

INTRODUCTION TO BEEF PRODUCTION & BEEF CATTLE BREEDS

Lesson Aim

Describe the nature and scope of Beef Cattle Production.

THE ROLE OF BEEF CATTLE IN AGRICULTURE

Beef cattle have a useful and necessary role in agricultural production for the following reasons:

- (a) Beef provides protein and some minerals and vitamins which are necessary to human health and which balance other nutrients that are obtained from plant foods. Animal protein (meat) contains amino acids which are essential to the growth and development of humans. In general, children cannot grow properly without the protein obtained from meat, milk and eggs. Vegetarians can be healthy on a meat-free diet provided they are extremely careful about their diets.
- (b) Beef is always in demand to satisfy human appetites. People like the taste of beef and as the standard of living and incomes rise throughout the world, the demand for animal products also rises. Developed countries eat the most meat per person while the underdeveloped countries eat the least.
- (c) Cattle are ruminants that convert non-human foods into protein. Beef cattle convert grass and roughage (which can't be eaten by humans) into high quality human food.
- (d) Ruminants use native pastures and by-products from arable crops such as straw. These products are available on farms but have little resale value. They are converted into saleable products by processing them through the ruminant animal.
- (e) Beef cattle produce manure which feeds the soil and maintains soil structure. This increases the production of the arable crops on the farm.
- (f) Beef cattle can make use of marginal land. Although the greatest demand is for the high energy plant foods such as cereals and oil seeds, the amount of useable land in the world is limited. Marginal land which is unsuitable for high value cropping can be used efficiently for beef production.

BEEF CATTLE BREEDS

Scientific Classification

The classification of the breeds of cattle which are now used in beef production is:

Phylum	<i>Chordata</i>	(animals with a backbone)
Class	<i>Mammalia</i>	(milk producing)
Order	<i>Artiodactyla</i>	(even-toed, hoofed)
Suborder	<i>Ruminata</i>	(cud chewing)
Family	<i>Bovidae</i>	(hollow horn)
Genus	<i>Bos</i>	(ruminant quadrupeds)
Species	<i>taurus</i>	(European domestic breeds)
	<i>indicus</i>	(humped cattle)

Note: Other species of Bos have also been found in fossil records and from earlier times.

SAMPLE

EXAMPLES OF SOME BEEF BREEDS

British Breeds	U.S. Breeds	European	Other
Angus	Santa Gertrudis	Blonde D'Aquitaine	Watusi
Devon	Amerifax	Beef Friesian	Droughtmaster
Galloway	Ankina	Boran	Australian Lowline
Hereford	Barzona	Brown Swiss	Afrikaner
Lincoln Red	Beefalo	Charolais	Ankole
Red Angus	Beefmaster	Chianina	Belmont Red
Red Poll	Braler	Corriente	Wagyu
Scotch Highland	Barzona	Gasconne	Braford
South Devon	Longhorn	Gelbvieh	Tuli
Sussex	Brangus	Luing	Charbray
Welsh Black	Salorn	Limousin	Hays Converter
Shorthorn	Simbrah	Maine Anjou	Murray Grey
Poll Hereford	Brahman	Marchigiana	Siri

BRITISH BREEDS

Angus: This breed originated in north-eastern Scotland. It is a pitch black animal with a short neck and very prominent eyes. The poll is round and hornless, reputed to be one of its superior traits. The Angus has a smooth hair coat and is relatively small in size. It is particularly suited to fattening. Angus cattle thrive in cold temperate regions, such as south-eastern Australia, particularly where foggy conditions are often experienced. It is also

SAMPLE

very useful for cross-breeding in those areas. Desirable traits include mothering and milking ability, early maturity, easy calving, easy mustering, high fertility and an extremely good carcass quality.

Hereford: The Hereford evolved in the south western part of England on the border of Wales and is one of most well known breeds in the world. It has a reddish brown body and a characteristic white face. They are medium to large in size and are horned (preferably growing downward and inward). Desirable traits include hardiness, grazing ability, rugged adaptability, reproductive efficiency, good temperament, heavy bones and thick flesh. Tendency towards some health problems (e.g. pink eye, prolapse of the uterus) is also reported.

South Devon: This breed is thought to have originated on the red soils of South Devon, becoming established in about the 16th century. These cattle are not to be confused with the North Devon, which is somewhat similar to the beef Shorthorn. The South Devon is light red or brown and it is the largest of the British breeds. It usually performs well in the production of good quantities of beef, milk and butterfat. The famous Devonshire cream is derived from these cattle.

Sussex: This breed originated in the counties of Sussex and Kent in England. The colour is deep cherry red with a white switch. The cattle are horned and are of medium size. It is a hardy breed developed to produce good quality beef and to cope with periods of drought. The natural grasses of their native land are not very good so this breed is quite able to cope with poor quality pastures. The Sussex is used in cross-breeding and yields a carcass well muscled in the loin and hindquarter.

Red Poll: The Red Poll is derived from the original cattle of Norfolk and Suffolk. The Norfolk cow, which was a beef type, frequently blood red in colour was crossed with the Suffolk polled bull, from an excellent dairy breed of predominantly dun coloured cattle. The polled gene in the Suffolk suppressed the Norfolk horn, and in 1863 the name Norfolk and Suffolk Red Polled cattle was adopted and the first standard description was agreed in 1873. The Red Poll Cattle Society was formed in 1888. The colour of the breed was by then established as red, preferably deep red, with white touches only on the tail switch and udder. With its long traditions of both dairy and beef qualities the Red Poll is recognised as one of the original English dual purpose breeds.

U.S. DEVELOPED BREEDS

American Brahman: The American Brahman has played an important role not only in crossbreeding programs



Brahman Bull

throughout the United States and beyond and has also become a common thread connecting many different breeds developed in the last century. The American Brahman was developed from a mixture of Indian zebu cattle. American Brahman influence in the beef industry is felt world-wide, and cattlemen on every continent seek their genetics. The cattle vary in colour from light grey, mottled to almost black. It is humped at the back of the neck, which is a continuation of muscles from the shoulder, and has long pendulous ears and loose pendulous skin along the dewlap, sheath and throat. They are a medium sized breed with horns. Brahmans are well known for their longevity - they have a 50% longer lifespan than most other breeds. They are also well adapted to hot arid regions and have a docile, placid temperament. Other desirable traits are that it thrives well under minimal management, has excellent mothering ability, is resistant to diseases and parasites and is sought after for cross-breeding because it belongs to a different species to other commercial breeds. Crossing of species gives the greatest hybrid vigour. The Brahman can 'twitch' its skin effectively, thus limiting insect

attacks.

Amerifax: A beef breed developed in the USA in the 1970s. This breed is a combination of Angus (5/8th) and Beef Friesian (3/8th). They can be either red or black and are polled (hornless). The breed society was formed in 1977.

Beefalo: Beefalo is a cross between Bison (buffalo) and domestic cattle of any breed. The purpose of the species cross was to blend the outstanding qualities of the Bison with outstanding qualities of the bovine breeds of the world. A full-blood is considered to be an animal who has 3/8 Bison and 5/8 bovine.

Beefmaster: Beefmaster cattle have been developed by the Lasater Ranch then headquartered in Texas. It is estimated that modern Beefmaster have slightly less than one-half Brahman blood and slightly more than one-fourth of Hereford and Shorthorn breeding. Stress was placed on the production of beef. No selection has been made to characteristics that do not affect the carcass, such as horns, hide or colour.

Santa Gertrudis: This breed was developed by King Ranch in Texas, U.S.A., by careful cross-breeding of Brahman and Short Horn cattle. Santa Gertrudis cattle possess 3/8 Brahman and 5/8 Shorthorn, the breed has just the right amount of Brahman influence to boost performance in crossbreeding programs in many areas or environments. It matures early and fattens well while being resistant to heat, insects and disease although it is not as good at tolerating drought as some other breeds. Santa Gertrudis cows are renowned for producing calves with small birth weight and rapid weight gains to weaning. Cows have above-average production of quality milk with high butterfat content. Santa Gertrudis cattle maintain high buyer demand because of their reputation for high yielding carcass with the ability to produce ideal fat coverage for the market.

EUROPEAN BEEF BREEDS

Charolais: This breed originated in the Juca mountains of eastern France. They are known collectively (with the Pinzgauer and Simmental) as *Jucosic* cattle. The name comes from the fertile Choralles area into which they spread. The cattle are large and heavy, but have a docile temperament making them easy to handle. Their colour varies from creamy light yellow to light grey.



Image: Charolais cow.

Gelbvieh: Gelbvieh originated in Bavaria, in southern Germany. The breed is red in colour, with strong skin pigmentation, and horned. Polled cattle were developed in the United States from the use of naturally hornless foundation females. Proponents of the breed claim the breed has superior fertility, calving ease, mothering ability, and growth rate of the calves.

Salers: The Salers is a breed of cattle which originated in Cantal, in the Massif Central of France. They are a large breed of cattle, with the female weighing in at between 700 and 750 kg and standing 1.40 metres tall. They have long, frizzy brown hair, and long, thin, light-coloured horns.

Simmental: The Simmental breed originated in the Simme valley of western Switzerland. Simmentals are one of the oldest and most widely distributed breeds of cattle in the world today. The Simmental breed is one of the more docile and easy breeds to manage and is most commonly known for their extreme muscle pattern and

leanness. Also known as Simmentaler, this is a very good dual purpose breed.

AUSTRALIAN BEEF BREEDS

Australian Lowline: These cattle were developed in 1974 as a part of a major research project to investigate the implications of selection for growth rate. The “Lowline” herd has remained completely closed, with all replacement bulls and heifers selected from within the line on the basis of low growth rate performance. They are always black, naturally polled and at all stages of their growth are 60% of the size of normal beef breeds. As they stand today, they are generally the smallest breed of beef cattle. Cattle of the herd are naturally docile and very easily handled. The Lowline is the perfect breed for the small acre farmer.

Braford: The Australian Braford breed was developed in Queensland in the period between 1946 and 1952. It is now a stabilized breed with approximately 50% Hereford and 50% Brahman genetic background. It is heat resistant and relatively tick tolerant, and performs well in both harsh tropical and temperate conditions. The breed carries many of the Brahman characteristics, such as a hump, loose skin, and short coat, but has the colour markings of the Hereford.

Beefmaster: Breeding is based on a specially designed genetic program which involves infusing Simmental blood with specially selected base Herefords. The program was designed to produce an animal with faster growth rates, heavier carcass weights, an improved ratio of lean carcass meat to fat, maximum fertility, improved lactation, and greater stress tolerance compared to the two contributing base breeds. The Beefmaker has been stabilized at 75% Hereford and 25% Simmental content.

Droughtmaster: The Droughtmaster were developed in North Queensland, Australia’s hot tropical north. Selective breeding arrived at a fixed tropical breed containing approximately 50% Shorthorn and 50% Brahman bloodlines. The breed is basically red in colour, although variations from a golden honey colour to dark red occur. Droughtmasters are either polled or horned with the majority of stud cattle exhibiting the poll characteristic. Their heat and tick tolerance, excellent fertility, ease of calving and quiet temperament give this breed a good reputation.



Above: Murray Grey Bull

Murray Grey: The Murray Grey originated in southern New South Wales, Australia. The preferred colour is silver-grey although there are numerous variations in the shading of grey. The cows are good mothers and milk well, and the calves have good rates of growth. Docility seems to be a genuine asset of the breed both in the herd and in the feedlot. The cattle have relatively small heads and bone and are polled. Their survival and reproductive rate has been very satisfactory under a wide range of climatic and management conditions.

SOUTH AFRICAN BEEF BREEDS

Afrikander: A hardy breed of beef cattle which are popular in South Africa. The Afrikander cattle are a powerful draught animal, large horned, bony and give little milk. Afrikaners are usually deep red with long spreading horns. Afrikaners have been bred into other lines used in the tropics because of their fertility, docility and greater weight gain potential.

Salorn: A recently developed composite breed consisting of 5/8 French Salers and 3/8 Texas Longhorn blood. The Salorn development program began with registered Texas Longhorn females carrying the genetic traits of adaptability. Superior pure bred, smooth-coated, muscular Salers sires, selected for gentle disposition, have been mated to these cows. The resulting F1’s (1/2 Salers - 1/2 Longhorn) are bred to 3/4 Salers - 1/4 Longhorn to produce a 5/8 - 3/8 result, which is the First Generation Salorn. Successive generations of the 5/8 - 3/8 Salorn will insure breeding consistency.

Assignment

Question 1

Compile a list of at least 15 breeds of cattle commonly used for beef production.

Question 2

Select ten cattle breeds and compare their advantages and disadvantages for beef production. Discuss aspects such as:

- heat tolerance
- appearance
- hardiness
- health problems
- handling requirements
- parasite resistance
- productivity (size, growth rates)
- cost of stock
- meat value
- availability of suitable production areas

(Put your answer in table format)

Question 3

Choose two breeds suitable for beef production in each of the following locations and briefly discuss why you have chosen the breed:

- Cool temperate areas with winter rains (eg. England, North East USA, Tasmania (Australia), New Zealand).
- Hot, dry tropics (eg. Somalia, Ethiopia, central, western and northern Australia).
- Warm, wet tropics (Central America, South East Asia, north-eastern Australia).

Give reasons for your answer. (Write about 200-250 words for each breed).

Question 4

Write up to one page on recent innovations in beef cattle breeds. What are some of the newer breeds, what features are being looked for by farmers?

Question 5

Re-draw (freehand) a steer's body. Label all the external parts.

Question 6

Submit the results of your visit to the butcher shop in Set Task 2.

Question 7

Submit a completed standard judging form as prepared in Set Task 3.