



National Agricultural Youth Show

Beef Cattle Manual



INDEX

- 1. THE DIFFERENT CATTLE SPECIES**
- 2. SELECTION OF A BULL AND HEIFER**
- 3. BODY PARTS OF BEEF CATTLE**
- 4. ANATOMY OF A MALE AND FEMALE ANIMAL**
- 5. ANATOMY OF THE DIGESTIVE SYSTEM**
- 6. FEEDING**
- 7. ANIMAL HEALTH**
- 8. INFECTIOUS, NON-INFECTIOUS AND METABOLIC ANIMAL DISEASES**
- 9. THE MOST IMPORTANT ANIMAL DISEASES FOUND IN SOUTH AFRICA**
- 10. INTERNAL AND EXTERNAL PRASITES**
- 11. ANIMAL POISONING**
- 12. ANIMAL BEHAVIOUR AND HANDLING**
- 13. SHOW PREPARATION FOR BEEF CATTLE**
- 14. GUIDELINES FOR SHOW MAN**
- 15. GUIDELINES FOR WASHING**
- 16. GUIDELINES FOR PREPARATION**
- 17. GUIDELINES TO SHOW YOUR ANIMAL**
- 18. CHANGE OF POSITION IN THE LINE UP**

1. THE DIFFERENT CATTLE SPECIES

- Bos indicus (African type of cattle)
- Bos taurus (European type of cattle)

| Bos indicus | Bos taurus |
|---|---|
| <ul style="list-style-type: none">• Descend from the Indian subspecies. | <ul style="list-style-type: none">• Descend from the Eurasian subspecies. |
| <ul style="list-style-type: none">• Fatty humps on their shoulders, drooping ears and a large dewlap. | <ul style="list-style-type: none">• No humps on their shoulders and no drooping ears. |
| <ul style="list-style-type: none">• Able to tolerate parasites, pests and diseases. | <ul style="list-style-type: none">• More prone to tick attacks and tick-borne diseases. |
| <ul style="list-style-type: none">• Can survive and produce under harsh tropical environments. | <ul style="list-style-type: none">• Adapted to cooler climates. Less suited to South African conditions and less heat tolerant. |

2. SELECTION OF A BULL AND HEIFER

SELECTION OF A BEEF CATTLE BULL

Head: Broad, short, strong eyebrow, strong broad mouth.

Mouth: No undershot or overshot of jaw.

Neck: Broad, short, strong and muscular.

Shoulders: Broad, topline flat and well fleshed.

Middle Section: Broad, long, deep, ribs well attached and well sprung, no devils grip.

Hind Quarter: Muscular, long, deep, wide and well sprung rump, well fleshed between hind legs.

Legs: Strong, moderate length.

Hooves: Broad, strong, dark colored, good walking ability.

SELECTION OF A BEEF CATTLE HEIFER

Should have acceptable growth rate, overwintering ability and adaption ability.

Hair early in season.

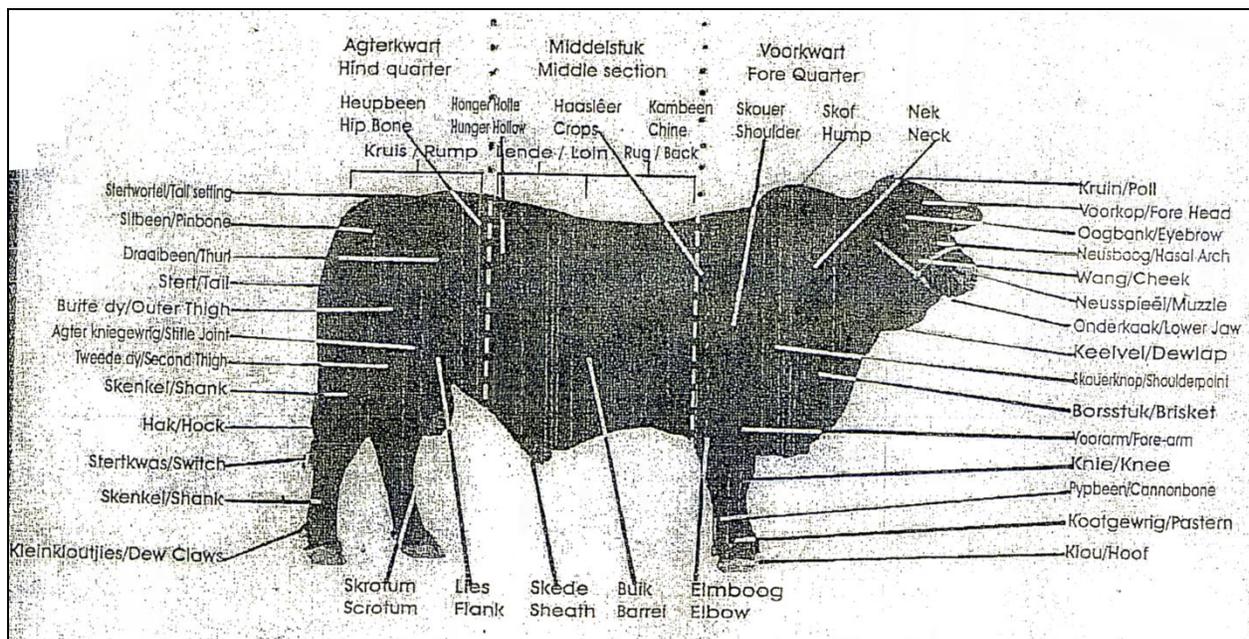
Well-balanced udder, few hairs, fine wrinkles in neck.

Not too much muscling.

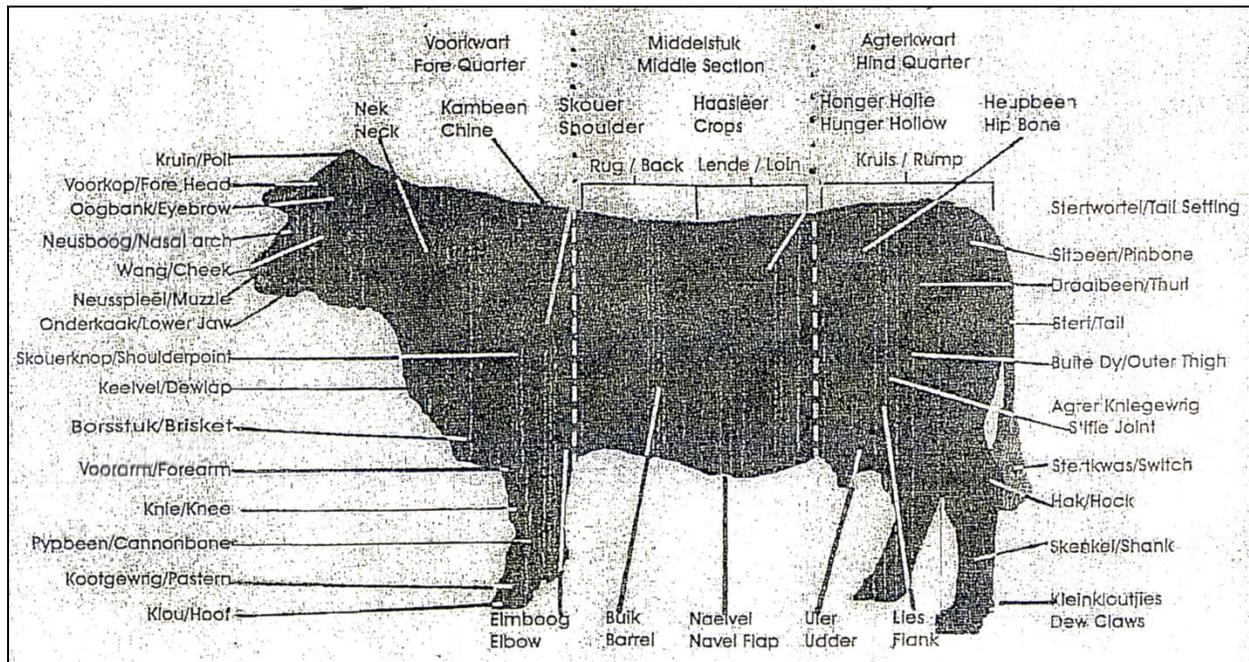
Fine, feminine head.

3. BODY PARTS OF BEEF CATTLE

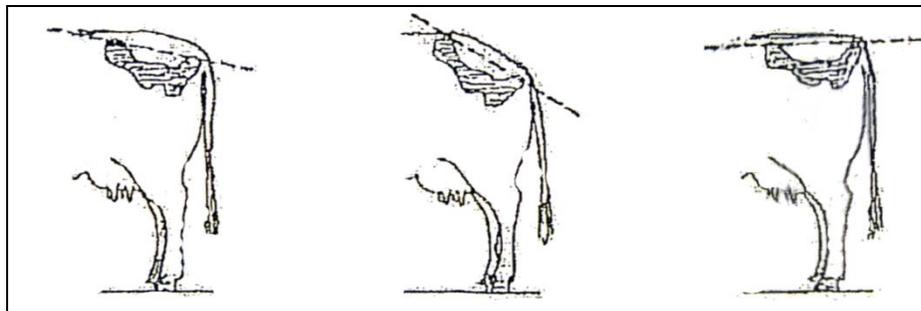
| | |
|----------------------|--------------------------------------|
| BACK | STRAIGHT AND STRONG |
| TRUNK OR MIDDLE PART | LONG AND SUFFICIENT DEPTH |
| RUMP | LONG AND BROAD |
| LOIN | LONG AND WIDE |
| HEIGHT | ADEQUATE, SUFFICIENT |
| HIND QUARTER | LONG, DEEP, WIDE AND MUSCULAR |
| SHIN BONE | AMPLE – NOT COARSE OR FINE |
| RIBS | WELL ATTACHED AND WELL SPRUNG |
| FLANKS | CLEAN |
| THROAT | NOT TO MUCH FLESHINESS |
| SHOULDERS | NOT PROMINENT |
| CHEST/BRISKET | WITHOUT FAT DEPOSITS |
| FOREARM | MUSCULAR |
| LEGS | MODERATE LENGTH - STRAIGHT |
| HEAD | BULLS MASCULINE AND FEMALES FEMININE |



MALE ANIMAL – ANATOMIC DESCRIPTION



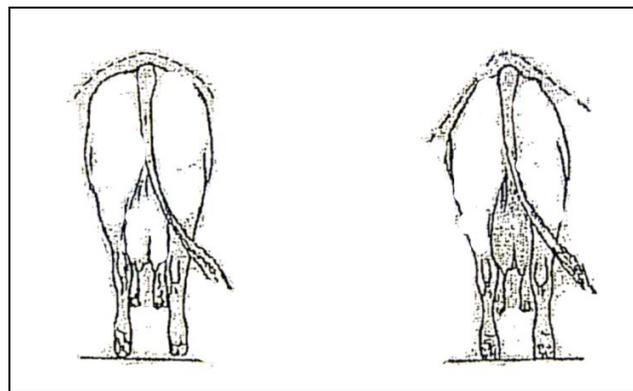
FEMALE ANIMAL – ANATOMIC DESCRIPTION



Correct

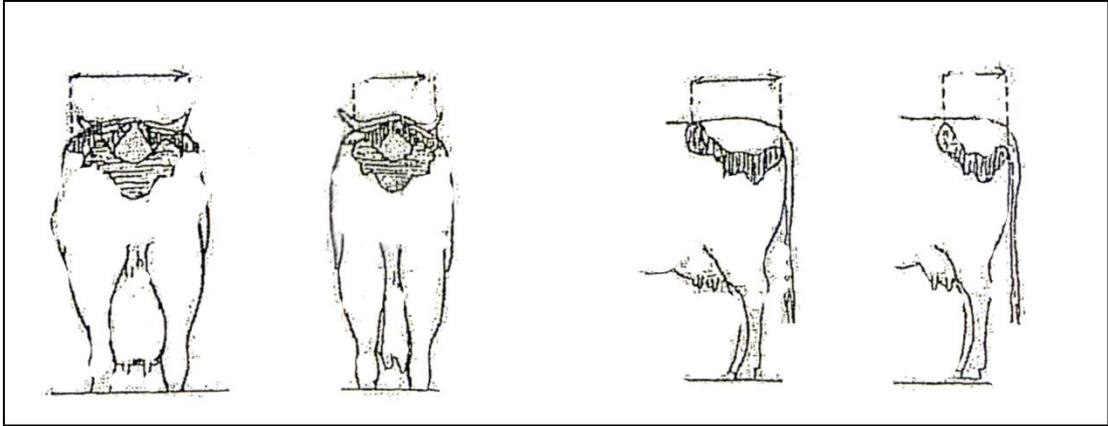
Droopy

Flat



Correct

Roofy

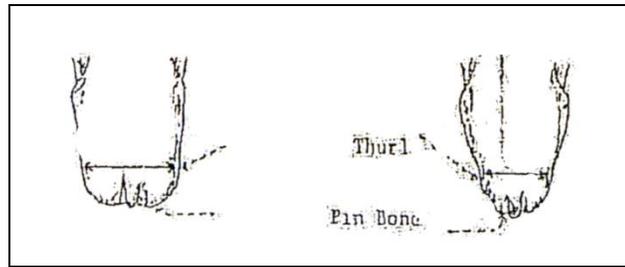


Broad

Narrow

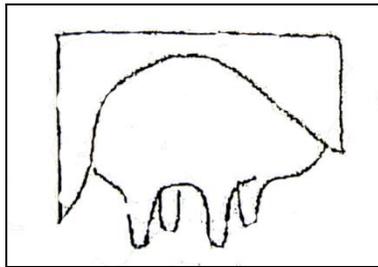
Long

Short

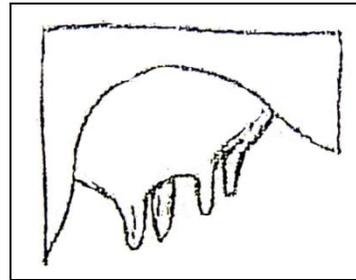


Width of thurl

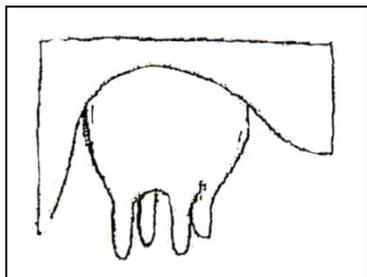
UDDER FAULTS



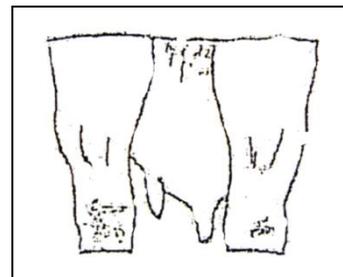
Normal



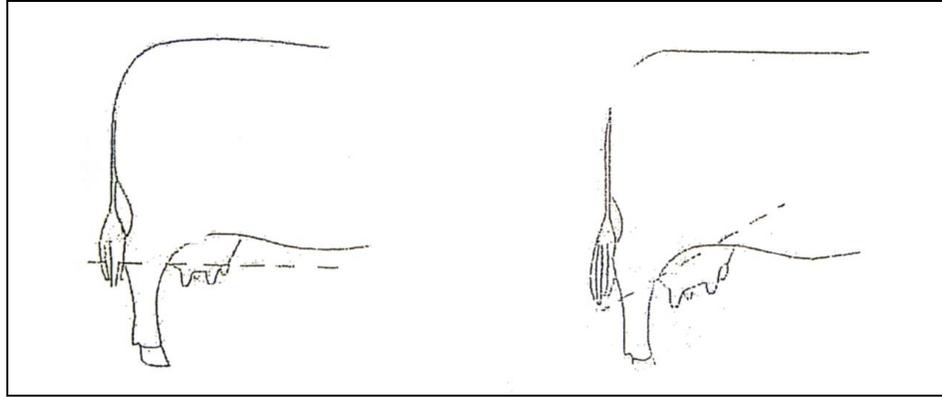
Out of balance / Droopy



Pendulous udder (front and back)

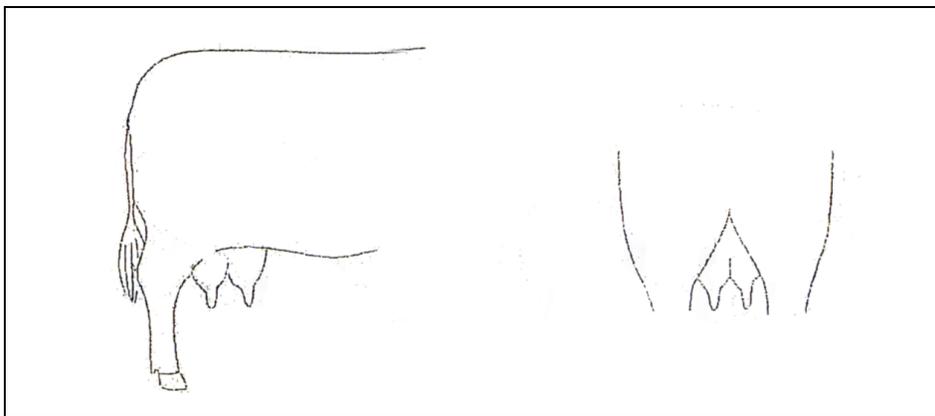


Scew – out of balance



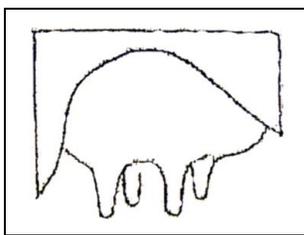
Correct

Unbalanced $<45^\circ$ (To cull)

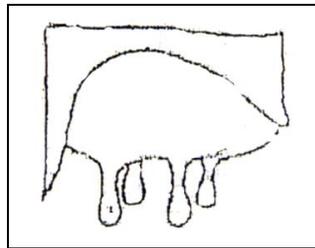


Goat udder

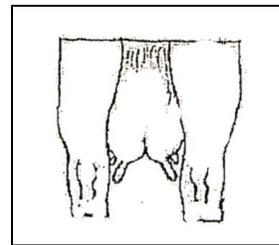
TEAT FAULTS



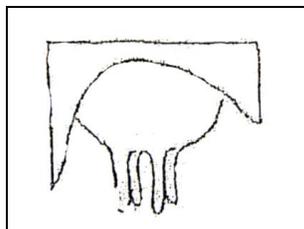
Normal



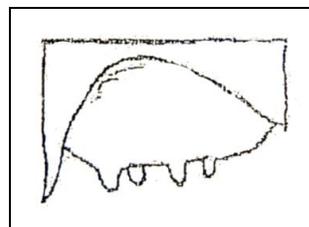
Bell shaped



Splayed teats

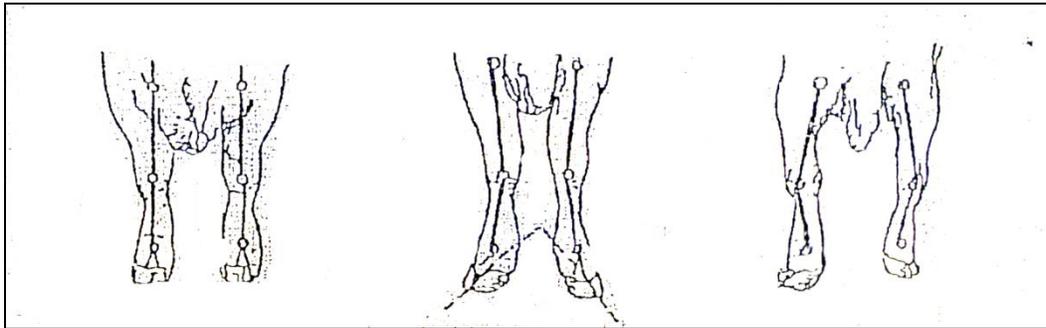


Thin and long



Too short

FRONT LEGS

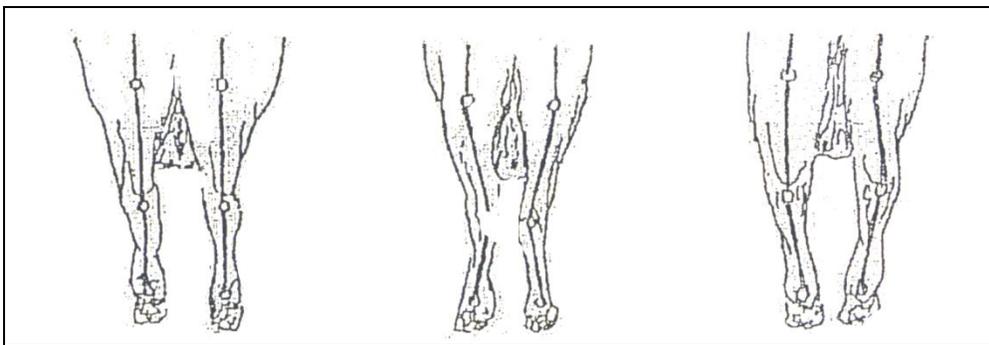


Correct

Knock knees

Bandy

HIND LEGS

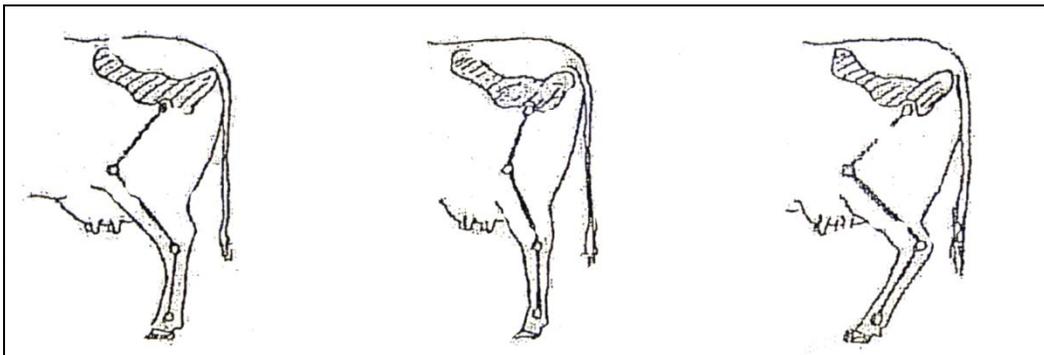


Correct

Cow hocked

Bandy

HOCKS

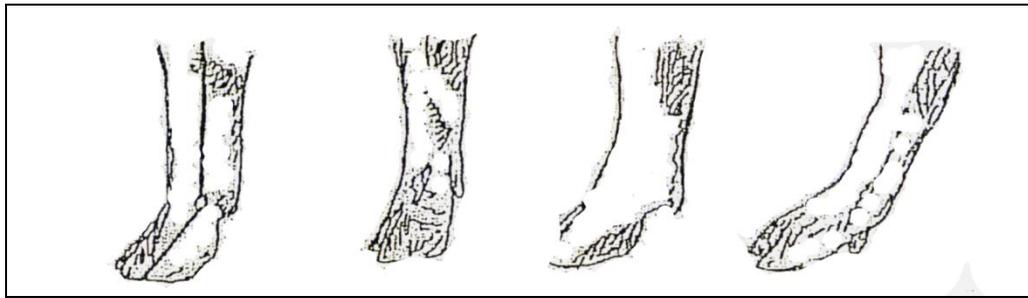


Correct

Straight

Sickle

PASTERNS



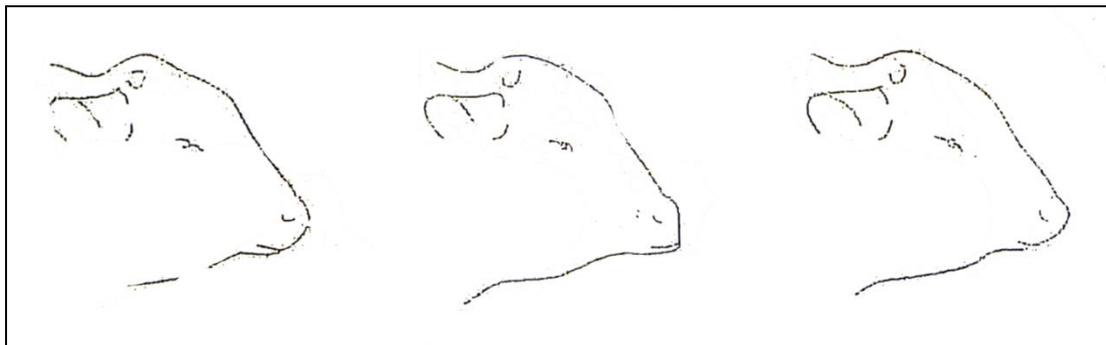
Correct

Straight

Slack

Tread through

JAW

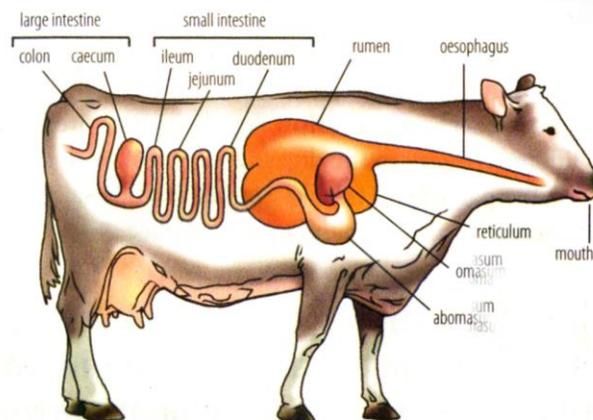


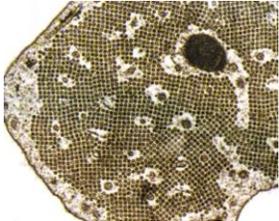
Correct

Undershot

Overshot

5. ANATOMY OF THE DIGESTIVE SYSTEM



| | | |
|---|---|--|
| 1 | <p>MOUTH:</p> <p>Lips</p> <p>Tongue</p> <p>Upper jaw</p> <p>Lower jaw</p> <p>Teeth</p> <p>Salivary glands</p> | <p>Broad, thick and almost immovable.</p> <p>Long, thick, muscular and rough and is used to grasp or gather grass. Taste buds occur on the posterior side of the tongue.</p> <p>Is fixed to the skull and immovable.</p> <p>Moves with a side to side motion during chewing and rumination.</p> <p>Cattle have 32 teeth. There are no incisors or canines in the upper jaw; instead they have a dental pad. The upper and lower jaws both have six premolars and six molars each (total of 24 molars).</p> <p>Three pairs (below the ear, below the jaw and below the tongue).</p> |
| 2 | <p>PHARYNX</p> | <p>It is a passageway for the food from the mouth to the gullet (oesophagus).</p> |
| 3 | <p>GULLET (OESOPHAGUS)</p> | <p>Connects the mouth to the forestomachs. Food is pushed forward by the involuntary contraction and relaxation of the longitudinal and circular muscles in the walls creating a series of wave-like movements called peristalsis.</p> |
| 4 | <p>COMPLEX STOMACH</p> <ul style="list-style-type: none"> • Rumen  <p>Internal structure of the rumen</p> <ul style="list-style-type: none"> • Reticulum  <p>The honeycomb pattern of the epithelium lining of the reticulum</p> | <p>Consists of four compartments.</p> <p>Largest compartment. Occupies the entire left half of the abdominal cavity. Filtered large food particles out so that they can be broken down further. The contractions of the rumen help to release gases that are trapped.</p> <p>Also known as the "honeycomb".</p> <p>Smallest compartment of the stomach. This compartment is sometimes called the 'hardware stomach' as this is where hard objects such as nails, wire and foreign objects ingested with the food settle.</p> |

| | | |
|---|--|--|
| | <ul style="list-style-type: none"> • Omasum  <p>The inside folds in the omasum of the ruminant</p> <ul style="list-style-type: none"> • Abomasum (True stomach) | <p>Spherical shape.</p> <p>Removed water from the feed.</p> <p>Also known as the glandular stomach. Function like the single-chambered stomach of a monogastric animal.</p> |
| 5 | SMALL INTESTINE | <p>About 20 times longer than the length of the animal. Most of the digestion and absorption of the end products of nutrients and water occur in the small intestine</p> |
| 6 | LARGE INTESTINE | <p>Ingested matter is dehydrated so that the waste products are more solid. Helps with the absorption of mineral salts by the blood. Eliminates body wastes that leave the body in the form of faeces.</p> |
| 7 | RECTUM | <p>Store solid undigested food.</p> |
| 8 | ANUS | <p>Release undigested food in the form of faeces.</p> |

6. FEEDING

6.1 SCHEDULE OF FEEDING

Train your animal to a certain feeding time and stick to it. This schedule ensures that your animal **eats** regularly and normally. Show cattle are usually fed from 05:00 -08:00 and 16:00 - 19:00.

Water

Is the most important part of feeding. Clean, fresh water must be freely available.

Group feeding

Show animals can be fed in small groups of 2- 3. Manger space of 80-100 cm per animal is allowed. In case they push one another, tie them apart from each other.

Cleaning of manger

Animals should eat their food within 30 minutes. Leftovers must be taken out to prevent attracting flies. In the case of too much fodder left in the manger, you must check that the animal is not sick.

Feeding before the show

Don't change the ration before the show. Train your animal for other feeding circumstances, tie him to the manger. Approximately 4 days before the show, tie the animal before feeding and watering. Cut down his fodder before traveling to give him a better appetite when arriving at the show.

At the show

If your animal is calm, he will eat immediately, if not, look at the following:

- a) Don't bother him, don't brush him or stand nearby.
- b) Is the tie rope long enough?
- c) Has he had enough exercise?
- d) Is he getting the same food?
- e) Is he thirsty? Give enough water - perhaps he will start eating.

If you have tried everything and he still refuses to eat, try to feed him hay and water. If he refuses to drink water try and dissolve a little bit of molasses in the water or even a handful of salt in his mouth. The most important is to water him out of the same bucket or in the way you trained him at home. If the animal does not drink after two days, ask an experienced cattle man for advice.

Rations

To put a ration together you must know what nutrients the animal needs for his health. Cattle are ruminants with specialized digestive systems and the most nutrients they need come from hay and grain.

6.2 THE ESSENTIAL COMPONENTS OF ANIMAL FEEDS

For animals to be healthy and have energy for growth and maintenance, production and reproduction as well as being able to perform work, they need feeds that contain water and other essential organic and inorganic nutrients (dry matter). Organic nutrients include carbohydrates, proteins, fats and oils, and vitamins. Minerals are inorganic nutrients (they do not contain the element carbon).

If animals do not get enough of the necessary components in their feed:

- Their growth will be affected negatively
- They will lose weight
- Production will drop
- Their reproductive potential will also decrease.

If they have mineral deficiencies:

- They may not come into heat and as a result reproduction will be reduced.
- They may show poor bone growth.

Lack of essential vitamins:

- Can lead to serious problems such as blindness and other deficiency diseases.

Animals should be fed a balanced diet for optimum productivity and reproduction.

6.2.1 Water

Water is the most important part of a ration. The amount of water required by animals depends on factors such as the climate, production purpose, the amount of feed consumed, the composition of the feed, the moisture content of the feed as well as the species of animal and its body size.

An animal obtains its water requirements from drinking water, water in feeds and metabolic water. Drinking water should be clean and fresh and available at all times.

Animals can survive longer without food than without water.

Functions of water in animal production:

1. Essential solvent, especially for dissolving dry matter.
2. Transports foodstuff to the cells.
3. Control body temperature.
4. Helps with digestion.
5. Helps with the elimination of waste materials.
6. Aids as lubrication (external and internal).
7. Forms a shock-absorbing cushion.
8. It washes waste products away.

6.2.2 Proteins

A lack of proteins is the most common nutrient deficiency. Protein supplements are usually needed because most feeds are low in proteins. Sources of proteins include soybean meal, cottonseed meal, fishmeal and legume hay. Young animals as well as lactating animals need more proteins in their diets.

Functions of protein:

1. Important for growth.
2. Responsible for repair of body tissues.
3. Responsible for the production of protein rich products.
4. Excessive protein can be converted into energy.
5. Excessive protein can be converted into animal fat.

6.2.3 Carbohydrates

Carbohydrates are converted into sugars during the digestive process. They are divided into two categories, namely simple and complex carbohydrates

Functions of carbohydrates:

1. Supply heat and energy to the body.
2. Unused carbohydrates are stored as fat in the body.
3. Used for the making of lactic sugar.
4. Stimulate chewing and rumination.
5. Fattening of animals.

6.2.4 Fats and oils

Also called lipids.

Function of fats and oils

1. Protect and insulate the internal organs of the body.
2. Play a role in the palatability of feed.
3. Protects the body against extreme cold and heat.

6.2.5 Minerals

Minerals play an important role in health, growth and reproduction.

Minerals are divided into macro-elements and trace-elements (micro-elements).

Macro-elements

The most important macro-elements for ruminant livestock are calcium and phosphorus.

| Mineral | Functions/Importance | Deficiency symptoms | Sources |
|----------------|---|---|---------------------------|
| Calcium (Ca) | Bone and teeth formation. | <ul style="list-style-type: none">- Broken bones do not heal or heal over a long period of time.- Soft mouth and bones.- Slow growth.- Milk fever in cows. | Bonemeal Lime |
| Phosphorus (P) | Essential component of bone and teeth. Skeletal development and maintenance. | <ul style="list-style-type: none">- Rickets in young animals.- 'Pica' or bone-chewing in grazing animals. | Cereal grains Bonemeal |

Micro-elements (Trace elements)

The most important trace elements in animal nutrition are copper, cobalt, iron, iodine, zinc and selenium.

Mineral deficiencies can be supplemented by:

1. Dosing.
2. By means of drinking water.
3. Mixed with concentrates.
4. Injections.
5. Mineral licks.

6.2.6 Vitamins

Vitamins are organic compounds that are required in small quantities in feed and are essential for:

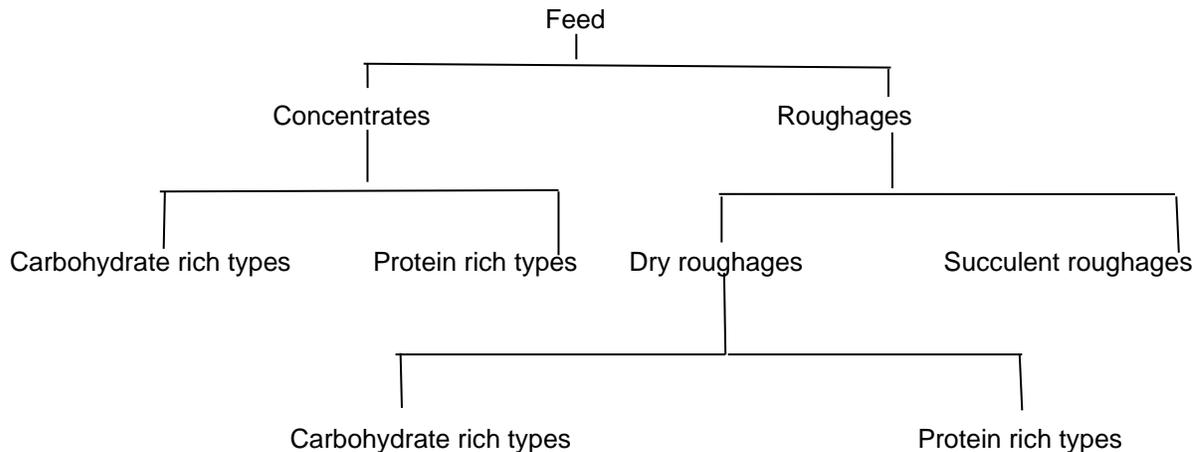
- Growth
- Production
- Reproduction and
- Maintenance of health

Vitamin deficiencies can be supplemented by:

1. Supplementary rations.
2. Injections.
3. Through drinkwater.

6.3 TYPES OF FEED

Types of feed can be divided as follows:



Concentrates:

Concentrates are feeds that contain a high density of nutrients and are low in crude fibre contents. Therefore it is of utmost importance to feed roughages with concentrates.

Functions of concentrates:

1. Essential for growth.
2. Supply carbohydrates and fats.
3. Supply reasonable minerals and vitamins.
4. Necessary for the fattening or finishing of an animal.

Roughages:

Roughages are bulky feeds that have a low weight per unit volume with high fibre content.

Protein-rich roughages:

Luserh hay, clover hay and groundnut hay.

Carbohydrate-rich roughages:

Chaff, straw, corn stalk and teff hay.

Functions of roughages:

1. Roughages enhances rumen development in young ruminants.
2. Roughages ensure that digestion takes place properly.
3. Roughages are palatable and they increase the palatability of the ration.
4. Roughages supply the necessary bulk to the ration.
5. Prevents bloat.

Succulent roughages (forage):

Are young plants that have a high moisture content, ex. green grass, lusern pastures, oat pastures, silage.

Functions of forage:

1. Rich in vitamins, especially Vitamin A.
2. Tasty.
3. Has a lactating effect.
4. Supply the necessary bulk to the animal.

6.4 NUTRITIONAL NEEDS OF ANIMALS

The composition of ration worked out to promote the following:

Growth

Increase in muscle growth, skeleton and other body parts. The deposit of fat is not growth.

Maintenance

The maintenance of body functions like digestion, respiration and heart beat. Also for the repair of damaged body tissue.

Fattening

The building of a fat layer between the skin and muscle and in the body. If an animal is fed more fodder than he needs for growth and maintenance, it is put on as fat. Animals fed for the market must be fed for quick growth, yet proper maintenance and just enough for a thin layer of

muscles and body fat. Fodder varies in different regions of our country but there are enough foodstuffs to serve as components for a well-balanced ration.

If an animal loses his appetite

If your animal does not eat all his concentrate ration, cut down the food by half. Continue until he eats all the food. Then you can increase it until he is on his full ration. Give enough hay at all times.

7. ANIMAL HEALTH

A farmer should be knowledgeable about the normal appearances and behaviours of livestock in order to detect any subtle changes that may be the result of poor health.⁴

Poor health will have a detrimental effect on animals' reproductivity, nutrition a production of milk, meat and wool.

7.1 Signs of poor health in cattle

Healthy animals should have healthy postures, walk normally and be alive and alert.

Unhealthy animals can show the following symptoms:

1. Ruminants don not ruminate.
2. The membranes of the eyes are pale and dull.
3. The skin is dry or rough.
4. Walks with a hunched back, lowers its head with ears drooping.
5. Walks with a lame gait.
6. Discharge from the eyes, nose or mouth.
7. It has diarrhoea or the faeces are too hard.
8. Urine may be discoloured.
9. Body temperature is high.
10. The breathing is laboured and the animal wheezes and coughs.
11. The pulse rate rises.
12. The animal isolates itself from the herd and looks weak and depressed.

7.2 Methods used to test animal health

7.2.1 Preliminary examination of the animal's health

- Take the animal's temperature by using a rectal thermometer.
- Determine the animal's pulse rate.
- Determine the respiratory rate.
- Investigate the membranes for anemia/paleness.
- Is the nose wet or dry.
- Discolouring of urine.
- Any other abnormalities ex. lumps, discharge from nose and mouth, limping.
- Does the animal eat and drink.
- Signs of bloat.

The following table represents the normal pulse and respiration rate of a cow.

| Animal species | Pulse rate per minute | Respiratory rate per minute |
|----------------|-----------------------|-----------------------------|
| Cow | 60 - 70 | 18 - 28 |

7.3 Methods of administering medicine to animals

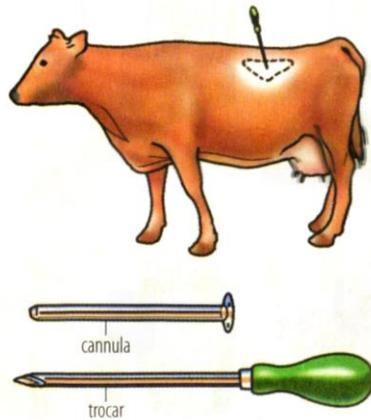
1. Mixing the medicine with food
2. Topical application
3. Injection
4. Drenching gun
5. Stomach tube
6. Cannule and trocar

7.4 Types of injections

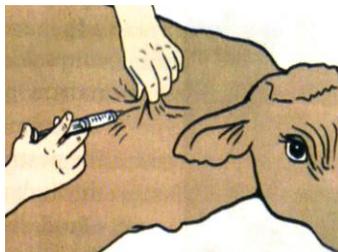
- Intramuscular injection (buttock muscle or neck area)
- Subcutaneous injection (beneath the the skin around neck area))
- Intravenous injection (jugular vein in the neck)

7.5 Dipping methods

- Spray races
- Plunge dip
- Hand dressing and hand spraying
- Foot and belly dips



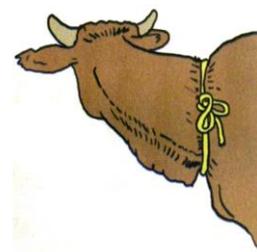
Cow with bloat treated by using a canula and trocar



Intramuscular injection



Subcutaneous injection



Intravenous injection

8. INFECTIOUS, NON-INFECTIOUS AND METABOLIC ANIMAL DISEASES (Only for background information. NOT for theory exam)

8.1 Infectious animal diseases

Infectious animal diseases are transmissible diseases. Infectious diseases can be transmitted easily from one host animal to other hosts by physical contact, in contaminated food, body secretions, contaminated objects, by air inhalation or by vector organisms. The pathogens causing infectious diseases include viruses, bacteria, fungi, protozoa and parasites. These pathogens can cause disease epidemics, which are outbreaks of a particular disease that affect a number of individuals at the same time.

A number of infectious diseases are notifiable diseases, which means that if they occur it is required by law to notify the government authorities.

Infectious diseases can also be spread by vectors such as flies that sit on the dung of cattle and then on food, causing contamination of the food with the germs found in the dung. Blood-borne infectious diseases such as malaria and African sleeping sickness can be spread by vectors such as mosquitoes, ticks, fleas and lice.

Zoonotic diseases are diseases that can be transmitted from animals to humans and from humans to animals. They are spread through the air, by direct contact, by contaminated dead carcasses or objects (fomite transmission), by oral ingestion and transmission by insects. Zoonotic animal diseases include anthrax, rabies, ringworm and tuberculosis.

Infectious diseases that are very infective are called contagious diseases. Infective means that the pathogen can enter, survive and multiply in the host. Examples of infectious diseases are anthrax, Rift Valley fever, botulism, bluetongue, foot-and-mouth disease and tuberculosis.

8.2 Non-infectious diseases

Non-infectious diseases cannot be transmitted from one animal to another animal. Only the infected animal is affected by the non-infectious disease.

Non-infectious diseases of the digestive tract are caused by factors such as overeating, consuming indigestible feeds, obstruction of the stomach and intestines by ingesting foreign objects that interfere with the flow of digested matter or deficiencies of digestive enzymes.

Non-infectious skin diseases are caused by environmental, nutritional and congenital factors.

Congenital non-infectious diseases include porphyria (pink tooth) in cattle. Metabolic diseases such as milk fever are also non-infectious, as are functional diseases such as bloat and diseases caused by nutritional deficiencies. Hardware disease caused by ingesting nails and wires is also non-infectious.

8.3 Metabolic diseases

Metabolic diseases are caused by disorders that disturb metabolic processes in the animal's body. During metabolism all cells, tissues and organs in the body extract energy from nutrients that are used for the normal functioning of the body. Metabolic diseases are usually caused by nutritional deficiencies. Metabolic diseases or disorders are also sometimes referred to as production diseases.

Metabolic diseases affect dairy cattle immediately after parturition and during early lactation when they can develop milk fever. This period is characterised by stress and drastic changes in nutritional requirements. Metabolic diseases are caused by severe and sudden changes in fluids, electrolytes and soluble organic elements. The metabolism cannot cope with these sudden changes with the result that the animal develops deficiencies of elements such as calcium, phosphorus, magnesium, sodium and glucose that are secreted in the milk.

It is common for an animal with a metabolic disorder to develop other related disorders at the same time. For example, cows with milk fever are also prone to other diseases such as metritis, mastitis and retained placenta. Cows suffering from acidosis are more prone to milk fever, laminitis and mastitis.

Examples of metabolic diseases:

| Disease | Description |
|--------------------------------------|--|
| Milk fever (Hypocalcaemia) | Usually occurs around calving time – caused by a drop in blood calcium as milk production increases. Symptoms: signs of excitement, agitation and muscle tremors in the head and limbs; staggering and collapse with staring eyes, dry muzzles, cold legs and ears, constipation and drowsiness; body temperature falls below normal. Bloat is common. |
| Displaced abomasum | Abomasum may be twisted to the left or right from its normal position by the foetus during pregnancy. May also occur in correlation with milk fever, fat cow syndrome and mastitis. Bloat may occur. |
| Ruminal acidosis | Caused by an increased production of organic acids in the rumen. |
| Laminitis | An inflammation of the vascular tissues that may be caused by nutritional imbalances. The lamina of the hooves undergo degenerative changes. |

9. THE MOST IMPORTANT ANIMAL DISEASES FOUND IN SOUTH AFRICA

9.1 VIRAL DISEASES

| Disease | Mode of transmission | Symptoms | Treatment |
|---------------------------------|--|---|---|
| Foot-and-mouth disease | Highly contagious Transmitted by means of secretions and excretions from infected animals to susceptible animals. | Blister-like lesions on the tongue, nose, lips, in the mouth, on the teats, udder, between the toes and around the hooves. | Notify the government authorities. Keep infected farms under quarantine. Slaughter and burn all infected and susceptible animals. |
| Rabies | Transmitted in saliva through the bite of infected animals. | Changes in normal behaviour. Grinding of teeth. Eating strange objects. Aggression. Cattle urinate frequently, run aimlessly, bellowing with their tails in the air. Excessive salivation. | No treatment once the symptoms appear. Preventative measures: Mass immunisation of domesticated animals. |
| Rift Valley Fever | Transmitted by the bites of mosquitoes and other biting insects. Also transmitted by handling infected meat or by contact with blood of infected animals. | Anorexia Blood-stained nasal discharge and diarrhoea. Death of young animals within hours of infection. | Prevent by annual vaccination with live vaccines. |
| Three day stiff sickness | Not a deadly disease, spread by bloodsucking insects like mosquitoes. | Fever. Listless Lameness and stiffness Nose and eye discharge. Cattle can not get up. | Vaccination (Aug to Oct) |
| Lumpy skin disease | Highly contagious disease carried through contact with infected fodder, water etc. Also carried by insects. | Characterised by lumps 1 – 4 cm on the body. Nasal discharge. Silliva discharge. Bulls can become temperaly sterile. Some cases permanent sterile. | Vaccination early summer. |

| Disease | Mode of transmission | Symptoms | Treatment |
|---------------------------------|--|--|--|
| Bovine malignant catarrh | Carried from Wildebeests and insects. | Fever. Loss of appetite. Watery eyes. Nostrils have a muco-purulent discharge that accumulates and forms crusts. Sores form on the mucous membranes of the nostrils and mouth. Blindness. | No treatment. No vaccination. |
| Warts | The virus penetrates the skin via a wound. | This is a viral infection of the skin which causes a growth of tissue on the skin. | Small warts normally disappear. Larger warts can be tied off or can be surgically removed. |

9.2 BACTERIAL DISEASES

| Disease | Mode of transmission | Symptoms | Treatment |
|-----------------------|---|--|--|
| Brucellosis | The germ can be picked up from grazing, fodder or contact with other infected animals. | Abortions and weak calves. | Vaccination There are no known cures. Keep the herd free from it!! |
| Pasteurellosis | Animals pick up a germ from feed, inhalation, wounds or contact with insects. | Animal hides (shy). Coughing. Difficulty breathing. | Vaccination. |
| Anthrax | Contamination from fodder. Insect bites. | Do not eat and listless. Difficulty breathing. Blood from the anus and nostrils. Deaths within 72 hours after contamination. | Vaccination with Supavax. |
| Blackquarter | The germ is picked up through grazing in the veld. | Stiffness and discomfort. Swelling of carcass due to gas production in muscles and rapid rot. | Vaccination |
| Botulism | The germ is present in rotting carcasses. | Lameness of muscles. Weakness of the hind legs. Inability to swallow. Animal lying with his head against the side of the body | Premature feeding of phosphorus licks. Vaccination. |
| Foot abscess | Infection of the hooves and surrounding parts due to open wounds caused by ticks, sharp stones and wires. | Swelling of the hooves and tissues. Cause abscesses. Pull foot away when touching. | Clean hooves. Cut hooves. Open abscess to drain, Treat with antibiotic and anti-inflammatory medication |

| Disease | Mode of transmission | Symptoms | Treatment |
|-----------------|---|--|--|
| Foot rot | Highly contagious. Germs penetrate wounds caused by ticks or injuries. The germ likes hot and humid conditions. | Animal walk limping. Hoof tissues are warm and painfull. Damage sole and outer hoof. | Avoid wet conditions. Foot-dip with a copper sulphate solution. Intra-muscular injection with oxytetracycline. |

9.3 TICK TRANSFERABLE DISEASES (PROTOZOAN DISEASES)

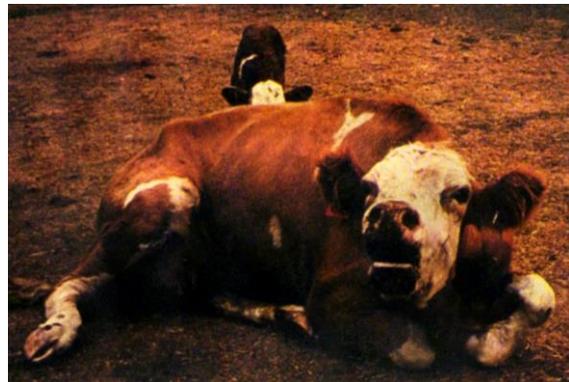
| Disease | Mode of transmission | Symptoms | Treatment |
|---|---|--|--|
| Anaplasmosis (Tick-borne gallsickness) | Are spread by insect vectors such as ticks and biting flies. Ticks become infected when they feed on sick or recovered animals (which continue to be carriers of the parasite). Cannot be transferred by direct contact. | Fever Anemia Lack of appetite and weight Weakness Listlessness Constipation. Pale mucous membranes of eyes and gums are pale to yellow Dehidration Acute death | If the disease is detected early, treat infected animals with broad-spectrum antibiotics. Control tick and flies to prevent the occurrence. Dip and vaccinate young animals to ensure immunity. |
| Redwater | Transmitted by blue ticks that become infected with redwater when they feed on cattle that have the disease or that are carriers of the redwater parasite. It is then transmitted through the tick eggs, | High temperature Rapid respiration and pulse rate Urine dark red or brown Listlessness | Usually not successful because of the rapid nature of the disease. Annual subcutaneous vaccination. If detected early, treat with broad-spectrum antibiotics coupled with blood transfusion and injections with Berenil or Imizol. |
| Hartwater | 'Bont' ticks | Nervous blinking of eyes. High temperature. Listlessness Breathing is difficult. Unco-ordinated movements (high stepping) and walking restlessly in circles, into fences and falling down. Grinding teeth. Frothy drivel from the mouth. | Exposure of animals to infecte ticks improves immunity. Treatment includes: - immunisation - Intravenous injections with tetracycline. |

9.3 FUNGAL DISEASES

| Disease | Mode of transmission | Symptoms | Treatment |
|---------------|--|---|--|
| Orbits | Transmitted by direct contact with an infected animal. Transmitted by indirect contact with bedding, equipment, posts or any other surfaces against which animals with lesions have rubbed. Spread by the hands of handlers. | Hair loss. Red, thick, scaly and itchy ring-like lesions in adult cattle these that is found on the chest and legs, and in calves they are seen around the eyes, on the ears and back. | Isolate infected animals. Treatment: - iodine-wash to kills the fungi. - Application of ointment. |



Foot and mouth disease



Rabies



Rift Valley Fever



Redwater

10. INTERNAL AND EXTERNAL PARASITES

10.1 Internal parasites (Endoparasites)

- Commonly referred to as 'worms'.
- Live within the bodies of animals (hosts).
- They obtain all their nutrient requirements from the host animal.
- The internal parasites benefit while the host is negatively affected.

Internal parasites cause:

- weight loss
- anaemia
- weakness
- bloating belly
- coughing and nose discharge
- death

Main groups of internal parasites:

- Roundworms
- Tapeworms
- Flukes

Preventive measures:

- Deworm regularly
- Clean water troughs and feed troughs
- Avoid wet pastures

Types of roundworms

- Wireworm
- Brown stomach worm
- Bankrupt worm
- Hookworm
- Nodular worm

10.2 External parasites (Ectoparasites)

- Feed on the skin and blood of animals.
- The most important groups are ticks and flies.

Ticks

Flourish in warm, humid conditions.

Transmit diseases such as anaplasmosis, redwater and heartwater.

| Type of tick | Where found on the animal | Disease |
|------------------------------|--|----------------------------------|
| Blue tick | Attack the neck, dewlap and the underline of the flanks. | Redwater Anaplasmosis |
| Red tick | Found around the anus of the animal. | Sweating sickness Congo fever |
| Bont tick Red-legged tick | Bos taurus cattle are less resistant. | Heartwater |

Lice

Red lice on cattle causes lesions on the shoulders, back and the root of the tail.

Mites

Can not be seen with the naked eye.

Symptoms:

- skin irritation with severe itching that causes rubbing, scratching and hair loss called mange.
- dermatitis (inflammation)
- round, hairless lesions

Treatment:

- Amitraz used as a dip or pour-on.
- Dipping with organophosphates.
- Injecting drugs such as Ivermectin.

Chemical control of ectoparasites

Acaricides for the control of ticks are applied using the following methods:

- Plunge dip
- Spray races
- Hand or mechanical spraying
- Pour-ons
- Injectable drugs
- Spot treatment

11. ANIMAL POISONING

Urea poisoning

The use of urea as a non-protein source of nitrogen for ruminants is useful but if not properly managed can cause poisoning. Large cattle can safely be fed up to 120 gram of urea per day. Increasing supplementation with urea gradually.

Urea poisoning occurs when:

- Eating too much of a normal safe lick.
- When urea is not properly mixed in the rations.
- Too high urea concentration in the lick or ration
- when urea dissolves in rainwater and animals drink it

Symptoms:

- Nervous symptoms such as loss of balance.
- Excessive salivation, frequent defaecation and urination, violent struggling and bellowing.
- Bloat
- Tetany (painful muscular cramps)
- Breathing difficulty
- Rapid death

Treatment:

- Administer vinegar to neutralise the alkalosis (dilute one litre of vinegar with four litres of water)
- In severely affected animals with breathing difficulty the vinegar must be administered directly into the rumen using a stomach tube.

12. ANIMAL BEHAVIOUR AND HANDLING (FOR INFORMATION ONLY)

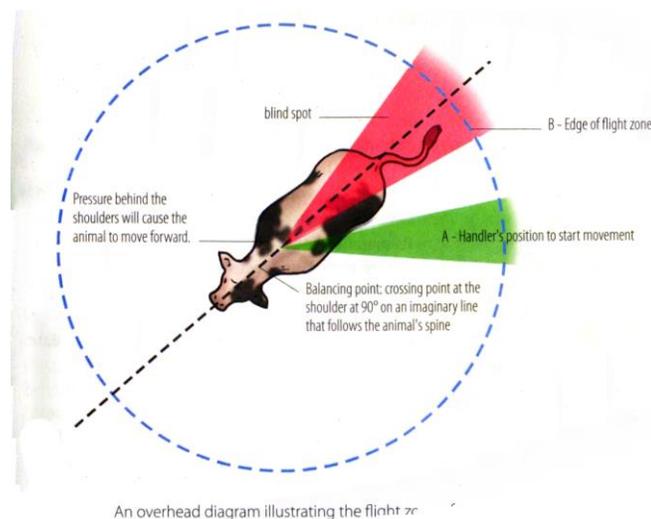
12.1 Common behaviour of cattle

Cattle are herd animals that react best when kept together. They become uncomfortable or even agitated when separated from others in the herd. Their instinctive reaction is flight and they will form a group when frightened. Cattle show distress by milling or circling, bawling or feigning charges.

Cattle in groups develop hierarchies and will usually follow a leader. If an animal loses visual contact with the leader it will try to return to a position of comfort and security where it can see the leader.

Cattle have very poor depth perception and do not focus well on objects directly in front of their faces. To examine an object on the ground closely they must lower their heads. Cattle may hesitate at the edge of water, simply because they have no way of knowing the depth of what they are stepping into.

Each animal has a personal space around it, called the **flight zone**. How and where you step into this zone affects an animal's movement. A calm animal has a much smaller flight zone than one that is fearful, stressed or agitated.



An overhead diagram illustrating the flight zone of a cow

- Animals have excellent broad angle vision
- They do have very good distance vision
- Animals can distinguish color
- Animals prefer to move to light
- Animals do have excellent hearing
- Ruminants do have natural herd instincts
- Prefer to follow a leader
- Gets easily confused by noise
- Animals flinching from shadows

12.2 The signs of cattle that are in distress are:

- pinned or raised ears
- Rappid tail movements
- Hair raised on the back of the neck
- pawing
- snorting
- feigned charging movements



The sign of a bull in distress

12.3 The reasons for handling cattle

Cattle are handled for the folowing procedures or reasons:

- dehorning
- vaccination
- dosing
- artivicial insemination
- rotational grazing
- help with calving
- training for show competitions
- feeding
- hoof trimming
- marking
- marketing or taken to auctions

12.4 The effect on incorrect handling

Animals respond to the way they are treated and draw upon past experiences when reacting to a situation. Animals that are chased, slapped, kicked, hit or frightened when they are young will fear being approached. This means if animals are handled incorrectly at any stage, especially when they are young, they will be much more difficult to handle on subsequent occasions.

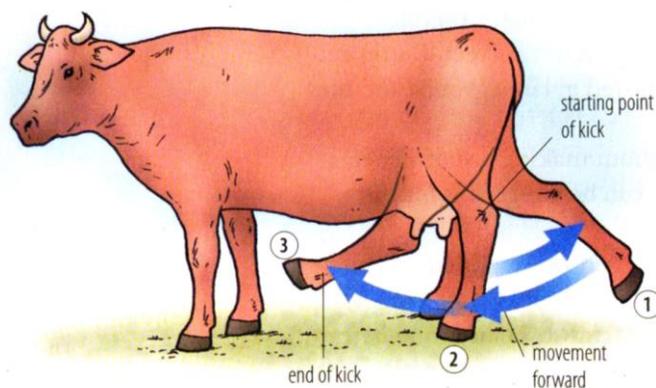
Examples of incorrect handling:

- Handlers that shout, yell, bang on wall with paddles and wave their arms excite and agitate animals.
- Aggressive handling.
- Catching cattle around the neck or tail can cause injury to the animal and handler.
- Pushing crowd gates up against the animals is not correct.

12.5 Guidelines for handling cattle

When handling animals the handlers must be aware of the following facts:

- Moving or flapping objects can disrupt handling.
- A cloth or coat swiveling in the wind can cause animals to balk.
- Movement at the end of a crush can cause animals to refuse to be herded.
- You should not yell when working with livestock.
- Be cautious around animals that are blind in one eye or deaf in one ear.
- You should not approach an animal from the back. There is a blind spot and the animal can kick the handler.
- Talk softly to the animal when approaching it.
- The crush should be wide without any sharp corners.



A cow kicks in an arch moving from back to front

12.6 Basic guidelines for transporting cattle

It is important to pay attention to vehicles that transport animals to make sure that animals are not injured, bruised or even killed during transport.

It is important to complete a transport permit when transporting animals. The following information must appear on the permit:

- name, surname and ID number of the owner
- owner's signature and telephone number
- number of animals
- type of animals
- description of animals
- registration number of vehicle
- the destination to which the animals are being taken
- the reason for transport
- name and ID number of the driver
- name of the new owner, if applicable
- date

The following guidelines must be taken into consideration when transporting animals:

- Do not transport animals when roads are busy.
- The rails of the truck must be high and strong enough.
- The floor of truck must not be slippery.
- Group animals before transport, so social groups become established.
- Dehorning calves or breeding polled cattle.
- Ensure the loading and unloading zones are high and strong enough.
- Do not transport different animals on the same truck, unless they can be separated from one another.
- Do not feed animals less than 12 hours before they are loaded.
- Keep animals calm during the preparation for the trip.
- Do not load animals too long before departure.
- Make sure that the back of the truck where the animals are kept is well ventilated.
- Nothing should stick out of the vehicle that can injure the animals.
- The back of the truck should be cleaned before and after the animals are loaded.
- In hot weather put a net over the back of the truck to keep the animals cool.
- Stay calm during the loading and offloading of animals.
- Keep different groups that do not know each other separate.

13. SHOW PREPARATION OF CATTLE

13.1 Halter tame

It is important to know how and when to tame animals.

Bulls:

It is much easier to make a bull halter-tame than a heifer. Provide the bull with a good quality nose ring and sturdy halter at least three months before the show or auction.

Heifers:

Heifers can be trained in a variety of ways, e.g. by fixing a chain around their neck for two weeks. Or fixing her with a halter for two days without water. If she is then detached, lead her to the water with the halter, use enough henchmen.

Routine:

When the animal is then well trained, the animal should be regularly worked on.

13.2 Preparation for the show

Especially animals that are first showed need to be washed several times, so they can get used to it. Use a good hair washing agent, not washing powder, it makes a cattle's skin scab.

Water drinking can be a big problem at a show. Usually the animals do not want to drink the water due to the chlorine content. A good tip is to give the cattle not water for 12 hours before being loaded for the show. One can also accustom the animals to a specific taste of the water by e.g. for several weeks beforehand to put a particular amount of molasses in the drinking water. Then take your own drinking bowl to show and keep on giving them this mixture in their water.

13.3 Removal of excess hair

In summer, this is usually not a problem except for the mane hair and hair around the ears and forehead. Remove the excess hair inside the ear. The crest and mane should also be cut shorter. Beware in the case of bulls not to cut the crest too short.

The ridged hairs on the tail and rump can also be made shorter. Comb out the tailbrush and brush it in a "puff" look.

Let the show animals sleep undercover at night and protect them from cold wind to slow regrowth of the hair. Excess hair on the body can be removed with a curry comb or brush. A number 18 saw blade can also be used to get rid of excess loose hair.

13.4 Feet and hooves

The claws/hooves of the animals may grow excessively due to the increase in condition and reduced exercise. Cut the hooves on a regular basis with a hoof clipper or make a smooth with a hoof file. It is safer to keep the hooves short by more oftening using a file than a hoof clipper. It is the easiest to let the animals walk regularly on a hard surface.



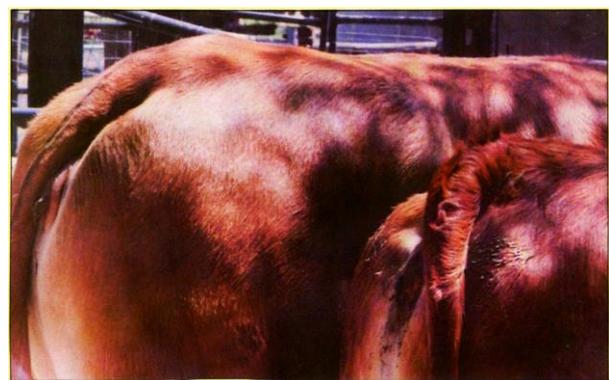
Ears before trimming



Ears after trimming



Combing of tail hair for "puff" look



Tail hair before and after trimming

14. GUIDELINES FOR SHOWMAN

PICKING YOUR ANIMAL

- The most important is to pick an animal that suites you.
- Both age and height must be considered.
- A non pregnant heifer can be on heat during the show.

THE ANIMAL MUST:

- a) Be stylish.
- b) Good balance of different body parts.
- c) Head: Feminine/Masculine, to carry his head high when walking or standing.
- d) Walk comfortably.
- e) Good set of legs.
- f) Good depth of hoof.
- g) Strong fetlocks.
- h) Shoulders that fit properly to the body.
- i) Well grown for its age.
- j) Long broad rump with the right decline from the hips to the pin bone.
- k) Long, straight topline.

AVOID

- a) Over conditioned.
- b) Short in body.
- c) Lack of style.
- d) An animal with too many conformation faults.

BREAKING

- a) After an animal has been put on his feed programme, he must be broken in to show.
- b) Minimize the human strength to catch the animal and tie him to the manger.
- c) Put your animal in a crush and halter him.
- d) Then chase him into a stable where he will sleep and tie him to the manger.
- e) Tie and loosen him a couple of times before handling him.
- f) If he has calmed down try to rub and groom him to lose his fear of people.
- g) Be sure the halter fits properly without choking, chafing or hurting the animal.
- h) Then lead him to the water, handle him gently.
- i) Begin to walk longer distances but be careful not to let him get out of hand.
- j) If it is the case lead him in a small arena until his properly halter broken.

TRAINING

- 1) The animal must be trained to carry his head high when walking or standing.
- 2) A show stick with a blunt point must be used for training.
- 3) Teach your animal the use of the stick by caressing him under his stomach.
- 4) Put the stick on the foot and if he moves his front foot, caress him again.
- 5) In this way he can't get away from you.
- 6) After he has done this satisfactorily, he can be led and trained to place his feet while handling him with the halter.
- 7) To move him backwards, keep the lead rein in the left hand, put your right hand on his wither and push or pull the wither to the opposite position of the foot to be placed.
- 8) The feet must stand square (block) under the body.
- 9) Train your animal to keep his back straight and follow the lead freely with a light right hand (don't push his head up strongly).
- 10) Walk your animal short periods, it's better than long distances.

ROUNDING OFF THE HOOVES

- Hooves must be cut in advance for the animal to walk and stand properly.
- They must be cut at least 3 weeks before the show to give him enough time to recover by the time of the show.
- Hooves must be clean.
- Hoof polish is optional.

ORGANISING YOUR SHOW EQUIPMENT

- a) If your show equipment is maintained carefully it can be used for many shows.
- b) A show box, like a tool box and the right size according to the number of animals you are going to show is useful to store your equipment.
- c) It also helps to keep the area around the stables neat.
- d) A good idea is to pack your washing and preparation equipment in different boxes.
- e) Decide on a color and paint all the equipment with lead free paint.

- f) Bear in mind the color of the bred.
- g) Repair and clean your equipment after each show.
- h) Take stock, and replace any lost stock or the supply of soap, oil, polish, etc.
- i) After the show season the equipment must be painted, cleaned and stored.
- j) Clean your show halter after every show.
- k) Use saddle soap or leather oil and your halter can be kept in good condition for many years.
- l) Make use of a nylon halter when washing your animal.

15. GUIDELINES FOR WASHING

WASHING BOX CONTENTS

Soft brush
 Hard brush
 Toothbrush/something similar
 Hoof brush/something similar
 Cloth or Sponge
 Soap
 Towels
 Bucket
 Sweat scraper
 Head for garden hose and fittings - optional

Do not pack unnecessary stuff in your box! No preparation equipment may be in your washing box! Beware of an overly large box, it must be manageable. **NO NAMES ON THE BOXES!**

Washing process

- Suitable but neat clothes are important. See the rules.
 - Wash the animal on a coarse cement surface.
 - Wash your animal a few times at home and treat him for external parasites. Regular washing gets your animal used to water and he will then be relaxed when this is done at the show.
 - The washing of an animal is hard work, but very important.
1. Always start by watering the animal on the left side. The process begins behind the left ear to first accustomed the animal to water.
 2. Water the head thoroughly with running water and close the animal's ear with your hand to prevent water from entering the animal's ear. This will prevent your animal from walking with a hang-ear. Try to use as little water as possible into the animal's face. Work systematically and quickly from front to back and from top to bottom. The same procedure is followed on the right side of the animal.
 3. If the animal's underline is watered, hold one hand against the animal. It not only stabilizes the animal, but also makes the animal aware of where you stand.
 4. Soap in the same order by put soap **directly** on the animal or work from a bucket with soapy water.
 5. Use a rubber brush to thoroughly scrub the animal.
 6. Rinse the animal thoroughly in the same order. A residue of soap causes flaking and a dull hair coat.

7. Use a hard brush and hoof pick to wash and clean the animal's hooves and dew claws, but stay below the hairline.
8. Use a soft cloth to clean the ears, eyes, nose, mouth and anus in this order.
9. Remove excess water with a sweat scraper and/or brush and dry off thoroughly with a towel.
10. Braid your animal's tail (optional).
11. No water may drip off the animal.
12. Clean your washing space and equipment and pack your equipment in your box. Roll up the pipe and clean your gumboots.
13. Always keep the last water in your bucket to wash off manure or rinse away what might be spilled.
14. Put a blanket on your animal if it is very cold.
15. Then stand upright next to your animal to indicate that you are done with the washing process.

16. GUIDELINES FOR PREPARATION

PREPARATION SHOULD BE DONE ACCORDING TO BREED'S BREED STANDARD

PREPARATION BOX CONTENT:

Soft brush
 Hard brush
 Toothbrush/something similar
 Hoof brush/something similar
 Cloth or sponge
 Soap
 Comb
 Hairspray
 Bucket and Water
 Oil (mix of spiritus and baby oil) or hoof oil
 Sheepskin (Shammy)/cloth
 Halter with chin chain and lead rein
 Show stick – optional

Do not pack unnecessary stuff in your box! No washing equipment may be in your preparation box! Beware of an overly large box, it must be manageable. **NO NAMES ON THE BOXES!**

Fasten your animal at a convenient height with an easy release knot.

1. Be neatly dressed, according to the rules as if going into the show ring.
2. Enter the ring and fasten your animal with an easy release knot.
3. Go get all your equipment for preparation of your animal and put it neatly with your animal.
4. Begin to brush off your animal. Start behind the left ear and move to the back, from top to bottom. Brush off the whole animal. Use the soft brush. Begin
5. If there are dirty spots on the animal, use the hard brush, soap and water to clean.
6. Clean the hooves and dew claws thoroughly.
7. Clean the animal's face. Use a wet cloth or sponge to clean the eyes, ears, nose, mouth and anus.

8. Comb the tail nicely and neatly and puff until it looks neat. Spray hairspray on the brush of the animal
9. Put oil on your animal (optional). Do not put the oil directly on the animal. Use a cloth, then wipe the oil evenly to your animal. IT SHOULD LOOK NATURAL!!
10. Also smear the hooves with oil.
11. Clean and tidy your area. Pack away all your equipment.
12. Now replace the nylon halter with your show halter (RULES AND REGULATIONS). An animal may never be tied up with the show halter.
13. Clean your gumboots and take up your show stick.
14. When you get to the judge, SHOW your animal to the judge as if in the show ring.

17. GUIDELINES TO SHOW YOUR ANIMAL

- 1) Give your animal food and water early.
- 2) Be rested on the day of judging.
- 3) Start early to get your animal ready.
- 4) If necessary rinse your animal and ensure that it dries off well.
- 5) Put on your animal's show halter 30 minutes before judging.
- 6) Be sure the halter fits comfortable and correct and that all adjustments are correct.
- 7) Brush off all dust.
- 8) Make your animal shine and keep it clean.
- 9) The emphasis will be placed on care, attention, training and preparation of the animal and the handler's ability to show the animal.
- 10) Note where walk on your way to the show ring.
- 11) Let your animal drink water before entering the ring. It will makes him looked fuller.

APPEARANCE OF THE SHOWMAN

- a) The handler must be dressed neatly and cleanly according to the prescribed rules.
- b) Dress code should be appropriate for the event, according to Youth Show rules.
- c) White rubber boots should be worn for protection.
- d) Before entering the ring, make sure your number is in the right place.
- e) No number no marks!
- f) When entering the ring, be mindful and show your animal to the best of your ability.
- g) Remember, first impressions made on the judge are enduring.

HANDLING

- a) The animal must enter the ring promptly after the class is called. There should be a ring steward present that will let you in.
- b) Lead your animal in clockwise direction around the ring.
- c) Lead the animal on the left-hand side, with your right hand.
- d) The lead should be held with your fingers pointing upwards (your hand must be under the lead and not on top).
- e) The lead must be neatly held at all times.
- f) Fold up the lead so that it does not drag on the ground.
- g) The lead can be held in one or both hands, but must be held with both hands as soon as the animal moves.
- h) Do not wrap the lead rope around your hand.
- i) The show stick must be carried under the left arm.
- j) The animal's head must be kept up through the whole performance.

- k) Move at a moderate speed when the animal walks.
- l) Look around regularly to see where you are going.
- m) Look back regularly to ensure that you maintain a good following distance with the animal in front of and behind you.
- n) One cattle length between you and the animal in front of you.

EYE ON THE JUDGE

- a) Always try to get your animal in the right position as soon as possible if you are asked or shown to stand.
- b) Hold the lead in the left and the show stick in the right hand.
- c) Pull your animal forward with the lead and its head as high as possible until the fore legs stand together. If the animal stands normally, the width of its chest will determine how wide apart its legs are.
- d) Then use the show stick to correctly place the hind foot.
- e) Never kick the animal's legs.
- f) Give only a push with your foot point at the top of the claw if necessary.
- g) Allow about one meter on both sides of your animal so that the judge can pass by.
- h) Avoid contact with your fellow contestants.
- i) At all times, try to get your animal in the right position before the judge inspects your animal.
- j) Keep your animal's back straight, head up and a foot below each corner.
- k) If the ground is not level, place the animal's front feet on slightly higher ground.
- l) The competitor's chest must always face the judge.
- m) Always keep an eye on the judge.
- n) With a quick look away, make sure that your animal is still standing right if the judge does not pay attention to you.
- o) Correct your animal in a quick but disciplined way with always an eye on the judge.
- p) Forget the people outside the ring (parents, friend, photographers).
- q) Just concentrate on what you're doing.
- r) Never be an obstruction to the judge if he wants to see the animal. If he wants to see the opposite side of the animal, you need to move quickly with the lead under the chin to the other side with your chest always facing the judge.
- s) Prevent the show stick from hindering both you and your fellow contestant's animals with the movement of the show stick.
- t) When instructed to change position in the ring, it must be done quickly, yet carefully as indicated by the judge or ring steward. Leave the ring only when the request of the judge or ring steward has come to do so.
- u) If an animal is showed with conformation faults, the participant must consult with the coach in advance to show the animal in such a manner that the errors are hidden.
- v) A show stick is not compulsory.
- w) Use the show stick sparingly.

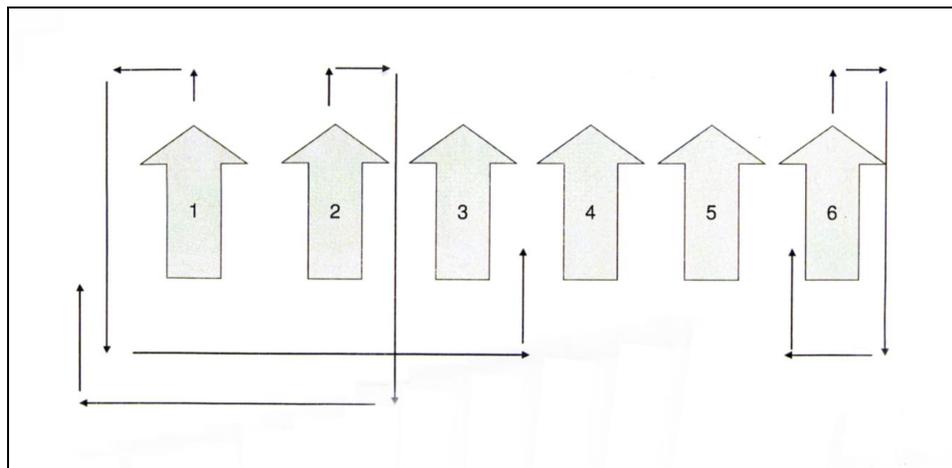
BALANCE, WAKEFULNESS AND ATTITUDE

1. Participants should be awake and quick at all times, but respond carefully to instructions from the judge and ring steward.
2. An eye should be kept on the animal and another on the judge and both need your undivided attention.
3. The main goal is to show your animal to the best of your ability.
4. Smoking, chewing of chewing gum, chatting in the ring and a phone in the ring are out of the question.

NO CELL PHONES!

5. Don't start conversations with the judge or steward. Only answer kindly to questions that deal with the judging of the animal.
6. All showmanship performances must be done in a quietly comfortable way.
7. Circus tricks don't belong in the show ring.
8. Be calm and quiet and enjoy what you do.
9. A showman/lady is courteous and friendly to the stewards and fellow contestants at all times. They have an enjoyable expression and enjoy what they do.
10. Good sportsmanship is very important. Be a modest winner and a courteous loser.
11. A smile can work wonders.

18. CHANGE OF POSITION IN THE LINE UP



1. The figure indicates the correct method of changing from position in the lineup.
2. The first participant moves out to the left and enters the line again from the back.
3. The rest of the participants in the line move out to right and then move through the line into the open space where they have stood.
4. They then go the line inside again from behind.

ENJOY YOUR SHOWMANSHIP FULLY AT ALL TIMES.