



MILKY MAMMALS LET'S LEARN ABOUT DAIRY COWS

TEACHERS: Your field trip to the farm will create opportunities for your students to observe a variety of animals found on a farm. These observations inspire students to ask questions, collect and document data for journal entries and science investigations. Each hands-on discovery assists in connecting and enhancing Next Generation Science Standards.

Grade Level/Range: Grades K-5

OBJECTIVE

- Students will carefully observe a variety of mammals found on a farm and understand the characteristics of mammals.
- Students will learn that Holstein cows are a breed of dairy animals
- Students will connect dairy products purchased at the grocery store to the farm/farmer that produced them
- Students will understand making health choices will grow a strong body

DRESS UP LIKE A COW

One student will volunteer to dress up like a cow.
(Scientific name *Bos Taurus*)

We start with a black and white **fur (or hair)** apron because the student will be turned into a Holstein cow. Holstein cattle are one of the 6 most common breeds of dairy cows in the United States. Dairy cattle are designed to produce more milk rather than muscle mass for the beef industry. Holstein's cattle are mammals and most mammals have hair/fur which is very important in keeping animals warm. Mammals are warm-blooded and it is important for them to maintain their body temperature to be healthy. I modified the statement on mammals because humans are the only mammals that regulate their internal temperature through sweating. Humans are considered hairless, having some hair on the head, axillae and groin.

- Once we have talked about the function of fur...we notice a tail. **Tails** are designed to be nature's fly swatters to chase away annoying flies. Everyone should use their arm, pretend it a tails and swish away the flies...say Shoo fly don't bother me!

- Next, we add the hat. The hat has really big **ears**. Cows are plant eaters (herbivores) and they have really big ears because they are always listening for meat eaters (carnivores).

Mini Science Experiment:

Take your hands and make a cup...put your cup hands behind your ears. Everyone say...MOOOO! Can you hear well if you have bigger ears?

- We notice the hat has **horns**. Horns do not fall off once a year like the antlers of the White-tailed deer that live near us. Cows (both male and female) are naturally equipped with horns to protect themselves from predators and other dangers. But in the dairy environment this is unnecessary. Horns can present a danger to the other animals in the herd, as well as farm workers—not to mention a threat to milking equipment, fences and property. And like humans, some cows are more aggressive than others. (Do you know a bully?)
- The horns are removed humanely, (using the familiar anesthetic lidocaine) to keep the herd injury free.



- We add the **hooves** to the costume. Cows walk around on two-toed feet or hooves. Cattle, sheep, goats, and pigs are cloven-footed animals, meaning that the hoof consists of two digits, instead of one solid entity like that of a horse. Farmers may hire a hoof trimmer to trim hooves in the dairy herd. A well-maintained routine of cleaning and trimming animals' feet will lead to a far lower incidence of discomfort and lameness in the animals. If a cow has sore feet, she doesn't walk around to eat and drink and then she doesn't give as much milk. Trimming hooves is a very important part of managing dairy cattle! It's just like trimming your fingernails and toenails...but much bigger.
- The next item is the **udder** bag...this is the mammary system or where the milk comes from. BUT...we cannot add the udder bag to our cow...UNTIL, we have someone else volunteer! Our new volunteer wears the calf hat because a cow does not give milk until it has a baby or calf and that is the way all mammals are designed! Our cow can wear the udder bag now and we all give them a round of applause. They may take a cow-bow! Our volunteer may feel udder-ly ridiculous or it could be a MOO-ving experience.
- We look inside the udder bag to find a variety of dairy products. All the products in the bag are found at the dairy section of the grocery store but they come to you from a farmer who milks his/her cows every day! Milking is done two or three times a day. Products include yogurt, cheese, milk, ice cream, sour cream, whip cream. Dairy foods are excellent sources of calcium, which is important for strong, healthy bones. Not many other foods in our diet contain as much calcium as dairy foods. They also

provide important nutrients such as protein, iodine, riboflavin and Vitamin B12. Everyone pretend you're REALLY STRONG from drinking your milk and says thanks to our cow!

EXTENSIONS

Moo-ving Math

How big are cows?

Mature Holstein cows typically weigh around 1,500 pounds and stand 58 inches tall at the shoulder, making them the largest of the U.S. dairy breed.

How many cows live in the United States?

There are over 9 million dairy cows in the U.S., with approximately 90% of them being of Holstein descent.

How much milk does a Holstein cow give?

Holstein cows give more milk than any other dairy breed in the U.S. The average Holstein cow produces around 23,000 pounds of milk, or 2,674 gallons, of milk each lactation. With a standard lactation lasting 305 days, that comes out to 75 pounds, or almost 9 gallons of milk per cow per day.

How much does a Holstein cow eat?

High producing dairy cows will eat 110 to 120 pounds of wet feed a day or 50 to 55 pounds of dry matter (DM) a day. As cows produce more milk, they eat more. A typical diet for a dairy cow could include about 30 to 35 pounds of baled hay (26-30 pounds DM) and 25 pounds of grain mix (22 pounds DM).

TEACHER RESOURCES

USDA for kids: <https://www.usda.gov/our-agency/initiatives/kids>

<http://www.wadairy.com/why-dont-dairy-cows-have-horns>

<https://www.extension.purdue.edu/extmedia/id/id-321-w.pdf>

<https://www.nationaldairyCouncil.org/resource-library>

http://www.holsteinusa.com/holstein_breed/breedhistory.html

VOCABULARY

Bovine: Of the biological subfamily Bovinae. This diverse group features about 24 species of medium-sized to large ungulates (animals with hoofs) such as domestic cattle. Other members include bison, water buffalo and yak.

Bull: An adult male dairy animal. Young male dairy animals are known as bull calves.

Butter: Butter is produced by churning the fat from milk or cream until it solidifies. The butter mass is washed and sometimes salted to improve keeping qualities.

Calf: A young female dairy animal before she has matured. A young male is called a bull calf.

Carnivore: an animal that feeds on flesh

Cream: Cream is the high-fat milk product separated from milk. The cream is processed and used to produce various products with varying names, such as “heavy cream” or “whipping cream.” Cream contains at least 18% milk fat. Some cream is dried and powdered and some is condensed by evaporation and canned.

Cud: The partially digested food that is regurgitated from the first compartment of the cow’s stomach into the mouth to be chewed again. A cow may spend seven hours a day consuming food and an additional 10 hours a day chewing her cud.

Forage: Cow feed that is high in fiber and low in digestible nutrients. Examples include whole plants of corn, small grains (such as oats, barley, or wheat), legumes and grasses.

Herbivore: An animal that feeds mainly or only on plants.

Herd: A grouping of cows on a dairy farm.

Holstein: A black and white dairy cow (though there are some “Red Holsteins”) that is the most predominant breed of dairy cattle worldwide. The Holstein originated in the province of Friesland, The Netherlands. They are known for having the highest milk production of all of the breeds of dairy cattle.

Hoof Trimmer: A trained professional who specializes in the trimming of a cow’s hooves on a regular basis in order to maintain comfort. Hoof trimmers are trained to detect disease, injury or other hoof-related problems and can advise farmers on treatments.

Pasture: Land at a dairy farm that is lush with vegetation cover such as grasses or legumes and is used for grazing dairy cows.

Udder: The encased group of mammary glands on a dairy cow.

Veterinarian: Animal doctors who have earned a degree in veterinary medicine. Sometimes called “large animal veterinarians” or “livestock veterinarians,” many specialize in the treatment of dairy cows and work directly with dairy farmers at their farms to ensure healthy herds.

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Next Generation Science Standards

Interdependent Relationships in Ecosystems: Animals, Plants, and Their Environment

K-LS1-1., K-ESS2-2., K-ESS3-1. K-ESS3-3.

Weather and Climate,

K-PS3-1. K-PS3-2. K-ESS2-1. K-ESS3-2.

From Molecules to Organisms: Structures and Processes

1-LS1

Interdependent Relationships in Ecosystems

2-LS2-1. 2-LS2-2. 2-LS4-1

Earth and Human Activity

K-ESS3-1. K-ESS3-2. K-ESS3-3.

Next Generation Science Standards

<http://www.nextgenscience.org/>

Teachers: We create an opportunity for students to compare farm life from the past to a farms contribution to our communities today.

We can custom design programs to meet your needs.

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