

BEEF CATTLE in Australia

Beef cattle are animals produced on farms to provide meat, which is a nutritious and important food for people to include in a balanced diet.

Beef cattle are not pets. They are production animals that are specially bred to provide food for humans. Farmers manage the cattle to keep them healthy so they can grow and produce good quality meat. Cattle have been used in this way all over the world for many thousands of years.

The first cattle in Australia arrived in Sydney on the ships of the First Fleet in January 1788. The **herd** of two bulls and about six cows were purchased from South Africa as the ships made their way to Australia.

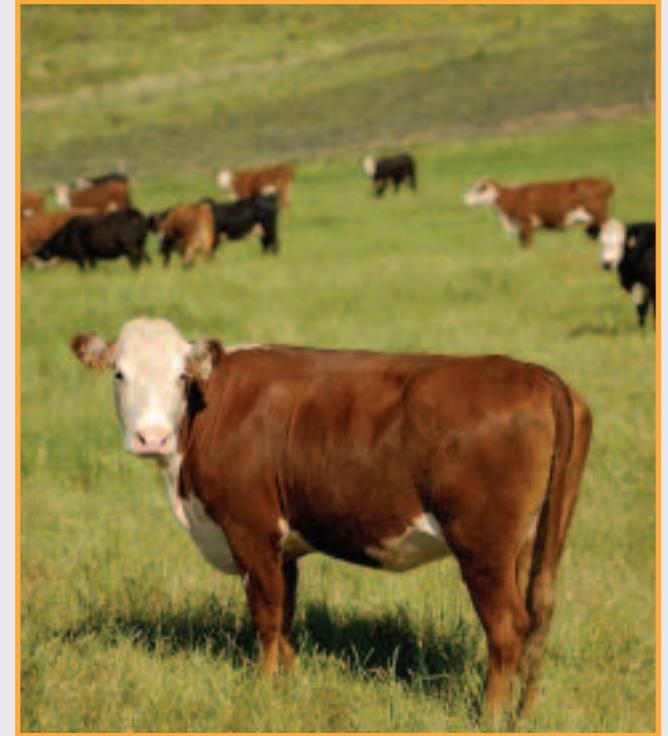
Beef cattle are now very important to all Australians as the beef **industry** provides healthy, safe food for us to eat and earns valuable **export** income that helps to maintain our standard of living.

How are beef cattle produced?

The beef industry relies on a constant cycle of the farmers managing their cattle herds to produce new animals that will grow and be sold at market for meat.

This cycle forms part of our food chain. We call this process breeding cattle and it describes when a bull is mated to a cow to produce a calf, forming the next generation of the cycle. It takes about 283 days from when the cow is mated until her calf is born. The calf will grow into an adult to either breed more cattle or be sold for meat.

Farmers are constantly trying to improve their beef herd to produce good quality meat that **consumers** will want to buy. Farmers select their breeding bulls and cows for characteristics they can pass on to their offspring. These features include good growth rates, good muscle development and an ability to produce tender meat. The aim is to breed cattle that will efficiently produce meat from grass, water and sunshine.



Turning grass into meat

Cattle are herbivores as they only eat plant material including grass, hay and grain. Cattle are also known as ruminants as they have four stomachs to help them digest fibrous (tough) plant material. The four stomachs are called the rumen, reticulum, omasum and abomasum.

When cattle eat they only partly chew their food to mix it with saliva before swallowing and passing it into the rumen. Later, the plant material is pushed back into the mouth for further chewing. This material is called the cud. As the ground-up plant matter passes through the four stomachs and the intestines all the liquid and the nutrients are drawn out of it to help the animal grow.

When grazing green pasture (grass) a cow may eat up to 100 kilograms of plant matter in a day. The animal's first priority is to use the energy from food to meet its daily needs for walking, eating and keeping warm. The extra energy left over is used to gain weight and grow. Farmers monitor how much the cattle eat so they have enough energy to grow and produce meat.

The Cattle Herd

Bull - a mature male animal used for breeding.

Cow - a mature female also used for breeding.

Calf - a young animal less than one year old.

Weaner - describes the calf once it has left its mother.

Heifer - a young female, before she has her first calf.

Steer - a young castrated (de-sexed) male.





Poll Hereford cattle, New South Wales.



Brahman cattle, Northern Territory.

Breeds of cattle

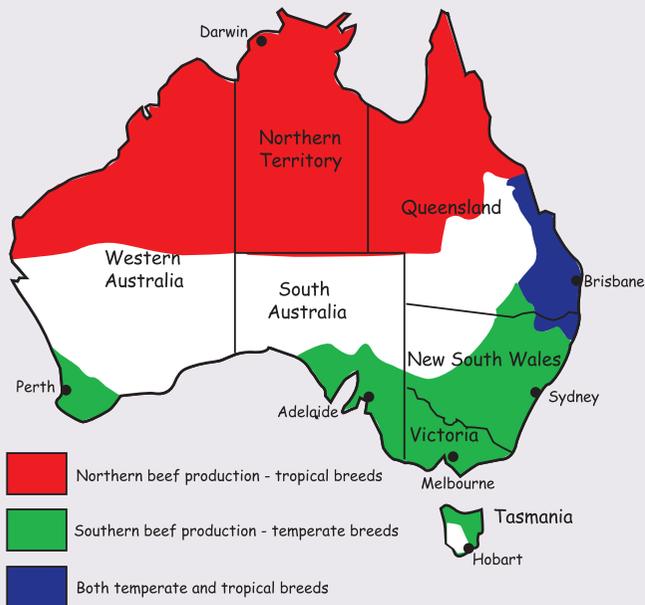
In Australia there are more than 40 different breeds (types) of cattle of all shapes, sizes and colours. The breeds may be suited to a particular climate. Brahman cattle cope with the hot, tropical conditions in Northern Australia and the Poll Herefords prefer the cooler Southern Australia climate.

The Brahman and Poll Hereford breeds are two of the most common breeds of cattle farmed in Australia. Some breeds are bred to produce a special type of meat for a particular **market** including the Wagyu cattle that produce meat 'marbled' with fat, which is highly regarded in the Japanese market.

There are more than 27 million cattle in Australia and the beef industry is one of the country's major industries. Investigate other cattle breeds by searching the Internet or writing to Meat & Livestock Australia.



Beef cattle production in Australia



Where are cattle produced?

This map shows the regions where cattle are produced in Australia. The climate is the main factor that decides where cattle are farmed. In the tropical regions of Northern Australia cattle from the tropical *Bos indicus* breeds are used as these cattle are better adapted to the high temperatures.

Brahman cattle belong to the *Bos indicus* group of breeds. Brahman cattle have short, light coloured coats to reflect the sun and black skin that protects them from sunburn. They have loose skin and extra sweat glands to keep cool.

In Southern Australia temperate breeds belonging to the *Bos taurus* group are used in the milder climate as they mature quickly and have a rapid growth rate. The Poll Hereford is a temperate breed.

The temperate breeds originally came from the cool climate areas of Europe, in particular Britain. The tropical breeds first came from Africa, Asia and the Mediterranean region of southern Europe.



Beef Words

Herd - a group of cattle.

Industry - producing goods to sell.

Export - to sell products to other countries.

Consumers - everyone who buys products.

Market - where products are sold.

Meat and Livestock Australia is committed to providing information on the Australian red meat industry and values your feedback to develop future materials. For further information please contact:

Meat & Livestock Australia Ltd
 Locked Bag 991 North Sydney NSW 2059
 Ph: 02 9463 9333 Fax: 02 9463 9393
 Email: info@mlla.com.au Web: www.mlla.com.au

Third edition published April 2006 ISBN 1 74036 288 8



HOW BEEF CATTLE are farmed

There are two different ways beef cattle are farmed in Australia: the Southern and the Northern beef production systems.

The way farmers manage the cattle to suit the climate and the food available is different between the two systems. This sheet explains what happens on a Southern beef farm, while Beef Sheet 3 looks at Northern beef production and compares the two systems.

Beef in Southern Australia

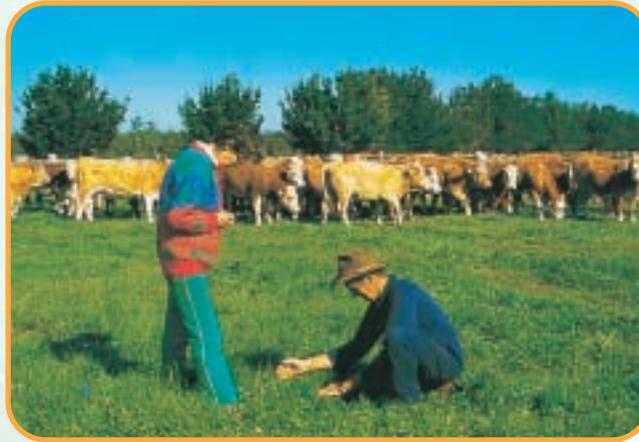
Southern beef production describes the type of farming where cattle are **grazed** on **pasture** plants. Farmers plant the pasture, control the weeds and apply fertilisers to keep the pasture healthy and provide good quality food for the cattle.

Good pasture needs a reliable rainfall, so this type of farming occurs in higher rainfall regions in the southern half of Western Australia, South Australia, Victoria, Tasmania, New South Wales and south-east Queensland.

This type of beef production is often called 'intensive' farming because the farmers work closely day to day with the cattle providing food and water, managing the breeding and keeping the cattle healthy. The cattle are run in paddocks and may be moved to another paddock or the cattle yards using motorbikes, horses or farm utes.

Farmers only allow bulls to mate with the cows at a specific time during the year so all calves are born and are ready for market at around the same time. On Southern beef farms cows usually have their first calf when they are two years old and they may have up to eight calves in their lifetime.

After calving the cattle are moved to the cattle yards so the calves can be given vaccinations (needles) to protect them from disease. They are also marked which means they get a plastic tag in their ear, like an earring, which



identifies the farm they belong to, the year they were born and other information about their breeding. Another way of marking cattle is to put a permanent notch in the edge of the ear. Marking helps the farmer tell the cattle apart, since they all look similar!

The male calves will be castrated (de-sexed) by having their testicles removed so they cannot breed. Castrated cattle produce better meat and are easier to manage as they are less aggressive than bulls. Sometimes the best male calves are selected and left entire (not castrated) so they grow into bulls to be used for breeding.

On Southern farms most of the rain falls during the winter months, which allows the pasture to start to grow. The warm, sunny spring months grow the best pasture before it dies off and becomes 'dry' feed over summer. Farmers feed their cattle extra hay, grain and silage (stored pasture) over the summer months so they have enough good food to keep them healthy and growing, ready for market.

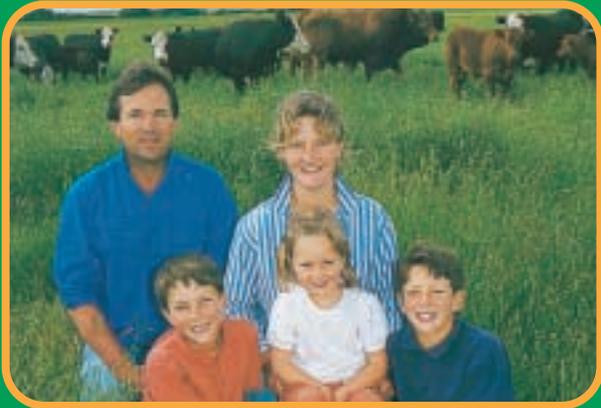
Farmers are busy in spring making hay and silage and storing it, ready for the summer and autumn when extra feed will be needed.

The cattle are grown to a stage when they can be sold for a particular market. They may be sold to another farmer for breeding or further fattening for market, or they may go directly to be processed for meat.



Farmers look after their farms carefully to protect the soil, water, pasture and trees so the land can produce good quality beef in the future for consumers to buy.

Farmers often use other people to help them manage their farms, including: pasture specialists, veterinarians, livestock agents, farm and landcare advisers.



What happens on a Southern Cattle Farm?

Ian and Pam McLennan and their children Jack (9), Austin (8) and Claudia (5) run beef cattle on their farm at Lake Bathurst, 230 kilometres south-west of Sydney in New South Wales.

The children enjoy helping their parents around the farm with mustering the stock, opening gates and feeding the cattle. Jack, Austin and Claudia go to school in their local town while the nearest large shops are 30 kilometres away in Goulburn.

The McLennan's farm is 1330 hectares in size and this is divided into 40 paddocks. The farm receives about 600 millimetres of rain most years and grows good pasture.

The McLennans run 4 bulls and 130 cows, which produce 130 calves each year. The cows are a mix of the Hereford and Angus breeds, and they are mated to Limousin bulls to produce quick-growing calves for the local market. The calves are sold when they are 10 to 12 months old and weigh 300 to 380 kilograms.

On the McLennan's farm they also run Merino sheep to produce wool and prime lambs. They make 30,000 bales of lucerne hay to sell to other farmers, and they grow grain crops and pastures. One extra person is employed to work on the farm all year, and other people are employed at busy times.



Feedlots

A feedlot is an intensive cattle farm where the cattle are run in yards and fed a special diet of grain and hay or silage. This is called lot feeding and it allows farmers to provide high value feed all year round to produce consistent quality meat.

How fast cattle grow depends on the quality of the feed available. In a feedlot the cattle are fed to keep their growth rate constant so they can be ready for market at any time of the year. The cattle are weighed when they enter the feedlot and their feed is carefully managed to keep them growing.

If cattle spend 100 days in a feedlot on a grain-based diet, the beef is described as 'grain-fed beef'. You may see this name on a menu or in a shop.



Japanese consumers like their beef 'marbled', which means the fat is spread evenly through the meat. This can be achieved by changing the diet of the cattle.

Feedlots are often used to 'finish' cattle so they meet the demands of particular markets and consumers. This means uniform (same) quality meat is available for us to buy all year round.

There are 650 feedlots in Australia that can feed up to 900,000 cattle. Most of the feedlots are in south-east Queensland and New South Wales close to the cattle and feed supplies, but there are feedlots in each state.

All feedlots producing meat for export need to be accredited (approved) under a national scheme to maintain the quality and standards of Australian beef.

The McLennan's Beef Farming Calendar

January-March	Plant crops to feed cattle.
May	Wean calves from cows and weigh the calves, sell heavier calves as vealers.
June	Remaining calves drenched to prevent worms and keep healthy, feed extra grain and allow them to graze the oat crop.
July-August	Calving begins. Weigh remaining weaners prepare for sale.
September	Remaining weaners sold.
October	Bulls put in with cows for mating.
November	Calf marking, hay making.
December	Bulls taken out of cow herd.

Beef Fact

62% of the beef meat produced from feedlots is exported to other countries, while 38% is consumed in Australia.



Beef Words



Production - making things.

Grazed - when cattle eat pasture.

Pasture - plants like grasses and clover.

Meat and Livestock Australia is committed to providing information on the Australian red meat industry and values your feedback to develop future materials. For further information please contact:

Meat & Livestock Australia Ltd

Locked Bag 991 North Sydney NSW 2059

Ph: (02) 9463 9333 Fax: (02) 9463 9393

Email: learn@mla.com.au Web: www.mla.com.au

Second Edition Published May 2002 ISBN 1 74036 294 2

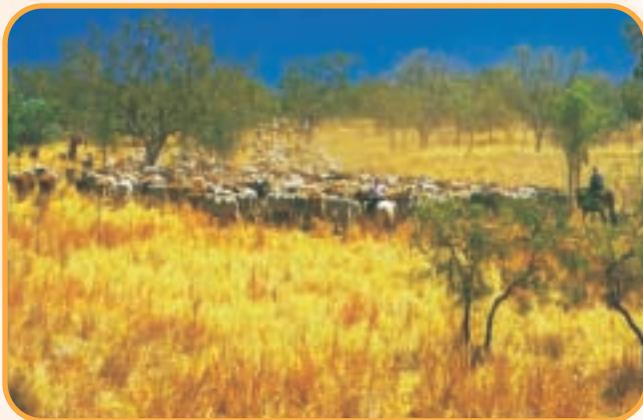


BEEF in Northern Australia

In Northern Australia beef cattle graze the native grasses and plants on large areas of land, called stations.

Some stations are more than one million hectares in size. If one hectare is the size of a square measuring 100 metres by 100 metres, you can try to imagine the huge area of land that a million hectares would cover.

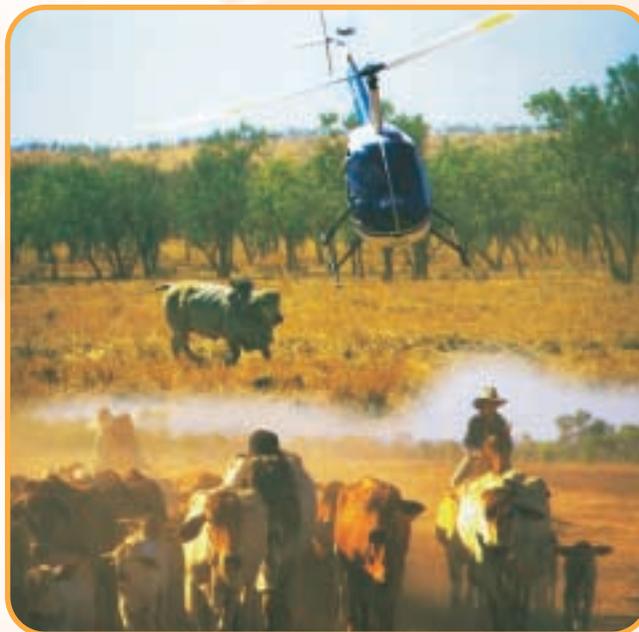
This type of beef farming is found in the northern areas of Western Australia and Queensland, as well as in the Northern Territory and remote parts of South Australia.



The paddocks have to be very large in these areas because the plants are not as nutritious as improved pasture and they cannot be grazed heavily. The cattle have to wander over large areas to find enough food, so this type of farming is often called 'extensive' farming. In northern areas the cattle are run at one animal for up to 50 hectares of land. In southern areas each animal needs up to 10 hectares of land.

There are only two seasons in the northern areas: the wet season from October to March and the dry season from April to September. The wet season rains help the grasses grow, and when the feed is green the cattle grow and put on weight.

During the dry season the cattle are **mustered** which means they are rounded up in the huge paddocks using horses, motorbikes, and a helicopter or small plane to help spot the cattle and drive them out of heavy bush. The cattle are taken to the nearest cattle yards where they can be sorted and the calves separated from the cows. The calves are vaccinated against disease, marked on the hide or ear tagged so they can be identified later, and the male calves are castrated (de-sexed).



It is a big job to round up all the cattle and take them back to the yards, so the bulls are allowed to run with the cows all year rather than being taken out of the herd after mating. This means calves will be born at different times of the year, so a second muster later in the year is done to brand and wean the late calves.

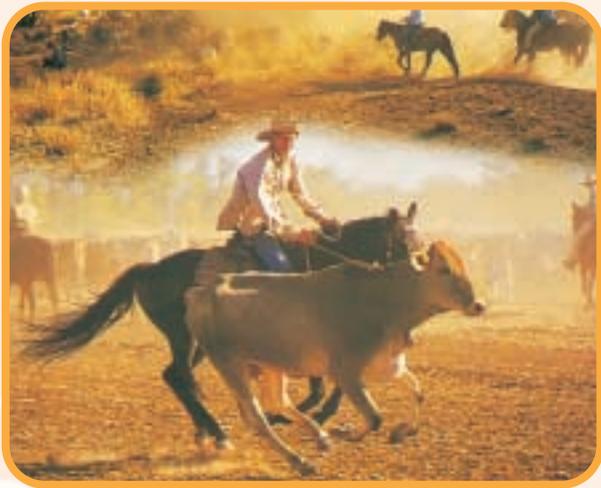
The best time for calving is during the wet season from November when there's more feed for the cow and her calf. If a calf is born after March the cow may lose condition trying to feed herself and her calf over the dry season, and she may not be able to have another calf the following season.

Most stations have several sets of cattle yards so the cattle don't have to travel too far to the yards. Trucks are used to transport the cattle around the station on dirt roads, and to take the horses out to the paddocks to do the mustering.

Huge road train trucks with several trailers take the cattle from the yards to market. The cattle may be transported to a port to be shipped live to markets in nearby Asia, or they may be taken to a meatworks for processing. The main ports for shipping cattle are Broome, Wyndham, Darwin, Karumba, Townsville and Gladstone.

Like to find out more
about beef?
Investigate Meat and Livestock
Australia's website at
www.mla.com.au





When the mustering is completed the other jobs that have to be done are fencing, windmill maintenance and checking that the water **troughs** are all working.

A team of people work on the cattle stations during mustering, including:

Station manager - the overall boss of the station.

Overseer - manages all the staff on the station.

Head stockman - organises the mustering team.

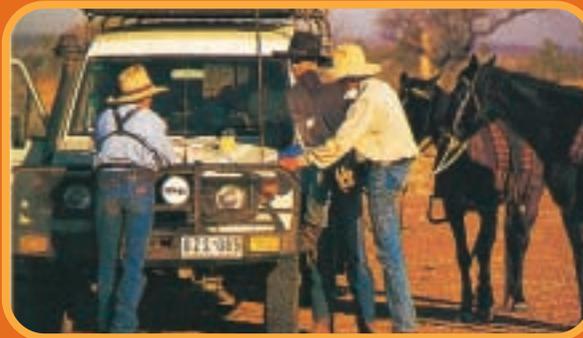
Jackaroo/Jillaroo - men and women who muster the cattle, work in the cattle yards.

Cook - provides all the meals for the stock camp.

Pilot - flies the helicopter or small plane during the muster.

Often the team sets up a stock camp in the bush during the muster so they don't have to travel back to the station homestead each night. They may spend many weeks camped out under the stars and they sleep in a roll-out canvas bed called a swag.

Mustering is hot, dusty, hard work but it can be a lot of fun and many young people do it for a couple of seasons to experience the way of life.



What happens on a cattle station?

Mick and Pat Murray and their children live on Newry Station in the Northern Territory, 70 kilometres east of the nearest town of Kununurra.

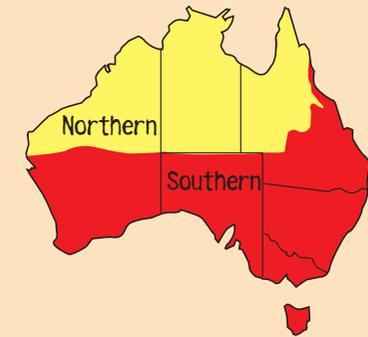
The two youngest children Luke (12) and Dan (10) do their school work at home and take part in School of the Air lessons over the two-way radio. From Year 8 they will complete their schooling at a school in the city. Luke and Dan enjoy working on the station and they look after the cattle dogs and feed the pigs each day, and ride horses to help with the cattle muster.

There are 12 people employed for the mustering season on Newry and one other person looks after the 14 windmills which supply underground water to the cattle.

The property is 2400 square kilometres in size. There are only 15 paddocks on the station, ranging in size from 10 square kilometres to 380 square kilometres.

The 15,000 head of Brahman Shorthorn cross cattle are run on Mitchell Grass, Flinders Grass, Spinifex, Tea tree and Acacia scrub country. The country is too rocky for motorbikes so the cattle are mustered using horses and a helicopter. There are 60 working horses on Newry.

The bulls are bought especially for breeding to improve the herd and they are left in with the cows all year. Heifer calves are kept on the property for breeding. The steers are sold for live export or to the meatworks when they are 1.5 to 3 years of age and weigh 280 to 340 kilograms.



Comparing North and South

Look at this table to compare the differences between Northern and Southern beef production systems.

These figures relate to the areas shown on the above map

Average per property	Northern	Southern
Average area hectares (ha)	138,143	3306
Number of beef cattle	4032	354
Area for each animal	33	6
Beef cattle sold/year	990	147
Beef cows mated/year	1809	146
Calves produced/year	1297	123
Calving time	Mar-April	Nov-Mar
Industry Totals		
Number of properties	1579	46,717
Number of beef cattle	6,365,722	16,514,495
Proportion of national beef production	28%	72%



Beef Words



Mustered - cattle are collected into the stock yards.

Troughs - hold water for the cattle to drink.

Meat and Livestock Australia is committed to providing information on the Australian red meat industry and values your feedback to develop future materials. For further information please contact:

Meat & Livestock Australia Ltd

Locked Bag 991 North Sydney NSW 2059

Ph: (02) 9463 9333 Fax: (02) 9463 9393

Email: learn@mla.com.au Web: www.mla.com.au

Second Edition Published May 2002 ISBN 1 74036 300 0



BEEF from farm to market

Beef cattle are grown to a stage that they best suit the needs of a particular market, then they are sold by the farmer with the aim of achieving the best price.

Consumers prefer different types and flavours of meat, and farmers try to match their cattle to what consumers will eventually want to buy from the butcher or supermarket. There are several different ways farmers can sell their cattle when they reach the right weight for a particular market.

Saleyard auction - cattle are trucked to a central saleyard, weighed and penned. Buyers inspect the cattle, decide how much they want to pay, then during the auction they bid for the cattle they want to buy. The cattle are sold to the buyer who bids the highest price. Cattle are sold at either a price per head, or a liveweight price measured in cents per kilogram the animal weighs at the saleyard. The buyer arranges to truck the cattle away from the saleyard after the sale.

Direct sale - the buyer buys the cattle directly from the farmer at an agreed price. The cattle don't go to a saleyard. They are transported direct to a meatworks, a feedlot or to a ship for live export.

Forward contract - the farmer agrees to supply cattle to the buyer at an agreed weight and on a set date. This is common in feedlots where the weight and condition of the cattle can be controlled with feeding.



Niche markets - the farmer produces cattle suited for a particular buyer and market, for example organically produced beef.

Auctions Plus Pty Ltd (Previously CALM) - is an electronic network where the cattle are traded on computers and the cattle stay on the farm until they are sold. People are trained to assess the cattle to provide an accurate description on the computer network.



Livestock agents are people who have an important job to bring the seller and the buyer together to get the best price for the cattle. They are skilled at judging when cattle are ready to be sold and often help the farmer select the cattle to go to market.

Quality

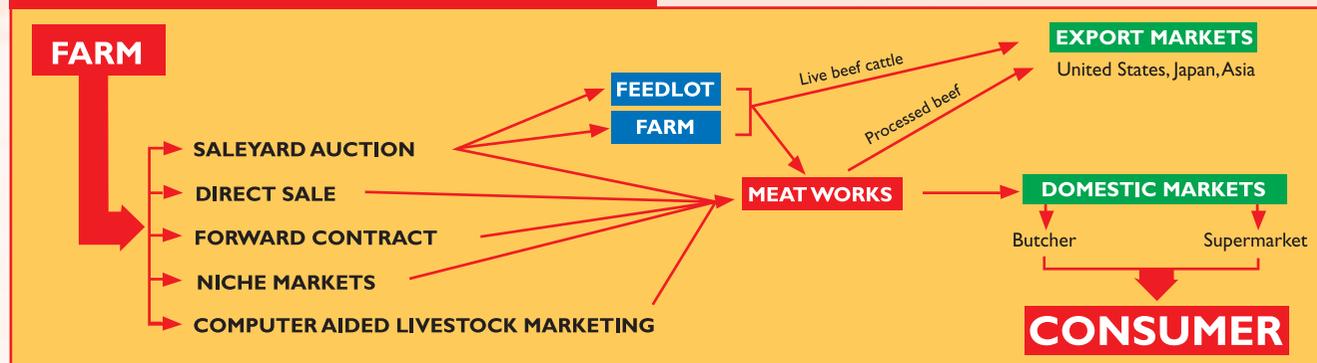
The Australian beef industry has quality control schemes to ensure consumers can buy fresh, safe, healthy meat produced in harmony with the environment.

The CATTLECARE program sets quality standards for farmers to follow at each stage of producing beef on their farm, covering areas like animal welfare, stock feeds, safe chemical use, transport and handling cattle. Quality control programs also operate in feedlots and saleyards to ensure livestock welfare, quality and safety is managed from the paddock to your plate.

Markets

Beef cattle are produced for both the domestic (within Australia) market and the export (overseas) markets. The domestic market uses 34% of all the beef produced in Australia and the rest is exported in two forms: live animals shipped to other countries for processing, or processed and chilled or frozen meat.

HOW BEEF GOES FROM PADDOCK TO PLATE

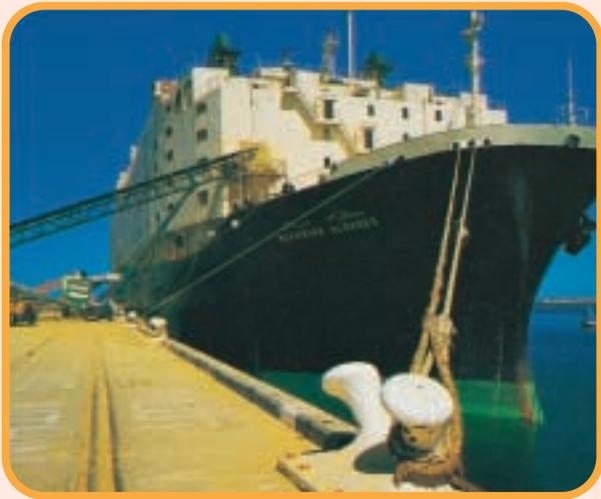


Beef fact



Australia is the world's largest exporter of beef even though we only produce 3.9% of the world's beef supply.





Live Cattle Exports

Live exports are a major outlet for cattle and this trade is worth about \$543 million each year to Australia's national income.

The main countries live cattle are exported to are in Asia, North Africa and the Middle East: these countries include Indonesia, Egypt, the Philippines, Malaysia, Japan, Jordan, Saudi Arabia, Israel, Brunei and Mexico. These markets prefer live animals so they can process the meat according to their religious beliefs, and because their cold storage and transport facilities are limited so it is safer to process the meat where it will be consumed.

The cattle are loaded on large ships designed to carry up to 25,000 cattle. The cattle travel in ventilated pens with water and feed troughs. They are fed a special ration of grain, hay, vitamins and minerals mixed together into feed pellets so it is easy to transport and feed out.

Before loading, the cattle are inspected by a veterinarian to make sure they are healthy and free from disease. There are strict guidelines and quality systems that must be met to make sure the animals arrive in good condition.

The export beef trade is worth \$4.1 billion to Australia so the industry works hard to protect its reputation for safe, quality Australian beef.



What is a meatworks?

The meatworks or abattoir is the factory where the beef cattle are processed into meat and other products.

There are strict rules that guide how meatworks operate and inspection takes place through each stage to



ensure the humane treatment of the cattle and the safety and quality of the meat products.

The most useful part of the animal is called the carcass which contains the meat and this is carefully chilled in a large chiller room like a huge fridge. After chilling the meat is transported in refrigerated trucks to butcher shops



and supermarkets as half carcasses or smaller cuts.

Every part of the animal can be used to make other products including: smallgoods like salami and sausages, icecream, lollies and jellies, fertiliser, glue, medical products, soap, candles, and shoes and furniture.

Processed Beef Exports

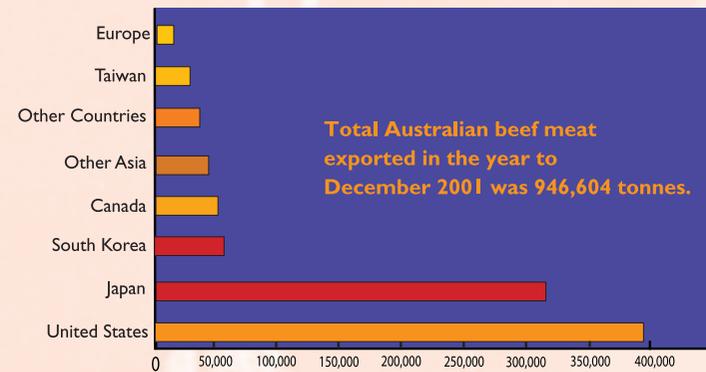
Beef for export must be processed in an approved export meatworks and all export beef is inspected to make sure it meets high health, safety and quality standards.

Most beef is exported as boneless cuts or bulk packs that have been vacuum packed and chilled or frozen. At the right temperature, vacuum packed meat will stay fresh for over 100 days and it becomes more tender with age. The packaged meat is transported on aeroplanes and ships to countries around the world.

Japan and the United States are the largest markets for Australian processed beef and we also export to Canada, South Korea, Taiwan, South East Asia, Europe and the Middle East.

Most of the beef from northern Australian cattle properties is processed for the United States market where it is mainly used for manufactured foods like hamburgers. Beef from the southern part of Australia is mostly exported to Japan and South Korea. When the beef arrives in another country it is distributed to butchers, supermarkets and restaurants where it is cut up and re-packaged to suit the needs of local consumers.

Australian Beef and Veal exports



Total Australian beef meat exported in the year to December 2001 was 946,604 tonnes.

Source: 2001 AFFA

Meat and Livestock Australia is committed to providing information on the Australian red meat industry and values your feedback to develop future materials. For further information please contact:
Meat & Livestock Australia Ltd
 Locked Bag 991 North Sydney NSW 2059
 Ph: (02) 9463 9333 Fax: (02) 9463 9393
 Email: learn@mla.com.au Web: www.mla.com.au
 Second Edition Published May 2002 ISBN 1 74036 306 X





HOW DO WE use beef

We can find beef meat and other beef products all around us in our daily lives. Beef is a useful food to include in a balanced diet and it makes a tasty and satisfying meal everyone can enjoy.

Some of the ways you might eat beef include in a home-cooked meal like spaghetti bolognese, tacos or roast beef, in a hamburger from a fast food outlet, in a meat pie from the school canteen, as a steak at a restaurant for a family celebration, as sausages or kebabs at a barbecue at a friend's house.

There are 7,756 butcher shops and supermarkets in Australia, and the value of the beef meat sold each year is \$1.8 billion. The food service industry, including fast food outlets and restaurants, uses \$655 million worth of beef.

Which cut of beef to buy?

When you buy fresh meat at a butcher or supermarket it will be labelled with a name which describes the cut of meat and gives an idea of what you might cook. When you want to buy some steak, you can choose from a number of different cuts depending on how you want to cook the meat, how much you want to spend and how tender you like your meat. Some of the types of steak you might see include: fillet, rump, sirloin, T-bone, chuck, porterhouse and blade steak.

If you are unsure of what cut of meat to buy you can always ask the butcher for ideas on what to cook and which meat is the most tender. Many butcher shops and meat counters in supermarkets have free recipe cards to help you try new meals with meat.

Handling meat at home

When you buy meat it is important to keep it cold while you get it home to the refrigerator to keep it fresh. It is a good idea to carry meat in an esky with ice if you are travelling in a hot car or taking meat to a barbecue.

Meat should be covered and stored in the coldest part of the fridge. Do not store raw beef next to cooked foods or foods that will be eaten raw, to make sure bacteria won't spoil those foods.

If meat is pre-packed it will have a date code on the label to show how soon the meat should be eaten. Fresh meat needs to be cooked and eaten without delay.

Frozen meat can be kept in the freezer for two to six months. It should be wrapped in plastic as a flat package with the air squeezed out so it freezes quickly. We usually think of food freezing at zero degrees Celsius (°C) but meat must reach minus 18°C to be properly frozen.

Food safety rules

- Clean:** Wash your hands thoroughly before and after handling raw meat. Clean knives and cutting boards in hot soapy water after working with raw meat and before using for other foods.
- Chill:** Keep meat chilled in the fridge until you are ready to cook.
- Cook:** Cook foods properly. Beef mince needs thorough cooking, but steaks only need cooking on the outsides to be sure any bacteria is destroyed.

Beef by-products

This table shows some uses for beef by-products.

Edible	Ice cream	Yogurt	Biscuits	Sausages
Household	Soap	Shoes	Pet food	Footballs
Industrial	Fertiliser	Explosives	Lubricants	Printing ink





How to cook beef

There are two cooking methods you can use to cook beef and these are the dry heat method and the moist heat method. The cooking method used depends on the tenderness of the cut of meat.

The dry heat method is a fast way of cooking that is best suited to the tender cuts of meat. This method uses little or no liquid and it's important not to over-cook the meat or it will become dry and tough. How long the meat will take to cook depends on the size and thickness of the cut; the bigger the cut, the longer the meat will need. Examples of the dry heat method are: pan fry, stir-fry, grill, barbecue, and oven roast.

The moist heat method is a slow way of cooking meat in liquid which is suitable for less tender cuts of meat. The long, slow cooking in liquid softens the gristle and sinew that makes meat tough. Examples of moist heat methods are: casserole, pot roast, braise and stew.

Beef can be cooked in a microwave oven but it is best to use cuts suitable for moist heat cooking, like a casserole. The best cuts include shin (gravy) beef, round, skirt, chuck steak and mince.

Cooking Terms



Barbecue

Quick cooking on a hot metal plate or grid over a gas flame or fire.



Stir-fry

Quick cooking small pieces of meat in a hot uncovered wok or frypan, stirring constantly.



Grill

Quick cooking under a gas flame or electric element.



Casserole

Slow, gentle cooking in liquid in a deep covered pan either in an oven or on a hotplate.



Oven Roast

Cooking in an uncovered roasting pan in a preheated oven.

Why do we eat beef?

We need to eat a balanced diet of foods that supply the essential nutrients to keep our bodies healthy and growing strong. Besides being tasty and satisfying, beef is a good source of nutrients including iron, zinc and vitamin B12.

Iron helps the red blood cells carry oxygen around your body to give you energy and help your brain develop and perform.

Zinc is vital for a healthy immune system to stop you getting sick. Zinc helps you grow and develop, and helps your body use carbohydrates and protein for energy.

Vitamin B12 maintains a healthy nervous system and body cells, and it gives you healthy skin and good vision.

Red meat is such a good source of iron and zinc that the Australian Guide to Healthy Eating recommends red meat should be eaten three to four times a week.

It is also a good idea to choose lean meat and trim the fat to reduce the amount of fat you eat. To help you choose lean meat when you're shopping, there are 33 different beef cuts with the National Heart Foundation red tick of approval label that shows these beef cuts are a healthy low fat choice.

How much beef do we eat?

Beef is the most popular meat in Australia. The average Australian eats about 36 kilograms of beef in a year. Most people eat beef or lamb as a main meal about three times a week. Australia has the fourth highest beef consumption level in the world.

Easy Peasy Spaghetti Bolognese

Ask an adult to help you make this delicious beef mince meal - just follow the recipe below and enjoy!



- 500 grams of lean beef mince
- 1 tablespoon of olive oil
- 1 onion, finely chopped
- 1/4 cup of tomato paste
- 425 grams can of peeled tomatoes with the juice.
- Spaghetti or your favourite pasta, cooked in boiling water.

1. Heat the oil in a pan, add the onion and cook stirring over medium heat for 1-2 minutes.
2. Add the mince, stirring constantly until it is well browned
3. Stir in tomato paste and canned tomatoes. Cover and simmer gently for 20 minutes.
4. Serve with your favourite spaghetti or pasta and salad

For great recipe ideas visit the Meat & Livestock Australia website at www.mla.com.au

Meat and Livestock Australia is committed to providing information on the Australian red meat industry and values your feedback to develop future materials. For further information please contact:

Meat & Livestock Australia Ltd

Locked Bag 991 North Sydney NSW 2059

Ph: (02) 9463 9333 Fax: (02) 9463 9393

Email: learn@mla.com.au Web: www.mla.com.au

Second Edition Published May 2002 ISBN 1 74036 312 4



FEEDLOTS in Australia

A beef feedlot is where cattle are mechanically or hand fed to produce meat of consistent quality. Cattle are kept in pens and do not eat pasture like cattle raised on farms. They are fed grain-based diets and hay or silage. The meat from cattle that are fed a grain-based diet can be sold as grainfed beef. Lot feeding is an intensive (high throughput) production system.

Feedlot Fact

Australian feedlots have the capacity to feed up to 900,000 beef cattle. The largest feedlot in Australia is located in Queensland and can hold up to 75,000 cattle.



Feedlots have operated in Australia since the 1960s to 'finish' cattle for market and to ensure a consistent supply of finished cattle. Consistency is not always possible through extensive (grass) grazing of cattle, due to Australia's varying climate (eg droughts).

There are over 650 feedlots Australia-wide that produce grainfed cattle. Most of the feedlots are located in south east Queensland and New South Wales. They are located in mixed farming areas for easy access to cattle, grain and other feed sources.

Markets for grainfed beef

Grainfed meat is highly valued by many of our export markets such as Japan which is our biggest market for grainfed beef. Cattle for the Japanese market remain in the feedlot for between 180 and 360 days. This results in meat that is 'marbled', where the fat is distributed through the muscle.

Over half of the grainfed beef produced in Australia is exported to Japan, with the domestic market and Korea taking most of the remaining product.

All feedlots producing meat for export need to be accredited under the National Feedlot Accreditation Scheme, the industry's quality assurance scheme. This is to ensure Australia maintains a high standard of production and supply to all markets. The scheme ensures proper care of the animals and the environment.

The process of lot feeding

Lot feeding is the most intensive of the beef cattle production systems so management of feed rations, water, animal health and the environment is very important.

Like to find out more
about feedlots?
Investigate Meat and Livestock
Australia's website at
www.mla.com.au

1. Sourcing the cattle

The people operating the feedlot may breed their own cattle to put in the feedlot, or they may buy cattle from other producers. Some feedlots offer a custom feeding service where producers can pay to have their cattle 'finished' in the feedlot before they are sold to meet specific market requirements.



2. Feeding

Feeding the cattle is one of the most important jobs on the feedlot. The food they are fed (called feed rations) is managed so their growth and weight can be controlled. When cattle enter the feedlot, they are introduced to the feed ration gradually because it is different from their previous diet.

Different feed rations can be given to the cattle depending on the weight gain that is required and the meat qualities wanted by the market. In a feedlot it is possible to determine quite accurately how fast each animal is growing and when it will be ready for market. In large feedlots grain and other feed is stored in large silos and the rations are accurately weighed and mixed.

Feedlot cattle may be fed once or twice a day. The rations are put into large troughs, usually just outside the pens. This allows the cattle to reach the feed but not make it dirty. Water is available at all times in the pens.

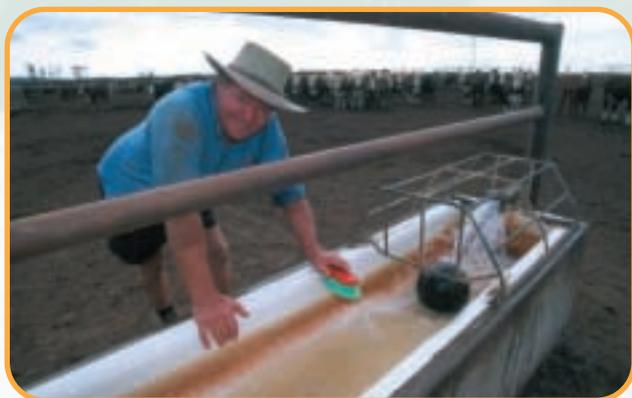
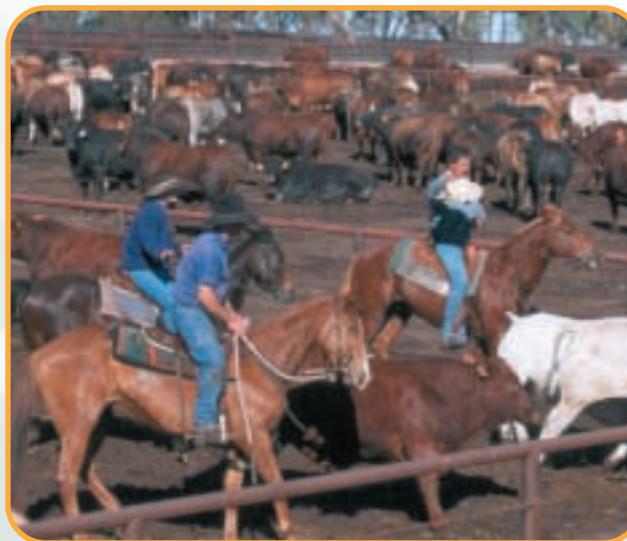
Feedlot production is affected by the price and availability of grain. If grain prices are high (as in times of drought) or if grain has to be transported long distances, the production cost of grainfed beef is high.

3. Checking the cattle

Checking that the cattle are healthy and caring for sick cattle is also an important activity in the feedlot. Trained stockmen on horseback or on foot work the cattle gently around the yards everyday and can easily spot any sick animals because they will be slow or look unsettled. If a sick animal is found, they move it away from the other cattle, usually into a separate hospital pen for treatment and care.

Feedlot cattle are usually weighed on entry to the feedlot and sometimes during the feeding period to check their progress. The scales used by feedlots to weigh cattle are big enough for the animal to stand on and are surrounded by a 'cattle crush', a fenced pen that holds the animal still while the weight is recorded.

Holding the cattle in the crush also enables feedlot workers to ear-tag the animals, which helps to identify them. This makes sorting cattle much easier. They may also receive a treatment to boost their health and resistance to disease.



4. Managing the waste

With so many cattle housed in feedlots, not surprisingly there is a lot of waste to dispose of such as manure and effluent. It is necessary to treat the waste so there are no strong odours or environmental problems.

The yards are usually built so that run-off (including manure) drains away to a large collection or ponding area. It is then removed, treated and composted, used in other areas of the property, or sold to other farms as a fertiliser or soil conditioner.

Manure is also a valuable by-product as it can be composted and used as a natural fertiliser.

5. Selling the cattle

Cattle ready for the market are weighed and checked before loading onto large trucks, which take them to the abattoir.

Care of the Environment

The beef cattle lot feeding industry in Australia is committed to caring for the environment. Feedlots require a lot less land for the production of beef ... but sometimes there are problems with odour, water and waste.

Feedlots are therefore required to protect the land, groundwater resources, surface water resources and community amenities. In addition they must utilise effluent and manure in a responsible way.

Feedlot Talk

Marbling – refers to flecks of fat distributed through the muscle. It is highly valued in Japan.

Feed rations – is the mix of grains and other food fed to cattle on the feedlot.

Finishing – means putting cattle on a feed ration to meet a specific market need. Cattle which are 'finished' are processed immediately for meat.

Short fed – cattle are grainfed for 70-150 days to supply the domestic or export market.

Medium fed – cattle are grainfed for 150-200 days generally for the Japanese or Korean market.

Long fed – cattle are grainfed for over 200 days (up to 360 days) for the top Japanese markets (eg fine dining restaurants).

Consistency – is the ability of feedlots to continually produce meat of the same high quality, regardless of seasons.



Meat and Livestock Australia is committed to providing information on the Australian red meat industry and values your feedback to develop future materials. For further information please contact:

Meat & Livestock Australia Ltd

Locked Bag 991 North Sydney NSW 2059

Ph: (02) 9463 9333 Fax: (02) 9463 9393

Email: learn@mla.com.au Web: www.mla.com.au

Second Edition Published May 2002 ISBN 1 74036 709 X



LIVE CATTLE Exports

The transport of live animals by sea has a long history in Australia. It is how Australia's cattle industry started when cattle and other livestock arrived in Australia on the ships of the First Fleet in January 1788. The cattle were purchased in Cape Town, South Africa, as the ships made their way to Australia. In a colony struggling to feed itself, cattle were to become critical for milk and meat. Each successive ship to Australia carried no stock for the early settlers.

From these humble beginnings, Australia is now the leading exporter of cattle in the world. We export livestock by sea from 18 Australian ports to 44 overseas destinations, mostly in South East Asia and the Middle East. In 2001, Australia exported almost 900,000 head of cattle, valued at \$543 million.

Industry location

The live cattle trade in Northern Australia has provided many benefits to local producers and the community. Distances and travel times to South East Asia are minimal and the predominant cattle species, *Bos indicus*, cope well with the tropical conditions. The live export trade supports many local businesses such as feed suppliers, livestock transporters, musterers and shipping agents.

Western Australia and the southern states also benefit from live cattle exports to the North African and Middle Eastern markets that import both *Bos taurus* and *Bos Indicus* breeds.

Darwin is the largest shipping port for the live cattle trade in Australia with most cattle going to South East Asia. Fremantle in Western Australia is the main port for loading cattle to the Middle East and North Africa. Port Hedland, Broome, Karumba, Townsville, Wyndham, Portland and Adelaide also load large numbers of cattle for the live export trade.

The voyage

Cattle travel from the farm or feedlot on trucks or trains to the port where the ship is held (docked). Before loading, they are checked by veterinarians to ensure they are healthy to travel and are sorted according to weight and breed type.

The cattle travel on large ships specially designed to carry them. The ships vary in size and can carry shipments of up to 25,000 cattle at a time, although generally between 1,000 and 6,000 are shipped.

On the ship, cattle are grouped into ventilated pens, allowing sufficient airflow to keep them cool and comfortable. They cannot run around the ship because of risk of injury, so are confined in the pens throughout the journey. However, they can move within the pens to water and feed troughs. The pens are usually lined with straw or sawdust, acting as a bed for the cattle, and are cleaned regularly.

Good ship design means cattle can travel on the top decks (above the waterline) or lower decks (below the waterline). When loading the ship, the heaviest cattle are loaded onto the lower decks first to ensure the ship remains stable.

Lighter cattle are put on the upper decks. Animals are allocated the most appropriate pen according to their weight, breed and friends (where possible they stay with their own mob). Heavier animals are given larger pens to allow them to move more freely.



Meet the crew

Crews will differ depending on the voyage but generally, the following people are important for the running of the ship.

Master of the vessel/Captain is in charge of all operations and activities on board the vessel.

Chief Officer manages the feed distribution, loading and unloading of stock and other important activities such as stability of the ship.

Accredited Stockman is employed by the exporter to look after the health and welfare of the animals throughout the journey.

The Crew help maintain the ship, feed the animals, clean the decks and change bedding for the animals.

Bosun is generally the head stockman in charge of the crew and ship maintenance.

Veterinarian checks the animals before they are loaded, and for some markets may accompany the animals on their journey.

The Cook prepares all meals for the crew.

The cattle have plenty of water and food on the voyage. They are fed twice a day in most cases (once in the morning and once mid-afternoon) on a combination of special pellets, chaff and hay. Fresh water is available to each animal. Each animal can drink up to 35 litres of water each day (that's almost 150 glasses of water!). Heavier animals drink even more.





Live cattle imports suit the needs of many countries

The majority of live cattle exports are destined for South East Asian markets where domestic cattle are in short supply. This is because most land is used for production of staple food items such as rice. There is a high demand for Australian cattle in Asian feedlots.

In addition to the shortage of cattle in these countries, they have religious requirements relating to the slaughter of cattle.

Refrigeration is also a problem in Asia and supplying chilled meat is not always possible.

Countries in North Africa, such as Egypt prefer Australian cattle because they are free of exotic diseases.

Our largest markets for live cattle are Indonesia, Egypt and the Philippines. We also export to Malaysia, Jordan, Brunei, Japan, Israel, Mexico and Saudi Arabia.

Caring for the animals on board

Whether the ship journey is a few days or a few weeks, caring for the animals is the most important job on board the ship.

Stress from the heat or cold is a leading cause of cattle illness on the ship so checking the temperature, humidity, and ventilation is important. On the top decks, shading is used to keep the cattle cool and dry. On the lower deck, fans may be used.

The ship's Master or First Officer checks weather forecasts to prepare for any hot, cold or rough weather. Sometimes ships are steered off course to avoid bad weather.

Experienced stockmen check cattle in the morning, during the hottest part of the day and after feeding. The stockmen look for cattle that may be distressed and in need of extra care. Healthy cattle look well with shiny coats, are eating and drinking and have good respiration (breathing) rates. Sick cattle receive extra care and are sometimes moved to a special pen for treatment (the 'sick pen').

Like to find out more about live cattle exports? Investigate Meat and Livestock Australia's website at www.mla.com.au

CLASSROOM ACTIVITY

- * Mark on a map where the major ports are (Darwin, Fremantle, and Portland). Guess how long it would take a ship to reach the Philippines and Egypt.
- * Trace a journey from the port of Darwin to the Philippines or from Fremantle to Egypt.



Live Export Talk

Port – the place where the cattle are loaded onto, or unloaded from, ships.

Pen – a small enclosure where the animal is held while on the ship.

Load Plan – a plan detailing the location of the pens and space requirements within the pens.

Stocking density – how much space each animal needs in the pen.

LEAP – (Live Export Accreditation Program) A quality assurance system which focuses on the welfare of the animal. All exporters of live cattle must have a LEAP in place, in order to get their licence to export.



Meat and Livestock Australia is committed to providing information on the Australian red meat industry and values your feedback to develop future materials. For further information please contact:

Meat & Livestock Australia Ltd
 Locked Bag 991 North Sydney NSW 2059
 Ph: (02) 9463 9333 Fax: (02) 9463 9393
 Email: learn@mla.com.au Web: www.mla.com.au

Second Edition Published May 2002 ISBN 1 74036 715 4

MEAT PROCESSING

The most valuable product from beef cattle production is meat. The meatworks, or abattoir, is the 'factory' where animals are processed into meat. Cattle are processed into beef and other products such as offal and hides.

While Australia only produces a small percentage of the world's beef supply (3.9%) it is the largest beef exporter in the world. Sixty-six percent of Australia's total beef production is sent overseas. The value of these exports is about \$4.5 billion.

In 2001, most beef and veal processed went to Japan (319,000 tonnes) and to the United States (397,000 tonnes). The United States buy a lot of manufacturing grade beef used to make hamburgers while the Japanese buy mostly high quality cuts.

There are around 236 meat processors in Australia. Not all meatworks process meat for export because they need a special licence.

The Process: Cattle to Beef

Meatworks have a high level of government inspection and self regulation to ensure the humane treatment of cattle and the quality and safety of the product.

1. Holding yards

When cattle arrive at the abattoir they are unloaded from the truck and placed into holding yards, which are pens holding several animals. Most pens contain drinking water for the cattle. All animals are inspected on arrival to ensure they are fit and ready for processing.

Some cattle that have been on a long journey may be rested for a few days and given feed. Other cattle arriving from a shorter journey may only be given a few hours rest before processing.



2. Slaughter

The process used to kill the cattle is very humane. Cattle are taken from the holding yard into a narrow lane leading to the meatworks. In the abattoir, the cattle are immediately stunned using a special device that makes them unconscious. The effect of stunning ensures the animal does not feel pain when it is bled. Death occurs almost instantly.

3. Processing

The process of converting the animal to meat begins after slaughter and continues until there is only meat, fat and bone. The final product, called the **carcase**, is the most valuable part of the animal and contains all the meat.

The processing stage is very hygienic. Extra care is taken to ensure contamination does not occur.

Other parts of the animal are also useful. The

hide (skin and hair of the cattle) is used to make leather goods like shoes, handbags, clothes and furniture coverings.

4. Chilling

Carcases are cooled at the meatworks in large refrigerators called chillers. The carcass is cut in half or quarters and hung on very large hooks, which roll along rails suspended from the ceiling. The carcasses would be too heavy for a person to carry, so the hook and roller system allows abattoir workers to push the carcasses around from room to room.

Chilling of meat is very important. It stays fresher for longer and is tastier when it is finally cooked and eaten.

After the carcass has been chilled overnight, it can be sold as a half or quarter carcass, or cut up into smaller pieces. Many butcher shops, supermarkets, wholesalers or other processors buy quarter carcasses to cut into smaller pieces themselves.



Some meat is also frozen which extends the period of time between when it is processed and needs to be consumed. Freezers are very cold, so the people working in them need to wear very thick jackets, hats and gloves. They cannot stay in the freezer too long.



5. Further processing

Some abattoirs have their own boning room where carcasses are cut into smaller pieces called primal cuts. These are then cut into smaller cuts that you see in supermarkets or butcher shops. Boning, slicing and cutting are the terms used to describe what happens when large sections of meat (half or quarter carcase) are cut into the smaller sections.

In the boning room, people called 'boners' take the meat off the bone, 'slicers' trim the primal cuts and 'packers' pack the product into cartons (boxes). Some of the products are individually wrapped or vacuum packed which tenderises the meat and helps it last longer.

Some processors also make other products from the carcasses or carton meat like individual cuts (such as a piece of rump steak), salami, sausages, hamburger patties or pizza toppings.

6. Transport of meat

Transport is an important stage in delivering meat to the consumer. For the domestic (Australian) market, meat is transported in refrigerated trucks from the meatworks to a retailer (butcher shop or supermarket) or to a wholesaler who then sells it to retailers or restaurants.

Meat is unloaded from the truck and placed into chilled storage as quickly as possible. Meat intended for overseas customers can be transported by ships or by aeroplane. The meat is packed into large refrigerated boxes called containers. A truck delivers the containers to the port (where the ship is docked) or to the airport. Ship transport is cheaper but takes longer than air transport.



The Processing Team

It takes a lot of people to process meat. Australia's largest meat processor has four meatworks and 2,600 employees. It is an important industry in Australia employing many people who provide us with nutritious, healthy food.

Managers There may be several managers in a plant or just one. Most meatworks have a Livestock Manager, an Operations Manager, a Quality Assurance Manager and a Marketing Manager.

Cattle Buyers source cattle from saleyards or direct from beef farmers.

Office and Clerical personnel manage hiring of staff, marketing of the product, accounts and enquiries.

Supervisors are usually in each section of the meatworks such as the boning room or packing area. They oversee staff.

The Marketing Team find new customers to buy the meat and ensure that orders are placed and deliveries are made on time.

Livestock Handlers look after the livestock in the holding yards.

Quality Assurance people monitor the quality and safety of the meat.

Veterinarians inspect animals and carcasses for any evidence of disease.

Processing and Boning Room Staff make up most of the employees. These are the process workers, boners, slicers and packers.

Chiller and Freezer Staff manage the flow of product in the chillers and freezers.

Cleaning Staff clean and sanitise the plant every day to make sure the plant is hygienic.

Drivers transport chilled or frozen meat to customers.

The Maintenance Crew makes sure the plant operates correctly and may include electricians and fitters.

CASE STUDY

Noel Campbell and Neil Henningsen are the "Quality Assurance" team at Tender Plus Pty Ltd, a meat company on the Gold Coast in Queensland. Noel and Neil make sure customer quality and food safety requirements are met. It is an interesting job and every day brings something different.



Noel Campbell and colleague

Tender Plus Pty Ltd employs 100 staff who work in the fresh meat section and in their smallgoods factory. They buy carcasses and cartoned meat to make products such as sausages (they make over 40 different types of sausages!), pre-cooked meat (roasts) and individually portioned meals. As well as supplying the hotel and restaurant trade and retailers in Australia, they also export to several other countries such as Japan and Korea.

The day starts early for Noel and Neil, who arrive at work just after 5 am. Before operations start, they check the factory has been properly cleaned and sanitised.

Delivery of meat to Tender Plus starts early in the morning and Noel and Neil check temperatures of the product.

They do tests in a special laboratory to ensure the products made in the factory meet food safety and nutritional requirements. If something is not quite right, they correct the process by talking with staff or changing the procedure. Throughout the day they go into the factory to check that everything is operating correctly such as the temperatures of the chiller.

And if that's not enough, they also train new staff, take visitors and inspectors around the plant and answer queries from customers!

Noel says the enjoyable part of his job includes seeing improvement in products and working with people.

CLASSROOM ACTIVITY

Which of these products do you think originally comes from cattle? How many of these do you use?

Beef mince
Soap
Leather

Sausages
Glue
Bandages



Meat and Livestock Australia is committed to providing information on the Australian red meat industry and values your feedback to develop future materials. For further information please contact:

Meat & Livestock Australia Ltd

Locked Bag 991 North Sydney NSW 2059

Ph: (02) 9463 9333 Fax: (02) 9463 9393

Email: learn@mla.com.au Web: www.mla.com.au

Second Edition Published May 2002 ISBN 1 74036 721 9

