlined by the USDA.

Typical sheep production practices rarely need the use of confinement housing. The only exception would be during the lambing season to provide extra protection to newborn lambs.

Find out how many **sheep** are in your state.



[A Year in the Life of Raising Sheep in Idaho](#)



(Optional)

## Environmental Impact

The environmental impacts from the lamb industry that need to be sustainably managed include:

- **Greenhouse Gas Emissions:** Sheep produce methane, a potent greenhouse gas, during digestion and manure decomposition. Methane contributes to global warming and climate change.
- **Grazing Pressure:** Overgrazing can lead to land degradation, soil compaction, and erosion, affecting vegetation health and soil quality.
- **Habitat Loss:** Expansion of grazing lands for sheep can lead to deforestation and habitat loss, impacting local ecosystems and biodiversity.

## NATURAL RESOURCE USE



WATER

Lamb has a large water footprint estimated at 313 gallons of water to produce every serving. 94% of this water is green water (rain).



LAND

Space is required for sheep housing, outdoor areas, and cultivation of forage crops.



FORAGE & FEED

Adequate forage resources, including grasses and other plants, are necessary to provide a balanced diet for sheep nutrition.



# Poultry

The broiler chicken and turkey industries make substantial contributions to global food production, providing affordable and widely consumed sources of lean protein. These industries play a critical role in addressing nutritional needs, supporting food security, and meeting consumer demand for poultry products. Furthermore, they contribute to economic livelihoods by creating jobs along the supply chain, from farming and processing to distribution.

## Life Cycle of Poultry Production

The lifecycle of broiler chickens and turkeys begins with hatching at a hatchery. The young chicks, or poults (in the case of turkeys), are then transported to farms. On the farms, they are raised in controlled environments with access to feed, water, and suitable living conditions. The birds are provided with carefully formulated diets to promote growth and development. After they reach market weight, they are harvested at processing facilities. The meat is then processed into various cuts that are packaged and distributed to consumers. Throughout this lifecycle, proper nutrition, health management, and biosecurity measures are essential to ensure the welfare and quality of the birds and the final poultry products.



1

### PROVIDE A LEAN MEAT SOURCE

Chicken and turkey are the leanest meats. White meat is more lean than dark meat.

2

### SHORT LIFE CYCLE

Poultry has the shortest life cycle of any livestock species, bringing food to the table quickly. Broiler chickens mature and are ready to harvest in 6-7 weeks. Turkeys take 14-20 weeks.

3

### SUPPLEMENT SOIL NUTRIENTS

Manure from chickens (and other livestock) is a natural source of soil nutrients or fertilizer that can be used on fields to replace depleted nutrients.

# Production Styles

Turkeys and broiler chickens (raised for meat) are typically housed in open barns that are climate-controlled. They are fed and watered through an automatic system.

A small portion of poultry farms raise their birds in pasture systems to avoid confinement housing. These systems come with the benefits of more space and natural behavior. Challenges include weather, predation, and disease management.

The majority of poultry farms in the U.S. are conventional. Some follow protocol to certify as organic by following specific requirements in regard to health care and feed.

Find out how many **turkeys** are in your state.



## Environmental Impact

The environmental impacts from the poultry industry that need to be sustainably managed include:

- **Manure Management:** If not handled correctly, waste generated by poultry, including manure and bedding materials, can lead to nutrient runoff, water pollution, and odor issues.
- **Air Emissions:** Ammonia emissions from poultry waste can contribute to air pollution, affecting air quality and potentially causing respiratory issues in both animals and humans.

## NATURAL RESOURCE USE



WATER

Chicken and turkey have water footprints estimated at 130 gallons of water to produce every serving. 82% of this water is rain water.



ENERGY

Energy is required for various aspects of poultry farming, including heating, ventilation, lighting, and equipment operation.



LAND

Land is required for the housing of poultry and the cultivation of feed crops.



FEED PRODUCTION

Growing feed crops for poultry requires land, water, arable soil, and soil nutrients.

