

Take a trip to the dairy farm!

# Willow



## Join Willow and meet the dairy cows

Drawn by Quinn Hogg of Quarter Primary, winner of our Design a Dairy Cow competition



The most popular breed of dairy cow is the black and white Holstein-Friesian.



Other dairy breeds in Scotland include Swiss Browns, Ayrshire and Jerseys.



Dairy cows are able to eat grass and convert it into protein and butterfat.

To produce milk a dairy cow needs to have one calf a year.



A high yielding dairy cow can produce up to 12,000 litres of milk per year.



An electronic ear tag is put on the calf within hours of birth so she can be identified.



All dairy cows in Scotland stay inside over the winter. In the summer, some cows stay indoors whilst others go outside to graze.





# Name that dairy breed!

There are lots of different dairy cows in Scotland. Can you match the description of the cow to the picture?



## **Brown Swiss**

A grey/brown cow that produces creamy milk with high butterfat content.



## **Holstein**

The typical black and white dairy cow.



## **Jersey**

A small brown coloured cow that produces creamy milk with high butterfat content.



## **Ayrshire**

A medium-sized efficient and economic brown and white dairy cow.



## **Fleckvieh**

A brown and white dual purpose cow that is kept for meat and milk.

# Can you tell the difference between beef and dairy cattle?

In Scotland, farmers keep cattle to produce meat and milk. Beef cattle produce meat and dairy cows produce milk.

## Beef Cattle

### Foods produced

Beef cattle can be male or female and they end up in the food chain as meat like **mince** and **steaks** for us to eat.

### Colour

Beef cattle come in a **wide range of colours**. Check out our [beef breeds poster](#).



### Where they live

Beef cattle are hardy and **can stay outside** throughout the year. Watch [this video](#) to find out more about beef cows.



### What they look like

They eat grass and **convert energy into muscle** and fat which gives them a **stocky build**. Beef cows have **small udders** and only produce enough milk to feed their calf.

### Calves

In the Springtime, you can see the **cows and the calves together** in the fields.

## Dairy Cattle

Dairy cows are all female and calve throughout the year. A cow needs to have a calf in order to produce **milk** for us to drink.

Dairy cattle are usually **black and white**, however there are different colours depending on the breed of dairy cow. For example Ayrshire dairy cows are brown and white and Brown Swiss cattle are grey. Generally, on a dairy farm, all the cows will be the same colour.



Dairy cows **may live outdoors** eating grass or **live indoors** eating silage, cereals and sometimes byproducts like biscuit crumbs or brewers grains. Some dairy cows live outside during the warmer months and come in for the colder months. Dairy cows are not able to stay outside when it is cold. They are usually found either inside or near farm buildings, as they need to be milked several times a day.



Dairy cows **convert the food they eat into milk**. They have a **slender build** and a **large udder**. They may also be wearing a collar or a pedometer which records how far the cow walks and the amount of milk produced as well as lots of other information.



Dairy cows are not maternal and **the calves are reared by the farmer** using powdered milk. You can meet different dairy calves online [here](#).

# Discover what happens to the milk from the cows



Once a cow has been milked, the milk is instantly chilled to 4°C. The milk is transferred to a tank before being collected by a milk tanker lorry which takes it to a processing plant.

At the processing plant the milk is pasteurised. Pasteurisation involves heating the milk to 71.7°C for at least 15 seconds to kill any harmful bacteria and make it safe to drink.



The milk is then packaged into glass, plastic or paper based recyclable containers.



Milk is used to produce products like butter, cheese, cream, yoghurt, ice-cream and flavoured milk drinks. On any given day, 99% of adults in Scotland consume at least one dairy product. [Follow](#) the cheese journey.



Milk provides us with protein, calcium and essential vitamins which give us strong teeth and bones.



Milk is sold in several different categories: whole milk which contains about 3.5% fat, semi-skimmed milk which contains about 1.7% fat and skimmed milk which contains 0.1 to 0.3% fat.





# What do you know about science and technology on a dairy farm?

Dairy cows are usually milked twice daily in a milking parlour.



Many cows are milked using robots. In robotic milking systems, the cow takes herself to the milking machine when she feels ready. The robot cleans her udder and uses lasers to attach a cluster. Clusters use soft suction to milk the cow and when the milk stops flowing the cluster drops off.



In some dairy units the calves are reared by robots. This technology is linked to an app on the farmers phone. There are also poo bots which collect up all the cow pats.



Science is used on a dairy farm to care for the environment (by testing the soil and water). Science also helps farmers grow good grass. By measuring and monitoring the farmer can ensure the cows are healthy, productive and efficient. Join Pam and Jura for a [trip around a dairy farm](#) looking at some of the maths and science involved along the way.



## Do you know how many steps you take each day?

A dairy farmer knows how far each one of the dairy cows on the farm walks every day!



Dairy farmers use maths every day to calculate how much milk dairy cows produce and work out how much to feed the cows.

Calculating the number of steps a cow takes and recording her body temperature helps the farmer identify any cows that are feeling unwell.



Information on each calf is collected before the calf is born and within a few hours of birth, a calf is given an ear tag.

A cow ear tag contains information about the cow including her date of birth. Data on each cow continues for the whole of the cows life via electronic pedometers, collars and ear tags. You can explore more of the maths involved on a dairy farm with our [Moo Maths pack](#).



# True or false STEM on the farm

Here are some statements about STEM on the dairy farm. Can you identify which statements are true.

- |    |  |      |       |
|----|--|------|-------|
| 1. | Information collection begins before the calf is born. | True | False |
| 2. | Dairy cows are all milked once a day.                  | True | False |
| 3. | A robotic milker uses lasers to locate the cows teats. | True | False |
| 4. | Some dairy farms have robotic poo sweepers!            | True | False |
| 5. | All dairy cows are black and white.                    | True | False |



1. True 2. False. Dairy cows are usually milked twice a day however if they are milked robotically they can go to the milker whenever they like! 3. True 4. True 5. NO! There are several different breeds of dairy cows that come in a range of different colours.