SHEEP FUN FACTS:

The approximate age of a sheep can be determined by examining their teeth. At birth, lambs have eight baby teeth. As a sheep gets older, their baby teeth are replaced by permanent ones. The permanent teeth will start to spread, wear, and eventually break. The amount of wear on their teeth indicates their approximate age.

DID YOU KNOW?

- There are over 40 breeds of sheep in the U.S. and approximately 900 different breeds around the world.
- Sheep do not have teeth in their upper front jaw.
- One pound of wool can make ten miles of yarn.
- There are 150 yards (450 feet) of wool yarn in a baseball.
- Professional sheep shearers can shear one sheep in under a minute.

SHEEP AND THEIR DIET

Young Lamb

The young lamb is still getting most of its nutrition from its mother, plus the following in its diet:

Market Lamb "Finishing Diet"

These are approximations based on sample diets. Trace minerals, vitamins and other supplements may also be added. Animals eat to meet their energy (calorie) needs each day—they do not overeat. Young animals that are actively growing have greater requirements for protein than older animals. As the animal gets older, the protein needs (soybean meal) decrease.

WORLD MEAT CONSUMPTION

Type of Meat	Quantity
Pork	40 percent
Beef	32 percent
Poultry	22 percent
Lamb and Mutton	6 percent

U.S. MEAT CONSUMPTION

Type of Meat	Lbs. per Capita
Pork	45.7 lbs.
Beef	57.3 lbs.
Poultry	100.4 lbs.
Lamb and Mutton	0.88 lbs.

Agriculture in the Classroom USDA

THE UNIVERSITY OF ARIZONA. Cooperative Extension

www.agclassroom.org / www.agintheclassroom.org / http://cals.arizona.edu/agliteracy

SHEEP USES:

piano keys, candles, shampoo, fertilizer, chewing gum, medicines, insulation, lotions, make-up, wool clothing

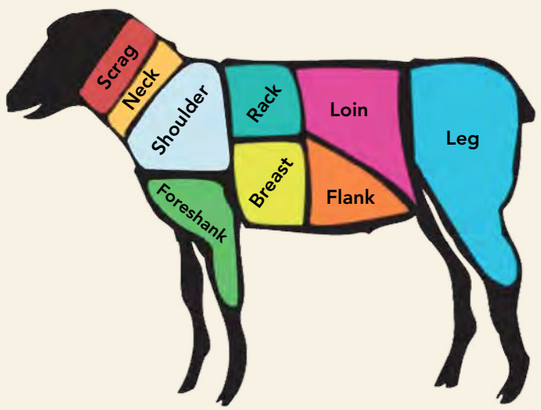
WHAT ARE SHEEP?

Sheep have played an important role in human history. They were among the first species to be domesticated and provided both meat for food and wool for clothing. Sheepskin was also used for clothing and shelter.

Depending on the breed, sheep range in height and weight. Ewes typically weigh between 99 and 220 pounds, while rams weigh between 99 and 350 pounds. Ewes are usually bred in the fall and give birth in the late winter and early spring. Lambs are sold to market at approximately four to seven months of age and weigh between 115 and 140 pounds.

Like cattle, sheep are ruminants, which means they have four compartments in their stomach. Sheep do not have any upper front teeth. When eating forages, such as grass and alfalfa, they close the lower teeth against the dental pad of the upper jaw.

Today, sheep are used for their meat, wool and milk. The U.S. is a large importer of sheep milk cheeses, such as Feta, Ricotta, Romano and Roquefort. Most sheep milk cheeses are imported from France, Greece, Italy and Spain. Other products made from sheep include: cosmetics, lubricants, piano keys and many others.



VOCABULARY

EWE: a female sheep of any age.

FLEECE: the outer covering of wool on a sheep.

FLOCK: a group of sheep that live, travel or feed together.

LAMB: baby sheep. The meat of a sheep that is usually 4-6 months old is also referred to as lamb.

LAMBING: to give birth to a lamb or lambs.

LANOLIN: an oil extracted from sheep wool and used in cosmetics and lubricants.

MUTTON: meat of an adult sheep.

RAM: a male sheep used for breeding.

RUMINANT: animals, such as sheep, that have multiple compartments in their stomach. They first chew their food to soften it, swallow it and then return it to their mouth for continued chewing. This is called chewing the cud.

SHEARING: removal of the wool from a sheep.

SHEPHERD: a person who takes care of sheep (also called a sheepherder).

WETHER: a male sheep not used for breeding.

WOOL: fiber covering on a sheep.

SHEEP

BREEDS: Suffolk, Hampshire, **Shropshire**, Dorset, **Corriedale**, Montadale, Southdown, Cheriot, **Oxford**, Columbia

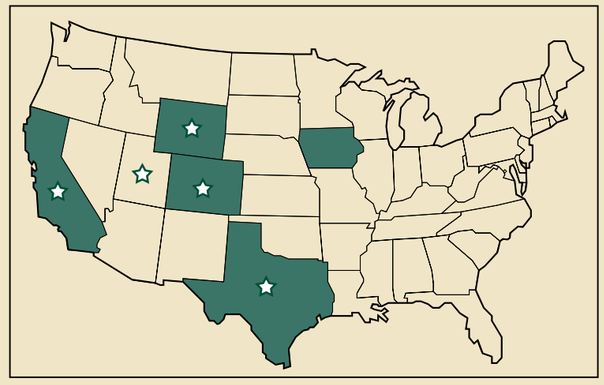
UNITED STATES SHEEP PRODUCTION

2010 United States Sheep & Lamb Production

1. Colorado
2. California
3. Texas
4. Wyoming
5. Iowa

2010 United States Wool Production

1. Texas
2. California
3. Wyoming
4. Colorado
5. Utah



HISTORY OF SHEEP

8000 BC — Sheep were domesticated.

3500 BC — Man learned to spin wool.

1200 — The spinning wheel was invented.

1493 — Sheep were first brought to America by Columbus.

1664 — There were 10,000 sheep in the colonies. The general court of Massachusetts passed a law requiring youth to learn to spin and weave.

1698 — America began exporting wool goods.

1733 — John Kay invented his 'flying shuttle,' one of the key developments in the industrialization of weaving. It allowed a single weaver to weave much wider fabrics, and it could be mechanized. Automatic spinning followed.

1767 — James Hargreaves, an English weaver, invented the spinning Jenny with multiple spindles mounted side by side. With this development, one spinner could operate as many as 120 spindles at a time.

1769 — The first American woolen mill was established.

1788 — New England was the first area to establish a spinning and weaving industry. It initially began in homes, and then later in small factories as it continued to grow. Eventually the first water powered textile factories were established in Hartford, Connecticut in 1788.

1789 — President George Washington was inaugurated in a suit made of American wool, as was Thomas Jefferson in 1801.

1801 — Seth Adams was credited with bringing the first flock of Merino sheep to Massachusetts in the United States. Americans hailed the introduction of this fine-wool animal as critical to the manufacturing industry.

1809 — President James Madison was inaugurated in a jacket woven from wool of sheep raised at his home in Virginia.

1885 — The first satisfactory shearing machine was produced by Fred Wolseley and John Howard.

1913-1921 — President Woodrow Wilson brought a flock of sheep to trim the White House grounds during World War 1.

1954 — The National Wool Act of 1954 was enacted to reduce dependency on foreign wool imports and increase domestic production by providing a subsidy for wool and mohair producers in the United States.

1997 — Dolly became the most famous sheep in history when her birth was announced by the Roslin Institute in Scotland. Dolly was the world's first mammal to be cloned. She was born July 5th, 1996 from three different mothers (one provided the egg, another the DNA and a third carried the cloned embryo to term).

2010 — The United States produced approximately 163 million pounds of lamb and mutton.

2012 — As of January 1st, 2012, there were 5.35 million head of sheep in the U.S.

SHEEP

CAREERS: Wool Buyer, Shepherd Shearing **Contractor**, Animal Well-Being Specialist, Animal Nutritionist, Farmer, Veterinarian, Apprentice, Animal Physiologist, Animal Geneticist, Shearer

SPOTLIGHT ON CAREERS:

ANIMAL GENETICIST — Animal Geneticists study gene functions and how these affect important traits such as growth, reproduction, disease resistance or behavior. Animal geneticists who map genes observe and measure traits and try to find the genes that cause them. Animal geneticists with more mathematical and computer skills analyze and interpret the genetic code or compare the genetic code across species. They relate what they learn about gene location and function in simple life forms such as cattle, pigs, chickens, turkeys, sheep, horses, fish, shellfish and honey bees. Some animal geneticists work with populations to understand evolution and forces changing our natural populations. They also may develop new mating strategies for crossbreeding or use marker-assisted selection to improve a wide range of important traits.

SHEPHERD — Animals that congregate in herds require attendants to keep them together and away from hazardous terrain and regions with predators. A **Shepherd** is in charge of flocks of sheep. Shepherds must rescue sheep that become lodged in between rocks and boulders or fall down steep embankments. A shepherd needs a gentle touch and warm demeanor to make the sheep comfortable and receptive. A shepherd must have knowledge of required vaccinations and birthing procedures.

THE EIGHT STEPS IN WOOLEN MANUFACTURING

1. GRADING & SORTING — The process of woolen fabric production begins with raw wool. Sheep are sheared once a year and the quality of their wool is measured based on fiber fineness, crimp (or number of bends per inch), length, strength and color. These depend on the different breeds of sheep, as well as climate, diet and geographic location. Hand sorters remove stained wool and foreign materials, and then grade and sort the wool with end use in mind. For each wool grade, fibers from various lots are carefully blended to assure a uniform and consistent fiber mix.

2. SCOURING — Wool is cleaned by a process referred to as scouring. Wool fleeces pass through a duster, a series of baths and squeeze rolls, which remove dirt, water and grease. A dryer at the end of the scouring line reduces the wool moisture content to a normal 12%. The wool is then packed into 500 pound bales and shipped for further processing.

3. LANOLIN RECOVERY — Lanolin, or wool grease, is a natural by-product of wool. It is separated from the discharge water of the scouring process, sent to a holding tank, and then neutralized. The lanolin rises to the top, is skimmed off and washed in hot water. A vacuum dryer then reduces the moisture content to 0.25% before it is bleached and filtered. The lanolin, which is used in many cosmetics, pharmaceuticals and lubricants, is then stored in 55 gallon drums and ready for market.

4. DYEING — Wool can be dyed at three different stages of production: as fiber (stock dyeing), as yarn (package dyeing), or as fabric (piece dyeing). The method selected is determined by the end use of the fabric. A computer scanner "reads" or evaluates a sample color and generates appropriate dye formulas. Dissolved dye is circulated by pumps, and electronic systems control temperature and pressure to ensure rich, permanent color and exact duplication of standard colors.

5. CARDING — Carding is the combing of wool fibers into a fine sheet or web, which is then divided into thin, continuous strands called roving. Before carding, several lots of wool are blended to ensure uniform color and quality. A light mist of vegetable oil and water is applied to keep the fibers supple during the carding and spinning operations. Wool stock is weighed in a hopper and then passes through a series of rolls covered with fine wires to smooth out and align the wool fibers. These fibers are divided and rubbed by rolls to form equal sized strands of roving, which is then wound onto large spools in preparation for the spinning frame.

6. SPINNING — Yarn is formed by the drawing out and twisting of the strands of roving, which adds strength to the yarn. To spin yarn, roving spools are first mounted on the spinning frame. Roving ends are passed through two sets of rolls and then delivered to a bobbin mounted below. The drafting rolls stretch the roving, and the twist is introduced by the turning bobbin and a high speed steel traveler, which carries the yarn and winds it around the bobbin. After spinning, the yarn is steamed to set a twist and eliminate kinking.

7. WEAVING — Fabric is formed during the weaving operation. Through the use of a loom, two sets of yarn are interlaced at right angles to form cloth. Fabric is generally woven in 72-yard lengths.

8. FINISHING — The unfinished fabric requires several finishing processes before tailoring. Fulling is a finishing process unique to wool where fabric is subjected to controlled amounts of heat, moisture, friction and pressure. The resulting shrinkage produces a softer, more compact fabric. Any remaining vegetable matter is removed, and the wool fabric is washed and dried. It is then sheared (shaved), to produce an even surface, pressed and sponged. Some fabrics are also napped which produces the soft, fuzzy nap often seen in coating fabrics or blankets. Fabrics are then inspected, measured and rolled before the finished cloth is shipped to garment factories.

Source: Pendleton Woolen Mills—Portland, Oregon