

## Cattle

- [Dairy Cows & Welfare](#)
- [Supermarket Policies & The Soil Association](#)
- [Beef Cattle & Welfare](#)
- [Disease](#)
- [Slaughter](#)



There are around 10 million cattle in the UK, most of which are reared for either beef (beef cattle) or milk production (dairy cattle).

Just over 2 million are adult dairy cows and just fewer than 2 million are adult beef cows. The remaining 6 million are younger animals (1).

### Dairy Cows & Welfare

The UK is the 9th largest milk producer in the world and the 3rd largest in Europe. Figures from the Milk Development Council (MDC) for June 2008 indicate that of the approximately 2 million dairy cows in the UK there were 420,000 heifers (heifers are young cows over 1 year old that have yet to give birth) and 481,000 total in-calf replacements between the age of 1 and 2 years(1,2).

Over 90% of dairy cattle breeds are the black and white Holstein-Friesian type. Other breeds include Ayrshire, Guernsey and Jersey cows. There are a few herds of buffalo in the UK kept for milk production to make mozzarella cheese(1).

Dairy heifers are first used for breeding at approximately 15 months old. The majority of dairy cows in the UK are impregnated by artificial insemination (AI). Bulls are first used for breeding from one year old and a single animal can father over 15,000 calves a year by AI. Pregnancy lasts approximately nine months (279 days) and so heifers will be around 2 years old when they first give birth.

Cows are impregnated again 2 to 3 months after each giving birth (calving). As lactation lasts around 10 months the cow is simultaneously pregnant and lactating for 6 to 8 months during each calving cycle. Cows have a 6 to 8 week period between lactation ceasing and their next calving.

Most calves are taken away from their mother within 24 to 48 hours. The cow is then milked for human consumption for around 10 months. Immediately after giving birth, the first milk that cows produce is colostrum. This contains essential antibodies, vitamins and minerals, and cannot be sold as regular milk. After a few days the colostrum changes over to regular milk and the calf is taken away. The calf is fed milk replacers based on dried skimmed milk with fat supplements before early weaning at around five/six weeks(3).

Calves would naturally suckle for 6 to 12 months. There is a strong bond formed between the mother and her calf in the first few hours after birth, enforced separation is therefore a very traumatic experience for both(4). Female calves may be kept for milk production whereas male (bull) dairy calves are an unwanted by-product of the milk-production industry. Many of the 482,000 young males born are killed shortly after birth, they are either shot or electrically stunned. Other calves are exported on long journeys to continental veal farms (see **Beef Cattle & Welfare**) (5).



Milking occurs 2 or 3 times a day and it is fully mechanised. Selective breeding and concentrated feeds have meant dairy cows can produce ten times more milk than calves would suckle if given the opportunity. A typical dairy cow produces up to 6,500 litres of milk a year(6). Normally a cow kept with her calf would produce less than 1,000 litres of milk throughout the lactation period(7). This huge overproduction of milk has severe welfare implications for dairy cows and has resulted in a number of so-called production diseases. The use and marketing of the genetically engineered milk-boosting hormone, Bovine Somatotrophin (BST) in dairy cattle has been banned in the EU since 1st January 2000.

Less intensive systems allow the dairy cows to graze on pasture during the spring/summer months and are then housed indoors in cowsheds during the winter. Cows will spend about 7 months a year indoors. The practice of keeping dairy cows indoors for most, if not all (zero grazing), of the year is increasing. Cows are usually either kept in sheds with a straw-covered bedding area and an un-bedded concrete floored area or in free stall housing where cows are not constrained and can choose which cubicle to enter. Some cows may be tethered in individual stalls whilst being milked.

A cow's natural lifespan is 20 to 25 years. By the time the dairy cow is just five years old she is worn out by the strain of constant milk and calf production and is slaughtered as she is no further use to the industry.

## **Supermarket Policies & The Soil Association**

### **Current Supermarket Policies**

Whilst most dairy cows have some access to grazing, several supermarkets continue to source dairy from cows permanently housed indoors. Marks & Spencer, Waitrose and Morrison's are at present the only supermarkets for which all dairy cows have some access to pasture. Marks and Spencer (M&S) reward dairy farmers for higher welfare and all cattle have seasonal access to pasture. They encourage farmers to rear male calves for UK beef or veal, instead of exporting them or shooting them at birth. From 2008 M&S will only sell UK rosé veal - calves reared in higher welfare British systems on straw. Also from 2008, Tesco's own-label dairy farmers cannot export male dairy calves. Calves have to stay in the UK, many going to Tesco's higher welfare calf-rearing units(8).

### **The Soil Association**

The Soil Association (SA) standards for organic farming are designed to reduce stress to farmed livestock through a variety of management techniques. Dairy cows cannot be permanently housed, but must spend the majority of their lives outdoors. The cows must have appropriate bedding and adequate space when they are brought indoors during bad weather. The Soil Association does not allow the sale of male calves to continental style veal systems, or any other non-welfare friendly/intensive system. From 1<sup>st</sup> January 2008, SA registered dairy farmers will be required to explore options to rear all calves instead of shooting them. If the calf has been bred for dual purposes, milk and meat (such as using a native breed such as a Red Poll or Shorthorn), they are then much more saleable. When housed, calves must have access to good quality straw, hay or silage and fresh clean water. Calves should be kept outside in fields or in group housing with open fronted straw yards. The feeding of calves must be based on natural milk, preferably maternal milk for a minimum of three months and they cannot be weaned before this. A calf may only be weaned when it is taking adequate solid food to cater for its full nutritional requirements. If the farmer cannot rear the calves themselves or sell them to another organic farmer, then they can be sold to non organic farmers providing that a number of conditions are met on farm. These conditions include the ability for the calf to see and hear other calves or cattle; the ability to be able to completely turn around; sufficient bedding for dry, lying areas; access to solid food, including hay or silage, therefore there is no allowance for intensive veal systems(9).



## Beef Cattle & Welfare

UK beef is produced from specific beef breeds; these may be native British breeds such as Aberdeen Angus, Hereford and South Devon or from continental breeds such as Charolais and Limousin. Beef cattle may be produced from dairy breeds where a bull is crossed with a cow, usually by artificial insemination (AI). For example, if a farmer crosses a pure-bred dairy cow (e.g. Friesian) with a beef bull (Hereford) then the crossbred calf produced will be slaughtered as meat due to it having 50% beef characteristics (they would usually be a low milk yielder). If the farmer crosses a dairy cow with a dairy bull they will hope that the offspring is a pure-bred dairy heifer so that it can replace the mother when her milk production decreases(10).

### Rearing Beef Cattle

Calves from the dairy herd are taken from their mothers and fed formula before early weaning at around five/six weeks. Many calves will be sold at market after 10-20 days to specialist calf rearers and beef producers. Calves have to endure castration, disbudding and dehorning. There are 3 methods of castration used; a rubber ring/other device which restricts blood to the scrotum which can only be used in the first 7 days of life, bloodless castration by crushing the spermatic cords of calves under 2 months old and castration by a veterinary surgeon under an anaesthetic. Disbudding is the removal of horn buds before any horn material can be seen before calves are 2 months old. This should be carried out under local anaesthetic with a heated iron. Dehorning involves cutting/sawing horn and other sensitive tissues under local anaesthetic with appropriate pain relief; ideally by a veterinary surgeon and only if it is necessary for the herd's welfare(1).

The most intensive systems involve keeping bull calves indoors or in yards all year round. Bull calves are used as they grow quickly. Increasing numbers are housed in pens on concrete or slats without bedding. Housed animals are confined in high numbers and are fed cereal-based diets – these are often used where a rapid turnover of livestock is required. Cereals included barley, wheat and oats. In addition, a certain amount of roughage (mostly cereal straw) may also be required in the diet to prevent metabolic disorders from hindering production. Approximately 15 to 20% of British beef comes from intensively farmed cattle(11).

Some beef cattle are housed in the winter months when the grass has stopped growing. The less intensive systems allow the calves (steers and heifers) to remain with their mothers and they are allowed to graze for 1 or 2 summers and may be brought indoors during the winter. These cattle have a predominately grass-based diet; this is most popular in the UK due to the ease of growing high quality grass. Summer grazing cattle may require supplementary vitamins and minerals, whereas winter-feeding is often supplemented by the use of conserved grass forage (hay/silage), or other home-grown feeds. Bought-in feedstuffs include: cereal-based concentrates, maize gluten, sugar beet-based feedstuffs, oil seed rape meal and soya-based products. Some calves from the beef herd stay with their mothers for 6 to 10 months of their life until they are fully weaned and then separated for rearing. These calves are usually known as suckled calves and are sold on to be fattened for beef or reared as herd replacements. Animals are reared to a heavier weight (approx 300kg) and slaughtered at any age between 1 and 2 years. Animals which graze generally take longer to reach slaughter weight compared to those fed on concentrates/cereal-based diets. Beef cattle are not fed synthetic hormones or growth promoters in the UK or Europe.

Veal is a tender 'white' meat from calves slaughtered at the age of 4 to 5 months. In the UK, veal calves may be reared in groups housed in straw yards/pens and fed on milk replacer. Previously they were usually reared in solitary solid-sided wooden crates with slatted floors (veal crate). Veal crates were banned in the UK in 1990. In March 2006 the 1996 ban imposed on live exports due to the BSE crisis was lifted. This meant that thousands of British cattle once again faced harrowing journeys abroad - with calves possibly destined for European veal production systems that are outlawed here. DEFRA figures for 2006 indicate that 128,028 cattle were exported from the UK for slaughter or further fattening, and calf exports are now around 60,000 - 70,000 a year (2,5). From 1<sup>st</sup> January 2007, veal crates were banned across the EU, including Belgium, France, Germany, Holland and Italy. These systems however have no requirement to use bedding, calves have no access to roughage in their diets and are likely to be transported lengthy distances (9).



## Disease

Dairy cows in particular can suffer from a range of welfare and disease problems, these included mastitis, lameness, ketosis and milk fever. These are related to the high milking yields required by the modern dairy industry.

### Mastitis

This is one of the most common problems with over 30% of the UK dairy herd contracting this every year. Mastitis is a painful infection of the mammary gland (udder) caused mainly by bacteria such as streptococci, coliforms and staphylococci. Severe infections cause swelling of the udder, fever and sometimes death. Infection can lead to depressed appetite, dehydration and severe diarrhoea and can be fatal. Mastitis is commonly caused by poor hygiene in cubicle houses and milking parlours, especially where cattle are forced to lie in damp and dirty conditions. Milk is extracted by a method known as vacuum pulsation, this means that tissue may be weakened and so more prone to infection. Over milking can also cause teat injuries leading to mastitis.

### Lameness

This can affect around between 10 to 50% of dairy cows each year with practically all showing signs of foot damage by the time they are slaughtered. Cows suffering from lameness can be in considerable pain. Lameness is most commonly due to the abnormally large udder of the dairy cow distorting the gait and posture of the cow's hind limbs so predisposing to foot damage and subsequent lameness. Lameness can also be caused or exacerbated by inappropriate housing or feeding. Many cows are still housed in cubicles built 20 to 30 years ago. Today's dairy cows are larger and longer than their predecessors and are often forced to stand with their hind feet in the passageway in which manure collects. This can soften the cow's hooves and encourages infection. The use of silage rather than hay as the main winter fodder has increased the problem as cows eating silage excrete more urine and wetter faeces causing more problems with wet bedding and wet slurry in passageways. Dairy cows are fed starchy, high protein concentrated feeds in order to maintain high milk yields. These can lead to ruminal acidosis in which the rumen becomes increasingly acidic. Acidosis leads to inflammatory substances being released into the blood which supplies the sensitive laminae of the cow's feet. The feet become hot, swollen and inflamed causing lameness.

### Ketosis

Acidosis can also lead to the problem of ketosis. Ketosis is a very common disease that occurs during early lactation and is due to the cow's metabolism being pushed too hard in order to sustain milk yield. Cows with ketosis become progressively depressed and lethargic. In severe cases cows lose weight, become dehydrated and show nervous, agitated behaviour such as delirium, bellowing and walking in circles.

### Milk Fever (hypocalcaemia)

Milk fever is caused by the sudden depletion of the body's calcium reserves due to the onset of milk production after giving birth. Some cows may experience loss of body temperature control by the nervous system causing them to be cold rather than feverish. If untreated, the cow becomes progressively weaker and is unable to stand due to other nerve functions being affected. They may then become unconscious and die. Milk fever affects around 6% of dairy cows; this figure has remained relatively consistent for the last 15 years that the Dairy Herd Health and Productivity Service (DHHPS) have been keeping records<sup>(12)</sup>.

### BSE

Bovine Spongiform Encephalopathy (BSE) was first recognised and defined in the UK in November 1986, reaching its peak in 1992 when over 37,000 cases were confirmed in the UK alone<sup>(1,13)</sup>. BSE is a neurological disorder occurring in adult animals of 5 years old or older. Affected animals show signs including; a change in mental state, abnormalities of posture, movement and sensation. The clinical disease usually lasts for several weeks and is invariably progressive and fatal. Over 180,000



cases of BSE have now been confirmed in the UK alone(1). New legislation to replace the Over Thirty Month (OTM) rule by BSE testing was introduced in November 2005. The OTM rule imposed an automatic ban on all older cattle from entering the human food chain. Subject to negative BSE testing, the new system will allow UK cattle born after 31<sup>st</sup> July 1996 to be slaughtered and sold for human consumption. New legislation states that cattle born before 1 August 1996 cannot be slaughtered for human consumption and consignment of these animals to a fresh meat slaughterhouse will be an offence. These animals must be slaughtered under the Older Cattle Disposal Scheme (OCDS) (1,13).

### **Bovine Tuberculosis (bTB)**

This is caused by the bacterium *Mycobacterium bovis* (*M. bovis*). Tuberculosis can also affect other species including other farm animals and wildlife, along with humans. The spread of infection to people by contaminated milk or dairy produce was an important public health issue before pasteurisation was widely used. Cattle with suspected bTB are usually identified by the tuberculin skin test before they develop clinical signs. Diagnosis is confirmed through post-mortem examination and bacteriological culture of *M. bovis* organisms(1).

### **Foot and Mouth**

This is an infectious disease caused by a virus (of which there are 7 types). The virus affects cloven-hoofed animals such as cattle, sheep, pigs, goats and deer. The disease is not normally fatal to adult animals but it does cause debilitation and loss of productivity for farmers (decreasing milk yields and lameness). The virus causes a fever and the development of blisters, mostly in the mouth and on the feet. Animals contract the disease by either direct contact with an infected animal or contact with foodstuffs, etc. which have become contaminated by an infected animal. The UK last experienced the disease in 2001, with 2,030 confirmed cases of foot and mouth spread across the country. 0.7 million cattle were culled as a result of this outbreak(1).

### **Other diseases**

Cows can also suffer from a range of other diseases. These can include grass staggers (due to magnesium deficiency), viral pneumonia, salmonellosis, bovine virus diarrhoea, brucellosis (causing abortion) and endometritis - an inflammation of the uterus caused by poor hygiene at calving. The majority of calf deaths occur in the first month of life, mostly from septicaemia and scours (localised infections of the intestines).

## **Slaughter**

Cattle are stunned first, either by electricity or percussion (captive bolt). They are then killed by having the blood vessels in their neck cut (sticking). The animal dies by being bled to death. In percussive stunning a captive bolt pistol is held to the cows head and the bolt penetrates the skull and destroys brain tissue. This should cause an instant loss of consciousness following collapse. If the brain tissue is not destroyed the animal may come around. The use of a captive bolt does not always successfully stun the animal. The most common failure in stunning is due to improper positioning of the bolt, which is a particular problem where cattle are agitated and struggling. Other problems may be due to inadequate maintenance of the pistol. Mis-stunning causes considerable distress and can mean the animal is still conscious during throat cutting. The period of unconsciousness induced by stunning should be longer than the period between stunning and sticking plus the time taken for sticking to induce brain death.

Calves are likely to be stunned electrically. Electrical stunning involves passing a large voltage across the animal's brain. Electric stunning of calves induces a much shorter period of unconsciousness than in other species (around 18 seconds). A number of studies have shown that calves also take longer to lose brain function after throat cutting. Anil *et al* (1995a) found that responsiveness can be present in the brains of calves for as long as 104 seconds after neck-sticking. Because of this many calves show clear signs of recovery during bleeding out(14,15). Over 2.6 million cattle were slaughtered in the UK in 2008, (2, 659,800 in 2007)(1).



Type of cattle		Number slaughtered
<b>Prime Cattle</b>	Steers (castrated males)	999, 000
	Heifers	758, 900
	Young Bulls	270, 300
<b>Adult Cattle</b>	Cows	542,000
	Adult Bulls	17, 800
	Calves	44, 400
<b>TOTAL</b>		<b>2,632,400</b>

### References & Useful Links

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