National Agricultural Youth Show

Dairy Cattle Manual

2024

CONTENTS

1. DAIRY COWS OF THE WORLD

There are 6 main breeds of dairy cows in the world.

1. **Holstein -** Also called the Friesian, although it is mostly commonly known as the Holstein. This is the biggest breed with a ***high milk production.*** It is also the breed with the largest frame.

2. **Jersey -** known for its ***high butterfat and protein*** and low maintenance requirements. The second biggest breed in the world, it has the smallest frame.

3. **Ayreshire -** A red and white cow, well known for its excellent udder and tasty milk.

4. **Guernsey -** Also well known for high butterfat and protein, but has a larger frame than the Jersey.

5. **Brown Swiss -** A grey brown cow known for its high protein and excellent hooves and legs.

6. **Dairy Shorthorn -** A hardy dairy cow that does well on pastures. This is also a dairy animal with a large frame.

2. WHAT IS MILK?

Milk consists of:

Water
Protein
Milk fat (butterfat)
Minerals
Milk sugars (lactose)

The quantity of the individual ingredients differ from farm to farm and each of the following factors have a role to play:

- The breed on the farm
- Nutritional status of the cattle (supplements play a big role).
- Health of the animals
- Udder health (eg. Mastitis)

Milk is used in the production of the following products
Butter
Cheese
Yoghurt
Ice cream
Cream
Powdered milk
Condensed milk
Evaporated milk

3. NUTRITION AND MANAGEMENT

Nutrients

All living organisms need nutrients to survive. The type and amount of nutrients depend on the type and use of the animal. The following nutrients are important for the majority of farm animals:

1. **Protein**

   Necessary for growth and milk production.

2. **Energy**

Necessary for maintenance, milk production and building up of condition.

3. **Minerals**

   Reproduction and milk production especially CALCIUM and PHOSPHATE.

4. **Vitamins**

   General health of the animal.

5. **Roughage**

   Helps the ruminant to keep the rumen stable. Prevents acidosis, amongst others.

Different types of food contain these nutrients in differing amounts. Here are a few examples:

Nutrients	Example
Protein	Lucerne, fishmeal and oilcake. Urea is also considered a protein source, but should not make up more than 1 % of the total ration.
Energy	All grains such as mielies, sorghum, hominy - chop and wheat bran.
Minerals and Vitamins	Most green feeds contain these, but deficiencies do occur and then supplements must be given.
Roughage	Lucerne is a high quality source of roughage and also are a source of protein and calcium in the diet. Silage contributes a reasonable amount to the energy of the total ration. Low quality roughage such as Eragrostis hay, mielie leaves, and wheat straw only contribute a small amount of nutrients to the ration. They are mostly used to prevent acidosis and to keep the rumen stable for more efficient digestion of the other nutrients.

3.1 COWS IN MILK

The management of cows in milk can be divided into 4 phases; namely 0-30 days, 30-100 days, 100-200 days, and 200 - 305 days. Nutrition and management differ in each of these phases.

Nutrition

There is a large variety of feeding systems that vary from pasture-based to full ration feeding.

Pasture system

The high rainfall areas and areas with irrigable land in South Africa lend themselves to the planting of pastures. The availability of grazing determines whether cows graze a portion of the day or the whole day. Cows that are able to graze for 24 hours per day only needed to be supplemented with concentrates. If the grazing is of a good quality, 300g of concentrate per litre of milk may be fed. Depending on the quality of the grazing, this may be increased to 450 per litre milk. Where cows are only partially grazing, their diet may be supplemented
with hay or silage and concentrates of 300g to 450g per litre of milk yielded.

Total ration system

Cows on a total ration system do not have access to grazing. The ration is made up of roughage like lucerne, eragrostis, wheat straw and silage. The ratios between roughage and concentrates vary between 40% concentrates and 60% roughage for cows with low production to 60% concentrates and 40%

roughage for cows with a high production. Jersey cows take in about 16 to 22kg of dry feed in. A total ration can be mixed by the farmer in a mixing wagon, or a pre mixed full ration can be purchased.

Group	Nutrition	Management
0-30 days	- Production relies on body reserves; therefore it is essential that there is enough energy in the ration. - Grazing cows must get a good concentrate ration. - The roughage - concentrate ration should be 40:60. - Cows in this stage of lactation take in 0.6kg dry feed for every litre of milk they produce. Read paragraph 5.2 with regard to cows in this stage of lactation.	- Monitor cows with poor appetite. They may have a sub-clinical ketosis and could die if not managed properly. - Ensure that the cows' uteri are clean and healthy. - Ideally all cows should be examined by a vet 30 days after calving. - Notice which cows are not having cycles, and contact a vet for examination.
30-100 days	- In this period, a cow reaches peak production and the same feeding principles are used for this group as for those 0-30 days of calving.	- Heat spotting should be done 3 times per day. - Contact your semen rep for training on heat spotting.
100-200 days	- Cows are still in peak production and a large portion of the group should be pregnant. - In the interest of constant production and continued pregnancy it is important that this group not experience any shortage in nutrition. - Each cow takes in 1 kg of dry feed for each litre of milk they produce.	- Good heat spotting is still important as there are a variety of reasons why a cow could reabsorb the fetus. - Pregnancy testing is important to confirm pregnancy.
200-305 days	- Cows are past their peak production and should pick up condition. - The concentrate - roughage ration can be reduced to 50 :50 or even to40:60 just before the drying off period.	- At the end of this period the cows should be dried off. It is important that cows be dried off for at least 45 days. That is with no milk in the udder. - The drying off can start 60 days before calving. It is important to put cows on a ration with only a little concentrate feed. This assists with the drying off process.

3.2 DRY COWS

The following guidelines are applicable to the feeding of dry cows:

1. The cows must be dried off for 45 - 50 days.
2. The cows should be fed a ration low in salt.
3. Cows should not lose or put on condition during drying off. It is important that the cows are dried off in the correct condition.
4. Small grain hay (oats or barley) is the ideal dry feed for dry cows. Avoid feeding lucerne hay.

3.3 YOUNG ANIMALS

Introduction

The raising of replacement heifers is a branch of dairy farming which is often neglected. One has to remember that the replacement heifers are the future dairy cows, and that unfavourable treatment during their growing phase could negatively affect their potential milk production.

Goals

Heifer's growth rate is determines their first covering. The ideal is that the heifer must be 2/3 of her full weight before she is inseminated. She should reach 90% of her full weight before calving. A scale is an essential item in order to monitor the growth rate and so manage the replacement heifers. Due to the fact that it is so expensive to raise calves, the unnecessary bull calves should be removed from the herd at one week of age, which will allow the remaining heifers to be optimally managed. Considering that the replacement heifers do not generate any income before their first calving, it should be attempted to get them to calve as close to 24 months as possible, while taking the target mass at insemination as well as at calving into consideration.

Benchmarks

- **Jersey and Guernseys**
  AI at 14-15 months at a mass of 250- 250kg. At 24 months, heifers should weigh 320-350kg after calving.

- **Holstein and Ayreshires**
  AI at about 16 months at a mass of 350- 380kg. Such a heifer should have reached 95% of her normal height and 90% of her expected weight. This means an average mass gain of 400-450g per day. This heifer should have a decent first lactation. Mass gain over 500g per day can have a negative effect on later milk production.

Costs to raise heifers differ from herd to herd. These costs are elevated the older the heifer is. A large, healthy heifer that calves early, starts to pay for herself as soon as she has calved.

4. PRINCIPLES OF RAISING CALVES

Sanitation

Exposure to infection is reduced if all calves are kept in individual pens away from other calves. Feaces and saliva are both sources of infection. In other words, infection can spread easily from one calf to another by means of the labourer's hands, boots, the milk buckets, bottles, flies etc. The ideal is to clear a set of pens at the same time, which allows for them to be thoroughly cleaned and disinfected. This allows for a greater chance to raise the next set of calves to be healthy. Avoid overpopulation and isolate sick calves
immediately and effectively. Allow the pens to get sunlight.

Colostrum

Correct feeding of the cow during the pregnancy and the dry period ensures an uncomplicated birth of a strong and healthy calf. This newborn calf should ideally drink colostrum equal to 5% of his body mass within ½ an hour, but not longer than 6 hours. Use a stomach tube if necessary. Good quality colostrum is thick and stringy and is obtained from the first milking after calving. After the first milking, the concentration of the antibodies in the colostrum drops to 60% of that of the first milking. Colostrum from a mature cow that has been exposed to all the local pathogens, is the best. Excess colostrums can be frozen and thawed when needed. It should be warmed to not more than 56^0C.

Housing

Calves should be kept in individual pens if possible, for a month after weaning. Good ventilation without draughts is very important. Calves should be kept warm and dry. A high standard of hygiene is essential, especially in terms of pens, feed dishes, water dishes, buckets etc.

Nutrition

Avoid overfeeding. A feed intake should be 10-12% of the mass of the calf. Over feeding can cause mechanical diarrhea. Use rich full cream milk or a good quality milk replacement. Maintain a constant feed interval, routine and a constant milk temperature. During cold weather, the energy requirements of the calves will increase. In other words, a milk with a higher butterfat would be better. Feed should always be fresh. Old feed should never be mixed with fresh feed. Water should be changed daily. Solids should be given as early as possible (from day 4). It stimulates the development of the rumen and promotes early weaning.

Stress

Stress in calves can cause diarrhea outbreaks. Dehorning and temperature extremes cause stress. Calves have a limited ability to maintain their body temperature especially during wet or cold weather which goes together with wind. Low temperatures lower the bodily function and therefore the protective mechanisms of the calf. A "Hutch" works very well.

Management of Diarrhea

a) Try to establish the cause of the diarrhea by taking samples for isolation of bacteria or viruses. An Antibiogram should be done in case it is a bacterial infection.

b) Treat it symptomatically and begin timorously. The calves should be checked two to three times per day.

Give milk twice a day at 8% of the calf's mass. Give electrolytes at 10-15% of the calf's body mass in the middle of the day, usually two litres for dehydration. Continue with this until the dung is normal. Inject the calf with a good antibiotic (consult your vet). If the diagnosis is early, this treatment should be effective

.

Please Note:

- Milk should not be diluted with water.
- Milk should never be fed to a sick calf via a stomach tube.

A sick calf can be stimulated to drink by lifting it up to stand (at least the hindquarters), and then by rubbing it on the chest, back and neck. This rubbing action will stimulate the appetite. Keep the calf warm and dry.

c) Look critically at all the management practices and correct where necessary. Controlling diarrhea is more than identifying the specific pathogen - it also requires good management practices.

5. NUTRITIONAL ASPECTS OF HEIFERS

Protein intake

Sufficient protein intake in the first ten months is very important. Insufficient protein in the feed can seriously affect growth.

Energy

Excessive energy in the feed from 3 - 10 months can cause negative effects, especially in the development of the udder, and causes an undesirable layer of fat. As soon as a heifer has had her 4th heat cycle, it is an indication that she is past the critical phase. Rather feed Lucerne or good hay than maize meal or maize silage. The opposite of too little energy feed has negative consequences for reproductive maturity and conception. After calving, a heifer that is underweight will not produce much milk, and not reach a good peak. Her milk will also be lower in solids.

Hay

Good quality hay is the best investment in a dairy herd for both heifers and cows. Good quality hay should be freely available. Adequate space for feeding is always important. The younger the heifer, the greater is the need for good quality hay. A mixture of Lucerne and Teff is ideal for young heifers. Maize silage should only be given after the age of 10 months and definitely not before 6 months of age

.

Growth Curves

The growth of heifers must be checked routinely for mass and height. Use a tape measure scale. Watch for heifers that reach the mass but fail to reach the desired height. Decrease the energy ration and increase the protein. A difference should be seen in 2-3 weeks. Non absorbed protein is often a problem with silage rations.

Grouping

Calves should be housed individually during the first three months. After that, the following guidelines can be followed:

It is desirable for calves to be housed individually for at least one month after weaning to avoid them suckling on each other.

6-8 months: Group in terms of age and size. Groups should not have more than 10 calves.

8-12 months: Larger groups of up to 25 heifers.

12 months to calving: Can be kept in large groups as long as each animal can get equal access to the supplementary feed.

Routine Management

- Dehorning with a dehorner at 4 weeks of age.
- Cut off extra teats at the same time.
- Tattoo calves as soon as they are born. Faulty identification can lead to very expensive parentage testing for the whole herd.
- Heifers should be inseminated with the best available semen that the farmer can afford.
- Negligent care of the hooves as a result of poor nutrition, genetics, limited exercise and type of surface, sometimes results in the heifer's hooves needing clipping before calving. Walking and sufficient exercise is very important for keeping the hooves in good condition.

In conclusion

The success in raising replacement heifers is an interactive process between the following variables: management, environment, biological aspects, and the owner's will to succeed.

6. ANATOMY OF THE DIGESTIVE SYSTEM

Dairy cows are ruminants and possess a unique digestive system which allows them to draw nutrients out of the different types of feeds. These nutrients are absorbed into the body to allow the animals to reach the goals set above.

The digestive system consists of the following:

Tongue: To eat with, pushing the food around in the mouth, help with the chewing process to drink water.

Teeth: Break up food, and has a grinding action which mixes saliva with the food.

Lips and teeth: Places food under the tongue to be chewed.

Pharynx: Communal path for food and air.

Epiglottis: Valve that prevents food from entering the lungs.

Cardiac Sphinctre: Valve that prevents food pushing back up. It does open to allow regulated regurgitation and chewing of the cud.

Combined stomach

Rumen: Stores and causes fermentation of feed, as well as absorption and digestion.

Reticulum: The same as the rumen.

Omasum: Presses water out of the feed from the Reticulum.

Abomasum: Also called the "milk stomach". Produces digestive juices and digests the food further.

Small intestine: Absorbs nutrients which are then used for bodily functions.

Large Intestine: Further digestion and absorption. Absorption of water.

Anus: Excretion of undigested feed.

These organs make it possible for cattle, goats and sheep to enjoy roughage like Eragrostis, hay and veld grass.

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.
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 abnormalties ex. lumps, discharge from nose and mouth, limping.
- Does the animal eat and drinks?
- 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

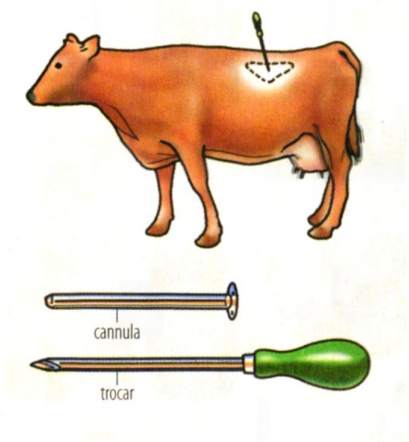
1. Mixing the medicine with food
2. Topical application
3. Injection
4. Drenching gun
5. Stomach tube
6. Cannule and trocar

7.4 Types of injections

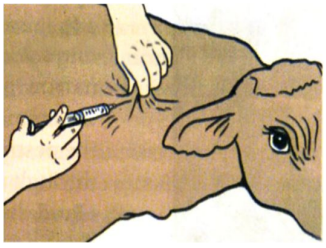
- Intramuscular injection (buttock muscle or neck area)
- Subcutaneous injection (beneath the skin around neck area))
- Intravenous injection (jugular vein in the neck)

7.5 Dipping methods

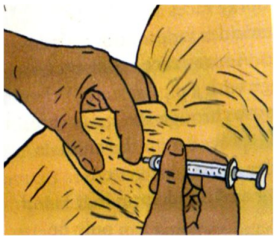
- Spray races
- Plunge dip
- Hand dressing and hand spraying
- Foot and belly dips



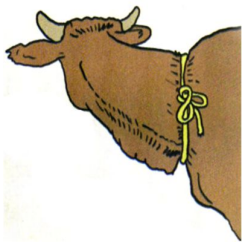
Cow with bloat treated by using a canula and trocar



Intramuscular injection



Subcutaneous injection



Intravenous injection

8. THE MOST IMPORTANT ANIMAL DISEASES FOUND IN SOUTH AFRICA

8.1 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	Fever Anemia Lack of appetite and weight Weakness Listlessness	If the disease is detected early, treat infected animals with broad-spectrum antibiotics. Control tick and flies to

	parasite). Cannot be transferred by direct contact.	Constipation. Pale mucous membranes of eyes and gums are pale to yellow Dehydration Acute death	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.
Heartwater	'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 infected ticks improves immunity. Treatment includes: - immunisation - Intravenous injections with tetracycline.

8.2 METABOLIC DISORDERS

A) <u>Milk Fever</u>

This is a non - infectious disease and occurs in dairy cows just after calving. It is caused by a shortage of Calcium in the cow. The calf needs a lot of calcium before birth and uses the calcium from the mother. An imbalance occurs and this causes milk
fever.

Symptoms:

- The cow becomes unsteady on her feet and staggers.
- The cow lies down and cannot stand up.

Treatment:

- Give a calcium supplement immediately.
- The supplement can be given intravenously, subcutaneously or into the abdominal cavity.

Prevention:

- Cows should not be over conditioned at calving.
- Small grains like oats and barley are good for dry cows. Avoid Lucerne.
- An anion-cation supplement may be given before calving.

B) <u>Ketosis (Acetonaemia)</u>

This is a non infectious disease which occurs within a few weeks of calving. It is caused by a metabolic imbalance.

8.3 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!!.
Pasteurellose	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.
Black quarter	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 abcess	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 abcesses. Pull foot away when touching.	Clean hooves. Cut hooves. Open abcess 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 painful. Damage sole and outer hoof.	Avoid wet conditions. Foot-dip with a copper sulphate solution. Intra-muscular injection with oxytetracycline.

8.4 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 cannot 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. Saliva discharge. Bulls can become temporally 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 wards can be tied off or can be surgical removed.

8.5 DISEASES OF THE STOMACH AND INTESTINES

Bloat

Excessive collection of gas in the rumen that is caused by succulent young Lucerne, clover or starchy feed.

Symptoms:

- Distention of the left flank between the last rib and the hipbone.
- Gasping for breath.

Treatment:

- There are drugs available that can be given orally.
- A stomach tube may be used.
- Cooking oil can be given by mouth.
- Use a trochar or sharp knife as a last option.

Prevention:

- Ensure that the cows do not get hungry and always have access to food.

Rumenal Acidosis

Displacement of the Abomasum

8.6 DISEASES OF THE UDDER

a) Mastitis

This is one of the most important udder diseases in dairy cows. It is infection of the udder tissue which is caused by various bacteria. The infected quarter or the whole udder can be lost if treatment is not given quickly enough or isn't effective.

Symptoms:

- The quarter or udder shows signs of infection.
- Enlarged, swollen, painful areas.
- Brownish or yellow watery milk with pieces or strings are passed.
- Watery discharge and fever - decrease in production.

Treatment:

- Good drugs are available to treat the affected parts.

Prevention:

- Use a sieve to test milk before each milking.
- Use disinfectants when washing the udders.
- Teat dipping after each milking.
- Walking areas must be dry.
- Good herd management and hygiene is essential.

b) Blocked Teat

c) Bleeding

9. INTERNAL AND EXTERNAL PARASITES

9.1 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

9.2 External parasites (Ectoparasites)

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

Ticks

Florish 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

Cannot 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-on
- Injectable drugs
- Spot treatment

10. ANIMAL BEHAVIOUR AND HANDLING (FOR INFORMATION ONLY)

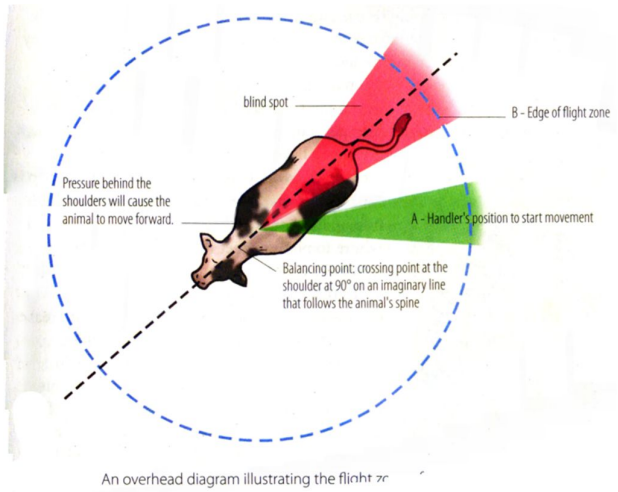
10.1 Common behaviour of cattle

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 zo

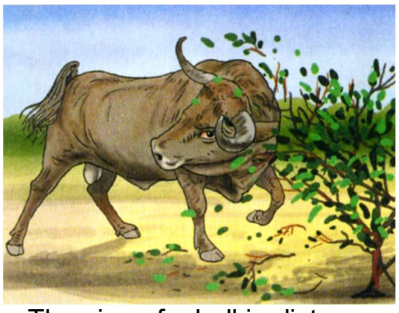
An overhead diagram illustrating the flight zone of a cow

- 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

10.2 The signs of cattle that are in distress are:

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



The sign of a bull in distress

10.3 The reasons for handling cattle

Cattle are handled for the following procedures or reasons:

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

10.4 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:

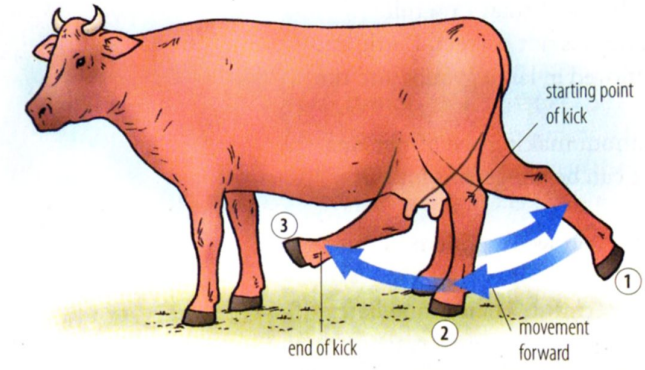
- Handlers that shout, yell, bang on wall with paddles and wave their arms excite and agitate animals.
- Aggressive handling.
- Catching cattle around the neck or tail can cause injury tot he animal and handler.
- Pushing crow gates up against the animals is not correct.

10.5 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 swinging in the wind can cause animals to baulk.
- 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

10.6 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 fed 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.

11. GUIDELINES FOR THE SHOWMAN

CHOOSING YOUR HEIFER

The most important thing to consider when choosing a heifer is that it is suited to you in terms of age and size of both of you. Heifers are shown between the ages of 6 and 28 months.

The heifer should be:

- Stylish, carry her head well and have a good balance between her body parts.
- Show good dairy qualities, with a long neck and a good bone structure.
- Walk comfortably on good legs, have a good depth of hoof and strong pasterns.
- A shoulder which attaches nicely to the body.
- Be well grown out for her age.
- Have a deep and open rib.
- Have a long broad rump with the correct positioning of pin bones and hipbones.
- Have a strong straight topline.
- Avoid heifers that are too well conditioned, short in the body and do not carry themselves stylishly.
- Always remember that a heifer that is not pregnant may come on heat at the show.

ORGANISATION OF SHOW EQUIPMENT

- If equipment is well looked after, it can be used for many shows.
- A showbox that is appropriately sized for the number of animals being shown is very convenient for storing equipment. The area around the stalls should also be kept clean.
- Decide on a colour and paint all equipment with a lead-free paint.
- Repair and clean all equipment after each time you use it. Check your stock and replace what is almost finished.
- After the showing season, one should repair broken equipment, paint and store carefully for the following year.
- Clean your show halter after every show. By taking care of it, you will be able to use it for many years.
- Care for your clippers carefully:
- Remove all hair from the blades, air filters and oiled sections with a brush or compressed air.
- Keep the blades sharp.
- Oil the blades to prevent friction on the motor and blades and to prevent overheating.
- Store the clipper in a separate container to prevent damage to the blades or cord.

SHOW EQUIPMENT CHECKLIST

- Broom
- Spade
- Fork

- Rake
- Hosepipe 4-6 m, with a nozzle
- Nylon halter or chain for washing
- Soft animal soap or dishwashing liquid
- Basic tools (hammer, pliers, nails, screwdriver)
- Name boards and a piece of string to hang it with
- Fly poison (spray can)
- Tick Grease
- Clippers, blades and oil
- Powder
- Water buckets (drinking)
- Feed dishes
- Washing buckets
- Washing brushes
- Curry comb and soft brush
- Show halters
- Extra rope halter
- Extension cord (electrical)
- Towel
- Small bottle Methylated spirits
- Cotton for earplugs

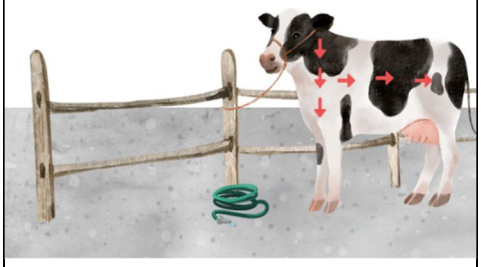
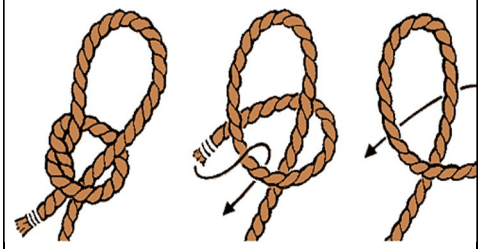
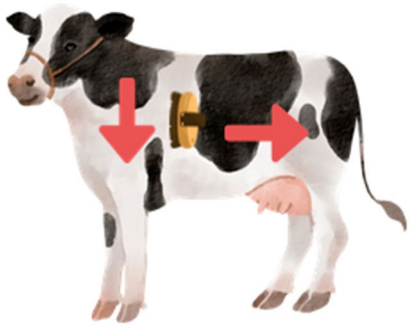
Washing:

- Soft Brush
- Bucket
- Washing brush
- Spray bottle with diluted soap [50:50, water and soap]
- Spray bottle with undiluted soap
- Dish Sponge
- Dustpan and Brush Combo
- Toothbrush
- Hoof pick
- Washcloths
- Towels (small works better)
- Dry Soft Brush
- Cotton Swabs
- Hair rubber bands
- Sweat scraper

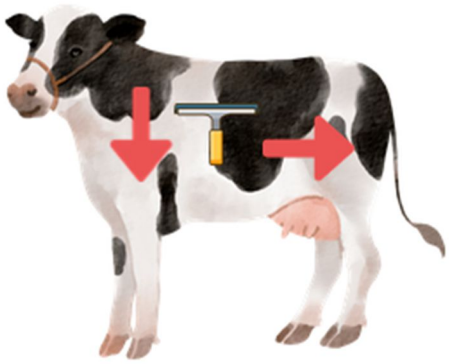
Preparation:

- Soft Brush
- Washcloths
- Baby oil and spirits mixture in spray bottle (3:1)
- Scissors
- Iron Comb
- Hoof pick
- Hair spray
- Shoe polish
- Baby Oil
- Show Halter
- Bucket

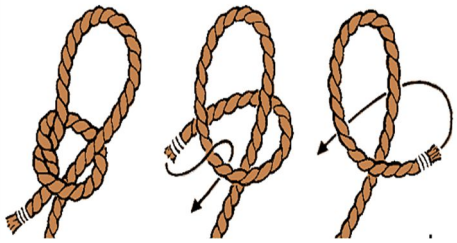
Wash of Dairy Cattle

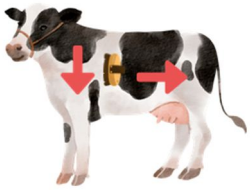
Before the Washing Start	 	1. Your number must be on your back. 2. Wait at the wash area with your box, bucket and heifer 10-15 minutes before the wash starts. 3. The ring guide will show you where to fasten the heifer. 4. Tie the heifer to a cross near the hose in the washing area with a untie knot. 5. Make sure your washing area is clean. Use the dustpan and brush to dispose all the old manure. 6. Fill you bucket with water and undiluted soap. Make sure there is plenty of foam in the bucket. 7. You may unpack your box on a rubber mat if you wish. 8. Stand behind your heifer and wait for the ring guide to say you may start.
When the washing began Always start on the left. Try and keep your one hand on the heifer.	 1. Brush the heifer:	1. Brush dust from the heifer's coat with a soft brush.

	2. Wet the heifer: 	1. Get your heifer used to the water by wetting her left front leg and then move up. 2. Push the heifer's ear forward to avoid getting water inside her ear. Begin to wet the heifer near to the halter. Rub up against the hairline as you wet the heifer. Wet the legs and the hooves as well. 3. Wet the under the throat, belly, the udder and 4. under the tail. 5. Wet the heifer's tail. 6. Now repeat the steps on the heifer's righthand side.
	3. Wash the heifer: 	1. Throw diluted soap [50:50] on both sides of the heifer's back from behind her head to the tail. 2. Start on the lefthand sight. Use the bucket with the foam water and start at the halter with a soft brush to wash the heifer. From the top to the bottom. Wash in circular motions. Remember to wash the under the throat, belly and the udder as well. 3. Use the foamy water and wash the tail and under the tail. 4. Repeat the procedure on the righthand side. 5. Use the foamy water, a hard brush and hoof pick /toothbrush to wash the heifer's hooves. Be careful on the hoof line of the heifer. The hoof pick can be used to get rid of the manure between the hooves. Wash the left front hoof first and then the back hoof. Repeat the procedure of the righthand side.
	4. Rinse the heifer 	1. Start on the lefthand side. Push the heifer's ear forward to avoid getting water inside her ear. Begin to rinse at the halter of the heifer. Keep one hand on the heifer. Hold your hand in a "bakkie shape" and rub the water from the top to the bottom. 2. Remember to rinse the belly, the udder and the tail. 3. Rinse the tail. 4. Do the same on the righthand side. 5. Empty the bucket behind the heifer.

	6. Wash the face of the heifer 	1. Fill the bucket with clean water. 2. Use a soft sponge and the bucket with clean water to wash the heifer's face. Remember to wash under the halter and crown as well. 3. Use a wet cloth and wipe the heifer's eyes, nose and mouth. 4. Use a damp piece of cotton wool or cloth and clean the inside of the heifer's ear. 5. If your heifer has an ear tag, you can use a toothbrush to scrub it. 6. Empty the bucket behind the heifer.
	7. Dry the heifer 	1. Use the sweat scraper and pull the water out of the heifer's hair by moving from top to bottom. 2. Start on the left side and repeat on the right. 3. Use your towel to dry the heifer. Start on the left and Remember to dry the throat, belly, the udder and under the tail. 4. Braid the heifer's tail. 5. Clean the wash area. 6. Brush off your heifer if you have time to spare.
After finishing		1. When the ring guide says the time is up, release your heifer and wait your turn to present your heifer to the judge. The ring guide will indicate when it is your turn. 2. When you walk to the judge, present your heifer.

Preparation of Dairy Cattle

<table>
<tr>
<td>Before the Preparation start</td>
<td> 
  </td>
<td>1. Your number must be on your back.
2. Wait at the entrance of the preparation area with your box, bucket and heifer 10 -15 minutes before the time start.
3. The ring guide will show you where to fasten your heifer.
4. Tie the heifer with a untie knot.
5. Make sure your preparation area is clean. Use the Dustpan and Brush combo to remove the old manure.
6. Fill your bucket with water.
7. You may unpack your box if you wish.
8. Stand behind your heifer and wait for the ring guide to say you may start.</td>
</tr>
<tr>
<td rowspan="3">Preparation start

Begin on the lefthand side.
Keep one hand on the heifer.</td>
<td>1. Brush the heifer:
  </td>
<td>1. Brush the dust from the heifer’s coat with a soft brush.
2. Dirty spots can be washed with a bucket of clean water and a soft brush.
3. Soil stains on white spots can be removed with a cotton ball with lemon juice.</td>
</tr>
<tr>
<td>2. Clean the face of the heifer
  </td>
<td>1. Use a cloth and the bucket of water to clean the face of the heifer. Be sure to clean around the eyes, nose and mouth.
2. Use cotton wool or a cloth and clean the inside of the heifer’s ear.</td>
</tr>
<tr>
<td>3. Clean the hooves
  </td>
<td>1. Use a hard brush and make sure that the hooves is clean form any manure..
2. Use the water and the hoof pick to clean between the hooves.
3. Clean under the tail of the heifer. Use a cloth to clean under the tail.</td>
</tr>
</table>

	4. Baby Oil 	1. Spray on some baby oil and sprits mixture on a cloth, wipe the fur of the heifer. 2. Don't use Mr Min or Doom. (the heifer can be startled by this) 3. Put some baby oil on a cloth and wipe the nose and the udder clean. 4. Put Maziena on white spots – be careful not to get it on the black spots – it dulls the coat.'
	5. Hooves 	1. Use shoe polish to make the hooves shiny. 2. The polish can also be applied to the horns of the heifer. Heifers with black hooves – use black polish Heifers with white hoove – use translucent polish
	6. Tail 	1. Use hair spray and the iron comb to puff up the heifer's tail.
	7. Clean your area 	1. Clean your preparation area. 2. Empty the bucket. 3. Put on show gumboots/ clean gumboots. 4. Tidy yourself up.
	8. The halter 	1. Put on the show halter. 2. Stand ready to be judged.
After the preparation		1. When you walk up to the judge, show off your heifer.

14. GUIDELINES FOR SHOWING YOUR ANIMAL

i. Make sure you are well rested before the showmanship. Start to get your animal ready in good time. Rinse the animal and dry it off.
ii. Ensure that the animal is in her show halter at least 15 minutes before your class. Ensure the halter fits correctly and all straps are adjusted correctly. Brush all the dust off her coat.
iii. The emphasis will be on the care, attention, training and preparation of the animal and the ability of the handler to show the animal.

iv. **Rounding off**

- Hooves should be clipped and cared for so as to ensure the heifer can walk comfortably and squarely on her four legs.
- The hooves should be clipped at least 3 weeks before the show, so that it allows the animal to recover before the show.
- Hoof polish is optional, but the hooves should at the least be clean.

v. **Appearance of the showman**

- The handler should be dressed neatly. Clothing should be appropriate for the occasion.
- White rubber boots must be worn for protection.
- Before entering the ring, ensure you have your number.
- When you enter the ring, be attentive, and show your heifer to the best of your ability. Remember first impressions of the judge usually last.

vi. **Handling**

- The animal must enter the ring as soon as the class is announced. When you lead your animal walk around your animal and lead it in a clockwise direction around the ring.
- Lead the animal on the left side with your left hand.
- The lead rein should be held with fingers facing upwards.
- The lead rein should be held neatly at all times. It can be held in one or both hands, but must be held in two hands when the heifer is moving.
- The calf's head should be held evenly. It should be held up during the whole performance.
- Move at a medium pace when the animal is moving.
- Look around often to see where you are moving, and ensure a safe distance between your heifer and the others.

vii. **Watch the judge**

- Stand your heifer correctly as soon as possible. Try and stop so that the back hind leg, on the judge's side, is a little behind the left.
- The front feet are easily reached and can be corrected quickly. Ensure the topline is straight and the head is up.
- The heifer should stand with her front legs together a foot width apart. Her hind leg at the judge's side should be slightly behind the left one.
- If time allows, ensure the coat is clean and smooth. Don't stand too close to any other animal when the heifers are called into line.
- Leave enough space around the animal so that the judge can walk around her.
- Try to stand her up before the judge starts his inspection. It is important for the animal to stand correctly even if you have to do it while the judge is busy with the inspection.
- The showman must ensure that he doesn't block the view of the judge. Stand to one side if the judge indicates that he wants to see the front of the cow. This is the same as when you are moving with your animal.

- ❖ When your position is changed, ensure that you don't overshadow another animal. When you are asked to move, do it quickly and efficiently.
- ❖ Do not leave the ring before the placings are complete, reasons are given and prizes handed out. Leave the ring in the order in which you are placed.

viii. **Show the animal to best advantage**

- ❖ Show the animal so as to minimize her faults. Do it in such a way that the attention of the judge does not fix on the faults.
- ❖ It is important that you relax and allow the judge to see your animal. Do not "overshow" your animal. The animal is being shown, not you!
- ❖ The handler must always be attentive to what is happening in the ring, and should react quickly and effectively to any instruction given by the judge or the ring steward. The handler should give their undivided attention to the judge and their animal. The primary aim is to show the animal to the best of your ability. Smoking, chewing gum or to talk to spectators or other handlers is poor ring etiquette. All activities in the ring should be carried out in a quiet and effective manner. There is no place in the ring for behaviour that might negatively influence the judging. Do not speak to the judge or officials unless you are asked a direct question. The handler should be prepared to answer any question regarding their animal.
- ❖ The handler must behave politely towards the judge, officials and other competitors. Relax and enjoy the show. Good sportsmanship is always important. The showman should be a humble winner and a dignified loser. A dignified loser always congratulates the winners. Handlers may offer a word of thanks to the judge.

15. HANDY HINTS

15.1 ERECTION OF STAND

- ❖ Stands should North facing.
- ❖ The stalls should slope slightly to allow run-off of moisture and prevent water pooling under the animals.
- ❖ The stalls should be comfortable and prevent the calf walking around where it is tied up.

15.2 CARE

- ❖ Animals should always be tied up in the same place to avoid spread of diseases.
- ❖ Always mix the feed to avoid subsidence. Fresh feed should always be given to the animals.
- ❖ If animals lie down within 10 minutes of being tied up, they are said to be happy.
- ❖ Fresh bedding is as important as fresh food.
- ❖ Always use quick release knots when tying up animals. It is safer for the animal and prevents having to cut the halter loose.

15.3 HANDLING

- ❖ If you are quiet, the animal will also be quiet.
- ❖ Never walk alongside another animal in the ring, always follow on.
- ❖ Never let the animal walk around you. You must walk around the animal.

15.4 CHANGING POSITION IN THE LINE

The figure indicates the correct way to change position in the line. The first heifer walks out to the left and enters the line at the correct place from the back. The rest of the competitors in the line walk out to the right and move back through the line in the open space they have left. They then enter the line from the back.