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SMACON AGRICULTURE DEPARTMENT

S.3 term 2 & 3 notes on livestock production

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N.B: This is a continuation from where you stopped with Mr. Ochwo's work of POULTRY PRODUCTION

PIG PRODUCTION

Terms used

- ❖ **Sow;** This is a female pig, which has already farrowed (given birth)
- ❖ **Boar;** It's a male mature pig.
- ❖ **Gilt;** A young female pig, which has not yet farrowed.
- ❖ **Piglet.;** The young of a pig [newly born pigs]
- ❖ **Farrowing;** The act of giving birth in pigs.
- ❖ **Runt;** The last born among piglets.
- ❖ **Farrowing pen;** This is a special place where pigs farrow from
- ❖ **Pigsty;** This is a house where pigs stay

- ❖ **Pork;** Fresh meat from pigs.
- ❖ **11.Bacon;** This is meat taken from sides and back of the pig and cured in the factory

SYSTEMS OF PIG REARING

- ❖ **Intensive system;** this is where the pigs are confined in houses through out their life
- ❖ **Semi-intensive system;** this is where the pigs are confined in houses at most period of the day and allowed out for a short time
- ❖ **Extensive system;** pigs are allowed roam the place in search for water and feeds

Question; explain the merits and demerits of each system

Advantages of rearing pigs.

- ❖ Pigs require a small area since they can be confined under the intensive system of management and do not require a large area of grazing as ruminants do.
- ❖ Little initial capital is required as compared to dairying and fish farming.
- ❖ They consume most of the food remains reducing wastage of feeds on the farm and lowering feed costs.
- ❖ Pigs grow very fast which enables the farmer to get income in a short time when sold. 5 It is adapted to specialized and diversified farming system
- ❖ They produce high quality manure which can be used in the gardens.
- ❖ Pig rearing creates extra employment for the family and the population especially in places with established pig industries.
- ❖ Pigs produce hard fat that can be used in the manufacture of soap.

- ❖ Pork is easily marketable
- ❖ Pigs are highly prolific which increases profits faster

Factors to consider before starting a pig enterprise.

- ❖ **Type of breed.** The breed chosen should be the one needed in the market and one adopted with the environment
- ❖ **Food supply:** A constant supply of feeds is necessary since pigs quickly respond to inadequate feeding.
- ❖ **Capital:** This is needed for purchasing the breeding stock, constructing pig houses, buying feeds etc.
- ❖ **Labour.** Skilled Labour is required for proper carrying out of management practices like feeding pregnancy diagnosis and gilt, removing chick.
- ❖ **Housing:** Good housing improves pig production hence it should be put into consideration.
- ❖ **Transport facilities:** There must be reliable transport in the area from breeding centres to the market
- ❖ **Market:** There must be ready market for the animals and their product to reduce losses.
- ❖ **Economy of production:** Large scale production requires high initial capital therefore a farmer must be ready to meet it.
- ❖ **Pest and diseases.** The history of pests and diseases in a particular place should be considered since some diseases like swine fever can cause a lot of losses

Problems facing the pig industry.

- ❖ **Diseases :** A serious disease like swine fever / hog cholera has caused serious losses to farmers in the pig industry.
- ❖ Pigs are non ruminant hence compete with man for the little food available.
- ❖ Social beliefs.

- ❖ A number of societies in Uganda look down at a pig as a an unclean animal therefore they cannot rear or eat products from the animal.
- ❖ Pigs have a vice of uprooting plants and destroying farm structures which makes their rearing expensive.
- ❖ Pig production requires a special kind of fence which may be expensive for most farmers.
- ❖ Inadequate organized market. Most of the pork / pig butchers are located in restricted places which makes marketing difficult.
- ❖ Poor breeds of pigs. Most of the breeds being kept are of poor quality and hence they are of low production.
- ❖ Poor management : Most of the farmers have little knowledge about pig management. This reduces growth rates hence a low level of production.

PIG BREEDS IN UGANDA

- ❖ Large black
- ❖ Large white / Yorkshire
- ❖ Land race 4. Saddle back.

SELECTION OF BREEDING PIGS.

Boars

- ❖ It should be vigorous and healthy
- ❖ It should have well developed feet
- ❖ It should be free from defects that can be transmitted to off springs.
- ❖ Should have a long, deep and strong body.
- ❖ It should be easy to handle i.e. should have good temperament.
- ❖ They should be able to weigh about 100kg at six months of age.
- ❖ The appearance and condition of the pig /boar should confirm the breed type.
- ❖ It should be able to mature sexually early.

- ❖ It should be able to produce large quantities of viable sperm

Qualities of good gilt

- ❖ Should have well developed feet to enable her feed the litter even when standing.
- ❖ It should have good mothering quality i.e. a low temperament.
- ❖ It should be healthy and having a vigorous build
- ❖ The appearance should be in conformity with the breed
- ❖ It should have at least 12 functional teats to enable her raise a large number of litter.
- ❖ It should be able to farrow without any problem
- ❖ Should have a high ability to utilize feeds efficiently.
- ❖ Should be able to produce at least 8 piglets per farrow
- ❖ Should produce piglets with a high growth rate.

CARE FOR A PREGNANT SOW

- ❖ Feeding: The sow or gilt should be given a feeds/ sow and weaner meal which is 2% of its weight per day.
- ❖ Individual feeding troughs should be encouraged to reduce competition between the pregnant animals.
- ❖ In the 1st month of pregnancy give about 2.4 – 3.5 kg of sow and weaner meal per day.
- ❖ Do not over feed the animal during pregnancy to avoid over feeding and stocking of the udder which causes mastitis.
- ❖ During the second and 3rd month sow and weaner feeds should be reduced to about 1.5 per sow per day.
- ❖ Bulky feeds like sweet potatoes and cassava should be given to make a balanced diet and improve digestion.

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- ❖ Clean fresh water must be made available at all times which can be mixed with feeds or given after eating.
- ❖ The pregnant animal should be dewormed before farrowing to control internal worms e.g. tape worm.
- ❖ Minerals and vitamins should be given in correct amounts e.g some vitamins which are important in embryo development.
- ❖ A sow should be taken in a clean farrowing pen two weeks to farrowing.
- ❖ Supply 10-15kgs of dry grass to the farrowing pen which can be used by a pregnant animal uses a nest.
- ❖ Administer an iron injection to the pregnant animal to control anemia in the piglets about to be born.
- ❖ The gilt also should be washed especially the udder with clean water and soap a few minutes to farrowing to remove dirt and worm eggs.

SIGNS OF FARROWING:

- ❖ The sow/ gilt becomes restless
- ❖ Presence of milk with in teats 12 – 24 hrs before farrowing
- ❖ Enlarged teats of the gilt or sow.
- ❖ The vulva becomes swollen and enlarged.
- ❖ Muscles on either side of the tail slacken
- ❖ The sow prepares a nest from the dry grass.
- ❖ Arching of the sow's back.

Preparation for farrowing

- ❖ Clean and disinfect the farrowing pen
- ❖ Wash and disinfect the pregnant animal
- ❖ Treat the animal against internal parasites
- ❖ Move the animal to the farrowing pen

- ❖ Secure the animals feed a day before farrowing
- ❖ Provide heat in the farrowing creep area
- ❖ Provide clean beddings

MANAGEMENT OF PIGLETS FROM BIRTH TO WEANING

- ❖ Feeding
 - Piglets should be left with the mother to ensure that they take colostrum which is important to their bodies.
 - They should be provided with feeds rich in proteins and carbohydrates [creep feed] in a special place only accessible by piglets [creep]
 - Clean water should be provided to the piglets at all times.

- ❖ Control of piglets anaemia. Piglets should be given an iron injection or anthill soil rich in iron.
- ❖ Identification: Two main methods are used in the identification i.e. ear notching and ear tattooing.
- ❖ Teeth clipping/ removal of cheek teeth. The sharp canines should be removed since they become dangerous at a later stage to the managers
- ❖ Deworming : The piglets are more prone to internal worms like liver-fluke, tape worms and round worms. They should be dewormed early to ensure fast growth.

- ❖ Castration: The male piglets that are not going to participate in breeding should be castrated at about 2 weeks of age
- ❖ Vaccination: The piglets can be vaccinated against killer diseases like foot and mouth etc.
- ❖ Weaning :The piglets are weaned at about six weeks after delivery and thereafter they should be fed normally on concentrate feeds

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Management of gilts from weaning to farrowing

- Feed the gilt on Atleast 3kg of sow and weaner meal every day
- Provide clean water without any restriction
- Vaccinate the gilts against killer disease regularly
- Control external parasites like lice by spraying or washing using pesticides
- Sick gilts should be treated immediately o avoid loss
- The gilt should be mated at about 12 month after attaining 45 kg.
- Flush the animal 3-4 weeks before mating to increase rate of ovulation and successful fertilization
- Keep the pen clean to reduce disease out breaks by regular washing
- Once ready, the gilt should be taken to the boar and left there for 12 hours
- Observe the gilt to ensure that it has conceived if not, take it back for service
- Steaming up should be done 1 month to farrowing
- Wash the gilt prior to calving to remove worm eggs from the teats

ADVANTAGES OF FEEDING PASTURES TO PIGS.

- ❖ Improve functioning of the digestive system
- ❖ They are the cheapest source of animal feeds
- ❖ They are a good source of minerals and vitamins for grazing animals
- ❖ They easily satisfy the animal's appetite since they are abundant and taken in large quantities.
- ❖ They protect and restore fertility in the soil.

END OF PIG PRODUCTION.

CATTLE PRODUCTION.

BREEDS OF CATTLE.

There are mainly two breeds of cattle namely;

- i). Local breed / *Bosindicus* or indigenous cattle
- ii). Exotic breed / *Bostaurus* cattle.

Classification of cattle

- ❖ **Phylum**; Chordata
- ❖ **Class**; Mammalia
- ❖ **Order**; Artiodactyla
- ❖ **Genus**; *Bos*
- ❖ **Species**; *indicus* (humped cattle) *taurus* (hump less cattle)

DIFFERENCES BETWEEN *Bostaurus* AND *Bosindicus* CATTLE

❖ <i>Bos taurus</i> /Exotic	❖ <i>Bos indicus</i> / Indigenous
❖ Don't have a prominent hump.	❖ Have a prominent hump.
❖ Rounded ears held at right angles with the head.	❖ Have long dropping pointed ears.
❖ Have a short and wide head.	❖ Have long and comparatively narrow head.
❖ Relatively large with the bull weighing up to 1000kgs	❖ Relatively small with the bull rarely weighing exceeding 700kg.
❖ The dewlap, umbilical cord and	❖ Dewlap and brisket are

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the brisket are small or absent.	extensively developed.
❖ Have thick skin which is relatively tight.	❖ Have a thin and loose skin.
❖ Have large amounts of subcutaneous fat.	❖ Have small amounts of subcutaneous fat.
❖ Hair tends to be relatively long and rough	❖ Hair is relatively short and smooth.
❖ Legs tend to be short and are slow moving.	❖ Legs are long and fast moving.
❖ Mature more easily and reach full maturity at 4 years.	❖ Slow maturity and reach full growth at 5½ years
❖ Back line is straight	❖ Backline is high at the shoulders, low behind the hump and higher over the pin bones.

INDIGENOUS CATTLE / LOCAL CATTLE

- ❖ These are humped cattle of tropical origin. Examples are; Zebu, Brahmin, Sanga, Nkole and Boran

Characteristics of indigenous cattle

- ❖ They are resistant to adverse Climatical conditions like high temperatures and drought
- ❖ They can walk for long distances without losing condition
- ❖ They easily convert poor pastures into milk and meat
- ❖ They are tolerant to tick borne diseases like east coast fever
- ❖ They have few problems of reproduction

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- ❖ They are cheap to buy and maintain
- ❖ They are less productive in terms of milk and meat

The indigenous cattle are being kept for meat and milk by the communities in Uganda. Improvement of these animals is being carried out through upgrading with exotic cattle

EXOTIC CATTLE

- ❖ These are hump less cattle that have been imported into east Africa from European countries.
- ❖ They are kept for milk and meat or both

Examples of exotic dairy breeds; Friesian, Jersey, Guernsey and Ayrshire

Examples of exotic Beef breeds; Galloway, Hereford, Charolais, Sussex, Aberdeen Angus, Lincoln Red, e.t.c.

Examples of dual purpose exotic breeds; Red Poll, Dexter, Short horn, South Devon and Welsh Black

Characteristics of exotic cattle

- ❖ They have a high growth rate
- ❖ They are not resistant to tick borne diseases
- ❖ They may reproductive problems
- ❖ They cannot tolerate high temperatures and drought
- ❖ They require high quality feeds for high production
- ❖ They lose condition after walking for long distances
- ❖ They require a high level of management
- ❖ They are highly productive in terms of milk and meat

MANAGEMENT OF CATTLE

- ❖ This is the care given to cattle to improve and maintain a high production.
- ❖ A stockman is the person entrusted with the work of caring for livestock on a farm

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Qualities of a good stock man

- ❖ Should be kind to the animals by avoiding rough treatment that can cause injury and death to animals
- ❖ Should know well the monthly or routine operations on the farm like drenching, vaccination to reduce risks of disease and death of animals
- ❖ Should have a high ability of identifying sick animals and those on heat for prompt action.
- ❖ Should be able to identify and remove dangerous objects from the farm to reduce injury to livestock
- ❖ Must be able to keep good up to date records for reference purposes
- ❖ Should be able to take correct decisions as and when required to reduce losses on the farm
- ❖ Should be honest to reduce losses to the farm
- ❖ Should be healthy and energetic so as to carry out work as and when required
- ❖ Should be highly knowledgeable in livestock management to ensure high animal production
- ❖ Should be able to do work on the farm under minimum supervision from the high officers

MANAGEMENT PRACTICES IN CATTLE / PRINCIPLES OF LIVESTOCK MANAGEMENT

- ❖ These are operations done on cattle to ensure high production. They include the following:
 - ❖ Feeding.
 - ❖ Grooming
 - ❖ Branding
 - ❖ Casting / putting animals down

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- ❖ Identification
- ❖ Vaccination
- ❖ Housing.
- ❖ Hoof trimming
- ❖ Castration
- ❖ Drenching / dehorning
- ❖ Dehorning.
- ❖ Restraining

DEHORNING:

- ❖ This is the removal or suppression of horns on animals. Suppressing horn growth at an early stage is called **Disbudding**

Importance

- ❖ To make the handling of the animal move easy especially during drenching, castrating, ploughing e.t.c.
- ❖ To allow more animals to fit in space during transportation of the animals and even in kraals.
- ❖ To reduce injury which is may be caused by horned cattle to others.
- ❖ To prevent the destruction of farm structure like fences by animals that are horned.
- ❖ To beautify animals hence making them more appealing.
- ❖ It introduces uniformity in a herd
- ❖ Makes animals to grow faster as nutrients meant for horn development are used in growth

METHODS OF DEHORNING

The method used will depend on the age of the animal, farmer's skill and to some extent capital. Methods used in dehorning are;

- Use of caustic pencils or chemical dehorning

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- Use of hot iron
- Use of dehorning saw
- Use of a rubber ring
- Use of dehorning wire
- Use of dehorning clippers

Chemical Method:

- ❖ This is where caustic pencils or sticks are used in suppressing horns by rubbing it against the horn buds. It's done to young animals between 3-14 days of age.

Procedure

- ❖ Restrain the calf using ropes and cast it down
- ❖ Clip the hair around the horn bud to expose it
- ❖ Rub the caustic sticks or pencils against the horn bud until bleeding occurs
- ❖ Apply fly repellants and antibiotics on the wound created
- ❖ Release the calf after the operation
- ❖ Do not allow the calf into rain for a few days for faster healing of the wounds.

Hot iron method:

- ❖ This is where a hot iron is applied on the horn bud to burn and kill the growing cells.

Procedure

- ❖ Restrain the calf using ropes and cast it down
- ❖ Heat the iron in fire or gas until it's red hot
- ❖ Apply the hot iron around the horn bud for about 10 seconds to burn the growing cells.
- ❖ Care should be taken not to go deep as it can damage the brain
- ❖ Apply fly repellants on the wound created to keep away flies and stop the wound from becoming septic respectively
- ❖ The animal should be released after the operation
- ❖ Monitor the animal to ensure that it does not go under rain

Use of a rubber ring;

A rubber ring is placed at the bottom of the horn bud which will stop blood supply to the horn and cut it off with in three to six weeks depending on the size of the horn. It is done on small horns at early age

Procedure

- ❖ Restrain the animal in a crush or using ropes
- ❖ Use an elastrator to stretch out the rubber ring
- ❖ Place the rubber ring at the base of the horn and remove the elastrator to release the rubber ring
- ❖ Release the animal after the operation

Use of dehorning saws:

- ❖ This is used where the horns have grown up and is long enough. The horns are cut off near the base after restraining the animal.

Procedure

- ❖ Restrain the animal using ropes and cast it down
- ❖ Administer a localized pain killer in the skin surrounding the horn iii. Tie a piece of thin rope around the base of the two horns to control bleeding
- ❖ Cut off the horn at the base using a dehorning saw
- ❖ Repeat the same procedure to remove the second horn
- ❖ Use a hot iron to seal the wound to stop bleeding
- ❖ Apply insect repellants and antibiotics on the wound
- ❖ Release the animal after the operation and closely monitor it to assess the healing process
- ❖ Remove the ropes around the base after two days

Use of dehorning wire

- ❖ This where a brittle wire is stretched and rubbed against a horn until it is cut off. The animal is restrained and the operation carried out

Use of dehorning clippers

- ❖ Dehorning clippers are tools with open blades that remove horns by cutting.
- ❖ They are used in the removal of large horns

CASTRATION:

- ❖ It's the practice of rendering male animals sexually unfunctional. In female animals, the practice is referred to as spaying

Reasons for castration:

- ❖ To prevent the bad smell especially in the Billy goats.
- ❖ To prevent undesirable males from breeding.
- ❖ To make the animal docile and easy to work.
- ❖ Castrated animals grow faster and produce quality meat.
- ❖ Castration increases the quality of wool in sheep as more nutrients are channeled to the development of the wool.
- ❖ It helps in the control of venereal diseases like contagious abortion.
- ❖ It controls in breeding on the farm when males born on the farm are castrated.

Methods of Castration.

- ❖ There are two main methods of castration namely:
 - Open operation/ castration.
 - Closed castration

Open castration:

- ❖ This is where the scrotum is opened to remove the testicles. It can also be referred to as surgical operation.

- ❖ This requires a sharp knife or blade to split the scrotum vertically up to the bottom for better bleeding.

Advantages of open castration

- ❖ Ensures complete castration of the animal
- ❖ It's a cheaper method of castration since can be done using local implements like the knife

Disadvantages

- ❖ It requires a lot of skill to be carried out
- ❖ There is a high risk of infection due to the wound created
- ❖ It is slow to be carried out
- ❖ There is risk of over bleeding more especially in mature bulls

Procedure of carrying out open castration:

- ❖ The animal should be restrained first using ropes.
- ❖ Wash your hands using clean water and soap or wear clean gloves.
- ❖ The scrotum of the animals should be washed and disinfected using clean warm water and soap
- ❖ Dry the scrotum using a clean hand towel
- ❖ Apply a localized anaesthesia round the scrotum to reduce pain
- ❖ Pull and squeeze the scrotum to locate the testes
- ❖ Use a clean blade or knife to cut the scrotum vertically in order to remove the testes.
- ❖ Pull the spermatic cords out and tie it using a clean string
- ❖ Cut the spermatic cord just below the knot to release the testis
- ❖ Repeat the same procedure to remove the second testis
- ❖ Seal the wound to stop bleeding by using a hot iron
- ❖ Apply fly repellants on the wound to keep away flies
- ❖ Apply antibiotic cream to stop the wound from becoming septic
- ❖ Release the animal and keep it in reach for easy supervision

Closed castration;

- ❖ This is a type of castration which is done without opening the scrotum. It can be done using the burdizzo/**burdizzo method** or using a rubber ring/**rubber ring method**
- ❖ A burdizzo is an instrument with handles which exerts pressure on closing it's jaws while a rubber ring is a thick round rubber which is stretched using an **elastrator** before being placed on the “**neck**” of the scrotum.

Advantages of closed castration

- ❖ It's a fast method of castration
- ❖ Does not require a lot of skill
- ❖ No bleeding experienced
- ❖ Less risk of infection since no open wound is created

Disadvantages

- ❖ Chances of a failed castration are common
- ❖ It is expensive to buy a burdizzo
- ❖ Castration using a rubber ring is very painful

Castration using a burdizzo

- ❖ Restrain the animal using ropes and cast it down
- ❖ Pull the scrotum down wards to locate the spermatic cords, ducts and nerves
- ❖ Open the jaws of the burdizzo by pressing the handles out wards
- ❖ Place the burdizzo at the “neck” of the scrotum
- ❖ Press the handles of the burdizzo in wards to lock the jaws and crush the spermatic cords, ducts and nerves
- ❖ Open the jaws of the burdizzo and remove it from the crushed area
- ❖ Release the animal after the operation
- ❖ Keep the animal within reach for easy supervision

Castration using a rubber ring:

- ❖ Here a strong rubber band is straightened using an **elastator** and fixed around the “neck” of the scrotum. This cuts off blood supply to the scrotum and the testes which eventually degenerate and fall off after sometime. It’s the most painful method of castration though very effective. The farmer doesn’t expect any development of the scrotum for a life time.

IDENTIFICATION:

This is done in order to:

- ❖ Enable a farmer to recognize his animal in case it’s lost.
- ❖ To facilitate record keeping.

Methods of identification:

- ❖ The main methods of identification are:
 - ❖ Branding
 - ❖ Ear tagging
 - ❖ Tattooing
 - ❖ Ear notching
 - ❖ Naming

BRANDING

- ❖ This involves sealing numbers, letters, designs or a combination of this on the skin of the animal.

Methods of branding

These include:

- ❖ Hot iron branding
- ❖ Chemical branding
- ❖ Freeze branding

Hot Iron branding

- ❖ This is done using a **branding iron** which is heated and stamped on the animal skin to leave marks for identification. Branding is done on the less valuable part of a hide like lower part of the thigh, jaw and hump

Procedure of hot iron branding

- ❖ Restrain the animal in a crush
- ❖ Heat the branding iron in fire or gas until red hot
- ❖ Stamp the hot iron on a less valuable part of the animal to burn the skin and leave marks
- ❖ Remove the iron from the skin after a few seconds
- ❖ Release the animal from the crush

Chemical branding

- ❖ In this method, corrosive chemicals are applied on the skin causing leaving marks on the skin.

PROCEDURE

- ❖ Restrain the animal in a crush
- ❖ Clean the area to be banded
- ❖ Dip the branding equipment in the branding chemical
- ❖ Apply the chemical to the less valuable parts of the hide.
- ❖ Release the animal from the crush

Freeze Branding

- ❖ This involves applying liquid nitrogen to the skin which freezes the hair follicles so that they die and stop hair growth in that area.

- ❖ A branding iron can be dipped in liquid nitrogen and then applied on the skin. The method is good since the skin / hide is not damaged and hence can be applied to any part of the animal.

EAR TAGS

- ❖ They are made of light metals or strong plastics written on with different numbers, letters or designs. The ear tags are of two types.
- ❖ piercing (self – piercing tags)
- ❖ non-piercing
- ❖ The self fixing tags will be fixed on to the ear with force while a non – piercing ear tag, a hole must be made where it is fixed. An ear **tag applicator** can be used in stapling piercing ear tags on the ear

EAR NOTCHING

- ❖ This involves cutting V – shaped notches on the edge of the ear using sharp scissors or pincers. This method is popular in pigs because of their soft skin. The number and location of notches on the ear can be used for identification

TATTOOING

- ❖ A special ink is used to inflict marks on the skin of the animal more especially inside the ear.
- ❖ The hair must be removed from that place before tattooing.

NAMING

- ❖ Animal are given specific names for identification depending on a number of things like origin, coat colour, e.t.c.

RESTRAINING

- ❖ This is the hindering of movements of animals by physical force. It's done so as to perform operations on the animals like: dehorning, castration, de-

worming, identification, vaccination and drenching with minimum disturbance.

- ❖ The amount of force applied during restraining depends on the temper, size and type of the animals. Cattle are not restrained in the same way as goats.

CASTING

- ❖ This is a practice of putting animals down and it's done when animals are to be controlled for a long time during operations like castration, dehorning and identification.

GROOMING

- ❖ This involves brushing off loose hair, dung, dirt and lice from the skin of an animal

Reasons for grooming

- ❖ To stimulate blood and lymph circulation in the body of the animal
- ❖ To remove loose hair, lice and other external parasites
- ❖ To facilitate mating in animals
- ❖ For cleanliness and good appearance for the animals
- ❖ For production of clean milk in lactating animals

FOOT TRIMMING

- ❖ This involves removing overgrown parts of the foot which impairs movement of the animal. It controls lameness in animals

CULLING

- ❖ This involves removing un-productive and sick animals from the herd for slaughtering / selling. It controls disease spread and wastage of feeds on the farm

VACCINATION

- ❖ This is done in order to control highly infectious diseases in livestock e.g. Swine fever, foot and mouth disease, New castle, rabies etc.

DRENCHING

- ❖ This involves administering oral treatment as supposed to animals. Its done using a drenching gun/bottle to control internal parasites like liver flukes, round worms, tape worms, hook worms.

ROUNDING UP

- ❖ This is done in beef animals and it involves bringing all animals on ranch in the centre of the kraal for the following reasons:
 - ❖ Castrate and vaccinate animals
 - ❖ Physical assessment of the animals
 - ❖ To separate animals according to age, sex, type etc.
 - ❖ To cull and market un productive animals
 - ❖ To wean calves of at the right age
 - ❖ To carry out pregnancy diagnosis

HOUSING

The main reasons why animals are housed are

- ❖ To protect animals from bad weather condition mostly young ones
- ❖ To provide animals with a good opportunity of being fed well
- ❖ To provide an area for special handling of the animals e.g. Crushes, dips, spray etc.
- ❖ To provide a conducive environment for production and temporary storage for milk (quality milk)
- ❖ To provide conducive working conditions for the farmer

Qualities of a good animal house

- ❖ Provide an adequate floor space to avoid overcrowding
- ❖ Should be water proof to avoid damp conditions that breed pathogens
- ❖ Should have a concrete floor which is easy to clean
- ❖ Should provide adequate light since it affects the productivity and behaviour of animals
- ❖ Should have adequate ventilation to control respiratory infections
- ❖ The floor surface should have a gentle slope to allow urine to drain off easily
- ❖ Should be built in such a way that animals can easily see each other

LIVESTOCK BREEDING:

- ❖ This is the mating of selected animals in a planned manner

AIMS OF ANIMAL BREEDING

- ❖ To maintain desirable qualities in animals like increased number of eggs produced in chicken, high number of off springs born per animal,
- ❖ Produce animals with a high mothering ability i.e. low temperament and high milk production
- ❖ Produce highly fertile animals
- ❖ Produce animals with a High growth rate
- ❖ Produce animals that can give a lot products like milk and eggs
- ❖ To come up with breeds that produce high quality meat, milk and egg
- ❖ To produce breeds of animals that are resistant to parasites and diseases
- ❖ Elimination of undesirable qualities in livestock
- ❖ To produce animals with a high resistance to harsh environmental conditions
- ❖ To produce animals that can provide products for a long period of time

SELECTION

- ❖ This is a practice of allowing some animals to be parents of future generations while depriving others of that privilege.

Types of selection

- ❖ There are mainly two types of selections i.e. **natural selection** and **artificial selection**

Natural Selection

- ❖ This is one which always takes place through random mating and its influenced by natural forces e.g. the ability of one individual to survive and reproduce in a certain environment.

- ❖ In such a selection only the fittest animals are able to survive hence survival of the fittest in the struggle for existence.

Artificial Selection

- ❖ This is the type of selection controlled by man and doesn't allow random mating but mating is based on desired characteristics

Methods used in artificial selection

- ❖ Individual / mass selection
- ❖ Pedigree selection
- ❖ Collateral relatives selection
- ❖ Progeny tests
- ❖ Tandem selection
- ❖ Independent culling
- ❖ Selection index

Individual Selection

- ❖ This is done basing on the information about the animals performance as well as the performance of its progeny. It measures the likelihood of a trait being passed onto the next generation.
- ❖ A comparison of animals based on their own individual performance is called the **performance test**. It's used for traits of high heritability such as growth rate, fertility, mothering ability and feed conversion efficiency.

Pedigree Selection

- ❖ Here animals are selected basing on the performance of their ancestors. This method is used for traits that can't be measured in life e.g. quality of beef.
- ❖ This method is not highly recommended because it can be easily manipulated by leaders and farm managers.

Collateral relatives Selection

- ❖ This is selection done basing on performance records of close relatives like brothers, sisters, half brothers etc.
- ❖ The transmission of traits (characteristics) with known importance between relatives can be measured using subtests.

Progeny Tests

- ❖ This is where selection is made basing on the performance of an animal's offspring (progeny)
- ❖ It determines the value of an animal breed and performance reflected in the following
 - ❖ Milk and butter fat production incase of dairy animals
 - ❖ Carcass quality in beef animals
 - ❖ Belly length in pigs
- ❖ **Advantages**
 - ❖ Weakly inherited traits are easily noted and decisions made
 - ❖ Its easy to know practically the productive qualities for both the bull and the cow
 - ❖ It's more suitable for traits which are exposed after slaughter such as the carcass quality.
- ❖ **Disadvantages**
 - ❖ It's a very expensive method of selection because it involves a lot of consideration before reaching the final judgment
 - ❖ It needs a lot of time hence its time wasting
- ❖ **Tandem selection**

- ❖ This where a desired trait is selected among many and improved before going for another

- ❖ **Independent culling**

- ❖ The breeder lays down a minimum standard for several traits and any animal that does not measure up to standard is culled

- ❖ **Selection index**

- ❖ Here, numerical values are given to potential parents basing on their characters and one with the highest value is selected

Factors considered in selecting animals for breeding

- ❖ Adaptability of the animal to environmental conditions
- ❖ Availability of the breed with in the environment
- ❖ Availability of market for animal products for the animal being bred
- ❖ Animal temperament should be low for easy handling
- ❖ Animal resistance to pests and diseases should be high
- ❖ Animal body conformity should confirm the breed and type
- ❖ History of success of the breed in the environment
- ❖ Feed conversion ratio of the breed i.e. should have a high ability of converting feeds into products like milk , meat and eggs
- ❖ Growth rate of the breed
- ❖ Availability of quality feeds for the animals
- ❖ Fertility of the animal being considered
- ❖ Productivity of the animal in terms of milk, meat and eggs

BREEDING METHODS

- ❖ This refers to those methods which deal with how the breeds that have been selected as parents for the next generation are mated.
- ❖ Breeding methods are classified into two broad groups namely:

Close breeding

Out breeding/ cross breeding

Close Breeding

- ❖ This is the mating of related animals e.g. a daughter and a father, a son and a mother, brother and a sister, grandparents and grand offspring.
- ❖ Close breeding involves **inbreeding** and **line breeding**

Inbreeding

- ❖ This is that mating of closely related animals like brother and sister, son and mother, e.t.c.

Advantages of in breeding

- ❖ It helps to maintain a high relationship with the desirable ancestor.
- ❖ It increases the degree of uniformity in the herd
- ❖ The less desirable recessive genes are easily brought to light and therefore culled.
- ❖ The good qualities of a particular breed can be easily maintained

Disadvantages

- ❖ It requires a lot of skill in making planned mating and rigid selection
- ❖ It leads to a reduction in survival chances of offsprings
- ❖ Leads to a reduction in the fertility of animals
- ❖ The offsprings got are usually of poor size

Line Breeding

- ❖ This can be defined as the mating of animals of the same breed or distant relatives e.g. cousin, grandson and grandmother
- ❖ It's actually practiced in order to conserve the good traits of a certain outstanding sire or dam.

Out breeding /out crossing

- ❖ This is the mating of unrelated animals. Sometimes such animals can be of the same breed but show no close relationship in the first four generations
- ❖ Out breeding results in the production of offsprings that are of better performance than the parents i.e. hybrid vigor.
- ❖ Crossing can be done between breeds, species and lines. Examples of crosses between species are;
 - ❖ Male **lion** and female **tiger** results in a **Liger**
 - ❖ Male **donkey** and female **Zebra** results in an **Asbra**
 - ❖ Male **Horse** and female **Zebra** results in a **Zebroid**
 - ❖ Male **horse** and female **Donkey** results in a **Mule**
 - ❖ **Bull** and female **buffalo** results in a **Beefalo**

Grading Up

- ❖ This is a system whereby pure exotic sires are mate with the local animals to improve the characteristics of local animals e.g.

Local female x 100% pure sire/ male

BREEDING EFFICIENCY

- ❖ This is the ability with which the herd is able to reproduce and multiply. It covers the entire period of breeding i.e. mating, conception, gestation and calving. It measures the following;

- ❖ **Calving interval:** This is the period between calving. Normally it is about 12 -13 months. In order to get a good calving interval, a rest period of 60 days should be given for the animal.

- ❖ **Age of heifer at first calving** which should be 24 months. A higher age indicates a low breeding efficiency

- ❖ **Services per conception.** The ideal ratio should be 1.6-1.8 and is measured by Numberof services
 - Number of animals that conceive in a herd

- ❖ **Percentage of cows that calve within a year.** A high percentage indicates a high breeding efficiency

- ❖ **Number of days a cow is pregnant in a year.** The more the days, the higher the breeding efficiency

- ❖ **The percentage of non-returns.** Non-returns arise when the service is done and pregnancy does not occur. A low percentage of non indicates a high breeding efficiency and vice versa

- ❖ **Maintaining a high breeding efficiency**
- ❖ **Good feeding:** Breeding animals should be fed well but excessive fattening should be avoided as it may reduce the fertility.

- ❖ **Observing the rest period:** Animals should be given a rest period of about 60 days to allow the uterus to return to normal

- ❖ **Insemination at the right time:** In case of A.I, the cow should be inseminated towards the middle and late part of heat period as ovulation occurs 14 hours after the beginning of oestrus
- ❖ **Observation of animals on heat:** This should be done as early as possible more especially where A.I is being used to avoid the animal missing service.
- ❖ **Veterinary Attention:** Animals that fail to conceive should be identified and examined to find out the causes and treated if possible.
- ❖ **Pregnancy diagnosis:** Animals should be diagnosed to find out whether they have conceived or not so that appropriate measures can be taken in time.
- ❖ **Keep accurate breeding** records for the herd to be used as reference were necessary
- ❖ **Use teaser bulls** for early detection of heat in farm animals for early service
- ❖ Maintain a good ratio of bulls to females to avoid over working the bulls which lowers fertility
- ❖ Use correct **techniques of artificial insemination** to ensure successful fertilization hence high breeding efficiency
- ❖ Females with abnormal discharges should be examined and treated early enough
- ❖ Know a complete breeding history of the animals before buying it into the farm

Mating animals

- ❖ Animals can be mated using two main methods i.e. **natural service** and **artificial insemination**

NATURAL SERVICE

- ❖ This is where a male mates with the female directly. It is the most common method of service in Uganda

Advantages of natural service

- ❖ Less costly since collection and processing of semen is not involved
- ❖ Best methods serving animals with silent heat
- ❖ Conception rate is higher than artificial insemination
- ❖ Its a quick method of service
- ❖ Does not require special skills and training

Disadvantages

- ❖ Reproductive diseases can be easily spread
- ❖ It's difficult to practice controlled breeding under this method
- ❖ Heavy bulls can easily injure weak females
- ❖ Wastes semen on one female that would otherwise serve 100 female
- ❖ Breeding records are difficult to keep

ARTIFICIAL INSEMINATION

- ❖ It's a method of breeding in which semen is obtained from the male and introduced into the female reproductive tract by means of an instrument without direct contact between the males.

Advantages

- ❖ Its easier and cheaper to transport semen from distant places than transporting a bull
- ❖ Semen from good males may be stored for use in future years even after the death of such animals

- ❖ This enables controlled seasonal and planned breeding on farms
- ❖ It is easy to keep accurate breeding records since the time of service is always known
- ❖ It is easy to control venereal diseases e.g. contagious abortion and trichomoniasis in a herd since semen used is first examined
- ❖ Poor breeds or bulls can be easily eliminated from the breeding programme giving room for better sires
- ❖ Semen from lame bulls and those that are dead but of good quality can be easily used in the breeding programme
- ❖ Injury to small and weak females by heavy bulls can be controlled using artificial insemination.
- ❖ It reduces the cost and the risk of keeping a bull on the farm since bulls are usually aggressive.
- ❖ Semen from good sires can be easily made available to farmers in rural areas through artificial insemination.
- ❖ Artificial insemination is economical since one ejaculation can serve over 100 cows after dilution.

PROBLEMS OF ARTIFICIAL INSEMINATION (A.I)

- ❖ Silent heat Some female animals do not show signs of heat hence it's very difficult to carry out A.I on such animals
- ❖ The method of communal grazing in Uganda does not easily allow A.I since poor bulls from different herds can mount animals.
- ❖ There is a danger of disease outbreak more especially if contaminated semen are used.
- ❖ Special skills are required to carry out A.I which may be lacking among the farmers

- ❖ Semen requires special equipment and conditions for storage which may not be easily available to the rural farmers.
- ❖ Poor roads in rural areas make the transportation of semen to such places difficult and expensive.

Methods of carrying out AI

- ❖ There are two main methods of AI i.e. **recto-vaginal** method and **speculum** method

Recto-vaginal method

- ❖ This is where the rectum and vaginal are manipulated in order to have successful insemination. The hand is pushed in the rectum to remove dung and locate the cervix at the end of the vagina

Procedure

- ❖ Restrain the animal in a crush to restrict its movement during the operation
- ❖ Wash your hands with clean water and soap to reduce infection
- ❖ Put on clean gloves
- ❖ Thaw the semen in a basin of water at room temperature to reactivate the sperms
- ❖ Sterilize all the equipment to be used
- ❖ Insert the semen straw in the inseminating syringe
- ❖ Lift the animal's tail and insert one of the hands into the rectum to remove dung
- ❖ Clean the anus and vulva using clean water and soap
- ❖ Insert the hand in the rectum to locate the cervix in the reproductive system

- ❖ Insert the inseminating syringe through the vagina and gently direct it to the cervix
- ❖ Release the semen to the cervix
- ❖ Massage the cervix after releasing semen so that it can be sucked into the uterus
- ❖ Gently remove the inseminating syringe from the vagina and the hand from the rectum
- ❖ Release the animal from the crush and monitor it for 21 days to ensure that it has conceived

Speculum method

- ❖ This is where special equipment called a **speculum** is used in locating the cervix by inserting it in the vagina.

Procedure

- ❖ Restrain the animal on heat in a crush
- ❖ Wash your hands using clean water and soap and dry it with a hand towel
- ❖ Sterilize all the equipment to be used in inseminating
- ❖ Thaw the semen in a basin of water at room temperature
- ❖ Insert the semen straw in the inseminating syringe
- ❖ Wash the vulva with clean water and soap
- ❖ Wear clean gloves
- ❖ Insert the speculum into the vagina to locate the cervix
- ❖ Insert the inseminating syringe into the speculum and release the semen
- ❖ Gently remove the inseminating syringe from the speculum
- ❖ Remove the speculum gently from the vagina
- ❖ Release the animal from the crush

REPRODUCTION IN FARM ANIMALS

- ❖ This is a process that determines the existence of any animal species and the profitability of that animal. Reproduction is responsible for the number of organisms / animals which will lead to increased animal products, employment and diversification of the economy.

Hormonal control of oestrus

- ❖ Oestrus is a period of high sexual desire in female farm animals. It is characterized by physiological and behavioural changes.

The female oestrus cycle

- ❖ The anterior pituitary gland secretes a hormone called follicle stimulating hormone (**F.S.H.**) which stimulates the growth of graffian follicles in the ovary
- ❖ It also stimulates the ovary to secrete a female sex hormone – **oestrogen**.

Oestrogen causes the signs of heat in females and also stimulates the anterior pituitary glands to produce another hormone called **Lutenising hormone (LH)**.

- Oestrogen makes the female animal more receptive to the male and increases sex urge in females.

Lutenising hormone causes the rapture of mature follicles to release the ova in the process of ovulation.

- ❖ After ovulation, lutenising hormone stimulates the development of the yellow body (corpus luteum) from the remains of the follicles.

- ❖ The corpus luteum produces a hormone known as **progesterone** which stimulates the growth of the endometrium in preparation for implantation.
- ❖ Progesterone also inhibits the release of follicle stimulating hormone and lutenising hormone from the anterior pituitary gland.
- ❖ After a successive fertilization, the progesterone stimulates the growth and improves blood supply to the endomentrium for successful implantation.
- ❖ After implantation, the **corpus luteum** degenerates and the placenta becomes the new source of **progesterone**.

Multiple Ovulation and Embryo Transfer (MOET)

- ❖ This is the ability to make female animal simultaneously produce several ova which are fertilize to form embryos

Objectives of MOET

- ❖ Increases the number of offsprings in the life time of a female farm animal
- ❖ Makes cows with good traits produce more offspring for breeding beyond they natural capacity
- ❖ Can be used in preserving endangered species since multiplication of offspring is high
- ❖ It is easier to transport embryos than a live animal
- ❖ Enables offspring to acquire better immunity from surrogate mothers
- ❖ Weak and sick females can participate in the breeding programme

Limitations

- ❖ It is very expensive to carry out
- ❖ It requires a lot of skill to be carried out
- ❖ Success rate is very low

SIGNS OF HEAT IN CATTLE

- ❖ The vulva swells and becomes red in colour
- ❖ The animal urinates frequently
- ❖ An animal on heat mounts other animals and allows others also to mount on it.
- ❖ There is a reduction in milk yield for lactating cows
- ❖ The animal becomes restless i.e. moves up and down in search for the male
- ❖ It sniffs the vagina of another cow
- ❖ Licking and rubbing of each other has also been noted amongst animals on heat.
- ❖ There is less feeding as more time is spent in walking
- ❖ There is a slight rise in the body temperature
- ❖ There is mucous discharge from the vagina
- ❖ The animal will stand still to be mounted by a bull (standing heat)
- ❖ **Note:** Production of bloody mucus from the vagina means that heat has been missed.

SIGNS OF HEAT IN SHEEP

- ❖ The female pays close attention to the male
- ❖ The female wags its tail more vigorously
- ❖ It stands still when mounted by the male but it's hard for it to mount others.

Signs of heat in pigs

- ❖ There is an intense search for the male by the female
- ❖ The female pays little attention to food
- ❖ The vulva becomes congested and swollen
- ❖ The sow emits short grunts
- ❖ It stands still when pressure is applied to the back
- ❖ There is reddening of the vulva more especially in the white breeds

- ❖ The sow can mount others and also allows others to do so.

Infertility in farm animals

- ❖ This is a temporary failure of an animal to reproduce which can be corrected ***Sterility*** is a permanent and irreversible failure of an animal to reproduce

Causes of infertility in cattle

- ❖ **Inheritance** : some families of animals inherit low fertility from their parents
- ❖ **Twinning in cattle**: Although it's rare in cattle, but when it happens, heifers born co-twin with males (free martins) can be sterile.
- ❖ **White heifer's disease**: This is infertility which is caused when the hymen is too strong and thus preventing natural mating or artificial service of the cow.
- ❖ **Cryptorchidism**: This is when the male animal is born with both testes retained in the abdominal cavity making it unable to produce sperms.
- ❖ **Retained corpus luteum**: this prevents the development of the eggs in the ovary by continuous production of progesterone (maintains pregnancy)
- ❖ **Cystic ovaries**: This is when follicles fail to rupture in order to release the ova causing a condition called **Nymphomania** (excessive desire for sex) and the cow is set on prolonged heat.
- ❖ **Nutritional deficiency** : Lack of vitamin A which is responsible for the formation and maintenance of membranes in the reproductive system lowers the fertility of cattle
- ❖ **Excessive conditioning (fattening) animals**: Heavy fat deposits on the ovary affect its functioning and cause low fertility / infertility.

- ❖ **Management** : Mating the animal too soon after calving , too early or late after on set of heat and failure to recognize heat signs will lead to infertility.
- ❖ Venereal diseases like brucellosis and Trichomoniasis can also cause low fertility in farm animals.
- ❖ Un favourable conditions in the reproductive tract of a female can cause infertility
- ❖ Use of defective sperms during service lowers animal fertility

SIGNS OF PREGANANCY

- ❖ Failure of the animals to have heat after 21 days.
- ❖ Increase in the size of the belly more especially on the right hand side.
- ❖ A higher concentration of progesterone in milk and plasma 21 – 24 days after conception
- ❖ The cervix opening is sealed and closed by a gelatinous and tough secretion
- ❖ Udder tissues develop and enlarge especially in heifers at the 6th month of pregnancy
- ❖ At the later stage, the signs of life in the foetus can be felt after applying slight pressure on the right hand side of the belly
- ❖ Laboratory analysis of blood shows a higher level of progesterone in it

CARE FOR A PREGNANT COW

- ❖ Provide clean water to the animal without any restriction
- ❖ Carry out pregnancy diagnosis two month after service to confirm pregnancy
- ❖ Dry off the animal at the 7th month of pregnancy to prepare it for the next lactation
- ❖ After drying carry out dry cow therapy to control mastitis

- ❖ Regularly deworm the animal to control internal parasites that may affect the unborn calf
- ❖ Provide adequate feeds through out the period to cater for high nutrient demands
- ❖ Steam up in the last 2 month of pregnancy to prepare the animal for lactation
- ❖ Regularly control external parasites by spraying Atleast twice a week
- ❖ Vaccinate the animal against killer diseases so as to protect the un born calf
- ❖ Isolate the animal in the last 2 month from the general herd in put it in a nurse paddock
- ❖ Provide a clean dry calving pen for the cow
- ❖ During calving, assist the animal with difficulties
- ❖ Milk the animal a little to reduce the udder pressure
- ❖ If the after birth is retained, call in a vet for help

Steaming Up

- ❖ This is the practice of giving extra nutritious feed to a pregnant cow two months prior to calving.

Importance of steaming up

- ❖ It prevents nutritional disorders associated with milk secretion like milk fever
- ❖ It allows the heifer to get used to the milking place when steamed in a milking parlour.
- ❖ Replaces the nutrients that have been used in the development of the foetus
- ❖ It prepares the cow/ heifer physiologically for the next lactation period.
- ❖ Allows the animal to put on weight in preparation for calving
- ❖ Makes a heifer get used to feeding on concentrates
- ❖ Stimulates the development of mammary glands for milk production

- ❖ Encourages the production of high quality colostrums for the calf at birth
- ❖ For proper growth of the foetus

Signs of calving

- ❖ The cow / heifer stay away from the general herd and lies down rather than standing.
- ❖ The udder becomes extended as well as the teats
- ❖ The cow becomes increasingly uneasy
- ❖ Loss of appetite
- ❖ The vulva becomes flabby (becomes soft and loose)
- ❖ There is frequent urination
- ❖ Repeated arching of the back and raising of the tail

Care of the cow at calving

- ❖ The animal should be taken to the calving paddock or stall
- ❖ The place where the cow is to calve should be clean and free from sharp objects
- ❖ The animal should be let to deliver by itself for at least 1 hour 4. In case of failure, the veterinary officer should be called in for help.
- ❖ 5. Remove the after birth as soon as possible

Care after calving

- ❖ The calf should be left with the mother so that it can clean it by licking.
- ❖ Normally, the calf removes the mucus membrane from the nostrils by sneezing
- ❖ In case the calf fails to breath, artificial respiration should be initiated by:
 - mouth to mouth respiration

- handling the calf with the hind legs and lifting it up then releasing it gently
- tickling the nostrils with a piece of straw to initiate sneezing
- ❖ Give the cow warm water to drink so as to assist in the digestive system
- ❖ Disinfect the naval cord of the calf with iodine to reduce infections
- ❖ Milk the cow a little to release the pressure in the udder
- ❖ Allow the calf to stay with the mother for 2 – 3 days to ensure that it takes colostrum.

Management of calves from birth to weaning

- ❖ Clean the calf by removing the mucus membranes from the calf in case the mother fails
- ❖ Disinfect the umbilical cord using dettol and tie it to stop tetanus infection
- ❖ In case the calf fails to breath normally, artificial respiration should be initiated
- ❖ Leave the calf with the mother to ensure that it takes colostrum
- ❖ In case of artificial rearing, the calf should be trained to drink from the bucket with in two days after birth
- ❖ Feed the calf on clean milk Atleast twice a day
- ❖ Provide plenty of clean drinking water at all times of the day
- ❖ Provide roughage to the calf at the age of about 2 weeks to facilitate rumen development
- ❖ Towards weaning, introduce milk replacers to save milk for the market
- ❖ Carry out identification of the calf Atleast 2 weeks after birth

- ❖ Male calves that are not going to participate in the breeding programme should be castrated in the 4th week from birth
- ❖ From extra teats fro female calve at the age of 2 weeks
- ❖ Calves should be dehorned using the hot iron method in the second week
- ❖ Deworm calves regularly to control internal worms that affect growth
- ❖ Vaccinate calves against killer diseases to reduce mortality
- ❖ Clean the pen regularly by removing dirty litter so as to reduce infections
- ❖ Wean the calves at about 2 month after attaining the right weight

Major causes of calf mortality

- ❖ Calf scours characterized by diarrhea with a foul smell
- ❖ Calf pneumonia; this caused by poor housing conditions
- ❖ Navel infection; this caused by bacterial attack of the navel creating septic conditions
- ❖ Internal worm infections resulting into stunted growth and diarrhea
- ❖ Calf coccidiosis characterized by feaces with foul smell. It is caused by bacteria
- ❖ East Coast Fever which is transmitted by ticks and caused by protozoa. It is the leading cause of death in exotic calves. It is characterized by swollen lymph nodes of the parotid and diarrhea

Feeding calves

- ❖ After calving, the calf should not be removed from the mother for the first 2 – 3 days in order to ensure colostrum intake.

Colostrum:

- ❖ This is the milk produced by a cow for the first 3 – 4 days after calving. It is different from normal milk in the following ways:
- ❖ It contains very high antibody content about 5 times more than normal milk.
- ❖ It has a high protein and vitamin content

Reasons for giving the calf colostrum

- ❖ Contains antibodies which help the calf to fight disease
- ❖ Removes sticky materials from the alimentary canal of the calf
- ❖ It contains a lot of nutrients which are needed highly by the calf.

Methods of feeding / rearing the calves

Natural rearing/ Suckling: This includes single suckling (natural suckling), restricted suckling and foster mothering (multiple suckling)

Artificial rearing / bucket feeding

Single Suckling

- ❖ This is where a calf is left to suckle from the mother without any restriction until it is weaned at about 4 – 6 months. This method is restricted to beef production and places where there is little market for milk.

Advantages of single suckling

- ❖ It is the simplest and best way of producing large healthy calves
- ❖ It is a suitable method for the beef farmers who have a little interest in milk but more in the beef of the animals.
- ❖ It is Labour saving as compared to the artificial rearing
- ❖ Diseases due to unhygienic conditions eg. Calf scours observed in bucket feeding are rare in this system.
- ❖ Calves get milk at the normal body temperature which enhances proper digestion

- ❖ This is the most suitable method of raising calves in places with low market for milk.
- ❖ There is low mortality rate under this method of raising calves.

Disadvantages of single suckling

- ❖ It is very difficult to keep feeding records in this system since the amount of milk taken by the calf is not known.
- ❖ Injury to the teats is common as the calves suckle

Restricted suckling

- ❖ The calves are allowed to suckle at certain periods of the day e.g. after the morning and evening /afternoon milking. Supplementary feeds can be easily introduced.

Advantages

- ❖ Well grown calves can be realized with proper management
- ❖ There is a tendency of getting a high milk yield from the dam as it is milked in the presence of the calf.
- ❖ There is low mortality rate since calves get clean milk at the right temperatures
- ❖ Less cases of mastitis are noted under this method
- ❖ It saves both Labour and time.
- ❖ Provision of supplementary feeds to calves would greatly improve their growth.

FOSTER MOTHERING

- ❖ In this method, a substitute mother is used in providing milk to the calves. The calf is first allowed colostrum for three days then allocated to the foster mother.

Advantages

- ❖ The dam will give more milk when the calves are left to suckle it.
- ❖ The method gives good calves as compared with bucket feeding.
- ❖ The method uses less Labour since supervision is little
- ❖ The calves are able to get the milk at the normal body temperatures
- ❖ There are fewer cases of calf scours
- ❖ Case of mastitis in cows is rare
- ❖ Milk from other dams can be saved for the market

Disadvantages

- ❖ In case of an infectious disease, a farmer may lose a good number of calves.
- ❖ Weak calves are denied a chance of suckling at most times by the strong aggressive calves.
- ❖ Injury to teats caused by the calves is more common
- ❖ It is very difficult to keep feeding records in this system.

ARTIFICIAL REARING (BUCKET FEEDING)

- ❖ In this method, calves are removed from the dams three days after birth and reared by feeding them on milk or milk substitutes from a bucket.

Training the calf to drink from the bucket

- ❖ The calf should be removed from the dam three days after birth to ensure colostrum intake.
- ❖ Immediately After milking, the bucket with the milk should be presented to the calf for training.
- ❖ Wash your hands with clean water and soap and dry it using a clean hand towel
- ❖ The trainer should dip the index and middle fingers in the milk and later place it in the calf's mouth to suckle.

- ❖ The calf suckles the fingers as the trainer lowers the hand in the bucket containing milk.
- ❖ As the mouth of the calf approaches the milk in the bucket containing milk, the fingers are removed slowly to allow the calf to drink milk.
- ❖ The calf begins slowly to drink the milk and later learns
- ❖ The calf should not be allowed to drink in large quantities at ago as the milk can choke it or enter the undeveloped rumen where it would ferment causing digestive disturbances.
- ❖ Training can be repeated until the animal learns

Advantages of bucket feeding

- ❖ It is easy to keep feeding records that can be referred to in any case since the amount of milk taken is known
- ❖ Calves can be easily rationed according to their body needs
- ❖ The farmer can introduce milk substitutes easily and therefore save milk for market.
- ❖ The method permits early weaning which can save milk
- ❖ The dam will give milk even when the calf dies
- ❖ It encourages better management of the herd since the lactating cows are fed according to their production.

Disadvantages

- ❖ The mortality rate in this system is high since in most cases calves are given less or dirty milk.
- ❖ Calves are more prone to diseases due to unhygienic conditions associated with feeding the calves
- ❖ The method requires more labour and attention which are expensive to the farmer.

- ❖ In case of an infectious disease, the farmer may lose a good number of calves.

DIARY CATTLE

- ❖ These are cattle reared specifically for milk production.

Examples of exotic dairy breeds

- ❖ Friesian, Ayrshire, Jersey, Guernsey and Kerry

Characteristics of a good dairy breed

- ❖ Should be a high milk yielder
- ❖ Should be resistant to pests and diseases
- ❖ Should have a high fertility
- ❖ Should be docile hence easy to be milked
- ❖ Should have a large udder
- ❖ Should be able to calve easily
- ❖ Should have a big milk vein
- ❖ Should be able to calve regularly for a long time
- ❖ Should have a well-suspended udder with four functional teats
- ❖ Should have a long lactation which ensures continuous milk production
- ❖ Should have strong hind legs for supporting a big udder

FACTORS TO CONSIDER BEFORE ESTABLISHING A DAIRY HERD

- ❖ **Capital** : This is needed in the construction of farm structures, purchase of land and the animals.
- ❖ **Land**: There should be enough land to accommodate farm buildings and paddocks where animals can graze from

- ❖ **Labour:** Both skilled and unskilled Labour is required for performing specialized work and manual Labour respectively.
- ❖ **Reliable source of water:** Water is needed by the animals for drinking and also in other farm operations like cleaning and mixing of drugs.
- ❖ There should be a ready market for milk and milk products which is easily accessible to reduce the costs incurred in looking for market.
- ❖ **Pastures:** The place in consideration should have good pastures since the production of the animals is greatly affected by the quality of what they eat.
- ❖ There must be reliable transport so that the farmer can easily move farm products to the market and bring back inputs.
- ❖ The breed selected should fit the market demand and the Climatical conditions of the place in consideration.
- ❖ Security is a very important factor for any business since insecurity results into loss of property and life
- ❖ Government policy in place should be encouraging dairy farming through the provision of good breeds of cattle
- ❖ Climate in the area should be good for dairy farming

Importance of Dairy farming

- ❖ Provides income to the farmer all year round since animals produce at any given period of the year
- ❖ They can provide dung used for making farm yard manure
- ❖ Can provide quality meat at the end of milk cycle after fattening
- ❖ Provide food to the farmer in form of milk
- ❖ Provide market for industrial products like meat
- ❖ They are good converters of inedible pastures into milk

Introducing exotic dairy cattle in an area

- ❖ Fence off the whole grazing area to keep out intruders and pests
- ❖ Partition the grazing land into paddocks for easy pasture management
- ❖ Remove all weeds and injurious objects from the grazing land
- ❖ Install water points in all paddocks for the animals
- ❖ Introduce bait animals to the paddock to control ticks 3-6 months before bringing in the exotic animals
- ❖ Spay or dip the bait animals regularly over the whole period
- ❖ Remove the bait animals after a specified period and introduce the exotic animals
- ❖ Regularly spray or dip the exotic animals to control external parasites

MANAGEMENT OF DAIRY CATTLE

- ❖ **Regularity of care:** The operations done on these animals should be performed regularly without abrupt interruptions as those may affect the production of animals.
- ❖ **Kindness to animals:** Rough handling of animals like beating reduces the productivity and can even cause injuries that may be expensive to treat.
- ❖ **Exercise:** Animals need light exercise for good health but long distances of movement should be avoided as these require a lot of energy lowering animal production.
- ❖ **Grooming :** Keeping hind quarters of animals off dung, loose hair and any dirt by brushing and dipping leads to production of high quality milk.
- ❖ **Hoof trimming:** Overgrown hoofs should be trimmed to avoid difficulty in movement and lameness
- ❖ **Dehorning:** Apart from introducing uniformity in the herd, handling of dehorned animals is easy and less risky

- ❖ **Identification:** For record purposes, dairy animals should be identified by ear tagging notching, branding and tattooing.
- ❖ Provision of adequate water; Animals need enough water since the biggest percentage of their body is water. Excessive loss of water from the body reduces milk produced.
- ❖ **Breeding:** A farmer should aim at breeding of his herd to increase animal number and productivity by incorporating good breeds in the breeding programme.
- ❖ **Proper feeding;** dairy animals should be given enough and highly nutritious feeds to improve and maintain a high level of production

MILK SCIENCE

- ❖ This is the way how milk is harvested from a cow.

Milk composition

Component	Percentage
Fat (Butter fat)	3.7
Sugar (Lactose)	4.8
Protein (Casein)	3.2
Mineral	0.7
Water	86.6
Solids	1.0

MILK LET DOWN

- ❖ This is down flow of milk from the udder to the lowest part of the teat or it is process by which milk is removed from the alveoli and small duct systems to the lower part of the udder i.e. gland cistern and teat canal.

Process of milk let down

- ❖ When the udder is stimulated, by **washing with warm water** or **suckling** by the calf, a message is sent to the **anterior** part of the brain through the **spinal cord**.
- ❖ A hormone called **oxytocin** is released in the blood stream from the anterior pituitary gland.
- ❖ When the hormone reaches the udders it causes contraction of muscles surrounding the **alveoli**
- ❖ The squeezing action forces the milk into the **gland** and **teat cisterns**
- ❖ The action of suckling / milking will bring the milk outside.

Ways of stimulating milk let down

- ❖ Taking the cow to the milking parlour
- ❖ Massaging the udder or washing it with warm water
- ❖ Noise or rattling of milk buckets
- ❖ Feeding of the on concentrates cow in the milking parlour
- ❖ Approach of milking time
- ❖ Presence of the calf at the milking place

Rules of good milking

- ❖ Avoid exciting the animal before and during milking
- ❖ Prepare and assemble the milking equipment before hand
- ❖ Milking tie should never be interrupted
- ❖ Milk at the same time every day
- ❖ Prepare the cow for milk letdown by washing the udder with warm water

- ❖ Use a strip cup to test for mastitis
- ❖ Begin milking soon after preparing the cow to utilize short period of milk letdown

Milk hold up

- ❖ This is the opposite of milk let down where the cow holds up milk due to the production of adrenaline. Adrenaline limits blood supply to the udder therefore preventing oxytocin from reaching the muscles surrounding the alveoli. Adrenaline is produced when:
 - ❖ Presence of strangers around the milking parlour like dogs and cats
 - ❖ Rough handling of the animal by beating
 - ❖ Too much noise at the milking parlour
 - ❖ Improper dressing and change of the milking person
 - ❖ Pain during the milking process caused by mastitis or injury to the teats.

Milking Procedure

- ❖ Assemble all milking equipments like buckets, cans and milking strainer in the parlour to avoid time wastage.
- ❖ The cow to be milked should be restrained while in the parlour by tying the hind legs with a milking rope.
- ❖ Wash the udder with warm water and soap and dry it using a hand towel.
- ❖ Milking salve should be smeared on the teats to reduce friction and injury to teats
- ❖ A strip cup should be used to test milk from each teat for mastitis
- ❖ Cows suspected of mastitis should be milked last and the milk poured away
- ❖ Follow the right milking technique of applying pressure to the outside of the teat while holding it between the index finger and thumb.
- ❖ Weigh and record milk from each cow immediately after milking

- ❖ Milk should be filtered using a milking strainer before being put in the can for cooling to remove all dirt and any foreign material like hair.
- ❖ All the milking equipment should be washed after milking and hanged upside down in the sun to dry.

Note: The milking should be done in seven minutes to utilize the time for milk let down.

GUIDELINES TO CLEAN MILK PRODUCTION

Milk is said to be clean if:

- ❖ It is free from dirt and any other visible matter
- ❖ Has normal composition
- ❖ Has desirable flavour
- ❖ Free from harmful bacteria

In order to produce clean milk, the following points are important:

- ❖ Clean, healthy cows must be maintained free of brucellosis and tuberculosis
- ❖ Regular grooming and washing of animal is important for removal; of dirt and loose hair that can contaminate milk.
- ❖ All the equipments used during milking must be kept sterile by washing and drying.
- ❖ The milking parlour should be kept spotlessly clean to reduce contamination of milk by microbes
- ❖ Personnel handling milk should be clean by having clean clothes, short hair and finger nails
- ❖ Milk should always be covered when in containers to stop foreign material from entering it.
- ❖ The person milking should not be suffering from any contagious disease e.g. Tuberculosis.

- ❖ Cows suffering from mastitis should be milked last and the milk poured away to reduce the spread of the disease.
- ❖ Regular tests for tuberculosis in the herd should be carried out regularly and animals found with tuberculosis should be cull
- ❖ Before milking, the milker should wash his hands thoroughly and dry it with a hand towel to reduce contamination of the milk with dirt.
- ❖ The milking parlour should be far away from poultry houses, piggeries, manure pits and latrines which may pollute the air and provide a breeding ground for flies.
- ❖ The milking parlour should be built on a high ground to permit good drainage
- ❖ Wild plants which have an odour that can taint milk should be removed from the milking place.
- ❖ Milk should be cooled from the normal temperature of 37°C to 4°C to reduce bacteria multiplication.
- ❖ Proper milking techniques should be followed to reduce injury to teats and contamination of the milk.

FACTOR AFFECTING THE QUALITY (COMPOSITION) AND QUANTITY (YIELD) OF MILK

- ❖ **Breed** : Friesians produce large amounts of milk but of low butter fat while the indigenous produce less milk of high butter fat.
- ❖ **Age** : Older cows produce more milk than the young. However, the butterfat of the milk produced by the older cows is lower than that of the young cows.
- ❖ **Period of lactation** : Milk yield increases until the 7th week then it starts declining up to drying off.

- ❖ **Animal Health:** Sick animals give less milk which may also contain antibodies and drugs more especially after treatment.
- ❖ **Animal Temperament:** Quiet animals are the best milkers while nervous cows which kick about give less milk.
- ❖ **Water Supply :** Water is needed for the health of the cow and also in the manufacture of milk since it is 87% water. Provision of enough water increases milk yield
- ❖ **Food eaten;** Animals fed on concentrates will produce more milk which is of better quality than those feed on the ration full of roughages.
- ❖ **Season of the year:** During the rainy season cows produce milk with high butter fat content. The quantity of milk is also high due to the abundant pastures and water.
- ❖ **Heat Period:** Oestrus causes a slight decline in milk production which may be due to the reduced feed intake. The butterfat content of the milk can also fluctuate by 1% above / below normal.
- ❖ **Temperature:** High temperatures reduce milk yield due to the increased evaporation of water of water from the animal's body.
- ❖ **Management :** Proper feeding of animal and better handling during milking will increase the quality and quantity of milk produced. Rough handling leads to the increase of adrenalin and hence milk hold up.
- ❖ **Milking Interval :**The greater the number of milking times, the higher the amount of milk produced. However, morning milking produces milk with higher butter fat content.

METHODS OF MILKING

- ❖ There two main methods of milking

- hand milking
- machine milking

Hand milking

Advantages

- ❖ Spread of mastitis is limited as compared to machine milking where mastitis is easily spread through the teat cups.
- ❖ Hand milking has a low initial capital and therefore peasants can afford it.
- ❖ It can not be limited by power therefore more applicable to rural areas with no power.
- ❖ Injury to teats is not common as witnessed in machine milking due to faulty machines.

Disadvantages

- ❖ It is very slow in operation and therefore can not cope with large herds.
- ❖ Efficiency declines with increase in the time worked
- ❖ It is difficult to produce clean milk under this method
- ❖ It is difficult to have complete milking hence a farmer stands to lose.
- ❖ It increases Labour costs as more people are employed.

MACHINE MILKING

Advantages of machine milking

- ❖ It produces clean milk more easily than hand milking
- ❖ Complete milking is easily achieved
- ❖ There is reduction of Labour cost since one person can handle more than 1000 cows in a short time.
- ❖ It is faster in its operation hence saving time for animals to graze.
- ❖ Can easily cope up with a large piece of work without getting tired.

Disadvantages

- ❖ Needs skilled Labour to operate the machine which may be difficult to attain.
- ❖ Its limited by power supply and can not work in places with no power.
- ❖ Faulty machines can cause injury to teats
- ❖ Diseases like mastitis are easily spread since the animals share the same teat cups
- ❖ The initial cost of buying and installing the machine is high for most of the farmers in Uganda
- ❖ It is only economical on farms with very large numbers of lactating animals.

DISEASES ASSOCIATED WITH LACTATING COWS

Mastitis

- ❖ this is an inflammation of the udder caused by a number of bacteria and the most common are: - Streptococci and staphylococci

TYPES OF MASTITIS

❖ Acute Mastitis:

This is sudden in occurrence, marked with changes in the udder.

❖ Chronic Mastitis:

This is slow in onset without obvious signs

Spread of Mastitis:

- ❖ Can be spread through:-
- ❖ The milkers' hands,
- ❖ Teat cups of milking machines
- ❖ Udder towels

Signs of mastitis

- ❖ Blood stains in milk
- ❖ Flakes and clots in milk
- ❖ Discoloured milk

Treatment of mastitis

- ❖ Use intra mammaries which are antibiotics injected into the affected teats.

Control of mastitis

- ❖ The milker must ensure that his hands are clean before milking
- ❖ A strip up should be regularly used to test for mastitis
- ❖ Before milking, the udder should be washed with warm water and dried using a towel
- ❖ The farmer should pay more attention to soars on teats and prevent the plucking by using a milking salve
- ❖ The teat cups should be rinsed and disinfected immediately after milking each cow
- ❖ Animals suffering from mastitis should be treated promptly to stop the spread of the disease
- ❖ Infected animals should be milked last and the milk poured away.

Factors predisposing lactating animals to mastitis

- ❖ Stage of lactation; it is more common at the beginning of lactation
- ❖ Age of cattle; older animals are more prone to mastitis due an ageing immune system
- ❖ Level of milk yield; high milk yielders are more prone to mastitis than the low yielders
- ❖ Injury to teat and udder; this makes animal more prone to mastitis
- ❖ Unhygienic practices; milking infected animals with health ones increases the chance of mastitis spread

Milk Fever (Parturent Paresis/ Hypocalcaemia)

- ❖ It affects cattle, sheep and occasionally goats

Causes

- ❖ Low blood calcium and phosphorus level with an increase in magnesium concentration. The normal ratio of calcium phosphorus should not be above or below 2:1.
- ❖ Too much calcium in the ration

Symptoms

- ❖ It occurs in high milk producing cows soon after calving
- ❖ Loss of appetite
- ❖ Constipation and general depression
- ❖ Muscular spasms (convulsions)
- ❖ Uncoordinated movement and inability to stand
- ❖ Nervousness is experienced by the animal
- ❖ Paralysis and turning of the head back

Prevention

- ❖ Feed the cow on a ration containing 0.5 – 0.7% calcium and 0.3 – 0.4% phosphorus
- ❖ Calcium shock treatment; feed the pregnant animal 10 – 14 days before calving on a calcium deficient ration to activate the animals calcium mobilizing mechanism.
- ❖ The pregnant animal should be fed on a ration with high vitamin D, six days before calving

Treatment

- ❖ The animal should be injected with calcium salts in form of calcium chloride, calcium lactate, and calcium gluconate.

Drying a cow

- ❖ The dry period is when a cow is left without giving milk immediately after lactation period. The dry period should be for at least 60 days.

Reasons for observing the dry period

- ❖ Allow the cow to restore udder tissues before getting back to lactation
- ❖ Allow the cow to replace the minerals depleted during lactation
- ❖ To give the foetus enough time to develop and also enough nutrients
- ❖ To maintain a high future milk yield in the next lactation
- ❖ Enable the cow to gain weight before delivering
- ❖ To ensure high quality colostrum at birth

Methods of drying a cow

Incomplete milking :

- ❖ This involves milking the cow half way its production capacity so that the remaining milk in the udder exerts pressure on the milk secreting cells which will stop secreting milk.

Intermittent milking:

- ❖ The cow is milked at intervals of days and later left completely after 5 days or more.

Cessation Milking

- ❖ This is when milking stopped once for all. It causes a lot of pain to the animal and can easily result into mastitis

Dry cow therapy:

- ❖ Here antibiotics are included in feeds which will control mastitis.

BEEF PRODUCTION

- ❖ The main objective of beef production is to produce healthy young stocks, fatten them and sell for slaughter as meat.

Breeds of beef cattle in East Africa

- ❖ The main indigenous breeds are the boran and small short horned zebus
- ❖ The exotic breeds are Hereford, Aberdeen Angus, charlolais short horn and Galloway

Characteristics of a good beef breed

- ❖ Should have a high ability to mature early
- ❖ Should have a high ability to grow fast i.e. put on weight quickly
- ❖ Should have thick muscles to increase the quantity of beef produced (have a deep body)
- ❖ It should be able to breed regularly so as to increase the herd
- ❖ Should have a high ability of converting herbage into beef
- ❖ Should have a high resistance to pests and diseases common in the environment
- ❖ Should be able to survive long drought periods without losing excessive weight
- ❖ Should show a high degree of tolerance to heat

FACTORS LIMITING BEEF PRODUCTION IN UGANDA

- ❖ **Climate** : Long droughts that are rampant in many places of Uganda have led to the scarcity of pastures and water hence decreasing animal productivity.

- ❖ **Poor Soils:** Potential areas for beef production have poor soils which cannot support quality pastures for the animal.
- ❖ **Diseases:** There are a number of diseases which attack livestock in Uganda. The most notable diseases are those transmitted by the vectors e.g. ticks and tsetse flies.
- ❖ **Inadequate Extension Services:** Most farmers live in rural areas which are difficult to reach by the extension staff. This denies them an opportunity of acquiring knowledge about beef production.
- ❖ **Conservation:** Most pastoral communities in East Africa look at cattle number rather than the quality hence low production from the large number of poor quality animals in terms of beef.
- ❖ **Poor Markets:** Animal markets are poor and far from the production areas making transport to be difficult and expensive.
- ❖ **Poor Animal Breeding:** Animals are mated while young and little time is spent on selecting the right breeds that are productive.
- ❖ **Poor Management:** This can be reflected in the way records are kept and referred to if necessary. Most farmers do not keep update records and therefore animal production is difficult to judge.
- ❖ **Inadequate land:** Most areas do not have enough grazing land due to competition between crops and animal production

FACTORS DETERMINING ANIMAL PRODUCTIVITY

- ❖ **Inheritance :** This is the most important factor since as the animal received genes of high productivity, and then it can always have the potential. However, productivity is affected by environmental factors which include:

- ❖ Management: This involves proper care for the animal and observation of signs of ill health
- ❖ Feeding: Animals that are underfed will have low production and are more prone to diseases.
- ❖ Diseases: Irrespective of the animals potential of production diseases will always lower the animal's production.
- ❖ Climate; Under this, the most important factors are temperature rainfall and humidity. High temperatures of the day increase evaporation of water from the animals body which reduces milk production in lactating animals.
- ❖ Humidity: High humidity reduces evaporation of water from the animals body hence conserving it for other productive purposes like milk secretion.
- ❖ Parasites: A part from transmitting pathogens, animal parasites can extract a lot of nutrients that are supposed to be used by the animals' body.

FACTORS TO CONSIDER BEFORE ESTABLISHING A BEEF HERD

- ❖ Beef cattle may be raised under the farm herd system similar to having a dairy farm, or under the range / ranch cattle system. Under any of these systems, when establishing a beef herd there are a number of factors a farmer may need to consider.
- ❖ **Type of stock**
- ❖ Uniformity
- ❖ Size of the herd
- ❖ Health
- ❖ Condition
- ❖ Age and longevity
- ❖ Reproductivity / fertility

- ❖ Size of cattle
- ❖ Adaptability

Factors that determine the size of the herd

- ❖ The type of pasture species; high nutritive value of pastures therefore high carrying capacity
- ❖ The productivity of the pasture species; high rate of dry matter or forage for grazing means high number of stock
- ❖ The type of stock e.g. hardy types which can survive well in drier conditions and scarce pasture can be kept in large numbers.
- ❖ Availability of reserve feeds which enable a large herd to be carried through dry periods when pasture is scarce.
- ❖ Economic considerations which are usually of a long term nature e.g. Whether the farmer requires cash immediately and the cost of keeping a large number of animals.
- ❖ Topography of the land where over – stocking in hilly areas could result into a serious case of soil erosion.
- ❖ Availability of water , sufficient and available at all times
- ❖ The presence of poisonous plants and trees that should render portions of the ranch useless.

BUTCHERY

PROCEDURE OF SLAUGHTERING AN

ANIMAL a) Before Slaughter

- The animals should at all times be handled humanly, rested and starved for 24 hours. This allows emptying of the gut and reduces spoilage and contamination of meat. The resting also conserves stored body glycogen. After slaughter, glycogen is

converted into lactic acid which has a preserving effect on the meat.

- Inspection of the animal to check for any deformities, injuries, sex etc. is done at this stage.

b) **Stunning**

- ❖ This renders the animals senseless just before slaughter to reduce pain. Painless killing of animals is human and it is strongly recommended.
- ❖ Stunning can be achieved either by use of a hammer gun or electric shock.

c) **Slaughter**

- The neck of the animal is cut and its allowed to bleed by hoisting it up. Adequate bleeding is essential to reduce meat spoilage. Skinning is then followed by **devisceration** which is the cutting open of the carcass to remove the internal organs.

Inspection

- ❖ This is the postmortem inspection for infection by tuberculosis, cysts etc.
 - The carcass has to be passed for public consumption. Condemned carcasses are buried / burnt.

Grading

- ❖ The products looked for are fat, degree of marbling, texture of meat and colour. A pale colour indicates poor quality

Factors leading to poor quality of meat from animals

- Poor feeding of animals leading to disease and nutritional deficiencies
- Poor meat preservation causing putrefaction

- Diseases in animals that contaminate meat
- Parasitic infection in animals causing cysts and eggs in meat
- Age of animals i.e. very young and old animals produce poor quality
- Poor animal breed that may produce poor quality meat
- Chemical poisoning of meat by drugs administered shortly before slaughter
- Harsh treatment of the animal before slaughter through beating

HIDES AND SKINS

Uses

- ❖ Used in the leather tanning industry for making shoes, belts, bags etc.
- ❖ Source of government revenue when the government taxes the products.
- ❖ Making musical equipments e.g. drums
- ❖ Decorations in cultural centers
- ❖ Used as clothing for traditional ceremonies.
- ❖ Sources of food in some communities e.g the karamajong

PREPARATION OF HIDES AND SKINS

- ❖ **Washing:** This is done in running water to remove dung, dirt and blood
- ❖ **Draining:** The hides and skins are hanged over poles to remove water and some blood after washing
- ❖ **Fleshing:** This involves the removal of fat and meat from the hide using a knife or scrapper
- ❖ **Trimming :** Here, odd flaps at the edge of the hide / skin are removal with an aim of making a regular in shape.
- ❖ **Flaying drying**
- ❖ **Curing Preserving**

- ❖ This can be done by wet/dry salting or hanging them in frames using ropes to dry.
- ❖ **Tanning** This is the process of soaking hides and skins in chemicals such as tannic acid to soften and turn them into leather.

SOURCES OF DAMAGE TO HIDES AND SKINS

During the animals life:

- ❖ Injuries / wounds that may be caused by rough handling and sharp objects such as barbed wire.
- ❖ Some parasites like ticks can cause wounds which will eventually lower the quality of the hide or skin
- ❖ Diseases like ringworms in cattle and goats can also damage their skins by causing open wounds
- ❖ Bad branding more especially at the thigh and back will lower the quality of hides and skins
- ❖ Bad roping can cause calluses and wounds which will eventually lower the quality of hides and skins

During slaughter

- ❖ Incomplete bleeding which causes blood to remain in a hide or skin attracting microbes that may lead to putrefaction.
- ❖ Dragging carcass on the floor or over sharp objects can damage the hide

During Flaying

- ❖ Delay in flaying after killing the animal will make the whole process more difficult hence prone to more mistakes during flaying

- ❖ Use of pointed knives which may accidentally make holes in the hide/skin
- iii) Mixing the hide with dung or blood during the process of flaying the carcass attracting microbes that speed up putrefaction
- ❖ Failure to wash and dry the skin immediately after flaying can encourage rapid decomposition hence reduction in quality.
- ❖ The fresh skin should not be folded with the hair inside as these create anaerobic conditions that speed up putrefaction
- ❖ An even removal of flesh from the hide causes distortion and damage of the pattern during flaying.

d) Drying of the skin on the ground can cause the following

- Causes flaking due to over drying since temperatures are high on the ground
- The fat on the skin/hide will melt and spread all over increasing chances of microbial attack.
- Rain drops can collect on the hide/skin which may easily encourage decomposition and hence loss in quality
- The outside of the hide/skin is hard while the inside is soft i.e. There is uneven drying
- There is putrefaction of the hide/skin more especially in spots which touch the ground

Damage during transportation

- Bad packing causes the hide/skin to rub against each other which may lead to damage
- During transportation, rain can soak the hides/skin encouraging microbial action on them

Damage during storage

- Pests like the rodents and insects can attack the hides while in store more especially if stored in poor houses ii) Moisture from leaking stores can soak the hide/skins thus speeding up decomposition

END.