

# External and Internal Parts of Dairy Cattle

**W**HEN you first look at a dairy cow, what do you see? Most likely you see an animal weighing more than 1,000 pounds, with a head, tail, and four legs. But if you look closer you may notice a skeletal structure, an udder, and external reproductive components. Imagine if you could see through the skin of the dairy cow. You most likely would find multiple systems that support life, produce offspring, and supply milk. Let's explore the external and internal parts of a dairy cow.



## Objectives:



1. Identify the major external parts of dairy cattle.
2. Identify the major internal parts of dairy cattle.

## Key Terms:



digestive system  
gestation  
mammary system

ovum  
parturition  
reproductive system

ruminant  
sperm

## External Parts of Dairy Cattle

The external parts of dairy cattle have been selected or evolved to support major milk-producing animals. A dairy animal must have strong feet and legs to support mobility and carry the weight of the body. It should have a well-shaped top line, or back and rump. The head and neck should be in proportion to the rest of the body. The tail must be well attached and properly placed on the rump. And finally, the udder and mammary system must be well shaped, attached, and appropriate for milk production. All these external parts aid in the sole purpose of the dairy cow—milk production. The external parts are judged or evaluated to select top-producing animals that have functional parts to support a healthy lifestyle.

## FEET AND LEGS

The feet and legs are part of the skeletal system and support mobility of the animal. Dairy cattle must have strong feet to be able to have long productive lives and the ability to move over various terrains found in dairy production systems. These terrains could include concrete in the dairy barn or feeding floor, rocks in the walkways or gate entrances, and vegetation in the grazing pastures. The legs must be properly shaped and placed on the body. The width between the hind legs must provide adequate space for a large udder. Strong legs are also necessary to prevent injury during reproduction. Together, appropriate feet and legs are essential for a functional dairy animal.

## BACK AND RUMP

The back and rump should be correctly shaped. This is most important for reproduction and support of the body and mammary. A properly shaped rump aids in ease of service by a bull and birth of offspring. A strong, well-shaped back holds the body cavity and mammary at an acceptable height.

## HEAD AND NECK

The head and neck should be in proportion to the rest of the body. Heads and necks that are too large or too small not only look unusual but can also cause problems when handling animals. A dairy animal may not be able to reach feedstuffs or water sources because of an unusually shaped head or neck.

## TAIL

The tail must be properly placed on the rump and not interfere with reproduction. If not properly placed, the tail can block or injure the male when attempting to service the female. The tail is also used to swat away biting insects that may carry disease.

## UDDER

The udder is the most important exterior component of a dairy animal when milk production is

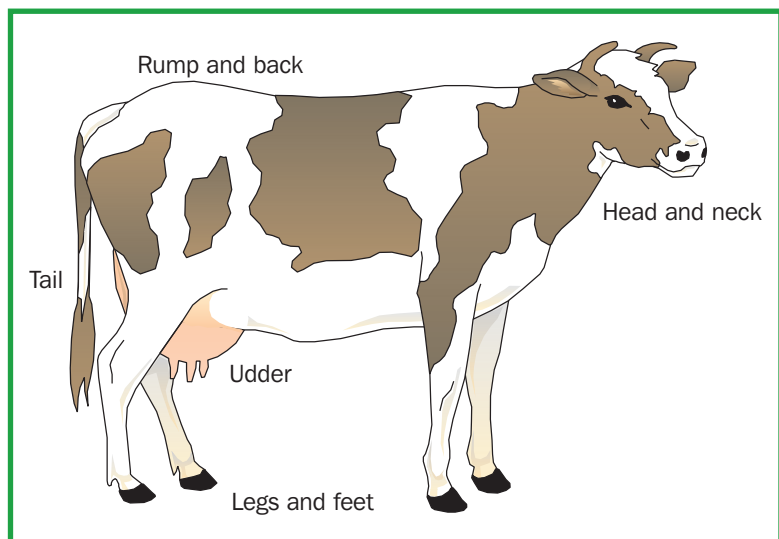


FIGURE 1. External parts of a dairy cow.

being considered. It is the location where feed, water, and nutrients are converted into milk. It is also the point where milk is released from the animal's body. It is evaluated for proper shape, placement, and functionality. If it is held too closely to the body or hangs too loosely to the ground, the animal is not considered functional for milk production.

## Internal Parts of Dairy Cattle

The major internal parts of dairy cattle are designed to support life, produce offspring, and supply milk. Like other cattle, dairy cattle share many similarities in the makeup of their major internal parts. A dairy animal has a digestive system that includes a multi-compartment organ that breaks down feedstuffs. The reproductive system includes the major organs for production of specialized cells used to create offspring. Milk is produced in the mammary of a dairy animal to supply nutrients to offspring and for human consumption.

### DIGESTIVE SYSTEM

The digestive system extends through a large part of the body cavity of a dairy animal. It begins in the mouth, where saliva and other enzymes are released to start the breakdown of feedstuffs. From the mouth, the food travels into the multi-compartment organ, or stomach. A dairy animal is classified as a **ruminant** because of its multi-compartment stomach. Each compartment breaks down the feedstuff into a form in which it can be utilized by the animal. The

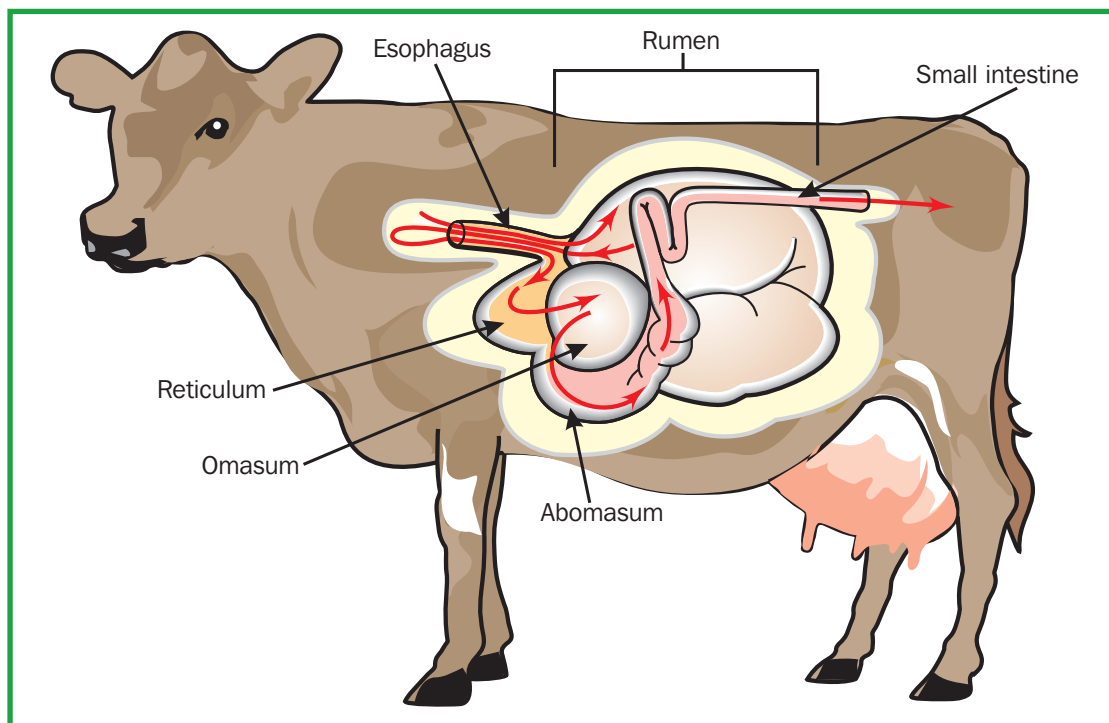


FIGURE 2. The digestive system of a cow.

**digestive system** supplies energy, promotes growth, and aids in milk production for dairy animals.

## REPRODUCTIVE SYSTEM

The reproductive system is used by both male and female dairy animals to produce specialized cells for reproduction. The components of the system differ between males and females, but the **reproductive system** contains the main organs for the production of offspring through natural or artificial means. In a male dairy animal, **sperm**, or male sex cells, are produced in the testes. A female dairy animal produces an **ovum**, or a female sex cell, in an ovary. When the sperm and the ovum are united in the reproductive system, a pregnancy may occur. Once a female becomes pregnant, gestation begins. **Gestation** is the time frame from the beginning of pregnancy until birth occurs. The birth process is called parturition. **Parturition** is the final function of the reproductive system.

## MAMMARY SYSTEM

The **mammary system** is the internal part of dairy cattle designed for milk production. The mammary carries out a variety of functions for the production and release of milk. Blood that is rich in nutrients and water is circulated through the mammary and is screened to extract the components needed to produce milk. The nutrients and water are converted into milk, which is stored in the mammary until it is released through the teats. Milk release is stimulated by the suckling of offspring or the cleaning of the udder before milking. The mammary system begins producing milk before or shortly after parturition. Birth must occur to release the appropriate hormones that trigger milk production.

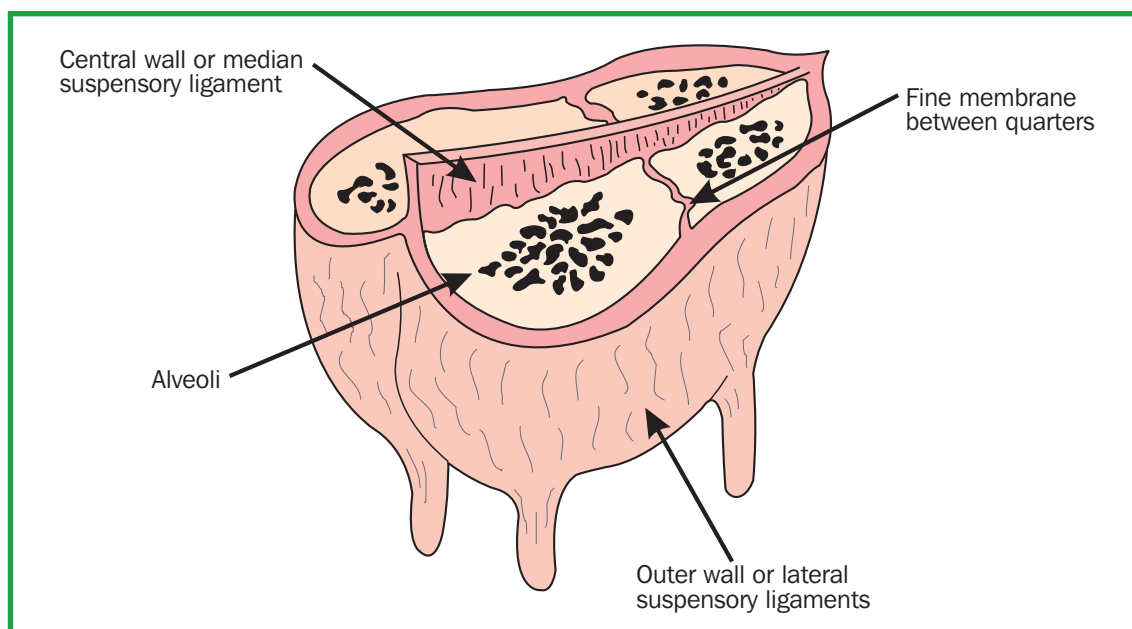


FIGURE 3. Mammary system of a cow.

## Summary:

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The major external and internal parts of dairy cattle support mobility, functionality, and productivity of the animals. The external parts support movement of an animal, shape the body, and support features such as the udder. These parts have been selected or have evolved to be most efficient in milk production systems. The internal parts of dairy cattle work together to support life, produce offspring, and supply milk. A firm understanding of the external and internal parts of dairy cattle aids in understanding how dairy animals function.

## Checking Your Knowledge:

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1. List the major external parts of dairy animals.
2. List the major internal parts of dairy animals.
3. How do the digestive and reproductive systems aid in the support of the mammary system?

## Expanding Your Knowledge:

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Visit or communicate with a dairy farmer. Ask questions about selection for the major exterior parts and about concerns with animals that have faults in the selected areas. Also, ask questions about the importance of reproduction in the dairy industry.

## Web Links:

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### **Illini DairyNet**

<http://www.traill.uiuc.edu/dairynet/>

### **Why Milk?**

<http://www.whymilk.com/>

### **Virtual Farm Tour and Exploration of Dairy Cattle**

<http://www.ext.vt.edu/resources/4h/virtualfarm/dairy/dairy.html>

### **Agricultural Career Profiles**

<http://www.mycart.com/career-profiles>