

1. About dairy cows

■ Breed of dairy cows



Holstein

Holstein is a typical dairy cow, and 99% of dairy cows in Japan are Holsteins. They are originally from the Netherlands and Holstein region of Germany. They are big built and have large udder with high production yield of milk. They are the most common dairy cows in the world. They have mild temper and good tolerance with cold weather but not good with heat. They are not

only black and white in colour but also brown and white.



Jersey

Jersey is the second popular breed in Japan after Holstein and originally from Jersey island in the English Channel. They are rather small and soft brown in colour. Their production yield is not as good as Holsteins', but milk fat content is higher.



Brown Swiss

Brown Swiss is the third popular breed in Japan and native to Switzerland. They are famous Alpine breed with very rich milk which is suitable for natural cheese. They are large in dark brown to silvery brown colour and mild in temper.

■ Lifecycle

From conception to birth (artificial insemination and birth)

Currently, at most Japanese dairy farms artificial insemination (AI) is used for cows' reproduction. However, there is no guarantee of conception. Life cannot be created just with human efforts and powers.

After about 10 months in pregnancy, the waters break and delivery starts. More than 90% of calves come out with their head first. In case of a difficult delivery, a mother receives helps by human's pulling ropes tied on calf's legs in time with mother's pushing.

Cow's birth ends in 30-40 minutes. Mother removes amnion from her calf with her mouth and licks her calf's body with her long tongue. Calf tries to stand up within 30 minutes of being born. How soon they can get up and start walking, this is an important condition for the animal to determine whether they can survive or not.

Nursing

Calves are separated from their mothers as soon as they are born, and they are nursed in the barns dedicated to them. For the first week, they are given mothers' colostrum. Just like human's, bovine colostrum contains plenty of protein and vitamins which are easy to digest as well as components to prevent them from catching illness (immunity).

Breeding

Calves from the period of weaning (2months old) till the first mating (about 18 months old) are called breeding cows. Sometimes they are brought up grazing in the designated breeding field in order to gain healthy and strong body.

Milking

After cows give birth, they start producing milk as mothers do. Cows continue to produce milk for about 300 days. Milk production yield peaks at around the second and the third month after calving, and it gradually starts to get reduced.

Dry

After about 280-300 days of lactation, cows stop milk production and have a break for 2-3 months to prepare for the next calving. They are called dry cows.

12-15 months cycle being repeated 3-4 times

Average life of cows is about 12 years in their natural life, but dairy cows are required to produce a lot of milk. After repeating 3-4 cycles of 12-15 months period each, they retire from their duty in about 5-6 years and are sold for meat.

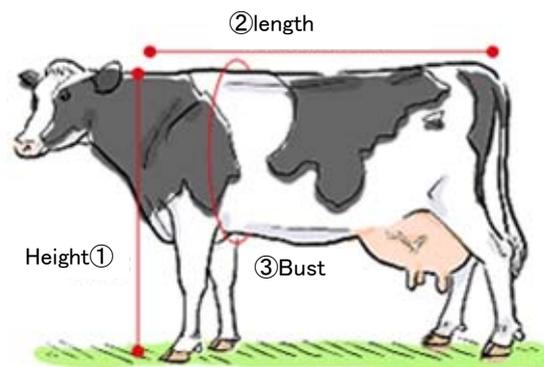
■ Body structure of dairy cattle (cow)

Height

Height is about 140-150cm from the ground to their shoulders when standing

Length (horizontal length)

Length is normally measured from the shoulders to the base of their tails. Cows are about 170cm long.



Bust

It is measured in the same way as human beings, and in the case of cows it is the circumference of their chest from the base of their front legs. It is normally over 200cm.

Weight

Cows weigh about 600-700kg.

Muzzle pattern

Wrinkles on their noses are called muzzle pattern, and these are different from each individual just like human fingerprint.

Tail

It is used to keep flies and mosquitos away instead of hands and also keeps the balance of the body.

Hoof

A long, long time ago, the animal ancestral to both cattle and horses had 5 toes. During their evolution, horses had developed their middle toes and ended up with one hoof, and cows had developed their middle and ring toes which had evolved to two hooves, and they become family of even-toed ungulates (artiodactyla).

Cows hooves are known to grow about 3-10 cm per month. If they stay inside the barns too much and have not enough exercises, their nails grow too long which could cause them of developing hooves diseases. Therefore on farms, they have their hooves cut roughly twice a year.

Tooth

Ruminants like cattle have their characteristics of not having upper front teeth.

Spots

Holsteins' spots (patterns on their body) are different on each cow just like human fingerprints and never change from their birth till their adulthood.

Horns

Their horns are often cut within 3-5 months of their birth in order to prevent them from getting into fights with other cattle and also to keep their careers' safety.

Skeleton

Cows' ribs and bones are projected conveniently to support their big body and firmly developed. Their hind leg bones (metatarsal) are well developed to support their heavy udder.

Dung and urine

The output of dung is 20-40kg per day, and of urine is 6-12 litres per day.

■ Ruminant and mechanism of milk production

Stomach

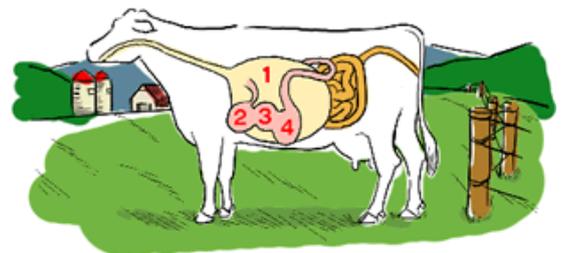
Cows' stomach occupies three quarters of their abdomen and divided into 4. The first and largest stomach (rumen) has a volume of 160 litres. What cows eat through their mouth such as grass first comes into this stomach. Here numbers of microorganisms decompose fibre and ferment food by propagating microorganisms.

After repeating rumination, fibre gets decomposed even finer in the second stomach (reticulum) & the third stomach (omasum) and get digested in the fourth stomach (abomasum). Here in the fourth stomach, cows digest microorganisms grown in the second and third stomachs and take in all the nutrients both from food and microorganisms. It is their characteristics to have their own fermenting factory in their stomach.

Rumination

In order to digest food, cows regurgitate cud from the first stomach to the mouth and slowly grind them. This is called rumination.

They ruminate for 6-10 hours a day and chew food 40-60 times every minute. This is why cows are always moving their mouth. Saliva is secreted as they chew food, which wets food to make it easy to swallow and also activates microorganisms in the stomach to help digestion. Cows secrete 90-150 litres of saliva every day.



Udder

Udder is an important organ to produce milk. The actual milk producers are mammary glandular cells in the udder. Here, various nutrition transported through blood are made into components of milk. To produce 1 litre of milk, 400-600 litres of blood circulation is required. Cows with high milk production yield at 45kg a day have 22.5 tonnes of blood circulating their breast.