

Livestock

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Livestock are domesticated animals raised in an agricultural setting to produce commodities such as food, fiber, and labor. The term is often used to refer solely to those raised for food, and sometimes only farmed ruminants, such as cattle and goats. In recent years, some organizations have also raised livestock to promote the survival of rare breeds. The breeding, maintenance, and slaughter of these animals, known as animal husbandry, is a component of modern agriculture that has been practiced in many cultures since humanity's transition to farming from hunter-gatherer lifestyles.

Animal husbandry practices have varied widely across cultures and time periods. Originally, livestock were not confined by fences or enclosures, but these practices have largely shifted to intensive animal farming, sometimes referred to as "factory farming". These practices increase yield of the various commercial outputs, but have led to increased concerns about animal welfare and environmental impact. Livestock production continues to play a major economic and cultural role in numerous rural communities.



Cattle on a pasture in Germany

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Etymology and legal definition

Livestock as a word was first used between 1650 and 1660, as a merger between the words "live" and "stock".^[1]

Older English sources, such as the King James Version of the Bible, refer to all domesticated animals as "cattle", while the word "deer" was used for wild animals. The word cattle is derived from Old North French *catel*, which meant all kinds of movable personal property,^[2] including livestock, which was differentiated from immovable real estate ("real property"). In later English, sometimes smaller livestock such as chickens and pigs were referred to as "small cattle".. Today, the modern meaning of cattle, without a modifier, usually refers to domesticated bovines, but sometimes livestock refers only to this subgroup.^[2]

Legal definition

United States federal legislation sometimes more narrowly defines the term to make specified agricultural commodities either eligible or ineligible for a program or activity. For example, the Livestock Mandatory Reporting Act of 1999 (P.L. 106-78, Title IX) defines livestock only as cattle, swine, and sheep. The 1988 disaster assistance legislation defined the term as "cattle, sheep, goats, swine, poultry (including egg-producing poultry), equine animals used for food or in the production of food, fish used for food, and other animals designated by the Secretary."^[3]

History

Animal-rearing originated during the cultural transition to settled farming communities from hunter-gatherer lifestyles. Animals are domesticated when their breeding and living conditions are controlled by humans. Over time, the collective behaviour, lifecycle and physiology of livestock have changed radically. Many modern farm animals are unsuited to life in the wild.


Dogs were domesticated in East Asia about 15,000 years ago. Goats and sheep were domesticated around 8000 BC in Asia. Swine or pigs were domesticated by 7000 BC in the Middle East and China. The earliest evidence of horse domestication dates to around 4000 BC.^[4]

Types

The term "livestock" is nebulous and may be defined narrowly or broadly. Broadly, livestock refers to any breed or population of animal kept by humans for a useful, commercial purpose. This can mean domestic animals, semidomestic animals, or captive wild animals. Semidomesticated refers to animals which are only lightly domesticated or of disputed status. These populations may also be in the process of domestication. Some people may use the term livestock to refer to only animals used for red meat.



This Australian road sign uses the less common term "stock" for livestock.

Animal / Type	Domestication status	Wild ancestor	Time of first captivity, domestication	Area of first captivity, domestication	Current commercial uses	Picture	Ref
Alpaca Mammal, herbivore	domestic	Vicuña	Between 5000 BC and 4000 BC	Andes	Alpaca fiber, meat		
Addax Mammal, herbivore	domestic	Addax	2500 BCE	Egypt	Meat, hides		
Bali cattle Mammal, herbivore	domestic	Banteng	Unknown	Southeast Asia, Bali	Meat, milk, draught		
Bison Mammal, herbivore	captive (see also Beefalo)	N/A	Late 19th century	North America	Meat, leather		
Camel Mammal, herbivore	domestic	Wild dromedary and Bactrian camels	Between 4000 BC and 1400 BC	Asia	Mount, pack animal, meat, milk, camel hair		
Cattle Mammal, herbivore	domestic	Aurochs	6000 BC	Southwest Asia, South Asia, North Africa	Meat (beef, veal, blood), milk, leather, draught		
Capybara Mammal, herbivore	captive	Capybara	Unknown	South America	Meat, skins, pets		
Collared peccary Mammal, omnivore	captive	Collared peccary	Unknown	Brazil	Meat, tusks, skins, pets		
Deer Mammal, herbivore	captive	N/A	First century AD	UK	Meat (venison), leather, antlers, antler velvet		
Donkey Mammal, herbivore	domestic	African wild ass	4000 BC	Egypt	Mount, pack animal, draught, meat, milk		
Eland Mammal, herbivore	domestic	Common eland, Giant eland	Unknown	South Africa, Kenya, Zimbabwe, West Africa	Meat, milk, leather, hides, horns		
Elk Mammal, herbivore	captive	Elk	1990s	North America	Meat, antlers, leather, hides		

Fallow deer Mammal, herbivore	semidomestic	Fallow deer	9th century BC	Mediterranean Basin	Meat, antlers, hides, ornamentation	
Gayal Mammal, herbivore	domestic	Gaur	Unknown	Southeast Asia	Meat, draught	
Goat Mammal, herbivore	domestic	Wild goat	8000 BC	Southwest Asia	Milk, meat, wool, leather, light draught	
Guinea pig Mammal, herbivore	domestic	<i>Cavia tschudii</i>	5000 BC	South America	Meat, pet companionship	
Greater cane rat Mammal, herbivore	captive	Greater cane rat	Unknown	West Africa	Meat	
Greater kudu Mammal, herbivore	captive	Greater kudu	Unknown	South Africa	Meat, hides, horns, leather, pet	
Horse Mammal, herbivore	domestic	Wild horse	4000 BC	Eurasian Steppes	Mount, draught, milk, meat, pack animal	
Llama Mammal, herbivore	domestic	Guanaco	3500 BC	Andes	Pack animal, draught, meat, fiber	
Mule Mammal, herbivore	domestic	Sterile hybrid of donkey and horse			Mount, pack animal, draught	
Moose Mammal, herbivore	domestic	Moose	1940s	Russia, Sweden, Finland, Alaska	Meat, milk, antlers, research, draft	
Muskox Mammal, herbivore	domestic	Muskox	1960s	Alaska	Meat, wool, milk	
Pig Mammal, omnivore	domestic	Wild boar	7000 BC	Eastern Anatolia	Meat (pork), leather, pet, research	
Rabbit Mammal, herbivore	domestic	Wild rabbit	AD 400-900	France	Meat, fur, leather, pet, research	
Reindeer Mammal, herbivore	semidomestic	Reindeer	3000 BC	Northern Russia		

					Meat, leather, antlers, milk, draught	
Sika deer Mammal, herbivore	domestic	Sika deer	Unknown	Japan, China	Meat, antlers, hides, leather, pet, tourism	
Scimitar oryx Mammal, herbivore	domestic	Scimitar oryx	2320-2150 BC	Egypt	Meat, sacrifice, horns, hides, leather	
Sheep Mammal, herbivore	domestic	Asiatic mouflon sheep	Between 11000 and 9000 BC	Southwest Asia	Wool, milk, leather, meat (lamb and mutton)	
Thorold's deer Mammal, herbivore	captive	Thorold's deer	Unknown	China	Meat, antlers	
White-tailed deer Mammal, herbivore	captive	White-tailed deer	Unknown	West Virginia, Florida, Colombia	Meat, antlers, hides, companionship	
Water buffalo Mammal, herbivore	domestic	Wild Asian water buffalo (Arni)	4000 BC	South Asia	Mount, draught, meat, milk	
Yak Mammal, herbivore	domestic	Wild Yak	2500 BC	Tibet, Nepal	Meat, milk, fiber, mount, pack animal, draught	
Zebu Mammal, herbivore	domestic	Aurochs	8000 BC	India	Meat, milk, draught, hides	

Animal rearing

Livestock are used by humans for a variety of purposes, many of which have an economic value. Livestock products include:

Meat

A useful form of dietary protein and energy, meat is the edible tissue of the animal carcass.

Dairy products

Mammalian livestock can be used as a source of milk, which can in turn easily be processed into other dairy products, such as yogurt, cheese, butter, ice cream, kefir, and kumis. Using livestock for this purpose can often yield several times the food energy of slaughtering the animal outright.

Clothing and adornment

Livestock produce a range of fiber textiles. For example, domestic sheep and goats produce wool and mohair, respectively; cattle, swine, deer, and sheep skins can be made into leather; livestock bones, hooves and horns can be used to fabricate jewellery, pendants, or headgear.

Fertilizer

Manure can be spread on fields to increase crop yields. This is an important reason why historically, plant and animal domestication have been intimately linked. Manure is also used to make plaster for walls and floors, and can be used as a fuel for fires. The blood and bone of animals are also used as fertilizer.

Labor

The muscles of animals such as horses, donkeys, and yaks can be used to provide mechanical work. Prior to steam power, livestock were the only available source of nonhuman labor. They are still used in many places of the world to plough fields (drafting), transport goods and people, in military functions, and to power treadmills for grinding grain.

Land management

The grazing of livestock is sometimes used as a way to control weeds and undergrowth. For example, in areas prone to wildfires, goats and sheep are set to graze on dry scrub which removes combustible material and reduces the risk of fires.

Conservation

The raising of livestock to conserve a rare breed can be achieved through gene banking and breeding programmes.^[5]

During the history of animal husbandry, many secondary products have arisen in an attempt to increase carcass utilization and reduce waste. For example, animal offal and inedible parts may be transformed into products such as pet food and fertilizer. In the past, such waste products were sometimes also fed to livestock, as well. However, intraspecies recycling poses a disease risk, threatening animal and even human health (see bovine spongiform encephalopathy (BSE), scrapie, and prion). Due primarily to BSE (mad cow disease), feeding animal scraps to animals has been banned in many countries, at least for ruminants.

Farming practices

Farming practices vary dramatically worldwide and among types of animals. Livestock are generally kept in an enclosure, fed by humans, and intentionally bred. However, some livestock are not enclosed, are fed by access to natural foods, and are allowed to breed freely.

Historically, raising livestock was part of a nomadic or pastoral form of material culture. The herding of camels and reindeer in some parts of the world remains dissociated from sedentary agriculture. The transhumance form of herding in the California Sierra Nevada still continues, as cattle, sheep, or goats are moved from winter pasture in lower-elevation valleys to spring and summer pasture in the foothills and alpine regions, as the seasons progress. Cattle were raised on the open range in the western United States and Canada, on the Pampas of Argentina, and on other prairie and steppe regions of the world.

The enclosure of livestock in pastures and barns is a relatively new development in the history of agriculture. When cattle are enclosed, the type of confinement may vary from a small crate, a large-area fenced-in pasture, or a paddock. The type of feed may vary from naturally growing grass to animal feed. Animals are usually intentionally bred through artificial insemination or supervised mating. Indoor production systems are typically used for pigs, dairy cattle, poultry, veal cattle, dairy goats, and other animals depending on the region and season. Animals kept indoors



A Brown Swiss cow in the Swiss Alps



Goat family with 1-week-old kid



Farrowing site in a natural cave in northern Spain

are generally farmed intensively, as large space requirements could make indoor farming unprofitable if not impossible. However, indoor farming systems are controversial due to problems associated with handling animal waste, odours, the potential for groundwater contamination, and animal welfare concerns. (For a further discussion on intensively farmed livestock, see factory farming, and intensive pig farming). Livestock source verification is used to track livestock.

Other livestock are farmed outdoors, where the size of enclosures and the level of supervision may vary. In large, open ranges, animals may be only occasionally inspected or yarded in "round-ups" or a muster. Herding dogs may be used for mustering livestock, as are cowboys, stockmen, and jackaroos on horses, in vehicles, and in helicopters. Since the advent of barbed wire (in the 1870s) and electric fence technology, fencing pastures has become much more feasible and pasture management simplified. Rotation of pasturage is a modern technique for improving nutrition and health while avoiding environmental damage to the land. In some cases, very large numbers of animals may be kept in indoor or outdoor feeding operations (on feedlots), where the animals' feed is processed either offsite or onsite, and stored on site before being fed to the animals.

Livestock—especially cattle—may be branded to indicate ownership and age, but in modern farming, identification is more likely to be indicated by means of ear tags and electronic identification, instead. Sheep are also frequently marked by means of ear marks and/or ear tags. As fears of BSE and other epidemic illnesses mount, the use of implants to monitor and trace animals in the food production system is increasingly common, and sometimes required by government regulations.

Modern farming techniques seek to minimize human involvement, increase yield, and improve animal health. Economics, quality, and consumer safety all play roles in how animals are raised. The use of hard and soft drugs and feed supplements (or even feed type) may be regulated, or prohibited, to ensure that yield is not increased at the expense of consumer health, safety, or animal welfare. Practices vary around the world, for example growth hormone use is permitted in the United States, but not in stock to be sold in the European Union. The improvement of animal health using modern farming techniques has come into question. Feeding corn to cattle, which have historically eaten grasses, is an example; where the cattle are less adapted to this change, the rumen pH becomes more acidic, leading to liver damage and other health problems. The US Food and Drug Administration allows nonruminant animal proteins to be fed to cattle enclosed in feedlots. For example, it is acceptable to feed chicken manure and poultry meal to cattle, and beef or pork meat and bone meal to chickens.

Predation

Livestock farmers have suffered from wild animal predation and theft by rustlers. In North America, animals such as the gray wolf, grizzly bear, cougar, and coyote are sometimes considered a threat to livestock. In Eurasia and Africa, predators include the wolf, leopard, tiger, lion, dhole, Asiatic black bear, crocodile, spotted hyena, and other carnivores. In South America, feral dogs, jaguar, anacondas, and spectacled bears are threats to livestock. In Australia, the dingo, fox, and wedge-tailed eagle are common predators, with an additional threat from domestic dogs that may kill in response to a hunting instinct, leaving the carcass uneaten.^{[6][7]}

Disease

Livestock diseases compromise animal welfare, reduce productivity, and can infect humans. Animal diseases may be tolerated, reduced through animal husbandry, or reduced through antibiotics and vaccines. In developing countries, animal diseases are tolerated in animal husbandry, resulting in considerably reduced productivity, especially given the low health-status of many developing country herds. Disease management to improve productivity is often the first step taken in implementing an agriculture policy.

Disease management can be achieved by modifying animal husbandry practices. These measures aim to prevent infection with biosecurity measures such as controlling animal mixing and entry to farm lots, wearing protective clothing, and quarantining sick animals. Diseases also may be controlled by the use of vaccines and antibiotics. Antibiotics in subtherapeutic doses may also be used as a growth promoter, sometimes increasing growth by 10-15%.

^[8] Concerns about antibiotic resistance have led in some cases to discouraging the practice of preventive dosing such as the use of antibiotic-laced feed. Countries often require veterinary certificates as a condition for transporting, selling, or exhibiting animals. Disease-free areas often rigorously enforce rules for preventing the entry of potentially diseased animals, including quarantine.

Transportation and marketing

Since many livestock are herd animals, they were historically driven to market "on the hoof" to a town or other central location. During the period after the American Civil War, the abundance of Longhorn cattle in Texas and the demand for beef in Northern markets led to the implementation of the Old West cattle drive. The method is still used in some parts of the world. Truck transport is now common in developed countries. Local and regional livestock auctions and commodity markets facilitate trade in livestock. In other areas, livestock may be bought and sold in a bazaar, such as may be found in many parts of Central Asia, or in an informal flea market-type setting.

In developing countries, providing access to markets has encouraged farmers to invest in livestock, with the result being improved livelihoods. The International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) has worked in Zimbabwe to help farmers make their most of their livestock herds. ICRISAT works to improve local farming systems through 'innovation platforms' at which farmers, traders, rural development agencies, and extension officers can discuss the challenges they faced. One finding was that if farmers devoted half of three hectares to maize and half to *mucuna* (velvet bean) in a rotation system, they could obtain 80% of the biomass needed to see their livestock through the dry season. If they only grew maize, they could only meet 20% of their biomass needs. In the town of Gwanda, the platform helped create a strong local market for goats, raising the value of a single animal from US\$10 to \$60. This gave the farmers a great incentive to invest in their own goats by growing their own feed stock, buying commercial feed only as a supplement, and improving their rangeland management techniques. Because the platform has helped regulate prices, farmers now plan ahead and sell animals at auction, rather than just selling one or two animals at their farm gate as opportunities arise.^[9]

Stock shows and fairs are events where people bring their best livestock to compete with one another. Organizations such as 4-H, Block & Bridle, and FFA encourage young people to raise livestock for show purposes. Special feeds are purchased and prior to the show, hours may be spent grooming the animal to look its best. In cattle, sheep, and swine shows, the winning animals are frequently auctioned off to the highest bidder, and the funds are placed into a scholarship fund for its owner. The movie *Grand Champion*, released in 2004, tells the story of a young Texas boy's experience raising a prize steer.

Animal welfare

The issue of raising livestock for human benefit raises the issue of the suitable relationship between humans and animals, in terms of the status of animals and the obligations of people. The concept of animal welfare reflects the viewpoint that animals under human care should be treated in such a way that they do not suffer unnecessarily. What is considered 'unnecessary' suffering may vary. Generally, though, the animal welfare perspective is based on an interpretation of scientific research on farming practices. By contrast, animal rights defends the viewpoint that using animals for human benefit is, on principle, exploitation, regardless of the farming practices used. Animal rights activists are often vegan or vegetarian, whereas it is consistent with the animal welfare perspective to eat meat as long as the production processes are defensible.

Animal welfare groups generally seek to generate public discussion on livestock raising practices and to secure greater regulation and scrutiny of livestock industry practices. Animal rights groups usually seek to abolish livestock farming, although some groups may recognise the necessity of first achieving more stringent regulation. Animal welfare groups



Grass-fed cattle, saleyards, Walcha, New South Wales

such as the RSPCA are often, in first-world countries, given a voice at governmental level in the development of policy. Animal rights groups find it harder to convey their concerns, and as a result, may advocate civil disobedience or violence.

A number of animal husbandry practices have been the subject of campaigns in the 1990s and 2000s and have led to legislation in some countries. Confinement of livestock in small and unnatural spaces is often done for economic or health reasons. Animals may be kept in the minimum size of cage or pen with little or no space to exercise. Where livestock are used as a source of power, they may be pushed beyond their limits to the point of exhaustion. Increased public awareness and visibility of such abuse meant it was one of the first areas to receive legislation in the 19th century in European countries, but it continues in parts of Asia. Broiler hens may be debeaked, pigs may have deciduous teeth pulled, cattle may be dehorned and branded, dairy cows and sheep may have tails cropped, Merino sheep may undergo mulesing, and many types of male animals may be castrated. Animals may be transported long distances to market and slaughter, often under overcrowded conditions, heat stress, lack of feed and water, and without rest breaks. Such practices have been subject to legislation and protest (see Live Export). Appropriate methods to slaughter livestock were an early target for legislation. Campaigns continue to target halal and kosher religious ritual slaughter.



A shepherd boy in India: Livestock are extremely important to the livelihoods of rural smallholder farmers, particularly in the developing world.

Environmental impact

Reports such as the United Nations report "Livestock's Long Shadow" cast a pall over the livestock sector (primarily cattle, chickens, and pigs) for 'emerging as one of the top two or three most significant contributors to our most serious environmental problems.' In April 2008, the United States Environmental Protection Agency released a major stock-taking of emissions in the United States entitled *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2006*.^[10] It found that "In 2006, the agricultural sector was responsible for emissions of 454.1 teragrams of CO₂ equivalent (Tg CO₂ Eq.), or 6 percent of total U.S. greenhouse gas emissions." By way of comparison, transportation in the US produces more than 25% of all emissions. In 2009, Worldwatch Institute released a report which revealed that 51% of greenhouse gas emissions came from the animal agriculture sector.^[11]



Cattle near the Bruneau River in Elko County, Nevada

The issue of livestock as a major policy focus remains, especially when dealing with problems of deforestation in neotropical areas, land degradation, climate change and air pollution, water shortage and water pollution, and loss of biodiversity. A research team at Obihiro University of Agriculture and Veterinary Medicine in Hokkaidō found that supplementing animals' diets with cysteine, a type of amino acid, and nitrate can reduce the amount of methane gas produced without jeopardising the cattle's productivity or the quality of their meat and milk.^[12]

Deforestation

Deforestation impacts the carbon cycle, as well as the global and regional climate, and causes the habitat loss of many species. Forests that are sinks for the carbon cycle are lost through deforestation. Forests are either logged or burned to make room for mining activities or for grasslands, and often the area needed for such purposes is extensive. Deforestation can also create fragmentation, allowing the survival of only patches of habitat in which species can live. If these patches are distant and small, gene flow is reduced, habitat is altered, edge effects occur, and more opportunities for invasive species to intrude occur.^[13]

Land degradation

Research from the University of Botswana in 2008 found that farmers' common practice of overstocking cattle to make up for drought losses made ecosystems more vulnerable and risked long-term damage to cattle herds by depleting scarce biomass. The study of the Kgatleng district of Botswana predicted that by 2050, the cycle of mild drought is likely to become shorter for the region (18 months instead of two years) due to climate change.^[14]

Climate change and air pollution

Methane is one of the gasses emitted from livestock manure; it persists in the atmosphere for long periods of time and is a potent greenhouse gas, the second-most abundant after carbon dioxide.^[15] Though less methane than carbon dioxide is produced, its ability to warm the atmosphere is 25 times greater.^[15] Nitrous oxide, another gaseous byproduct of animal agriculture, is about 300 times more potent at trapping heat in the atmosphere. Animal agriculture contributes 65% of anthropogenic nitrous oxide emissions.^[13]



Testing Australian sheep for exhaled methane production (2001), CSIRO

Water shortage

Livestock require water not only for their own consumption, but also for watering the crops needed to produce their feed. Grains are often used to feed livestock; about 50% of US grains and 40% of world grains are used for this purpose.^[16] Grain and crop production in general require various amounts of water depending on the end product. For example, 100,000 liters of water are needed to yield a kilogram of grain-fed beef, compared to 900 liters for a kilogram of wheat.^[16]

Water pollution

Fertilizers that often contain manure are used to grow crops (such as cereals and fodder) that contain phosphorus and nitrogen, 95% of which is estimated to be lost to the environment.^[17] Water pollution from agricultural runoff causes dead zones for plants and aquatic animals due to the lack of oxygen in the water.^[18] This lack of oxygen, known as eutrophication, is caused when organisms present in the water grow excessively and then later decompose, in the process using up the oxygen in the water. A prominent example is the Gulf of Mexico, where much of the nutrients in fertilizer used in the US Midwest is funneled down the Mississippi River into the Gulf, causing massive dead zones. Other pollutants not commonly considered are antibiotics and hormones. In southern Asia, vultures that consumed carcasses of livestock declined 95% due to their ingestion of the antibiotic known as diclofenac.^[13]

Agricultural waste

The amount of waste material produced by livestock globally is considerable, as is the effort required to dispose of it. Every minute, 7 million pounds of excrement are produced by animals raised for food in the US (not including animals raised outside of USDA jurisdiction, or aquaculture); another estimate is 335 million tons of "dry matter" / year.^[19] A farm with 2,500 dairy cows produces the same amount of waste as a city of 411,000 people.^[20] 130 times more animal waste than human waste is produced in the US.^[21] – 1.4 billion tons from the meat industry annually. Daily production has been calculated as: dairy cows, 120 lbs x 9 million cows; cattle, 63 lbs x 90 million cattle; pigs, 14 lbs x 67 million pigs; sheep/goats, 5lbs x 9 million sheep/goats; poultry, .25-1 lbs x 9 billion birds.^[22] Some waste is disposed of via composting or use as fertilizer. In some countries, animal waste is even used for energy generation. However, improper waste management practices can pollute both surface and groundwater.^[21]

Alternatives

Researchers in Australia are looking into the possibility of reducing methane from cattle and sheep by introducing digestive bacteria from kangaroo intestines into livestock.^[23] Furthermore, as a means to conserve traditional livestock, cryoconservation of animal genetic resources have been put into action. (Cryoconservation is a practice that involves collecting genetic material and storing it in low temperatures with an intent of conserving a particular breed.)

In semiarid rangelands such as the Great Plains in the U.S., research has provided evidence that livestock can be beneficial to maintaining grassland habitats for big game species.^[24]

Economic and social benefits

The value of global livestock production in 2013 has been estimated at about 883 billion dollars, (constant 2005-2006 dollars).^[25] However, economic implications of livestock production extend further: to downstream industry (saleyards, abattoirs, butchers, milk processors, refrigerated transport, wholesalers, retailers, food services, tanneries, etc.), upstream industry (feed producers, feed transport, farm and ranch supply companies, equipment manufacturers, seed companies, vaccine manufacturers, etc.) and associated services (veterinarians, nutrition consultants, shearers, etc.).

Livestock provide a variety of food and nonfood products; the latter include leather, wool, pharmaceuticals, bone products, industrial protein, and fats. For many abattoirs, very little animal biomass may be wasted at slaughter. Even intestinal contents removed at slaughter may be recovered for use as fertilizer. Livestock manure helps maintain the fertility of grazing lands. Manure is commonly collected from barns and feeding areas to fertilize cropland. In some places, animal manure is used as fuel, either directly (as in some developing countries), or indirectly (as a source of methane for heating or for generating electricity). In regions where machine power is limited, some classes of livestock are used as draft stock, not only for tillage and other on-farm use, but also for transport of people and goods. In 1997, livestock provided energy for between an estimated 25 and 64% of cultivation energy in the world's irrigated systems, and that 300 million draft animals were used globally in small-scale agriculture.^[26]

Although livestock production serves as a source of income, it can provide additional economic values for rural families, often serving as a major contributor to food security and economic security. Livestock can serve as insurance against risk^[27] and is an economic buffer (of income and/or food supply) in some regions and some economies (e.g., during some African droughts). However, its use as a buffer may sometimes be limited where alternatives are present,^[28] which may reflect strategic maintenance of insurance in addition to a desire to retain productive assets. Even for some livestock owners in developed nations, livestock can serve as a kind of insurance.^[29] Some crop growers may produce livestock as a strategy for diversification of their income sources, to reduce risks related to weather, markets and other factors.^{[30][31]}

Many studies have found evidence of the social, as well as economic, importance of livestock in developing countries and in regions of rural poverty, and such evidence is not confined to pastoral and nomadic societies.^{[27][32][33][34][35]}

Social values in developed countries can also be considerable. For example, in a study of livestock ranching permitted on national forest land in New Mexico, USA, it was concluded that "ranching maintains traditional values and connects families to ancestral lands and cultural heritage", and that a "sense of place, attachment to land, and the value of preserving open space were common themes". "The importance of land and animals as means of maintaining culture and way of life figured repeatedly in permittee responses, as did the subjects of responsibility and respect for land, animals, family, and community."^[36]

In the US, profit tends to rank low among motivations for involvement in livestock ranching.^[37] Instead, family, tradition and a desired way of life tend to be major motivators for ranch purchase, and ranchers "historically have been willing to accept low returns from livestock production."^[38]

See also

- Agribusiness
- Agriculture
- Agroecology
- Amenable species
- Aquaculture (cultivation of aquatic animals and plants)
- Beekeeping
- California Proposition 2 (2008)
- Cattle
- Cryoconservation of animal genetic resources
- Cuniculture (rabbit farming)
- Environmental effects of meat production
- Fur farming
- Leave the gate as you found it
- *Livestock's Long Shadow - Environmental Issues and Options* (UN report)
- Poultry
- Ranching
- Sericulture (silkworm farming)
- Sheep husbandry
- Western Fair
- Wildlife farming
- Animal husbandry in Nepal

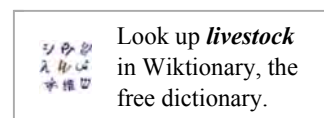
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- Livestock (<http://www.dpi.nsw.gov.au/agriculture/livestock>) - New South Wales Government
- Havana Livestock Fair (Photo Feature) (<http://www.havanatimes.org/?p=31372>) - *Havana Times*, October 19, 2010
- A Short History of Livestock Production (http://www.wageningenacademic.com/_clientfiles/download/livestockhousing-e_01.pdf)

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