Breeds of Dairy cattle:

1. Holstein Friesian;

It is firstly originated in Holland and worldwide distributed then after. It is being raised in Scandinavian countries, Britain, North America, Africa, Asia , particularly Middle East due to its adaptability to hot weather and high production.

General morphological characters:

This breed is characterized by its black and white or red and white color, and the red color is a recessive and undesirable character. Friesian cattle is the largest dairy breed , the average weight of cow is 600-650 kg (fig.3.2), weight of bull is 800-850 kg (Fig.3.1) while the average weight of calf at birth is 35-45 kg.

Fig. 3.1: Holstein Friesian bull

Production characters:

The average production of milk is 5000 kg within 305 days of production, while the butter fat percentage ranges between 3.5-3.8% which is comparatively low due to large quantity of milk production (fig.3.3). Milk has white color due to the efficiency of cow to convert carotene yellow pigment to Vit. A which is a colorless substance.

Fig. 3.2: Holstein Friesian cow

Adaptability to environment:

Friesian is a worldwide dairy cattle due to its ability to be adapted for adverse circumstances, particularly hot weather. The animal is also calm and easily managed, and male can be raised for beef production with a good dressing percentage.
Friesian has been introduced to Iraq since 1950 for the purpose of improving the production of local breeds. The average quantity of milk production of Friesian in Iraq is 2500-3000 kg during 305 days

Fig.3.3: Udders of Holestein Friesian cows

2. Ayrshire:

It was firstly originated in Ayr in Britain, and then introduced to many countries including Iraq based on its ability to withstand difficult circumstances and diseases such as Tuberculosis.

Fig.3.4: Ayrshire cow

Morphological characters:

White color is the common one with brown or black spots on neck and breast (Fig.3.4). Horns are long and bent at their extremities, while the neck is short and thick. Cow weighs 450 kg, bull 650 kg and newly born calf at birth 35 kg. the udder is large and regular with small teats (small teats is considered as a drawback due to difficult milking) (Fig.3.5).

Fig.3.5: Red colored Ayrshire cow

3. Jersey:

It is originated in Jersey Island near the French Coast and it has been introduced to many countries in Europe , Africa, North and South America, and Asia including Iraq.

Fig.3.6: Jersey cow

Morphological characters:

It is pale yellow in color with white spots scattered on the body (Fig.3.6), while the tongue and muzzle are black in color. The Jersey breed is the smallest one and bit nervous but easily responding to good management if provided. However, cows of this breed possess good udders in terms of conformation and regularity. The average weight of cow is 350-500 kg (Fig.3.7), bull 500-700 kg and calf at birth 25 kg.

Fig.3.7: Pale yellow Jersey cow

Production characters:

The Jersey is characterized by its high production and longevity of production . Cows of this breed produce 2500-3000 kg of milk with 5.3 % as fat percentage. The milk is rich in carotene which gives the yellow color to it. The cow gives its first birth at 2 years of age, and the period between two parturitions is 377 days.

4. Brown Swiss;

This breed was originated in the Alp mountains in Swiss and is being raised in many European countries for three purposes, dairy production , beef production and working (Fig.3.8).
Morphological characters;

It is brown with tongue, muzzle and tail are black in color (Fig.3.9). The udder is large and the cow weighs 600 kg while bull weighs 700 kg.

Fig.3.8: Brown Swiss cow

Production characters:

Cow is characterized by its long production life and persistency of milk production, which reaches to 3000 kg during 305 days with 4% of fat.

Fig.3.9: Dark Brown Swiss cow

Beef Cattle:

Beef cattle is characterized by its high efficiency for converting consumed food to an increase in body weight. The production of meat depends on the following factors:

1. Breed:
The morphological characters of beef cattle can be summarized as short and straight limbs, long and deep body , broad back which is furnished with muscles and short - wide neck particularly at its connection with the chest. the shoulders are prominent and full with flesh The head has a small nasal bridge and wide eyes. The belly is wide, and the hind quarters are long, wide , straight and furnished with thick flesh from both internal and external surfaces. The body of beef animal is firm in texture with soft and flexible skin.
Breeds of beef cattle must have a rapid growth rate along with the efficiency for converting food to meat and fat. The fat must be early stored in the body and coincide with the growth of the body, as the best kind of beef is the marbled meat, which is characterized by intermingling of fat with muscle fibers.

2. Age:
Young animals are preferably selected for gaining rapid increase of body weight and that is attributed to their rapid growth rate.
3. Feeding:
Good feeding accompanied with the suitable breed are necessary for fattening.
4. Management;
Good husbandry , health requirements and environmental conditions are necessary for beef production.
Beef cattle can be young calves, adult male and culled female.

Young calves are firstly put on milk or its substitutes, afterward , enough quantities of concentrates should be supplied to them until one year age. Calves should also be castrated to save energy for gaining body weight and to be calm and easily restrained.
Fattening of adult male or prime-bullock which should be castrated are usually slaughtered at 2.5-3 years of age.
Culled cows for any reasons such as infertility or low milk yielding should be fattened for a short period prior to slaughtering.

Breeds of beef cattle:

1. Aberdeen Angus:
It was originated in Scotland (Britain) and introduced to USA .

Morphological and production characters:
It is black and hornless breed with soft hairs. The size is comparatively medium as the bull weighs 750-900 kg (Fig.3.10), and cow 650 kg. this breed is characterized by its resistance to cold weather and good fertility rate as well as the marbled meat.

Fig.3.10: Aberdeen Angus bull

2. Hereford:

This breed was originated in Hereford Shire in Britain and it is the best breed all for beef production. It also suits sub-tropical countries such as middle east region . The breed is also resistant to Tuberculosis (TB).

General characters:

It is medium in size , red in color except the anterior back , low abdomen , head and neck which are white in color. Adult male weighs 750 kg (Fig.3.11) and cow weighs 600-800 kg with a good dressing percentage (65-68%) and marbled meat. Calves of this breed have rapid growth rate and good efficiency for converting food to flesh. The breed is also characterized by its hardiness and high reproductive rate.

Fig.3.11: Hereford bull

3**. Galloway:**

It was originated in Scotland , it is black in color , hornless, short legs with long hairs. This breed is similar to Angus breed but its body is longer than that of Angus.

4. Charolais;

It was originated in France and has been introduced to many countries including Iraq.

General characters:
The breed is of white color with brown muzzle with a long head and yellow horns . the animal has strong muscles , male weighs 1000 kg and cow 750 kg (Fig.3.12). Charolais is characterized by the presence of a recessive genetic mutation called Culard which is a double muscle character in calves. These calves have rapid growth rate, large body weight and high dressing percentage which reaches to 75%.

Fig.3.12: Charolais bull

5. Shorthorn:

It was originated in northern east of Britain, which is a big sized and wide back breed which has also the ability for producing a good quantity of milk as well as its good ability for fattening.

General characters:
The breed has red, or white or mixed colors (roan). The lower parts of limbs are white, while muzzle and eye lids are pink and horns are yellow in color. The bull weight reaches to 900 kg, while cow weighs 700kg. Calves have rapid growth rate with good meat quality.

6. Santa Gertrudis:

It was originated in USA from breeding Zebu cattle (Brahma) with Shorthorn. The breed can be adapted for tropical weather.

General characters:
Cattle of this breed has a red color, and they are calm and easily controlled. They also have a rapid growth rate and good ability to convert food to flesh. The adult male weighs 700 kg (Fig.3.13) and the adult female weighs 600 kg.

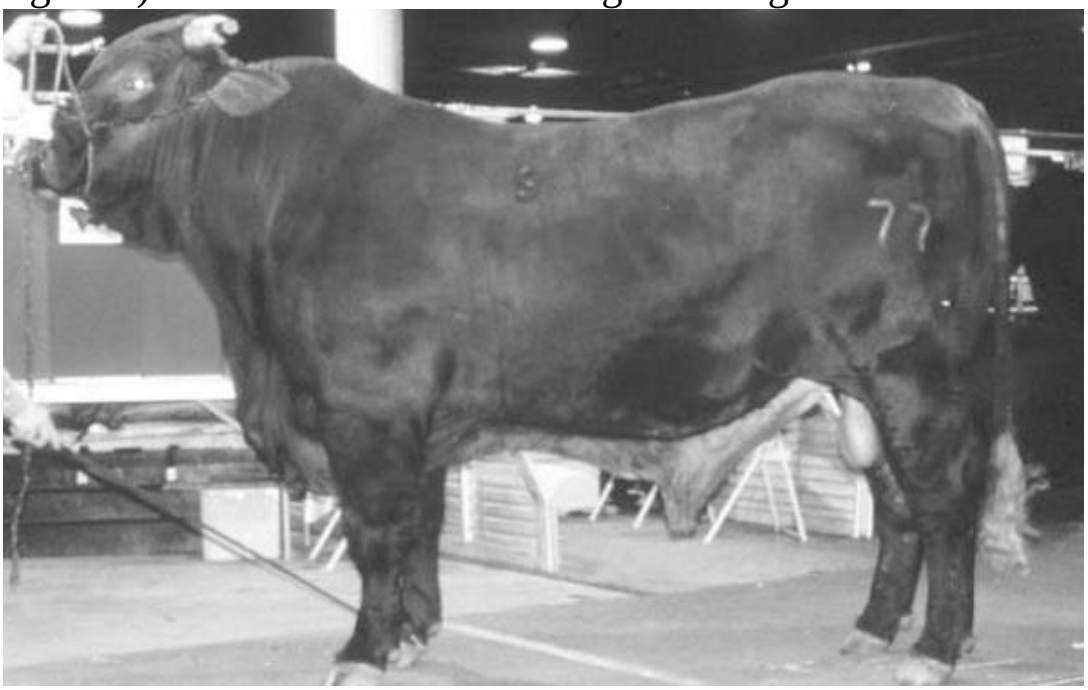

Fig.3.13: Santa Gertrudis bull

7. Beef Master:

This breed had been primarily a mixture of Brahma and Hereford to have individuals with good resistance for bad weather and diseases as well as difficult circumstances of pastures. The blood of Shorthorn was added to the mixed blood of Brahma and Hereford later on.
Colors of this breed are different but usually find brown , reddish yellow, red and red with white spots. The meat is of good quality and high dressing percentage (Fig.3.14).

Fig.3.14: Beef Master bull

Dual purpose Cattle:

These are breeds of cattle which have the genetic characters of high milk production and beef production. Although they are producing lower milk than dairy cattle but they are better in terms of beef production, rapid growth rate and good fattening ability.

Breeds of dual purpose cattle:

1. Normandy:

It was originated in Normandy district in France. It is a dual purpose breed and characterized by its white color or purple with white spot color. The weight of bull is 1100 kg m while cow weighs 750-800 kg. This breed can also produce milk with 4000 kg of milk quantity during each milking period. Normandy was imported to Iraq to study its adaptability and production characters.

2. Milking Shorthorn:

The color of this breed is either white or red or a mixture of both colors. Cattle of this breed have either the conformation of dairy or beef cattle. The weight of cow is almost similar to that of Holstein Friesian 600-700 kg, while the weight of bull reaches to 900 kg. Calves of milking Shorthorn are the best amongst other beef and dual purpose breeds in terms of carcass characters, rapid growth rate, fattening rate and their marbled meat, while the dressing percentage is 55%. Regarding milk production of this breed , it reaches to 3000 kg during lactation period with 4% fat.

3. Red Poll;

It is originated in Britain and is a world wide distributed at the time being. It is red in color with white tail and pale color udder. The weight of bull 850 kg and cow 550 kg. The average milk production 1200 kg with 4% fat , while the dressing percentage is about 63%- 65%.

4. Red Sindhi:

It is raised in Pakistan and has a red color . The weight of cow 400 kg, and bull 450 kg , the breed is characterized by the

presence of hump. Milk production reaches to 1580 kg with 4.9 % of fat.

5. Other breeds such as Dexter and Devon.

Indian Cattle:
There are many species of cattle which developed in India :

1. Brahman;

The majority of cattle breeds in India are called Zebu cattle, while in USA are called Brahman. Brahman is one of the oldest cattle which had been domesticated in the world. It is characterized by the presence of hump above the shoulders and dewlap under the neck (Fig.3.15). The dewlap increases the surface area of the animal and accordingly the number of sweating glands to minimize the impact of hot weather on the animal. Ears of Brahman are long and the common color of the skin is grey. The animal is also characterized by its resistance to many endemic diseases such as Tick fever as well as its resistance to external parasites such as ticks, flies and mosquitoes. Sebaceous glands which are located on the skin secreting a characteristic offensive smelled and oily substance which prevents external parasites to live or multiply on the animal skin. Brahman has the ability to convert plants which are poor in their nutritive value to animal protein. The adult male weighs 800 kg and cow 550 kg, with 55% dressing value of the carcass.

Fig.3.15: Presence of dewlap and hump in Brahman breed

2. Gir :

It was originated in west India, and characterized by its wide front , small curved horns and prominent hump. The common color is white with red spots. This breed is mainly raised for beef production and agricultural work.

African cattle:

There are many breeds of African cattle which are a mixture of both Bos africans and Bos indicus, such as Nilotic, Dama, Ankola, Nagada, Boran and others.

1. Nilotic:

It is mainly living in Sudan and South Sudan countries. It is characterized by the presence of hump and different skin colors such as white, grey, brown, red and black. The average weight of male is 300 kg and cow 200 kg with 50% as a dressing percentage of carcass.

2. Dama;

It is living in west Africa , and it is humpless cattle with small dewlap. The common colors are pale yellow and brown, and adult bull weighs 300 kg and producing a good quality meat.

Cattle in Iraq:

Cattle is the main source of animal protein in Iraq, it is dual purpose cattle producing about 60,000 Mt of meat and 20,000 Mt of milk annually. Two million heads of cattle are being raised in Iraq , the majority of them (one million) are living in the central area and the rest equally divided in North and South areas (Fig.3.16).

Fig.3.16: Iraqi cattle and goats grazing at the border of rivers

Breeds of cattle in Iraq;

1. Janubi;

This is living in southern and central areas and used for production of milk while male used for meat production.

Morphological and production characters:

Janubi is characterized by the presence of hump and its red color (Fig.3.17). The limbs are long , the skin is soft and the animal is resistant for hot temperature as well as its resistance to endemic diseases. The average weight of the animal is 400 kg at 3-5 years of age, while the quantity of milk 1000 kg during 305 days. It was found that cross breeding of Janubi with Freisian breed can improve its milk and meat production. It was also found that improving environmental circumstances of janubi can improve its milk production to reach 1350 kg during 200 days, with high percentage of fat (4.8%) , while the first delivery occurs at 2.5 years.

Fig.3.17: Janubi heifer

2. Shurabi:

This breed is found in northern area of Iraq, and it is believed that it had been introduced to Iraq from Turkey. Cattle of this

breed is characterized by the black color with the presence of longitudinal white lines of hair on back and abdomen. The total body weight of the adult animal reaches to 450 kg with 600 gm a daily increase of body weight and 52% dressing percentage. Milk production of Shurabi is lower than 6 kg daily , Thus the breed is considered as beef producing one.

3. Restaki:

These cattle are raised in central and southern areas of Iraq. The breed is better than Janubi in terms of body weight which reaches to 500 kg, and it is better than Karadi breed in both milk and meat production. The breed is characterized by its brown to red color (Fig.3.18) or even grey and by its ability to gain weight with 0.688 gm as daily increase of body weight and 54 % dressing percentage. However, its milk production is medium about 3-4 kg/ daily.

Fig.3.18: Restaki breed

4. Karadi:

This breed is living in the northern area of Iraq, which is characterized by its small size and short limbs to enable the animal to move easily in the high land areas. Individuals of this breed are black, red or grey in color with short horns and small udder of female. Its milk production is low which is not more than 2-3 kg / daily with short lactation period. Moreover, its daily increase of body gain is 400 gm which is lower than janubi and shurabi.

Nowadays, it is common to find cross breeding between the local breeds (endogenous breeds) and Friesian breed (exotic breed) which is a successful program to get generations with high performance level and good adaptability to the local environmental circumstances (Fig 3.19).