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# **LEARNER GUIDE**

## **Livestock Production**

### **Part 4**

## **Harvesting Animal Products**

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## Dear Learner

This Learner Guide contains all the information to acquire all the knowledge and skills leading to the unit standard:

Unit standard ID:	Unit standard title:
116390	Harvest animal products: animal production systems
116381	Investigate life threatening hazards when handling animals

You will be assessed during the course of your study. This is called formative assessment. You will also be assessed on completion of this unit standard. This is called summative assessment. Before your assessment, your assessor will discuss the unit standard with you.

It is your responsibility to complete all the exercises in the Assessor Guide. The facilitator will explain the requirements of each exercise with you. You will also be expected to sign a learner contract in your assessor guide. This contract explains responsibility and accountability by both parties.

On the document "Alignment to NQF", you will find information on which qualification this unit standard is linked to if you would like to build towards more credits against this qualification.








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## Key to Icons

	<p>Important Information</p>
	<p>Quotes</p>
	<p>Personal Reflection</p>
	<p>Individual Formative Exercise</p>
	<p>Group Formative Exercise</p>
	<p>Summative Exercise</p>
	<p>Activity</p>

## Alignment to NQF

<b>Element of Programme</b>	
1. Name of programme	Livestock Production Part 4
2. Purpose of the programme	Form part of the qualification to equip learners in Livestock Production
3. Duration of the programme	4 days of formal facilitation; 170 notional hours
4. NQF level	5
5. NQF credits	17
6. Specific outcomes	See Unit Standard Guide
7. Assessment criteria	See Unit Standard Guide
8. Critical cross-field outcomes	See Unit Standard Guide
9. Learning assumed to be in place	See Unit Standard Guide
10. Essential embedded knowledge	See Unit Standard Guide
11. Range statement	See Unit Standard Guide

12. Recognition of Prior Learning (RPL)	<p>RPL can be applied in two instances:</p> <ul style="list-style-type: none"> <li>• Assessment of persons who wish to be accredited with the learning achievements</li> <li>• Assessment of learners to establish their potential to enter onto the learning programme.</li> </ul>
13. Learning Materials	Learner Guide, Assessor Guide with Model Answers, Learner PoE workbook, Facilitator guide
14. Links of the programme to registered unit standards, skills programmes, or qualifications	<p>Registered qualification:</p> <p>Title: National Diploma: Livestock Production</p> <p>ID: 49011</p> <p>NQF: Level 5</p> <p>Credits: 249</p>

# Learning Unit 1

## Harvesting Animal Products

### Unit Standard

**116390 Harvest animal products: animal product systems**

### Specific Outcomes

SO1: Understand and identify all principles related to animal product production.

SO2: Identify and understand animal production systems and the effects of harvesting animal products on the animal and on the product.

SO3: Identify and utilise opportunities in the animal product production environment that will allow the production and processing of animal products.

SO4: Understand and implement processes and systems that will allow for the harvesting and processing of animal products.

SO5: Identify, understand and implement specific management of animals to produce products of constant quality and quantity for harvesting and processing.

### Learning Outcomes

**By the end of this unit you will demonstrate an understanding of:**

- Principles related to the production of animal products
- The effects of harvesting on animals
- New opportunities in harvesting
- The processes and systems of animal harvesting
- The management of animals to be harvested
- Food quality and Safety

Identifying

Collecting Science

Demonstrating

Working Organise

Communicating

Contributing



# 1. ANIMAL PRODUCTS FOR CONSUMPTION

In primary agriculture, production is a term that is widely used. But to what is it referring? It refers to the growing process of products that can be used either for human consumption or animal consumption.

In animal production most of the products produced are used for human consumption like meat, milk, honey, etc. these products are included but are not limited to meat, milk, bones, feathers, fibre or animal derivatives such as semen and ova.

- How do you identify animal products that can be used for human consumption?
- What is the origin of these products?
- How would you estimate the value of these products?

## Meat

There are a variety of products on the market for human and animal consumption that are products produced by animals. Most of these products like hides, meat, fibre, milk and other by-products such as bones and hooves are used widely. Insect products such as honey and beeswax are also very much in demand.

The term animal production is therefore a well-known term and referred to a lot of specific goods that is in demand. It will be difficult to handle all the aspects of harvesting the above products. In the previous level we have looked at the harvesting of a fibre product like wool and mohair.

Red meat is the collective name for meat that originates from cattle, sheep and pork. White meat is the collective name for meat that originates from chicken, turkey, duck, pigeon, guinea fowl, etc. Livestock production has developed to supply the world's demand for meat. In order to obtain the final product, it has to go through certain production and processing procedures.

Meat is very versatile, and its uses are limitless. To ensure the best quality product, there are certain parameters that give you an indication of its quality according to its specifications and grades and be aware of meat safety. If meat is handled and stored correctly, its shelf life could be prolonged, for example by using the correct packaging.

## Uses of Meat

Meat is available in fresh, frozen, canned and cured forms. Fresh meat is raw meat.

Frozen meat is also available, and it has the same food value as fresh meat. Tinned

meat has been sealed in a metal can and then heated. Meat is often canned with other ingredients, such as vegetables or gravy. Cured meat, such as ham, bacon, sausage and biltong has been treated with salt and/or sodium nitrate to control bacterial growth.

### **Origin**

Meat is animal flesh that is eaten as food. Meat consists largely of muscles, but fat and other animal tissue are also considered meat. The most commonly eaten meats come from animals that are raised for food. These animals - and the meat that comes from them - include cattle (beef and veal), pigs (pork), chicken and sheep (lamb and mutton). The meat from cattle, pigs and sheep are all classified as red meat. Chicken and fish are classified as white meat. There are several different types of meat. The names for meat from cattle and sheep also indicate the age of the animal from which the meat was taken.

- Veal is the flesh of calves less than 14 weeks old. It is light pink and contains very little fat. Veal is more tender than beef and has a milder flavour. Beef is the flesh of full-grown cattle. Most beef sold in shops comes from animals one to two years old. Beef is bright red and has white or yellow fat, depending on the food the animal was raised on.
- Lamb is the flesh of sheep slaughtered at a young age (younger than 6 months). It is red and has white fat. Lamb has a milder taste than mutton.
- Mutton is the flesh of sheep older than 6 months. It has a deep red to purple colour. Mutton has a stronger flavor and a coarser texture than lamb.
- Pork is the flesh of pigs. Pork has a light pink colour with white fat. It has a mild taste. Many cured meats, such as ham and bacon are made from pork.
- Chicken is the flesh of broilers. Chicken has a white colour with slightly yellow fat.
- Offal is the general name for various organs and glands of animals. Common offal includes brains, hearts, kidneys, livers and tongues of animals. Other offal includes sweetbreads (thymus gland) and tripe (the lining of the stomach).

### **Value**

The value of the product depends on the following factors:

- Availability.

- Demand.
- Readiness.
- Quality.
- Genetic parameters – age, fertility, reproductive performance.

## **Fibre**

In fibre production we distinguish between wool and mohair. Woollen sheep produce wool at an early stage, but that wool is of less value due to the lack of length. The older the sheep gets the longer the wool. Between 8 - 12 months the wool is at optimum length and the value are more, but it depends on the fineness of the wool (six months).

Mohair is also produced at an early stage, but here the product has the best value relative to adult goats (the fibre diameter of mohair can vary a lot from very fine fibre produced by young kids up to six months of age to coarse fibre production by rams at adult stage).

## **Semen**

In animal derivatives such as semen and ova the animal has to be mature and should be able to reproduce (fertile), before collection can be made.

## **Milk**

Milk is processed into a variety of dairy products such as cream, butter, yogurt, kefir, ice cream, and cheese. Modern industrial processes use milk to produce casein, whey protein, lactose, condensed milk, powdered milk, and many other food-additives and industrial products.

## **Skin**

Skins are by far the most important by-product and must receive special treatment to prevent damage. Skins are an important export product, and many are used within this country.

## **Offal**

Until recently it was part of tradition to slaughter a sheep or goat for the pot at least once a week. In those days, however, offal was still much in demand but today it is virtually unknown, particularly by the younger generation. This is unfortunate because not only is offal gourmet food, but it also has a high nutritional value.

What is offal? Offal is everything removed during the dressing (slaughtering) of a carcass. This includes the brains, tongue, trotters, tripe, kidneys, liver, sweetbreads and heart.

### **Liver**

Liver is a good source of complete proteins and is rich in vitamin A and the B-complex vitamins as well as mineral salts such as iron, calcium, phosphorus, copper and iodine.

- **Lamb's liver:** It is fairly readily available. Lamb's liver has a fine texture and is ideal for frying and grilling. Dark-colored lamb's liver often comes from older sheep and is less tender.
- **Calf's liver:** This liver is very tender but very scarce. It is suitable for grills and fried dishes.
- **Pig's liver:** Pig's liver has a stronger flavor and is generally used for pâtés and terrines. It can also be used in grills, casserole dishes or in sausage meat and meat loaves.
- **Ox liver:** Ox liver is freely available. This liver is less tender and has a strong flavor. Soak ox liver in salt water or milk for 20 minutes to remove some of the strong flavor. Ox liver can be used in stews, braised and casserole dishes. Ox liver is used in liver patties, liver-and-beef pies and many other well-known dishes.

### **Kidneys**

Kidneys are considered by some to be the choicest offal item. Ox, calf and lamb's kidneys are protected in the carcass by a large amount of white fat, known as the kidney fat. Pig's kidneys have no kidney fat.

- **Lamb's kidneys:** The shape of lamb's kidneys differs from that of ox and calf's kidneys. Lamb's kidneys can be fried or grilled successfully.
- **Ox kidneys:** These kidneys are the largest of all the kidney types (approximately 750 g) and have a strong flavor. Ox kidneys are usually cubed and used in stews and braises.
- **Calf kidneys:** Calf's kidneys are scarce and resemble ox kidneys but are smaller. These kidneys are tender and have a less pronounced flavor than ox kidneys. Calf's kidneys can be fried or used in stews or braises.
- **Pig's kidneys:** Pig's kidneys resemble lamb's kidneys but are larger, less tender and have a stronger flavour. They can be fried, grilled or used in stews and casseroles.

### **Tongue**

Ox tongue is most popular because of its fine texture and excellent taste. Lamb's tongues are delicious, small and tender but very scarce. Lamb's tongues are sold with the head as

lamb's or sheep's offal. Lamb's and pig's tongues are usually served whole while ox tongue is served sliced. Tongue may be served fresh or pickled.

### **Tripe**

This is the stomach tissue of cud-chewing animals. Tripe has a very coarse texture and is fairly tough and, therefore, requires long, slow cooking. Traditionally the stomach (tripe) is curried with trotters.

### **Oxtail**

Oxtail is perhaps the most popular of the animal extremities. Long, slow cooking is required to make tasty stews and soup.

### **Oils and Fat**

Edible fats are used for eating and baking and high grades oils are used for margarine. Non-edible come from condemned carcasses and from processes during the production of gelatine and bone meal. They are used mainly for the production of soap. Animal oils are used for the lubrication of delicate machinery and during the production of certain types of leather.

### **Intestines**

Intestines are used mainly in the manufacturing of sausage and polony and also for other purposes such as the supply of gut for the sewing up of wounds.

### **Blood**

The blood is caught up at abattoirs, boiled under pressure, which sterilise it, dried, ground and sold as blood meal. Blood meal is an important feed supplement.

### **Bones**

Only a limited amount of bones occurs in the abattoir and are used for bone meal, which is important ingredient of animal licks.

### **Condemned carcasses**

Owing to diseases some carcasses are not suitable for human consumption and are processed for the production of animal feeds.

## 2. HARVESTING OF ANIMAL PRODUCTS

By viewing these production systems, you should have noticed that production is time depended, so if you need products available at all times, you should have a large variety of animals at different stages of their life.

You should also have the infrastructure/ holding capacity available to make such production possible.

For sustainable matter the following factors should be considered:

- Time of harvesting.
- Harvesting methods.
- Infrastructures to enable products to be harvest.

The supply shortage of livestock products is a consequence of the traditional marketing systems, where fresh, unprocessed meat is sold at meat markets a few hours after slaughter. To provide consumers with adequate quantities of quality meat and meat products, the processing of products has become very important. Appropriate processing techniques offer the opportunity of overcoming the two main constraints to a better supply of livestock products - availability and price.

Using specific processing techniques, it is possible to produce shelf-stable meat products that can be stored under ambient temperatures. In the traditional system, the consumption of livestock products was within in a very short period.

Due to the factors above-mentioned above, meat was not available all the times. But as time passes new techniques/methods were used to maintain availability and product quality.

Here are some techniques and methods:

- Extend the shelf-life of meat by the replacement water (product's microbiological stability increases when less water is present for microbiological growth.)
- Salting, curing or smoking; suitable preservatives.
- Boiling, cooking or roasting.
- Sterilization.
- Drying of unsalted pieces of meat.

Due to the wide variety you will mainly focus on meat as animal product, but this is not limited to meat only.

### 3. READINESS FOR HARVESTING

The consumer faces an on-the-go lifestyle that demands consistent, high-quality foodstuffs that are convenient to prepare. These and other attributes are important in driving consumer purchasing of meats. Producers recognize that management practices could affect product quality and are important to consumers. You want consistently high quality, safe, and nutritious foods that are easy and convenient to prepare.

Therefore, you as producer should take the following into consideration:

- Consumers want meat products that are tender, safe, nutritious, and conveniently available.
- You should measure the consumers' acceptance and willingness to pay for new products and different product attributes.

When you harvest products (meat), you should do it as early as possible, meaning, when the animal is produced economical. *For example:* animals that are used for lamb production must be early matured so that they can be slaughtered at very early stage e.g. 4 – 6 months ( $\pm$  40 kg live mass). At this stage the animal's daily requirements are still low and its feed conversion ratio (FCR) is still high.

#### Readiness of Meat

Both beef and mutton can be harvested at different stages. Breeding stock is slaughtered only at the end of their productive lives, but their offspring are slaughtered when they will produce the best quality meat. For most mutton sheep breeds this is when a body mass of between 35 and 45 kg is reached depending on the breed.

Breeds that tend to put on fat at an early age such as the Dorper, Persian and fat-tailed breeds will be slaughtered at between 35 – 42 kg. At this stage the lambs will have very little fat and tender meat.

The mass of the carcass is approximately 45% of the live body mass of approximately between 17 – 20 kg. This will give a high-quality carcass.

Other breeds such as the S A Mutton Merino, the Dormer and other breeds that put-on fat later will produce carcasses with weights between 20 – 25 kg with the same characteristics as the lighter carcasses.

Mutton and lamb differ from each other in that lambs are slaughtered very young and before much connective tissue has developed, hence their meat is very tender. Mutton,

having more connective tissue, is less tender but also very tasty on account of its higher proportion of connective tissue. During cooking, the white connective tissue (collagen) is converted into gelatine, which makes mutton as tender and tasty as lamb.

To assess if a sheep is ready for slaughter one must measure its weight, deposition and distribution of fat on the potential carcass. There is a method that can be used to determine these qualities in the crush before the sheep is slaughtered.

While the sheep is standing in the crush one can easily feel the amount of fat deposited on the back of the animal. By placing the thumb and middle finger on either side of the spinal column at the juncture to the ribcage, when moving the hand back and forth whilst having a firm grip, the handler will feel the amount of fat distribution as a soft rubbery mass under the skin.

If the feeling under hand below the skin is still bony and sinewy it is a good indication that the animal is still too lean to be slaughtered.

By weighing the animal, the handler will also have a good idea of its readiness for slaughter and by observing the measure of muscle development on the shoulders and thighs.

Remember the modern consumer market prefers a fairly lean product which is tender and that must be the focus of the inspection.

Pork is tender meat derived from animals of approximately six months. Only carcasses of 21 kg to 55 kg are made available to meat traders for selling. Heavier and older carcasses are marked as "sausage" pork or "rough" pork and used for processed products such as sausage. "Suckling pigs" are piglets of less than three months of age weighing less than 20 kg and are popular for Christmas and special occasions.

Young cattle vary more and are mostly fed in a feedlot (a place where animals are fattened for slaughtering) until they reach the correct slaughter stage. They are then slaughtered depending on their fatness and depending on the breed. The carcass mass can vary a lot.

### **Readiness of Fibre**

The animal produces wool, mohair, cashmere and other fibers from birth, but the fiber diameter and length play an important role in the quality and price of the final commodity. The wool and hair produced by the young merino lamb or Angora kid, respectively, will attain better prices at auctions than that of older animals.



Wool and mohair is sheared at certain stages. Wool will be sheared, most of the time between eight to twelve months of growth. That will produce a fiber with a length of between 50 – 60 mm for eight months of growth and 80 – 90 mm for twelve months of growth.

Depending on the breed, it will either produce wool with a fiber diameter less than 20  $\mu$  for fine wool, between 20 $\mu$  and 21 $\mu$  for medium wool and more than 22  $\mu$  for strong wool. The fiber diameter of merino wool will be determined by the age of animal, breed of the merino; whether it is fine, medium or strong wool animal as well as the diet it receives during the wool growth period.

The length of hair growth in Angora goats is determined by the growth period but the fibre diameter is influenced primarily by the age of the goats. Young kinds up to 6 months of age will produce hair that grows approximately 25 mm a month depending on the availability of adequate, nutritious food. The fibre diameter of the hair will be in the range 20 $\mu$  to 25 $\mu$  and will be the most sort-after hair on the market.

The next 6 months will produce hair with more mass but also with a thicker fibre diameter of between 25 $\mu$  and 30 $\mu$ . The length grown will be more or less the same: 25 mm per month of growth. The growth rate will vary very little if a constant feed supply is given. The fibre diameter will increase up to 34 – 38 $\mu$  in the peak adult stages depending on the breed and nutritional level of the goat.

As mentioned above the biggest factor determining the readiness of wool to be harvested is its length. The length of wool that is sheared may vary but should be at least 50-60 mm. This length is measured on the back of the sheep to be sheared behind the shoulders. When measuring the length of the wool the handler can also assess the quality fines of the wool to be shared by using his/her senses

### **Factors That Impact Wool Quality**

The following will give you an idea of the quality of the wool.

**Color:** An off white, creamy color that shows of shiny in direct sunlight is preferable.

**Lanolin:** When touching wool of high quality, a fair amount of lanolin must be felt between the fingers.

**Foreign material:** Check for foreign material within the wool e.g. seeds, thorns etc. that has a detrimental effect on the wool.

**Tip:** The tips of the wool tufts must be stained dark to give the handler an idea of the amount of lanolin and the flow thereof to the tips of the individual strands of wool.

**Fiber crimp/ curvature:** The higher the crimp frequency of the fibers the finer the thickness of each fiber. This will give the handler an indication of the expected **micron /  $\mu$**  that can be measured when the wool is sampled at the factory where it will be processed for different uses. The finer the wool, the higher the marked value thereof.

### **Readiness of Feathers for Harvesting**

Feather production in geese and ducks will depend on the growth stage of the feather. As long as the feather grows, it will be unsuitable for plucking. If the feather-stem is dry it is an indication that the feather is mature and then the feathers can be plucked as well as the down. The down is used to make very light commodities like sleeping bags and light, puffed-up blankets like eiderdowns and comforters.

The **down** is very soft and light. These are the soft feathers that are found amongst the bigger feathers.

Ostrich feathers are harvested at the mature stage. The feathers are either plucked or cut with a side cutter depending on the type of feathers. Feathers from the wings are more sort-after than the body feathers.

## **4. HARVESTING OF MEAT**



Abattoir which means ("to strike down"), is a facility where farm animals are killed and processed into meat products. It can also be called a slaughterhouse. (Meat, in its broadest modern definition, is all animal tissue intended to be used as food. In this context, it not only refers to muscle tissue, but also includes fat or non-muscle organs, including lungs, livers, tongues, skin, brains, marrow, and kidneys. )

The animals most commonly slaughtered for food are cattle (beef and veal), sheep (lamb and mutton), pigs (pork), poultry, and horses (mostly in Europe).

The design, process, and location of slaughterhouses respond to a variety of concerns. Slaughtering animals on a large scale poses significant logistical problems and public health concerns. Most religions stipulate certain conditions for the slaughter of animals. Public aversion to meat packing, in many cultures, influences the location and practices of slaughterhouses.

## **Process**

Meat goes through many operations before it hangs dressed in cold stores. Skilled workers perform these operations with great speed. The animals are stunned before they are slaughtered and dressed. After slaughtering the carcasses are suspended from an overhead rail for the dressing operation, in which the hide and internal organs are removed.

Further along the line various trimming procedures are performed. By the time it reaches the end of the chain the carcass is clean, "dressed" and ready for chilling and classification. After slaughtering and dressing, the carcasses are inspected by a meat inspector to make sure that it is fit for human consumption.

Diseased carcasses are destroyed or sterilised and turned into meat-meal and bone meal, which are used mainly for feeding livestock. In the case of the beef parasite known as "measles", carcasses with a very light infestation are frozen at -10°C for ten days. This renders the cysts harmless and the meat fit for human consumption.

At abattoirs that participate in the voluntary classification system, the carcasses are classified according to certain characteristics (see "Specifications & Classes"). Roller marks, which tell the consumer more about the meat, are put onto the carcasses.

After classification, traders buy the carcasses. The meat trader then sells it to the consumer in the meat market. The carcasses are transported from the abattoir to the meat market by a refrigerator-truck. The carcasses are hung in large cold rooms at the meat market.

## **Steps in Slaughtering**

The steps in harvesting Halaal and Kosher meat:

1. Animals are received by truck or rail from a ranch, farm, or feedlot.
2. Animals are herded into holding pens.
3. A pre-slaughter animal inspection is conducted.
4. Animals are rendered insensible (unconscious - lack of responsiveness to people and other environmental stimuli) by stunning - the process of rendering animals immobile or unconscious prior to their being slaughtered for food (method varies).
5. Animals are hung by hind legs on processing line.
6. The main artery is cut, the animal's blood drains out and the animal dies.
7. Animal's hide/skin/plumage is removed.
8. Carcass is inspected and graded by a government inspector for quality and safety.
9. The carcass is cut apart and the body parts separated.
10. Meat cuts are quickly chilled to prevent the growth of micro-organisms and to reduce meat deterioration while the meat awaits distribution.
11. The remaining carcass may be further processed to extract any residual traces of meat, usually termed mechanically recovered meat, which may be used for human or animal consumption.
12. Material not destined for human consumption is sent to a rendering plant.
13. The waste water generated by the slaughtering process and the cleaning of the slaughter house is treated in a waste water treatment plant.
14. The meat is transported to distribution centres that distribute to local retail markets.

## **Skinning**

When discarding of a carcass, you may decide to skin the animal to benefit from the hide (financially or for own purposes such as clothing and furniture).

There are many ways of skinning a carcass. The carcass may be skinned on a bench or hanging up. There are also various cuts that can be used.

Choosing a technique will depend on the size of the carcass and personal choice but the key element is about creating flaps of skin to pull.

For those who take pride in preparing a well skinned carcass, the end product should have no hairs on it, no bloody fingerprints, no knife marks, a striped bacon-like appearance on the back and flat joints.

## **Preparation**

The starting point for this guide assumes that the carcass has been gralloched (disembowelled) and lardered (placed ready for processing). In practice it is easier to skin an animal before rigor mortis has set in.

Begin by washing down the work area, equipment, hands and forearms.

Skin the carcass as soon as possible.

When skinning the carcass, it may be useful to leave the chest and pelvis closed. The pluck however, should be removed and inspected beforehand. The head and legs may also be left on to assist handling the carcass during skinning.

Either hang the carcass by each hind leg on two fixed or anchored hooks or lie the animal on its back on a larder bench.

Work systematically from one side of the animal to the other. It is helpful to have someone hold legs or to tie legs to the bench.

## **Cuts**

The figures below detail the key cuts to be made. The position of these cuts can vary between practitioners and will depend on whether the carcass is hanging or on a bench. The following suggested technique is based on the carcass being skinned on a bench. If skinning with carcass hanging up, then make cuts accordingly to allow downward tension on flaps of skin.

The key is to minimise the number of cuts and ensure that there are flaps of skin for gripping to assist with skinning.

Keep your hand clean at all times by periodically washing in water. Having a wet hand also helps your hand or fist slide between the skin and the carcass easier.

Use one hand to hold the skin and to apply tension to peel away the skin while the other hand can be used to break through the connective tissue between the skin and the carcass.

It is good practice to use the knife to ensure that the skin is being separated from the carcass and not taking a layer of tissue with it.

To prevent hairs being cut and contamination from hair into skin, make cuts to the skin from inside/underneath the skin outwards (see Fig. 2).

Cut A: Cut through skin only over the sternum from bleed hole in neck up to breast bone. Make cut over length of pelvis. Remove penis or udder.

Cut B: cut from bleed hole to under the jaw (this may have been partly done during the gralloching process\*\*). Care should be taken around the neck area to limit the amount of blood spilling onto carcass.

Cut C: Make a cut through skin in a line down front leg knee to chest to join up with Cut A creating a flap (see E in Fig. 1). This rectangular flap can be pulled to create tension.

Use hand or fist to push skin from carcass around the front leg.

Pushing an arm between the leg and skin can be used to free skin around leg.

There is an option to cut through skin in a line around the knee. Alternatively cut off leg at flat joint once skinned leaving front leg attached to skin. This provides a weight that pulls the skin away from carcass.

Use your fist to push the skin away from carcass over the flank. Note a knife may need to be used to help start the separation of the soft tissue around the flank from the belly.

Push the skin away from carcass working as far back towards the backbone as you can.

Cut D: From cut A make an incision down the leg to groin/pelvis area.

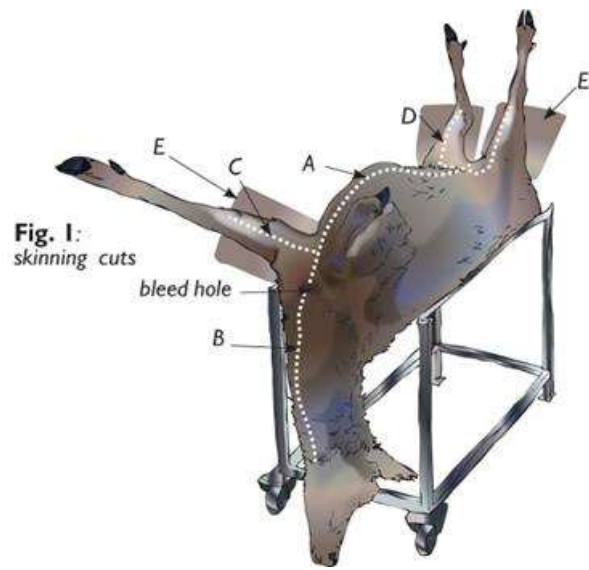
Use flaps of skin (see E in Fig. 1) to help skin the back leg as with the front leg.

Use fist to push skin back towards the backbone.

Repeat whole procedure on other side of the carcass.

Hang carcass up. The only area of skin attached should now be the very centre of the animal's back. If there is any skin left on back, work skin towards the tail rather than pulling down as the skin may break. Cut through the tail at anus, leaving attached to the skin.

Pull skin downwards only when over the neck, using a steady pressure. Use one hand to hang onto the carcass, and the other to pull the skin down enough to expose the atlas joint.



**Figure 1**



**Figure 2**



**Figure 3**



**Figure 4**



**Figure 5**

## **After Skinning**

Cut the head off at the atlas joint.

Check the carcass for warbles and remove.

If carcass has been skinned with the chest and pelvis closed, consider splitting them at this stage. Remove the anus when the pelvis is split. The benefits of this should be balanced with cutting into the meat and exposing surfaces when there may be no need.

Leave the carcass hanging in the larder initially to enable the carcass to cool slowly and steadily in the first six hours after skinning. This will ensure the full and rapid onset of rigor and will prevent cold shortening of the soft muscles in the carcass.

Thereafter carcasses should be stored at 7 °C or below.

## **Processing and Presentation**

Meat was originally processed to preserve it, but since the various procedures cause so many changes in texture and flavour it is also a means of adding variety to the diet.

Processing also provides scope to mix the less desirable parts of the carcass with lean meat and in addition is a means of extending meat supplies by including other foodstuffs such as cereal in the product.

Meat is a highly perishable product and soon becomes unfit to eat and possibly dangerous to health through microbial growth, chemical change and breakdown by endogenous enzymes.

These processes can be limited by reducing the temperature sufficiently to slow down or inhibit the growth of micro-organisms, by heating to destroy organisms and enzymes (cooking, canning), or by removal of water by drying or osmotic control (binding the water with salt or other substances so that it becomes unavailable to the organisms).

It is also possible to use chemicals to inhibit growth and, very recently, ionising radiation (however, the latter is not allowed in some countries).

Traditional methods that have been used for thousands of years involve drying in wind and sun, salting and smoking. Canning dates from early in the 19th century and allows food to be stored for many years since it is sterilised and protected from recontamination.

Processed meats are products in which the properties of fresh meat have been modified by the use of procedures such as mincing, grinding or chopping, salting and curing, addition of



seasonings and other food materials, and, in many instances heat treatment. Most of these processes extend the shelf life of meat. Their manufacture, in most instances, depends on the ability of the mixture to retain water since they are emulsions of protein, fat and water.

### **Chilling and Freezing**

While mechanical refrigeration is a modern process it is known that the ancient people kept food cool with ice. "Chilled" meat is usually stored at temperatures around 1 °C to +4 °C when it keeps well for several days. Provided that the meat is kept very cool (1°C to 0°C) and that slaughter and meat cutting are carried out under strict hygienic conditions, modern packaging techniques including storage under carbon dioxide or in vacuum can extend this period to about 10 weeks.

Chilling at temperatures very close to the freezing point of meat, -15 °C, diminishes the dangers of most pathogens and slows the growth of spoilage organisms; growth of some organisms, moulds, virtually ceases at -10 °C.

Most pathogens (*Salmonella*, *Staphylococcus* species and *Clostridium*) are inhibited by cooling but pathogens can grow at + 2 °C, some *Salmonella* species at +5 °C.

Non-pathogens include *Pseudomonas* species, which predominate on the exposed surface of chilled meat, and *Lactobacilli* on vacuum-packed meat.

Freezing - commercially at -29 °C and domestically at -18 °C - is now a standard method of preserving for periods of 1-2 years but there is some deterioration of eating quality compared with fresh or chilled meat.

However, there are problems in chilling and freezing meat. If it is cooled too rapidly below 10 °C before the pH of the muscle has fallen below a value of about 6, the muscle fibres contract (cold shortening) and the meat is tough when cooked.

This problem applies more to small animals, such as lamb, which cool down rapidly. The modern procedure is to cool the carcass to 10 – 15 °C ("conditioning") and to hold that temperature for a few hours until the pH has fallen to 6 °C.

Beef carcasses can be suspended in such a way as to exert a pull on certain muscle to prevent contraction. Another method is to apply electrical stimulation to the carcass after slaughter (low volt) or after evisceration (high volt) for 2-4 minutes to bring down the pH rapidly.

Another problem can arise during thawing of pre-rigor frozen meat when the muscle contracts and exudes a substantial part of its weight as tissue fluids. Clearly, freezing

of meat is not a straightforward procedure and calls for certain expertise. Only post-rigor meat should be frozen.

Meat is frozen without any prior treatment, unlike vegetables, which have to undergo a preliminary blanching process to destroy enzymes involving considerable loss of water-soluble nutrients. So, there is little or no loss of nutrients during neither the freezing procedure nor, so far as there is reliable evidence, during frozen storage - apart from vitamin E.

### **Curing**

Curing was originally a term applied to preservation in general but is now restricted to preservation with salt (sodium chloride) and sodium or potassium nitrite or nitrate or a mixture of these two salts. The nitrate serves as a reservoir for nitrite - the active compound - since bacteria in the curing solution form it from the nitrate. The use of salt is one of the oldest methods of preserving meat since at concentrations greater than 4% in the aqueous phase it inhibits the growth of most spoilage organisms.

### **Smoking**

Meat has been treated with smoke from the earliest days - traditionally over a wood fire and more recently by producing smoke from wood sawdust in a generator and conducting the smoke over the meat.

The substances deposited on the meat contribute to the flavour and appearance but with ordinary, light smoking the preservative effect is limited and the product has to be stored refrigerated.

Intensive smoking does prolong shelf life both by heavier deposition of preservatives and by the drying effect of the hot air, but it has a detrimental effect on flavour. Consequently, preservation by smoking is regarded as an emergency measure when other methods cannot be used.

A modern development making use of the flavouring effect is to use an aqueous solution of the constituents of smoke, which reduces the amount of strongly flavoured and other unwanted substances.

### **Drying**

Micro-organisms cannot grow unless there is sufficient moisture available to them and drying meat under conditions of natural temperatures and humidity with circulation of air and the assistance of sunshine is the oldest method of preservation.

Muscle meat of almost any kind can be dried but it is necessary to use lean meat since fat becomes rancid during the drying process. Drying involves the removal of moisture from the outer layers and the migration of moisture from the inside to the outside, so the pieces of food must be thin. The meat is cut into long thin strips or flat thin pieces and preferably salted, either dry or by dipping into salt solution, to inhibit bacterial growth and to protect from insects.

### **Canning**

Micro-organisms can be completely destroyed by heat (sterilisation) but a sterile product can be readily re-contaminated unless it is protected. This is achieved by heating in an airtight can or bottle, or, more recently, in a heat-resistant or aluminium foil-laminated plastic pouch.

The procedure is to seal the food into the container and then heat it under pressure in an autoclave (retort) to the required temperature for the required length of time and to cool rapidly to avoid overheating.

Overheating results in too soft a consistency and a burnt taste. It is not always possible to destroy all the organisms without excessive heat which would spoil the product, so the objective is to destroy the greater proportion of the organisms when the remaining few pose no hazard so long as the container is cooled rapidly and stored below 20 – 25 °C.

## **5. HARVESTING OF WOOL / FIBRE (SHEARING)**

### **Length**

A very important component of production. Length of wool results in more distance (length) to spin.

### **Density**

Also determines production. Density: Amount of fibres per skin area. Balance between length and density is important. Too dense retards length, too little, wool becomes loose and watery and thus clean yield becomes a problem.

### **Fineness**

Wool testing below 19 micron falls into a specialty group and therefore fineness is a important economic factor.

## **Quality**

This is the uniformity of wool over the body or fleece of the sheep — the depth of crimp, kindness of handle and the absence of foreign fibres such as Kemp and hair. The buyer also recognizes quality as good and health growth (tensile strength)

## **Staple, Bulkiness and Tip**

Staple — is the number of fibbers per surface skin area and it protects the fibre.

Bulk - is also a combination of the number of fibbers per skin surface. Wool feels bulkier in shorter than in longer wool.

Tip - The amount of yolk will determine how the tip will look or appear. Frequently a black tarry tip points to a loose, watery wool. Every fibre brings its yolk to the tip. This is not very desirable because buyers cannot determine whether all the yolk will wash out. Sometimes it results in a yellow colour after the washing process.

## **Yolk and Colour**

The wool buyer looks for a white wool with a light fluid yolk. In practice the same applies. Heavy yellow yolk results in problems with management, because the wool on the sheep does not dry quickly after rain and it then becomes a paradise for external parasites such as blowfly and lumpy wool.

## **Belly and Points**

The ideal is a good covering on the belly and points. This area constitutes approximately 30% of the fibre, bearing area. Be aware of over development which ensures good underlines, but results in other problems such as the wrong type of sheep and lower fertility.

NB: Maintain a balance between conformation and wool.

## **Determine your goals:**

- Body mass 55 kg meat production per hectare.
- 100% weaning percentage meat production per hectare.
- Wool production / big ewe 4.5 — 5 kg lambs included.
- Wool production per hectare lams included.
- Fineness below 19 micron, lambs included.



### **3: Individual Formative Exercise: Visit to an abattoir**

# Learning Unit 2

## Handling Animal

### Unit Standard

**116381 Investigate life threatening hazards when handling animals**

### Specific Outcomes

- SO1: Understand and identify all principles related to animal behaviour.
- SO2: Identify and understand animal behaviour systems and the effects of inappropriate management on the animal resulting in dangerous defensive behaviour.
- SO3: Identify and utilise resources that will allow the safe containment and shelter of animals.
- SO4: Understand and implement processes and systems that will show an understanding of the causes and effects of defensive behaviour.
- SO5: Identify, understand and implement specific management systems to allow for safe animal management in the event of defensiveness.
- SO6: Develop and manage programmes that cater for the treatment of injured animals and their human managers.

### Learning Outcomes

**By the end of this unit you will demonstrate an understanding of:**

- Understand defensive behaviour in animals
- Know the most effective ways of responding to problem animals
- Know how to minimise risk when dealing with defensive behaviour in animals

Identifying

Collecting

Demonstrating

Working

Science

Contributing

Organise

Communicating

# 1. HANDLING ANIMALS

There is a lot of routine work that goes on, on a farm. That is work that the farmer and the worker do every day to care for the animals and sometimes to harvest products of the animals such as feeding cows and milking them routinely. To do most of the routine work on a farm it is necessary to come into contact with the animal or to handle them.

## Routine Procedures

The following procedures will take place routinely on most farms.

- Moving the animals from one point or camp to another.
- Counting, sorting, transporting and housing the animals.
- Branding, tattooing or applying other identification marks to animals.
- Grooming / washing of animals.
- Harvesting of animal products such as milk, wool and mohair.
- Breeding females.
- Castrating of males operation in sheep.
- Perinatal care and foster rearing of young animals.
- Administration of health care products such as drenching and inoculating.
- Caring for the hooves of farm animals.

## Situations a Handler Needs to be Aware of

- Driving animals from one place to another can stimulate a defensive behavior if the animal feels threatened in the process of being moved.
- When you have confined animals in a crush to administer medication such as dosing, injections and inoculations, you should expect resistance and defensive reactions because the animals are confined and feel threatened.
- Defensive behaviors will most certainly occur if you intrude too closely to the young of an animal. The mother (and sometimes also the father) will defend its young.
- Threats caused by other animals may also stimulate defensive behavior.
- Similarly, loud sudden noises or sudden movements can also scare animals to defend themselves.
- When an animal has repeatedly been hurt through beating, whipping or prodding, then it may react aggressively to a person holding a whip or a stick.
- When males are in rut they are particularly aggressive.

## **2. PROBLEM BEHAVIOUR**

The most common problems that are encountered in the handling and feeding of animals are usually as follows:

- Breaking out of confinement and straying.
- Breaking equipment, facilities and infrastructure.
- Refusing to enter buildings / facilities / cages / transportation / confined areas etc.
- Struggling during handling.
- Threatening and / or attacking humans or other animals.
- Self-mutilation (hurting /harming themselves)
- Accidental injury to the animals themselves.
- Injury due to competition and pecking-order fights.
- Abnormal defensive behaviour as a result of some disease such as rabies or mad cow disease.
- Attacking people or animals in the vicinity. A good example of a type of animal/insect attacking people or animals is honeybees. When the people working with the bees wear protective gear then the bees may attack people in the vicinity not wearing protective gear.

It is always better to feed animals separately in pens or feed animals of the same age and size together. Where it is not practical then you must make sure that there is enough trough space and ration so that there will be limited competition among the animals.

## **3. DEFENSIVE BEHAVIOUR**

Most domesticated animals will normally be no threat or danger to the person that handles them. When handled inappropriately, some animals will tend to behave defensively and pose a threat or danger to its handler.

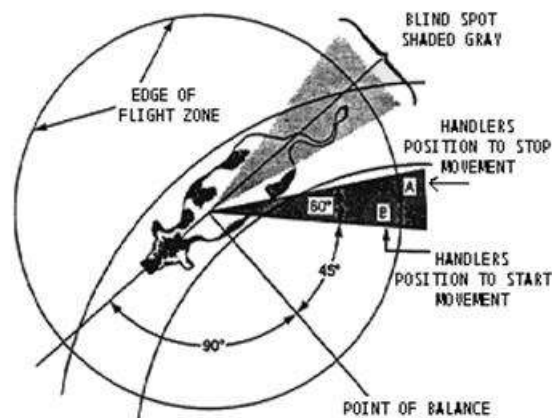
As it is impossible to expect any one learner to know everything about all animals and their behaviour, this module will allow learners to select the specie(s) (types of animals) of their choice and concentrate on them, however some general principles in handling animals need to be upheld. This material will therefore only cover the generic aspects of animal behaviour. As a learner you will be encouraged to bring any specialized knowledge you have acquired to the classroom to share with other learners.

It is also very important that you understand that animals such as beef cattle that are normally kept on extensive grazing (open grazing) veldt are not as tame as dairy cows. You



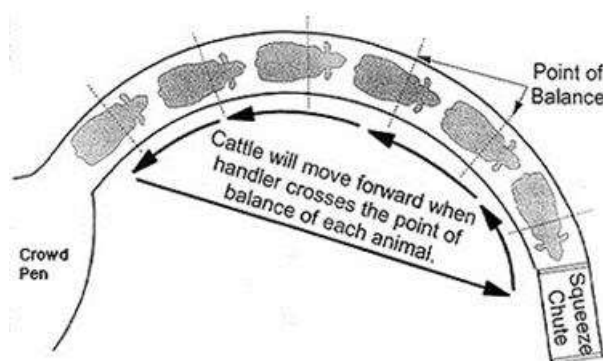
must therefore be careful when you approach such animals in the field especially when they have young calves.

A big part of this study will be undertaken as observation of animals in their environment. Herdsmen need to respect the animal's territory and be careful when approaching them. Your presence can be the reason why the animal becomes defensive. Like humans, animals have a personal space within which they will become uncomfortable when approached. Experienced herdsmen know how to keep a critical distance/flight zone during herding and handling (Figures 1, 2 and 3).



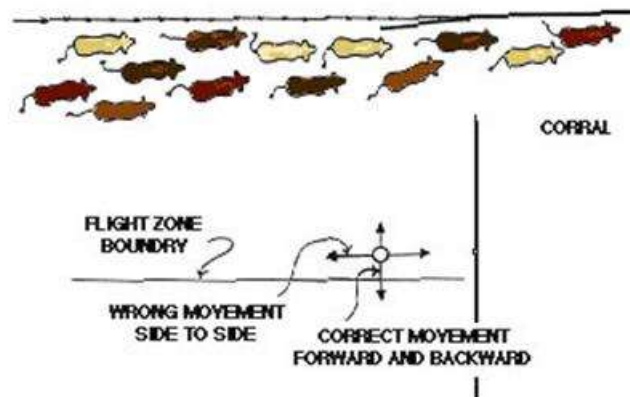
**Figure 1**

This diagram illustrates the general flight zone of an animal. The actual flight zone of an individual animal will vary depending on how "tame" the animal is. An animal's flight zone will vary depending on how calm it is. The flight zone gets bigger when an animal becomes excited. The flight zone is also bigger when you approach "head on". Calm cattle are easier to move. If cattle become excited, it takes 20 to 30 minutes for them to calm back down.



**Figure 2**

Handler's movement pattern to keep cattle moving into the squeeze chute in a curved chute system.



**Figure 3**

Using the principles of flight zone behaviour, a handler is able to move cattle into a pen in a calm and orderly way. Using the positions shown on this diagram will enable the handler to control the flow of cattle through the gate. Cattle movement can be slowed or speeded up by moving forward or backward.

### **Possible Responses to Defensive Behaviour**

To study different species' or animal types' normal as well as its defensive behaviour you need to study them in their natural environment. Therefore, you must choose species that are easily found in your area. In order to understand what constitutes "defensive behaviour" it is important to have a very clear idea of what constitutes "normal" behaviour and how this varies during the different lifecycles of the animal.

For the purpose of this study "defensive behaviour" is defined as any animal behaviour that may pose a threat or risk to another animal or human being. Animals will thus display defensive behaviour to humans and other animals within and between species. The "kiewiet" that makes a noise and runs around to distract the intruder from its eggs or young express defensive behaviour but does not pose a threat to anything.

Knowledge of animal behaviour is not something that is picked up overnight from books. It is therefore important for you to expose yourself to different situations of dealing with animals as often as possible.

Long-term observation will help with future identification of abnormal behaviour patterns.

## **Ways of Responding To Defensive Behaviour**

The first would obviously be – Get out of the way!! Get out of the camp, or the pen, or the crush, or the corner, or the room, or the space that you are in with the animal. Get out of the animal's way! The reason is to avoid injury to yourself, a bystander or the animal. Getting out of the way will then give you a chance to think about the most appropriate next step.

The following assessment of the situation can then be done:

- Is there something (other than yourself or a bystander) which is causing the animal to respond defensively? For example: there may be a barking dog or a snake in the animal's space. Or, maybe there is a thorn between the animal's hooves, or the animal may be injured (internally or externally) and is in extreme pain.

Once you have determined what the problem is, you can then respond as follows:

- Remove that which is causing the defensive behaviour – For example: the dog or the snake.
- If the animal is acting defensively because it does not want you to handle it, it may be necessary to subdue the animal.

## **Situations That Can Trigger Defensive Behaviour**

Certain things have to happen to an animal for it behave defensively. These have to do mainly with handling practices. Some of the things that stimulate defensive behaviour in animals are:

### **Shouting**

Most domestic animals are irritated by shouting especially if they are not used to it. For example, dogs that are used to gentle handling can easily bite you because they are stimulated to defend themselves.

### **Stress**

Animals can experience stress because of unpleasant environmental conditions. Stress can result in animals showing strange physical behavior such as defensive behavior because the animal will become very irritable. Causes of stress can be pain, unfavorable living conditions such as very cramped housing and poor ventilation, and transportation (especially long-distance transportation can cause the animals to be very irritable). However, some animals are more tolerant than others,

for example, sheep and cattle are more tolerant to painful stimuli than horses, dogs and cats.

### **Beating the animal**

Beating the animals painfully can immediately stimulate defensive behavior, especially if the animal is a less tolerant animal such as a horse or dog.

### **Manipulation**

This refers to stressful activities that include vaccination, castration, separation and transportation that can be very stressful to the animals such that its defensive behavior is stimulated.

### **Threatening the animal**

When animals are purposely threatened, either by your body movements or shouting, it can be an immediate stimulus to an animal to defend itself.

Thus, if you avoid doing these things the chance of eliciting a defensive reaction will be reduced.

## **4. HANDLING ANIMALS**

### **General Principles**

- The approach and all actions should be done in a calm and unruffled manner. Avoid a wild approach.
- Sounds and noise should be limited to a minimum, especially with single animals.
- Animals should always be talked to first, to make them aware of the presence of the handler. Individual animals in particular, should be addressed in a quiet, even and calming way.
- Any action or movement should be performed slowly and deliberately. Sudden movements will cause animals to become excited and restless.
- The safety of the operator and his assistants should be the first consideration.
- The safety of the animals, causing of injury and unnecessary pain must be considered.
- Always ensure that assistants know exactly what they must do.
- See to it that the best available aids are at hand.
- Use the most suitable facilities that are available for the particular purpose or that can be constructed easily and practically. This is necessary for effective handling and will also save much time.

- Individual animals should always be caught and controlled by people they know and by whom they are normally handled.

## **Approach to Animals**

The approach to animals will depend on the following factors:

### **Kind of animal**

For example, the approach to horses is totally different from that of cattle, sheep or pigs. The approach to dogs and cats differs and is altogether different from that of the other species.

### **Breed**

A Thoroughbred or American Saddle is more highly-strung and nervous than a Percheron or Boerperd and should be approached more calmly. Similarly, there is a big difference in temperament between for example Afrikaner and Friesland cattle, Merino and Namaqua Africander sheep, Boer goats and Angora goats, etc.

### **Sex**

Male animals are generally more aggressive than female animals, for example, a Jersey bull as compared to a Jersey cow, a ram as compared to an ewe, etc. Male animals are also physically stronger than female animals.

### **Age**

Older animals are usually calmer than younger animals. On the other hand, older animals may be more aggressive e.g. an old bull or ram. Young animals should always be handled in the presence or with the aid of tame ones and preferably their mothers.

### **Individuals or groups of animals**

The approach to a single horse is different to that of a number of horses or a single cow or sheep to that of a herd or flock.

### **Tame or untamed animals**

This will immediately determine the approach to be followed, for instance a tame horse can easily be approached and caught, while other methods must be used with an untamed one. A tame animal could, however, have acquired certain habits.

## **Different Approaches Apply To Different Animals**

### **Horses**

The first thing to do when approaching a horse is to make it aware that you are coming by means of whistling softly whilst walking towards it and talking softly as you come close to it. Unless a horse is very tame, it must always be driven towards a corner of the kraal, fence or crush and whilst doing all this, your hand must be lifted and stretched slowly and gradually until you softly touch the neck. Gradually touch the neck until you gently reach to the head and rub it gently. Then put the halter on the head. If the horse is too wild it may be necessary to use a crush pen. In some instances, tame animals may be used to press the wild one or, in the case of young horses, the presence of their mothers can be used as a means of catching them.

### **Cattle**

Handling cattle depends on the breed. For example, handling dairy cattle is easier than handling most beef cattle. Dairy cattle are usually tame because they are always handled in the milking sheds and thus they are generally familiar with handling. Bulls, whether they are dairy cattle or beef, must be always handled with care. A crush pen or paddock may be used to catch them. When handling bulls, one must never use bare hands only. A bull pole should be handled using a nose ring. Calves can be handled well in their calf pens. When working with animals, one must always be calm and avoid too much whistling and abuse to them.

### **Sheep and Goats**

Goats and sheep are usually easier to handle than large stock. No talking is required when handling them. If one wants to catch a goat or a sheep, it is always better to do this in kraals or crush pens unless sheepdogs are used which can assist in rounding the flock up and directing them towards a gate or kraal. A sheep or goat can be caught with its hind leg from behind or with its horns if it has horns. Too much whistling should be avoided when working with sheep or goats.

### **Pigs**

Pigs can be driven together if they are a group. Also, when handling pigs, they should be approached from behind and this can be done in their sty. Special crush pens can be used for pigs when available.

## **Dogs and Cats**

The best persons to handle these animals first are their owners before a stranger comes along. They are not handled as a group but as individuals. One should handle them calmly. Dogs and cats must be approached directly from the front slowly and calmly. When approaching a dog, you must stretch your hand slowly from a distance and gently touch its head first.)

## **Correct Handling Equipment**

Having access to good handling infrastructure / facilities goes a long way to create a safe environment in which to handle animals. Points to bear in mind when designing and constructing handling facilities are:

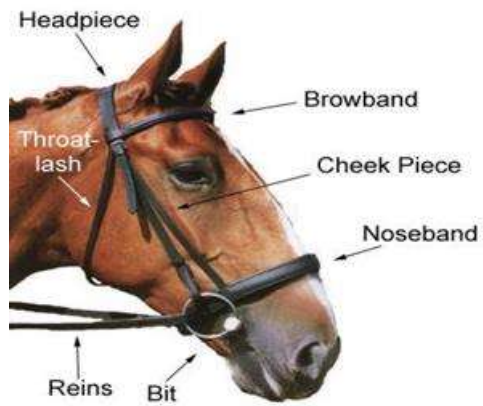
- Use strong and durable materials that can withstand heavy and sudden weight, are easy to clean and do not readily splinter.
- Ensure that floor surfaces are suitably rough to prevent slipping of animals and humans.
- Construct handling facilities under cover or in a shady and wind protected area so that workers do not tire too quickly, and animals do not get agitated in extreme weather conditions.
- Fences and gates need to be in a good state.
- Electric fences need to give a good strong signal to be effective - check the volt reading regularly. Avoid chasing animals towards an electric fence. They will ignore the fence and break it.
- Different species need different sizes and shapes of infrastructure.
- All movable parts of the handling facility need to be free-moving (grease or oil joints and hinges from time to time)
- All stables, boxes, crates etc. that are to be used to contain animals, need to be thoroughly checked before they are used. Special attention should be given to sharp objects and loose wires in the handling areas.
- Other potential risks when working with animals include such aspects as:
  - Poisoning by venom.
  - Contraction of tetanus as a result of injury by an animal. (It is advisable to have yourself and the animal vaccinated against tetanus).
  - Contracting a variety of zoonotic diseases such as brucellosis, TB, Rabies, endo-parasites, mad-cow disease.

It is for the prevention of such problems that Bio-security regulations should be applied.

## 5. RESTRAINING ANIMALS

### Physical Restraining the Animal

#### Halters



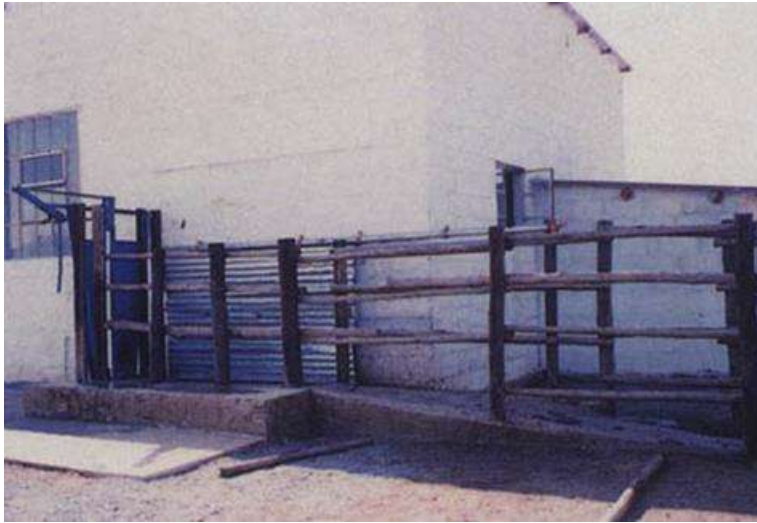
A Bridle is used to handle a horse



A halter can be used in almost all ruminants especially if you want to lead it calmly



## Crushers



An example of a crush made with wooden poles



An example of an animal weighing scale with a clamp to catch the animal



An example of crush pens and clamps that are designed to handle cattle



A sorting area to handle cattle and a clamp to catch them



Modern handling equipment used for sheep and goats





Modern handling equipment used for sheep and goats



Modern cattle and sheep crushes used to move animals onto trucks, into scales, and into kraals.



Modern cattle and sheep crushes used to move animals onto trucks, into scales, and into kraals.

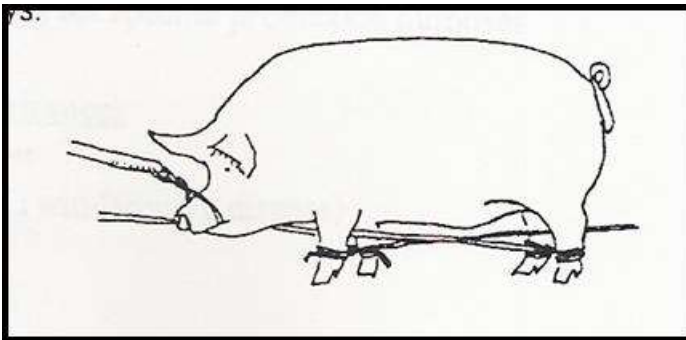
## Throw Lariats



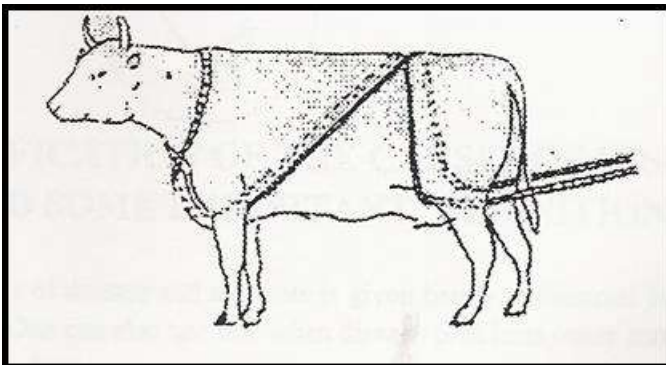
These are ropes used often by cowboys to catch and hold animals such as cattle and horses

## Casting

The throwing over of an animal so that it can be managed on the ground.



Ropes are used for casting a pig



Ropes are used for casting a cow

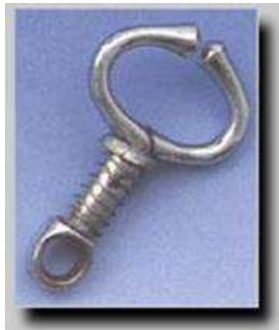
## Handheld Nets



## Trap Cages



## Bull Holder / Nose Clamp



## Chemically Restraining the Animal

- Tranquillizers are compounds that calm or quiet anxious animals. For example: Neuroleptics (ACP) or anti-anxiety drugs like valium.
- Sedatives are used to relieve irritability or excitement
- Anesthesia can be provided (either complete or partial) which causes a complete loss of feeling or sensation and muscle relaxation (This can be done especially if the animal needs to be operated on).
- These compounds can be administered either intravenously (difficult with an anxious animal), intramuscularly (easier to administer) or with a blow dart or darting gun (if the animal is impossible to approach).

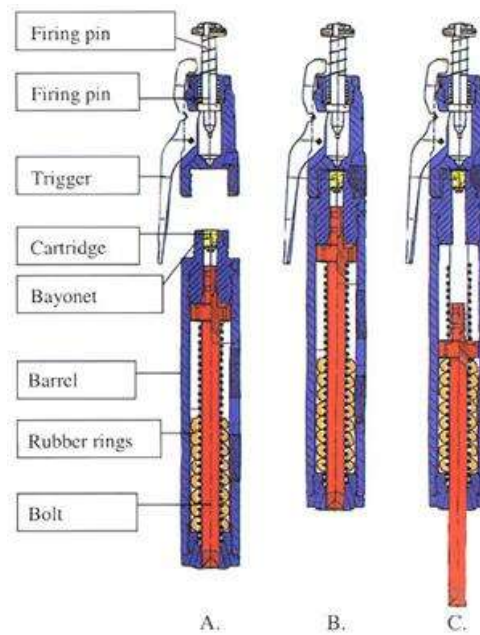


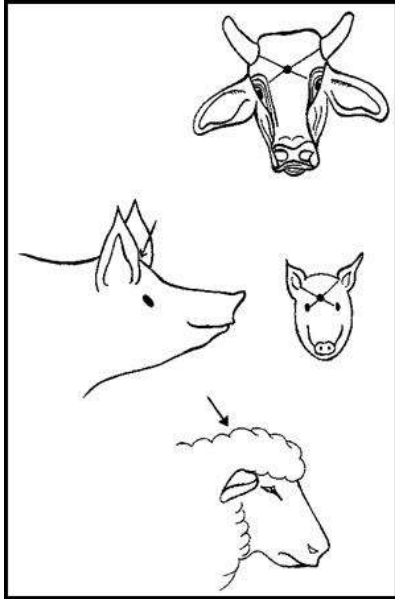
## Euthanasia

Captive bolt pistol – this is a hand-held weapon for euthanasia of large animals. The muzzle is placed against the subject’s forehead (different species have different locations). When the trigger is pulled a 3 cm rod, 1 cm in diameter exits sharply to pierce the skull and damage the brain. The rod does not leave the weapon and there is no possible risk of injuring a bystander.

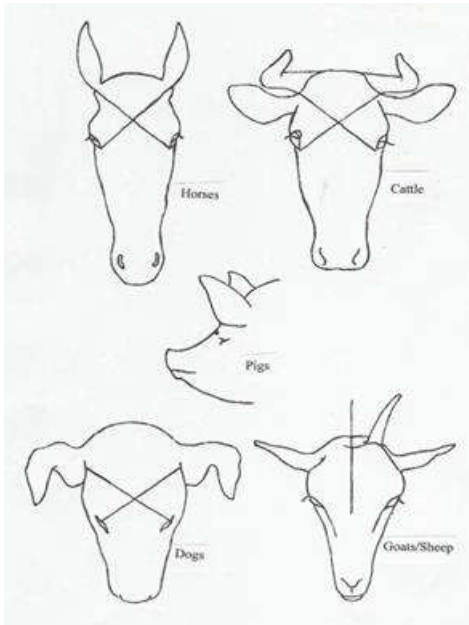


An example of a captive bolt pistol





Correct points to aim for with a captive bolt



Correct points to aim for with a captive bolt



**4B: Individual Formative Exercise: Flight Zone**

# Learning Unit 3

## Animal Husbandry



# 1. DOCKING OF TAILS

## Advantages

The docking of a sheep's tail is compulsory as filth and dung accumulate under the tail (especially when diarrhea occurs) thus aggravating the blowfly infestation if present. Tails should be docked at a young age to lessen shock. Lambing percentages will also increase, as the tails of ewes do not interfere with the mating process. Sheep with docked tails, due to their stocky appearance, are also more acceptable to butchers.

## Methods of Docking of Tails

### Knives

- Should be sterilized and dipped into a disinfectant after each lamb was docked.
- Hold the lamb in an upright-sitting position, with the front and hind legs together and the back of the lamb against the chest of the person holding it. The tail will hang down.
- Push the skin back towards the body so that the stump of the tail will be covered by skin afterwards.
- Cut off the tail at the desirable length and disinfect the wound with a disinfectant.

### Pincers

- Similar to emasculator.
- The same as described above but using pincers instead of a knife.

### Elastrator

- This method has the advantage that the tail can be amputated very short, but it is more painful.
- The rubber ring is placed around the tail close to the body and left there until the tail falls off or the necrotic end of the tail is cut off two to three days after application. Disinfect the wound to prevent infection.
- Haemorrhage is then eliminated. (The younger the lamb, the better)

### Warm Iron

- A sharpened, red-hot iron (e.g. blades of a motorcar) is used for this purpose.
- The lamb is held in a sitting position while the person holding it, holds all four legs together.
- The tail is stretched out along a small plank and the hot iron is then pressed down and through the tail at the desired length.

- There is usually very little bleeding and the heat seals off the wound, thus diminishing the chances of infection.

### **Complications**

- Hemorrhages
- Infection of the spinal cord
- Gangrene
- Oedema
- Tetanus
- Abscess in inguinal glands
- Local abscess or other infection

## **2. TREATMENT OF HOOVES**

Hooves of animals should regularly be attended to, as lameness, due to hoof abnormalities, may be detrimental to the grazing ability of the animal. The condition of the animal deteriorates and secondary infections such as foot rot may result.

### **Preventive Treatment**

Footbath containing 2 – 4% formalin or 10% copper sulphate should be a regular practice, especially where crowding of animals takes place under moist conditions.

### **Abnormal Growth**

The hooves should regularly be inspected for any abnormal growth, which may result in hoof-cracking or other bone abnormalities. This can be rectified by cutting it with bone cutters or knives and painting it with Stockholm tar afterwards. Animals (ruminants) should be cast to facilitate handling.

### **Inflammation with Infection**

Foot rot may occur in cattle and sheep under moist conditions. An organism (*Bacteroides nodosus*) penetrates and causes inflammation to the structures of the hoof, resulting in infection of the ligaments and bones of the foot. If diagnosed early, the animal can be treated with local and systemic antibiotics.

If complications such as suppuration and abscess-formation set in, the animal must be cast for treatment. All necrotic tissue should be cut away from the hoof. Do not be alarmed if there is bleeding. Thereafter, treat with local as well as systemic antibiotics. If the joints are also affected, hot fomentations should be applied.

Treatment requires time and effort and should be tackled locally as well as systemically. Veterinary assistance and advice are therefore essential.

### **Hardening of Hooves**

By means of the regular local application of methylated spirits the hooves (of pigs) may be hardened.

A person familiar with the procedures must first demonstrate all these procedures before you attempt it under supervision.

## **3. CASTRATION**

Castration is the removal of the testicles from a male animal. Castration may be either immediate (surgical, using a blade) or delayed (non-surgical, using an Elastrator® ring or Burdizzo® emasculator).

New technology, such as male infertility vaccination, may eventually render present castration practices obsolete, with obvious benefits to animal welfare, but it is not yet practical for on-farm use.

### **Why Castrate?**

Compared to entire male cattle, castrated males:

- Are less aggressive
- Are easier and safer to handle.
- Are less likely to fight, reducing bruising and injuries to themselves and other cattle and damage to fences and gates.
- Are easier to keep in paddocks after the time that sexual maturity would be reached.
- Prevent unwanted mating and allow greater control over genetic gains through selective breeding

### **When to Castrate**

The younger that bull calves are castrated, the better. Early castration significantly reduces:

- Pain and discomfort for the animal.
- Risk of bleeding and infection.
- Recovery time after castration.
- Weight loss after castration.
- Difficulty of restraining the calves and performing the procedure.

- Risks to the operator and the amount of labor needed.

Calves as young as two days old, but no more than two weeks old, can be effectively castrated with Elastrator® rings.

Calves should be castrated preferably under six months of age or at the first muster before weaning (it is acknowledged that in extensive cattle operations the first muster may not occur until calves are more than six months old). In more intensively managed situations, castration may be possible well before six months, and this should be the aim.

## **Bull's Reproductive Anatomy**

The important relevant structures in the bull's reproductive anatomy are the scrotum, testicles and spermatic cords – with their associated blood vessels.

### **Scrotum**

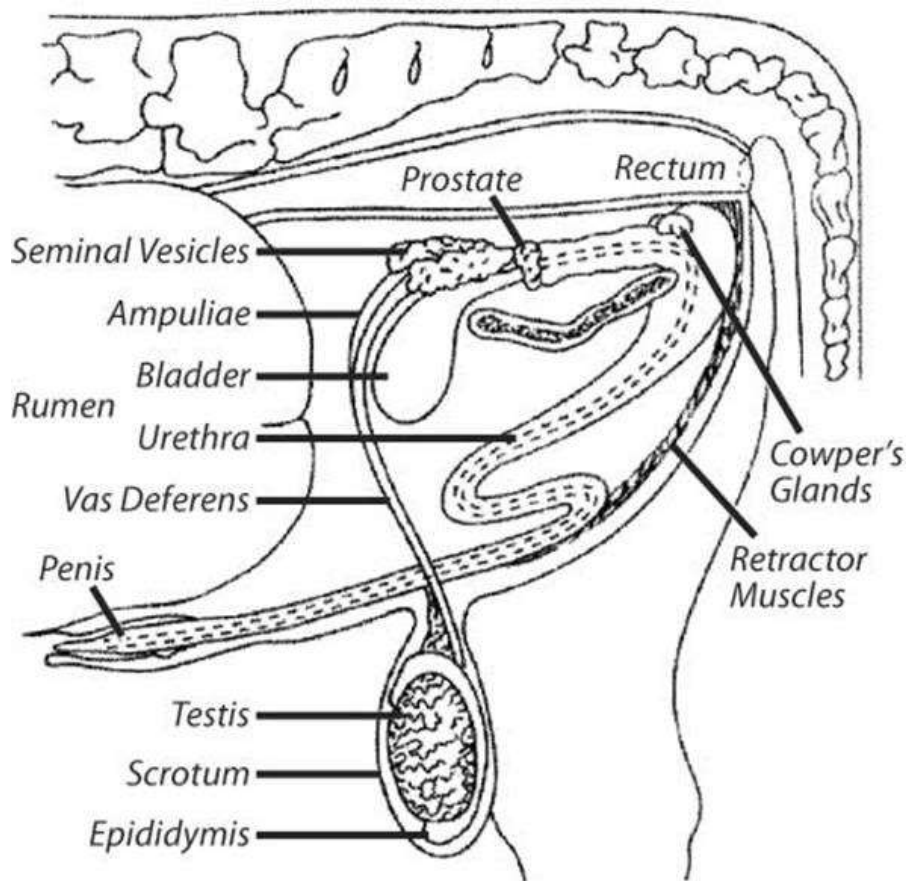
- The scrotum is a bag of skin containing the testicles.
- The scrotum is divided into two sections by a membrane called the scrotal septum; each side contains one testicle.

### **Testicles**

- Each testicle is covered by a tough fibrous membrane called the vaginal tunic. This membrane is separated from the testicles and removed during castration to reduce the risk of swelling and infection.
- The epididymis, with a distinct lump on each end (the head and tail of the epididymis), attaches around the curved outer upper and lower surface of the testicle.

### **Spermatic Cord**

- The spermatic cord is attached to the top of the testicle and goes up into the neck of the scrotum. It is enveloped in the fibrous vaginal tunic.
- The spermatic cord contains the duct which carries sperm from the testicle and the major blood vessels supplying the testicle. The sperm duct comes out of the epididymis that is attached to the testicle.



## Anatomical Abnormalities

### Cryptorchidism

Some calves (about five calves in every 1,000) have only one testicle in the scrotum. This is called cryptorchidism (and is heritable).

- The retained testicle does not produce sperm, but will produce male sex hormones.
- If a cryptorchid is found, it is advisable not to remove the one testicle present; this would greatly reduce the chances of the other one descending into the scrotum later – when full castration can be performed.
- If the one descended testicle is removed, the animal is known as a 'stag' and, though infertile, will exhibit male sexual characteristics (eg mounting and aggression). If this is done, a close watch needs to be kept on the 'stag' in case the other testicle does descend, with the possibility of fertile mating occurring.

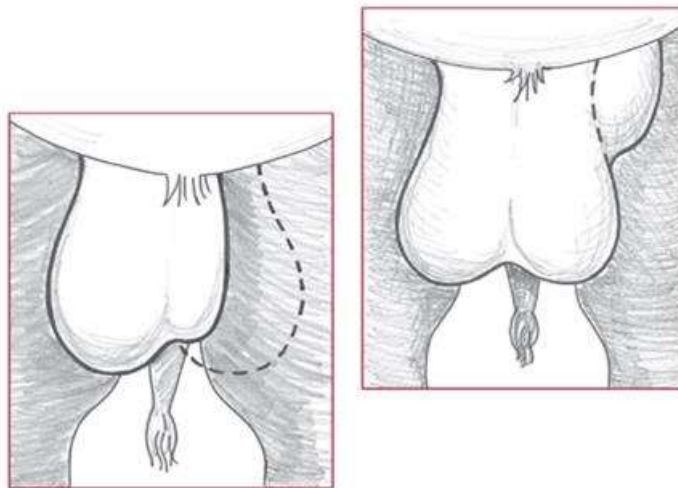
## Inguinal Hernia

On rare occasions, calves will have a larger than normal opening between the abdominal cavity and the scrotum, allowing intestines and/or fat to descend into the scrotum.

- An inguinal hernia will look like a large swelling on one side of the scrotum, often near the top. This swelling will often feel soft, due to the intestines or abdominal fat descending into the area.
- Do not attempt to castrate a calf if an inguinal hernia is suspected. Consult your veterinarian, or leave the calf entire.

## Deformed or Injured Testicles

- Injuries to testicles or previous infections can result in deformed testicles and adhesions developing between the testicle and the scrotal wall.
- If the testicles do not move easily inside the scrotum, **do not** attempt to castrate the animal. Consult your veterinarian, or leave entire.



## Effective Restraint of the Calf

Proper restraint is essential for the welfare of both the animal and the operator.

- Most calves are castrated in a commercially available calf cradle. A cradle that secures the calf in an elevated position, and not touching the ground, is easier to use and reduces dirt and dust contamination of castration and dehorning wounds.

If no cradle is available, calves can be:

- Held firmly on their side on the ground by one or more competent operators, depending on calf size, with an additional operator holding the leg.

- Restrained standing in a crush by one or more operators holding the calf firmly against the side of the crush. Holding the tail vertically and slightly forward towards the head of the calf helps restraint. However, this standing position is not recommended as it is generally harder to perform the operation and there is greater chance of retraction of the testicle into the scrotum or inguinal canal during surgical castration.

### **Equipment Needed for Surgical Castration**

- Separate buckets containing an effective antiseptic (such as Hibitane® or Savlon® mixed to the recommended dilution) for hand washing and then antiseptic rinsing.
- A suitable pair of artery forceps to clamp blood vessels in case of heavy bleeding. This is unlikely if the correct procedure is followed.
- Scalpel blades (no. 10, 22, 23 or 24) and handle.
- A shallow container of antiseptic solution for the scalpel between calves.
- A secure closable sharps container for used blades.

### **Equipment Needed for Non-surgical Castration**

Buckets containing effective antiseptic for hand washing and then antiseptic rinsing either a Burdizzo® emasculator or an Elastrator® applicator and rubber rings. The size of the Burdizzo® used will depend on the size of the calves

### **Surgical Castration – Using A Blade**

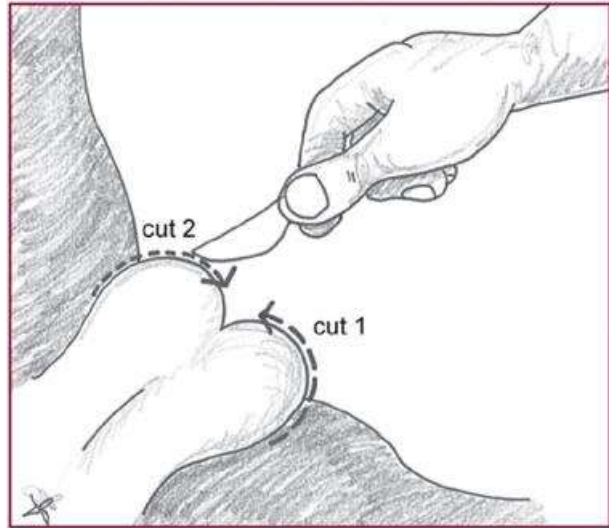
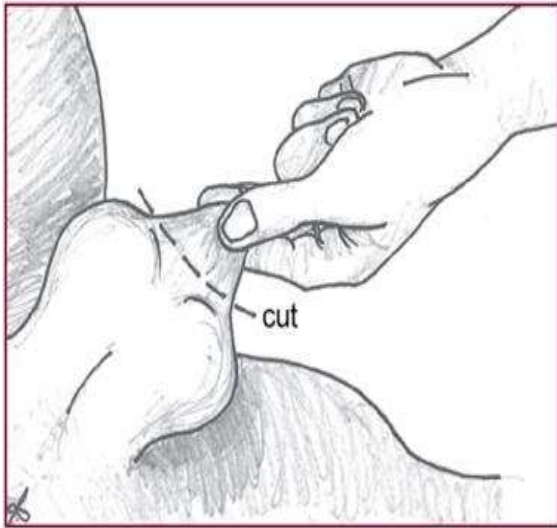
1. Restrain the calf, preferably in a calf cradle, or on the ground or standing in a crush.
2. If the calf is on its side, pull back its upper hind leg fully, hold it firmly to expose the scrotal area
3. Check the scrotum to ensure there are two free-moving testicles present and there is no inguinal hernia or other
4. If the scrotum is excessively dirty or covered in faeces, clean it with antiseptic before proceeding.
5. Always remove the testicle closer to the ground first – this will minimize the contamination of the second incision.
6. Squeeze the testicle to trap it against the bottom of the scrotum so the skin of the scrotum is stretched over the testicle.
7. Make a firm, decisive incision in the scrotum from about half way up the scrotum to the midline of the base of the scrotum. The incision size will depend on the size of the

testicle. A larger incision is better; a small cut may not allow adequate drainage and could result in a higher incidence of infection.

8. The incision invariably cuts a little into the tissue of the testicle. This is not a problem, provided the testicle is not squeezed excessively resulting in the testicular tissue being shelled out. This makes the remnant of the testicle almost impossible to hold, and it can be withdrawn into the scrotum to the point of being irretrievable. This may result in a 'stag' (an infertile animal with male sex characteristics).
9. Make sure the incision through the scrotal wall and through the vaginal tunic (the thick fibrous capsule or inner bag surrounding the testicle) is long enough to allow the testicle to be easily squeezed through the incision, and to allow good post-operative drainage.
10. Pull the testicle from the incision hole by wrapping fingers around the testicle and the spermatic cord.
11. Cut through the white fibrous vaginal tunic close to the incision opening, freeing the cut fibrous tissue and testicle with epididymis attached. The blood vessels are then manually separated from the sperm duct and the fibrous tissue. The sperm duct and fibrous tissue are then cut as close to the neck of the scrotum as possible, leaving the testicle attached only by the blood vessels. This fibrous tissue must be removed separately to the blood vessels, so cut through and remove it before removing the testicle.
12. Firmly pull the testicle away from the scrotum with the attached blood vessels and remove it with one quick continuous tearing action. This is the best way to prevent excessive bleeding as the stretching helps block the blood vessels.
13. If the testicle cannot be torn away, it means there is remnant fibrous tissue that has not been completely separated from the blood vessels. This must be separated from the blood vessels before attempting to tear again. Another, but less preferred, method is to stretch the blood vessels and cut through them by scraping back and forth repeatedly with the scalpel blade close to where they exit from the top of the scrotum. Do not cut straight through the cord as a clean cut will predispose to excessive bleeding.
14. Trim away any obvious loose tissue to minimize infection and promote wound healing.
15. Repeat the procedure on the other testicle.
16. Do not allow any tissue to return back into the scrotum after it has been pulled out as it is potentially contaminated and a source of infection.
17. Pull the scrotum away from the body in one single 'stripping' motion to allow the cut ends of the cords to retract high up into the scrotum and to remove any blood clots. This will reduce the chance of post-operative swelling and infection.



An alternative procedure is especially useful in young calves with smaller testicles that are difficult to grasp through the scrotum. This method is to remove the bottom quarter of the scrotum by grasping it firmly with thumb and forefinger of one hand, stretching it away from the body of the calf, and removing it with one quick, clean incision. Each testicle is then easily exposed, freed of the fibrous vaginal tunic and removed as described above.



### Doing Surgical Castration – Using a Blade

Start with testicle closest to the ground.

Squeeze the testicle against the bottom of the scrotum to stretch the skin.

Cut from about half way up the side of the scrotum to the midline of the base of the scrotum to allow the testicle to be easily squeezed out.



Pull the testicle from the incision hole by wrapping fingers around the testicle and the spermatic cord.



Separate the blood vessels from the sperm duct and the fibrous tissue.



Cut through the white fibrous vaginal tunic close to the incision opening, freeing the cut fibrous tissue from the testicle with epididymis attached.

Cut the sperm duct and fibrous tissue as close to the neck of the scrotum as possible, leaving the testicle attached only by the blood vessels. (This fibrous tissue must be removed separately to the blood vessels, so cut through and remove it *before* removing the testicle.)

Firmly pull the testicle away from the scrotum and remove it with one quick continuous tearing action. (Don't cut straight through the cord or it will bleed excessively; stretching helps block the blood vessels.)

Pull the scrotum away from the body in one single 'stripping' motion to allow the cut ends of the cords to retract high up into the scrotum and to remove any blood clots. This reduces any post-operative swelling or infection.



## Hygiene

- Before starting, and between animals, immerse instruments constantly in a solution of an effective antiseptic (eg Hibitane® or Savlon® mixed to the correct dilution).
- Wash both hands thoroughly first and then rinse in an effective antiseptic solution before each calf's castration, especially if performing other procedures (such as dehorning). Use separate buckets for initial washing and then antiseptic rinsing to prevent excessive contamination of the antiseptic solution.
- Change all antiseptic solutions (for hands and instrument storage) every 15–20 calves to stop them becoming contaminated.

## Possible Complications of Surgical Castration

The risk of complications and infections is greatly reduced by castrating calves when very young.

### Swelling

The risk of swelling and fluid build-up is reduced if a large incision is made initially through the skin and underlying fibrous tunic tissue.

### Infection

Infection will show as a swollen reddened area, with or without pus discharge.

Infected wounds should be treated by drainage and/or antibiotics, by or under the direction of a veterinarian.

### Bleeding

Minimal bleeding occurs if the cord is stretched as described. If there is excessive bleeding, the vessel should be located and clamped with artery forceps; otherwise,

apply firm pressure over the scrotum to control the bleeding.

### **Fly Strike**

Fly strike may occur, particularly if castration is done in rainy or humid weather. So avoid these conditions and check cattle frequently, preferably daily, for 10 days.

### **Non-surgical Castration with Elastrator Ring**

A small rubber ring is placed around the neck of the scrotum to cut off the blood supply to the scrotum and testicles. All tissue below the ring will die and fall off.

Castration with Elastrator® rings should be done only to calves less than two weeks old.

Using rings on older calves causes a high incidence of swelling and infection, and severe pain to the calf. This is because there is too much tissue in the neck of the scrotum for the ring to completely block the blood flow both into and out of the scrotum. Some blood can still flow in but none flows out.

Castration of very young calves (less than two weeks old) with Elastrator® rings is very effective and appears to cause little discomfort to the calf compared to other methods of castration. Calves can be castrated with rings when two days old and they can be easily restrained in the paddock. Often only one person is needed for the whole procedure in very young calves, but the operator should be wary of the calf's mother as she may become aggressive when her calf is handled.

### **Castrating With a Rubber Ring**

- Restrain the calf on its side.
- Place the rubber ring on the Elastrator® applicator and expand it.
- Position the applicator near the bottom of the scrotum with the prongs pointing towards the calf's body.
- Pull the tip of the scrotum through the expanded ring which is positioned above the testicles close to the calf's body.
- Apply gentle pressure at the neck of the scrotum to force the testicles below the rubber ring into the scrotum. Do not place the ring too high up the neck of the scrotum as this may pinch the adjacent skin on the abdomen.
- Release the pressure on the applicator so that the ring tightens around the neck of the scrotum.
- Carefully remove the rubber ring from the prongs of the applicator.

- Palpate the scrotum gently to make sure both testicles are present below the rubber ring.

Do not use Elastrator® rings unless both testicles are present in the scrotum; thus they should not be used on cryptorchids.

### Using the Elastrator Ring

Place the rubber ring on the Elastrator® applicator and expand it. Position the applicator near the bottom of the scrotum with the prongs pointing towards the calf's body.



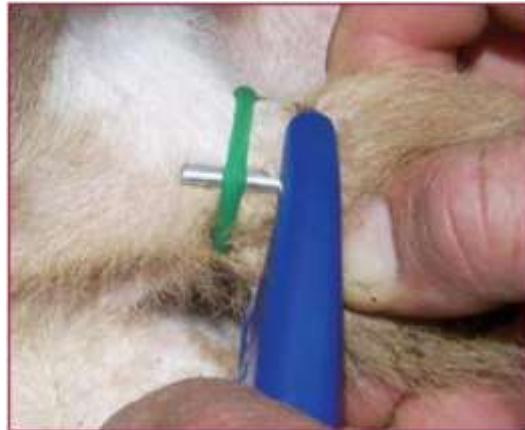
Pull the tip of the scrotum through the expanded ring which is positioned above the testicles close to the calf's body.

Apply gentle pressure at the neck of the scrotum to force the testicles below the rubber ring into the scrotum. Do not place the ring too high up the neck of the scrotum as this may pinch the adjacent skin on the abdomen.

Release the pressure on the applicator so that the ring tightens around the neck of the scrotum.



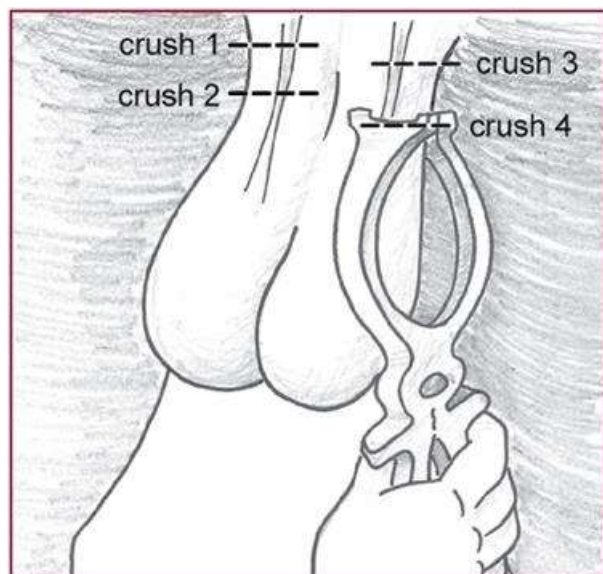
Carefully remove the rubber ring from the prongs of the applicator.



Palpate the scrotum gently to make sure both testicles are present below the rubber ring.



### Non-Surgical Castration – With A Burdizzo®



The Burdizzo® is a precision instrument that is used to clamp and crush the spermatic cord and associated blood vessels – without cutting the skin of the scrotum. Without a blood supply, the testicles wither inside the scrotum and disappear over 4–6 weeks, leaving the scrotum intact. Skill and experience are needed to ensure the spermatic cords are properly crushed. The Burdizzo® must be in good condition to work effectively as it can become 'sprung' (a properly working Burdizzo® should completely sever a match stick placed between two sheets of paper without cutting the paper).

- The procedure is best done from behind with the calf standing.
- The calf must be well restrained and the handler protected from being kicked.
- Palpate the left spermatic cord at the neck of the scrotum and move it to the outer edge of the scrotum.
- Clamp the Burdizzo® tightly over the cord, ensuring only that part of the scrotal skin covering the cord is included. Be careful in case the calf kicks.

**Note:** The skin down the midline of the scrotum must not be crushed so that blood flow to the scrotum is not interfered with – reduction of blood flow may cause infection and deformity of the scrotum.

- Leave the clamp in place for 10–20 seconds.
- Open the clamp and reapply about 1cm below the original application point. Clamping twice ensures the blood vessels are effectively crushed and completely removes the nerve supply, reducing pain.
- Repeat the procedure on the right spermatic cord, again clamping it twice. Always ensure that the clamping marks of the left and right sides are not joined so as to be certain that the blood supply to the scrotum remains intact.

### **Using the Burdizzo®**

1. Restrain calf (standing position is best) .
2. Feel for left spermatic cord at neck of scrotum and move it to the outer edge.
3. Clamp the Burdizzo® tightly over the left cord for 10–20 seconds. Do not crush the midline of the scrotum with its blood flow.
4. Reapply clamp about 1cm below first point – again for 10–20 seconds.
5. Repeat double clamping on the right cord (again avoiding the midline blood supply).

The advantages of castrating with the Burdizzo® are that it appears to cause less pain and stress than other methods. There is also little risk of infection because there is no open wound.

The disadvantages are that it is a specialist instrument and it needs a skilled experienced operator to ensure that the cords are completely severed – failures are common if the Burdizzo® is not applied correctly. This can result in partial castration with resultant uncontrolled mating, and often causes scrotal deformity with decreased market value of the steer/stag.

### **Non-Surgical Castration – By Tension Banding**

Like Elastrator® rings, it relies on completely cutting the blood flow in and out of the scrotum, resulting in all tissue below the band dying and eventually falling off. This is done by placing a tension band well up the neck of the scrotum.

Use of tension banding is a complicated and difficult procedure; failure to **completely** block the blood flow will result in an extremely painful and potentially fatal swelling of the scrotum. For this reason, it is not advocated here.

- Castrating younger animals greatly reduces the chance of complications.
- Inspect animals regularly, preferably daily, for up to 10 days after castration to quickly detect any complications.
- If the scrotum is swollen and reddened, consult your veterinarian. Treatment usually involves draining the scrotum by incising the lower part of the scrotum, flushing the wound and administration of antibiotics, especially if there is any sign of pus.

### **After Care**

- Do not apply a dressing powder after castration as it will retain moisture and make the wound attractive to flies.
- The main risk with surgical castration is retention of too much fluid in the scrotum causing a reddened swollen area. Though some swelling is normal, too much swelling causes discomfort, and the inflamed tissue and fluid accumulation increases the risk of infection.
- Excess swelling nearly always results from not making the surgical incision long enough, and not near the bottom of the scrotum. This allows fluid to accumulate in the scrotum rather than draining out of the wound.



## Comparison

Method	Advantages	Disadvantages
Surgical Castration	<ul style="list-style-type: none"> <li>• visual certainty that task is complete</li> <li>• scalpel blades are sharp, disposable and inexpensive</li> <li>• development of 'cod' (fat-filled scrotal sac) enhances appearance and market price</li> </ul>	<ul style="list-style-type: none"> <li>• blood loss</li> <li>• risk of swelling and infection from open wound</li> <li>• higher workplace safety risk because of sharp blades</li> <li>• needs experienced operator</li> </ul>
Elastrator® Rings	<ul style="list-style-type: none"> <li>• calves can be done very young (less than two weeks) reducing stress</li> <li>• bloodless and no open wound</li> <li>• rings and applicator are inexpensive</li> </ul>	<ul style="list-style-type: none"> <li>• highest tetanus risk</li> <li>• cannot be used on calves older than two weeks</li> <li>• no 'cod' forms</li> </ul>
Burdizzo®	<ul style="list-style-type: none"> <li>• older calves (up to six months) can be done with reduced stress</li> <li>• bloodless and no open wound</li> <li>• appears to cause less pain than surgical castration</li> </ul>	<ul style="list-style-type: none"> <li>• needs experienced operator and good equipment</li> <li>• Burdizzo® emasculator is expensive cannot visually confirm if procedure has been successful</li> </ul>

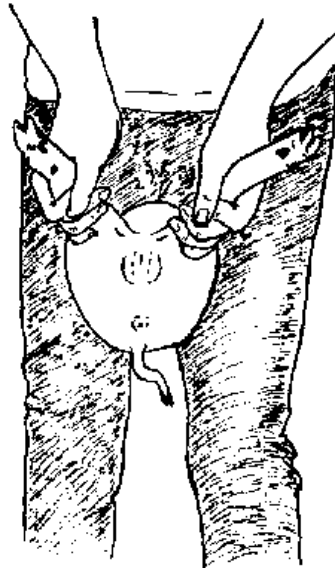
## Castration Of Pigs

Male pigs (boars) can fight causing injury to one another. Castrated pigs are quieter and easier to handle. Castrating the pig makes it put on more fat and the meat does not have a strong piggy smell. Young pigs should be castrated at 2 to 3 weeks of age.

### Restraining the Pig for Castration

You will need someone to hold the piglet for castration. The pig should be held by the hind legs with its head down and its body should be firmly held between the handler's knees.

Castration cuts



### **Castrating the Pig**

- You will need a very sharp, clean knife, scalpel or razor blade. Remove the sow from the litter and if possible put her where she cannot see or hear them.
- Clean the scrotum with warm water and soap and dry it.
- Move the testicle into the scrotum with your finger and then firmly grip the scrotum below the testicle between your thumb and index finger.
- Make a cut 1 - 2 cm long in the bottom of the scrotum. The testicle should pop out through the cut.
- Pull the testicle out of the scrotum and cut through the white cord leaving the red blood vessel uncut.
- Pull the testicle out slightly further and twist it around several times before cutting the twisted blood vessel by scraping up and down with the knife. This helps to reduce bleeding. Do not pull to break the vessel.
- Do not put your fingers in the scrotum. Apply either tincture of iodine, gentian violet, Dettol or an antibiotic powder (see R5 Annex 1) or a sulpha powder to the castration wound. Remove the second testicle in the same way.
- Put the piglets and their mother on clean bedding. Watch piglets for signs of infection in the wound for the next week. Infected castration wounds swell; piglets do not want to walk or are lame.



## 4. DEHORNING

Dehorning is the removal of the horns from cattle. Cattle can have horns of different length, shape and size, but all horns are detrimental to cattle from a welfare and production perspective, and pose a potential safety risk to cattle handlers.

Tipping (removal of the insensitive sharp end of the horn) is not dehorning. It does little to reduce the disadvantages of having horned cattle, for example it does not reduce bruising, and tipped cattle can still be a danger to other cattle and handlers.

### Horned Cattle

- Hurt and damage other cattle, either deliberately or accidentally, especially when they are close to each other – at feeders, in yards and during transport.
- Get more injuries, bruising and hide damage than dehorned/polled cattle and are more aggressive towards other cattle.
- Are generally more difficult to handle in yards, and pose a greater risk to themselves and stock-handlers.
- Cause more damage to gates, yards, fences and troughs.
- Require more space per beast during road or rail transport, increasing transport costs
- Require more trough space in feedlots, and are generally not accepted into feedlots or for live export.
- Are harder to catch in a head bail and harder to apply ear tags, eg NLIS tags.
- Dehorned/polled cattle attract better prices, especially from lot-feeders and exporters.

## When to Dehorn

The younger that cattle are dehorned, the better both for the calf and for the operator. Young calves suffer less pain and stress, have less risk of infection and have better growth rates. They are also much easier to handle and to restrain.

- The best time to dehorn is before the horn bud attaches to the skull. This generally occurs at about two months old, but can be quite variable. Dehorning is often possible earlier than this – it can be carried out as soon as the horn bud is visible. (Horn buds emerge more slowly in *Bos indicus* cattle, and they may need to be inspected later.) At this young age, the procedure is simpler, and there is relatively little bleeding. Dehorning at this young age is possible on more intensively managed farms.
- If dehorning cannot be done before the horn bud attaches, the procedure will cause more bleeding and leave a larger wound. However, it can be done successfully up to six months old, with extra care and good procedures.
- Dehorning of older animals is painful to the animal, significantly increases the risk of excessive bleeding and death due to blood loss, and greatly reduces growth rate.
- Cool and dry conditions are best for dehorning. Hot, dry and dusty weather increases bleeding and risk of infection. Wet weather increases the risk of infection and fly strike.

## Facilities and Equipment Needed to Dehorn

Dehorning is best done in a calf cradle that allows good access to each horn site. Good restraint minimises the duration of the procedure and pain to the calf, reduces the risk of wound contamination and makes it easier for the operator.

- A head bail can be used as long as movement of the head is restricted with a halter, nose grips or a chin bar.
- Holding the calf down on the ground is not recommended because the wound can become contaminated and infected.
- Hemorrhage control equipment including artery forceps and clean pressure pads should be available.
- All equipment must be clean, sharp and operating correctly before use. It must also be disinfected before each animal.



### Dehorning Instrument Depend on Age of Calf



The dehorning instrument used will depend on the age of the calf:

- hot iron – under two months old
- dehorning knife – 2–3 months old
- scoop dehorner – 2–6 months old
- cup dehorner – 2–6 months old

Animals over six months old\*

- guillotine dehorner – horn tipping only
- surgical wire – horn tipping only
- tippers – horn tipping only
- horn saw – horn tipping only

\*Horn tipping only unless under the direction of a veterinarian.

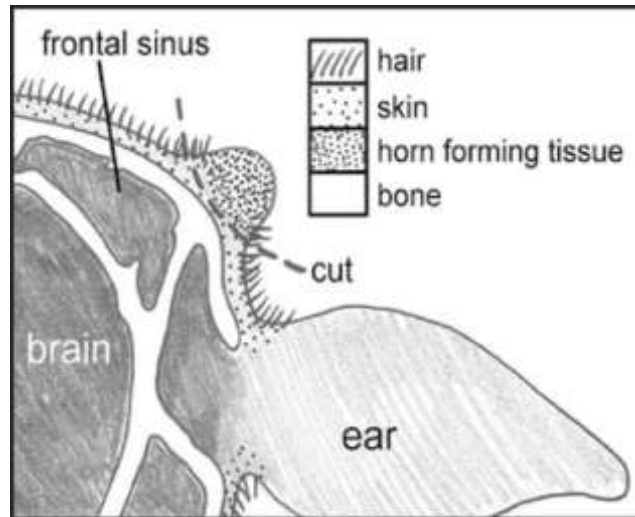
Caustic dehorning chemicals must not be used. They can spread into the eyes if the skin gets wet.

Removing horns with tools such as axes and hammers is completely inhumane, and is not permitted.

## Dehorning Young Calf

The horn grows from the skin around its base – at different rates with different breeds. The horn bud is usually free-floating in the skin over the skull base in calves less than about two months old.

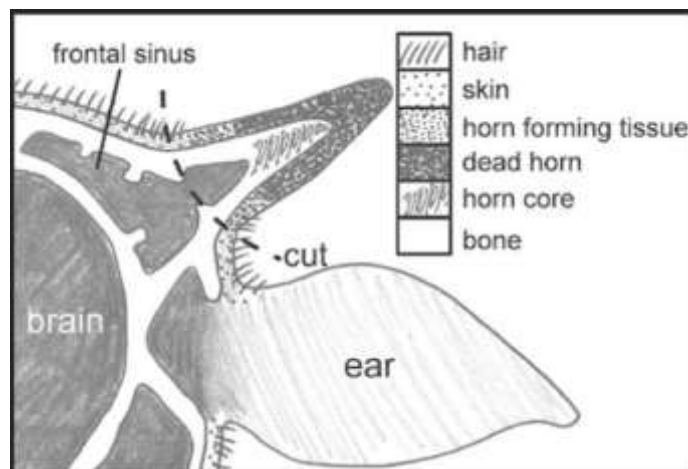
As the calf gets older, this horn bud attaches to the skull bone and a small horn forms.



## Dehorning Older Calf

After the horn bud attaches to the skull, the horn grows out from under the skin. It becomes a bony extension of the skull with the hollow centre of the horn opening into the frontal sinus. The brain lies directly under the frontal sinus covered by a thin layer of bone.

Dehorning after the horn attaches increases the risk of entering the frontal sinus and subsequent infection.



## Scurs

Scurs, found on some polled cattle, are horns without an anchoring protrusion from the frontal sinus. They are usually small, and are generally moveable as they are not connected to the skull. Cattle with scurs are considered equivalent to polled cattle for breeding and marketing purposes.



## Dehorn Process

Plan your order of operations so that the most invasive procedures are done last. This helps reduce stress on the animal and the risk of infection from wound contamination. Vaccinate first, then ear tag or earmark, then brand, then castrate, then dehorn.

### Before Dehorning

Pick a cool dry day. Hot weather increases bleeding; wet weather increases risk of infection. Water the yards to reduce dust (but do not wet calves).

### Cleanliness

Keep surgical instruments in a bucket with a suitable disinfectant solution (eg Savlon® or Hibitane®). Change the solution every 15–20 calves.

Have separate buckets with antiseptic for instruments, and for washing and disinfecting hands.

### Hot iron

Best for calves less than two months old as bigger horn buds will not fit in the 'O'-shaped opening of the iron – which must be approximately 1cm larger than the bud all around.

Irons can be heated by gas, fire or battery (12 or 24 V).

1. Heat iron until 'dull red' hot.
2. Firmly restrain the calf's head and apply the hot iron over the horn bud.
3. Roll the iron around and apply with sufficient pressure for just long enough to burn through the full thickness of skin. The skin should look copper/bronze colour when finished.

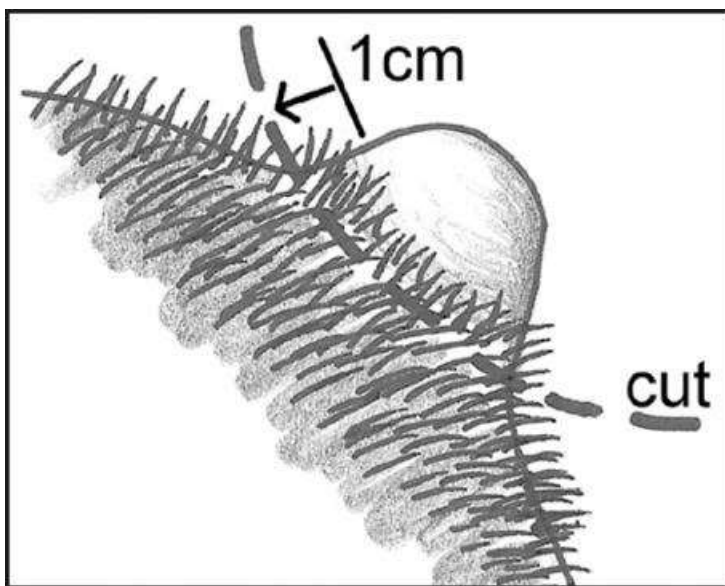
The hot iron method is practically bloodless so risk of infection is minimal.

### **Key to Successful Dehorning**

Because the horn grows from the skin around its base, you just remove or destroy a complete ring of hair (1 cm wide) around the horn base.

Check that the excised ring is wide enough because some horn will grow if the ring is not complete.

A 1 cm wide ring of hair is enough – any more will make a larger wound, cause avoidable pain, and delay healing.





## Dehorning Instruments

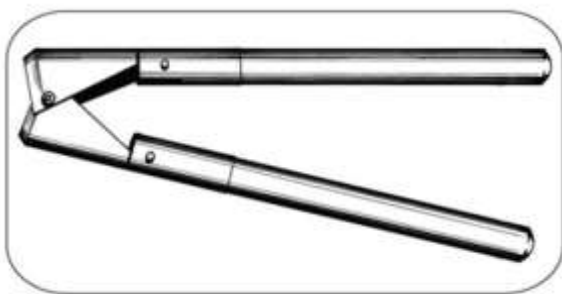
### Dehorning Knife



The knife has a sharp curved blade to ensure 1 cm of skin around the horn bud is removed. It is suitable for calves up to 2–3 months old but only if the horn bud is mobile and not attached to the skull.

1. Remove the knife from the antiseptic solution and ensure it is sharp and clean.
2. Start the cut about 2 cm from the base of the horn bud, apply firm pressure directed away from the operator's hand, and firmly and quickly cut through the skin around the horn bud in one decisive action. This will slice off the horn bud level with the skull because of the curve in the blade.
3. Inspect the removed horn bud to ensure there is a 1 cm ring of skin/hair around it. If not complete, make a second small cut to remove any remaining skin.
4. Repeat on the second horn, clean off any tissue or hair from the cutting edge and replace knife in antiseptic solution.

### Scoop Dehorner



Suitable for calves 2–6 months old. Scoop dehorner are used preferably before the horn bud attaches, but can also be used after attachment provided the horn tissue is not too hard.

1. Remove dehorner from antiseptic solution and ensure cutting edges are sharp and clean.
2. Firmly restrain the calf's head, hold the handles together, push the open scoop firmly down over the horn bud and then quickly open the handles outwards while maintaining firm downward pressure on the skin. This will scoop out the horn bud and surrounding 1 cm of skin around the bud.
3. Inspect the removed horn bud to ensure there is a 1 cm ring of skin/hair around it. If not complete, make a second small cut to remove any remaining skin.
4. Repeat on second horn, clean off any tissue or hair from the cutting edge and replace dehorner in antiseptic solution.

### **Cup Dehorner**



Use cup dehorner only when the horn is too big or solid for scoop dehorner. Cup dehorner are best for calves up to six months old where the horn bud is already firmly attached.

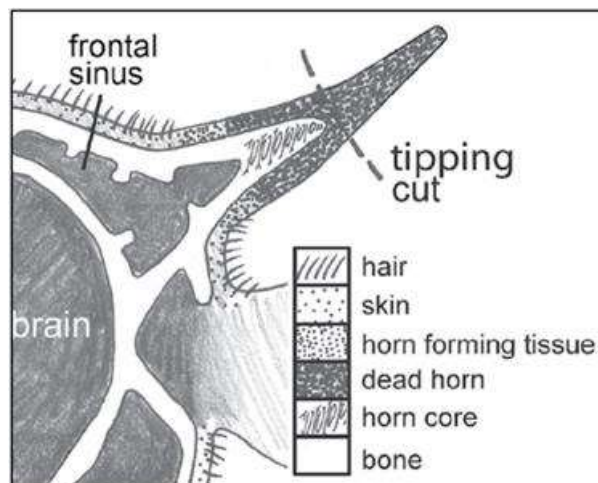
1. Remove the cup dehorner from the antiseptic solution and ensure the cups are sharp.
2. Place the open half cups over the horn, ensuring a 1 cm skin margin, then close the handles quickly together so the sharp edged cups cut through the skin and horn.

3. Downward pressure on the cup may need to be applied by a second person to prevent the dehorner 'riding up' the horn, otherwise some of the skin around the base of the horn may be missed.
4. Cup dehorners can cause an unnecessarily large wound, and sometimes exposure of the frontal sinus, if used on too small a calf or if excessive downward pressure is applied.
5. Inspect the removed horn to ensure there is a 1 cm ring of skin/hair around its base.

### **Horn Tipping**

Horn tipping may be necessary for welfare reasons (for example, a horn is growing towards an animal's head) or to reduce injury caused by aggressive horned cattle.

This would not be necessary if cattle are bred without horns or are dehorned at an early age.



### **Controlling Bleeding**

Animals dehorned at an early age before the horn attaches to the skull generally will not bleed excessively.

Any excessive bleeding should be controlled immediately as it will delay healing and can even be fatal.

Bleeding can be controlled by:

- Using artery forceps to grab and twist off any individual blood vessels that are leaking blood excessively.
- Applying firm pressure over the wound using a clean pad/gauze bandage and maintaining the pressure until the bleeding has stopped – generally after about two minutes.

- Applying a bandage wrapped firmly around the wound and skull if the above methods do not stop the bleeding. Pads or bandages must be carefully removed from the animal after 1–2 days. Do **not** leave them in place as they will attract flies.
- Cautery using a hot iron to seal off blood vessels.

### **After Care**

There is usually no need to apply a dressing or powder at the time of dehorning if cattle are dehorned at the correct age (less than six months) and not in wet or humid weather.

Dressings and powders tend to retain moisture making the wound attractive to flies. They are not usually needed if the equipment and environment are clean, and the procedure is efficiently carried out on young calves.

- Control any excessive bleeding before the animal is released from the cradle/head bail.
- Reunite calves with their mothers as soon as possible after dehorning. They should be released from the cattle yards as soon as possible into a grassed, shaded holding paddock. There will be less bleeding if the animals are handled calmly and slowly before and after dehorning.
- Inspect the calves regularly, preferably daily, for about 10 days after dehorning for early detection of infection or fly strike. The symptoms usually seen are constant tossing of the head and/or a discharge from the wound. Be extra vigilant if the frontal sinus is exposed as this increases the risk of poor drainage and infection. This will not be a problem if the calves are dehorned at a young age before the horn growth involves the frontal sinus.
- Consult your veterinarian if wounds get infected. Generally, removing any matted hair and flushing the wound daily with a non-irritant antiseptic solution or salt water will suffice. If necessary, apply a fly strike powder to the edges of the wound. More severe cases may require administration of antibiotics.

## **5. MARKING**

### **Beef Cattle: Legal Identification Marks**

Animal identification methods could be classified according to the nature of the characters used (natural or artificial), and to the permanence of the character on the animal (permanent or temporary).

Natural characters (e.g. coat colour, horns, hair curls, fingerprinting) are generally used for animal recognition, while artificial characters (marks) are made by humans for different purposes.

Permanent marks (indelible), are applied as signs of individual identification, ownership or protection (e.g. animals in quarantine); and, temporary marks (e.g. erasable or removable) are useful for animal management.

The main reasons for using an animal identification system in the modern livestock industry are:

- To indicate property ownership, for which registered brand or marks is used. Permanent marks are the only identification system acceptable by law as a legal proof of identity and ownership.
- To identify individual animals, as a prerequisite for individual performance recording in improved breeding and management systems.
- For disease and residue trace back to the property of origin. Permanent marks are again the only acceptable identification system for this purpose.

All livestock owners must have a registered identification mark for their animals. The permanent marking of cattle, sheep, goats and pigs is compulsory in South Africa.

All owners of livestock have the chance to get a registered Identification mark. The identification mark shows to whom the animal belongs. A legal identification mark is very useful: if lost or stolen animals are found, it will be possible to find the owner.

### **How to Register an Identification Mark**

- Fill in an application form.
- Get the form from extension officers, magistrates' offices, stock-theft units of the South African Police Services or from the Registrar of Livestock Identification in Pretoria.
- There is an application fee to be paid. You only have to pay once.

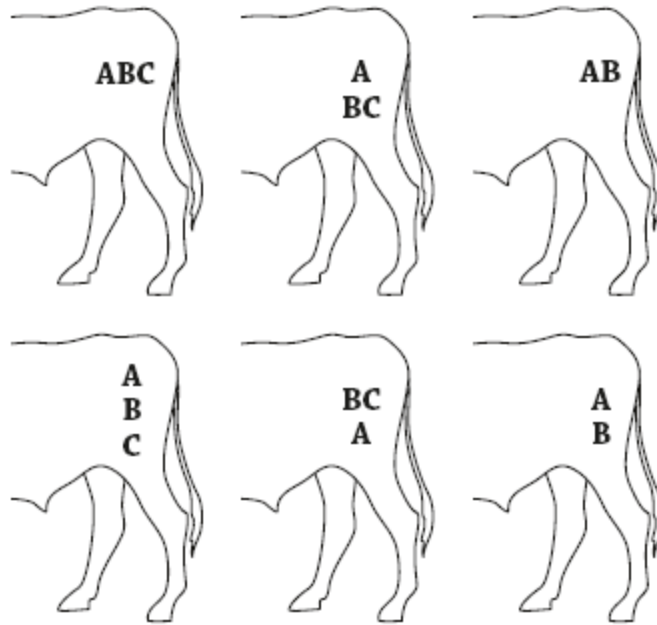
- Get a postal order at the post office for the correct amount and mail it together with the application form.
- Address the envelope to: The Registrar of Livestock Identification, Private Bag X138, Pretoria 0001, or take the form to the Delpen Building, on the corner of Annie Botha Avenue and Union Street, Riviera, Pretoria.

### **Rules for Registering an Identification Mark**

- All identification marks must be registered. This means that your mark is put on an official list and no one else may use it.
- You may not put an identification mark on your animals if you have not registered the identification mark.
- You may use the same mark for your small and large stock.
- No one may brand your animals without your permission.
- If you buy animals or get them as a gift you must put an identification mark on them within 2 weeks.
- Animals which you sell should have your identification mark.

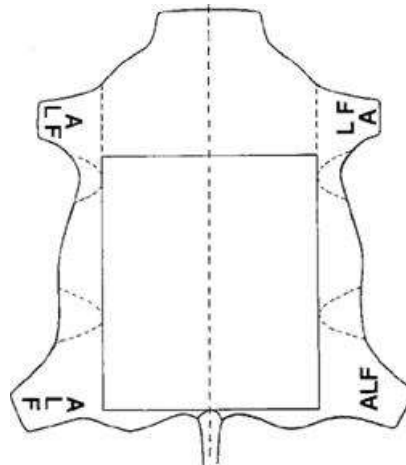
### **Identification Marks**

- An identification mark consists of not more than 3 letters of the alphabet or symbols (characters).
- A three-letter mark can be used in 4 different ways (look at the picture).
- Two-letter marks can be used in 2 different ways (look at the picture).
- The characters may not touch one another.
- The same mark may be used on cattle or small stock.
- Mark your cattle with a hot iron or by freeze branding.
- A character of an identification mark on cattle may not be smaller than 40 mm or bigger than 100 mm (high or wide).
- The mark may have 1, 2 or 3 characters.
- The characters may not be closer than 12,5 or further apart than 19 mm from each other.
- You may put the characters next to each other, below each other or in the form of a triangle, or an upside down triangle.



### Where to put the Identification Mark

- Put the identification mark as low as possible on the body but where it can be seen easily.
- Do not put the mark on the feet.
- Look at the picture. Put the brand any place outside the square.



- You can put the mark on the left hind leg, the left shoulder, the right hind leg and on the right shoulder.
- Remember, you can lose money on hides if you mark in the valuable areas.

## **Ways to Identify Animals**

Permanent identification marks can be put on animals by means of hot iron branding, freeze branding or tattooing.

### **Hot Iron Branding**

The stock owner burns a mark on the skin of his animals with a hot iron. You should not brand calves less than 6 months of age.

### **Freeze Branding**

A brand mark can also be put on the animals by way of freeze branding. Freeze branding is done by means of dry ice and alcohol.

### **Tattoo Mark**

Tattoo tongs and ink are used to mark the animals.

## **Marking With a Hot Iron**

Iron application should be performed when iron is hot-white or ash-grey coloured and not exerting excessive pressure, allowing the iron to do the branding.

Recommended procedure (Hurst and Irwin, 2000) is to put the iron against the animal's skin for 5-6 s (3 counts), without pressure, and roll the iron with the shape of the animal's body to apply the same pressure at all points of iron contact.

Long application, overheating, rough use or damage to the branding surface of the iron will cause incorrect brands. Thereafter, cold water or wound oil should be sprayed on the mark to reduce burning effects and to improve healing.

For long-coated cattle, the branding area should first be clipped.

The adequate method of heating the irons is a fire of wood or bark burned to coals. Gas burners for heating brands are easily portable and more convenient than traditional wood fires. Coal or coke must never be used, as they burn at too hot a temperature. Electrically heated branders are also available in the market. The correct heat for branding is a blue flame that will instantly burn a piece of paper or board. If the heated iron shows any red, it is too hot. When branding is finished, the hot irons should be cleaned and submerged in sump oil to cool and protect from oxidation.

Fire branding should never be performed in rainy weather, or on hides that are wet, because the hot iron boils any moisture in the coat and scalds the surrounding area.

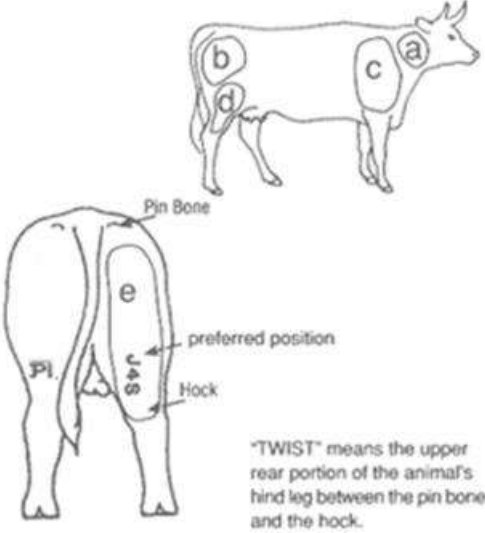


Unnecessary pain to the animal and no regular in shape brands will be caused in these conditions.



### Steps to Follow

Step 1	Use a separate iron for each character of the mark. It is easier.
Step 2	Get everything ready before you start marking.
Step 3	Get someone to help you. The helper must bring the animal closer and hold it firmly. If you have a crush-pen, branding will be easier.
Step 4	Heat the iron well. When the iron becomes whitish it is hot enough. You may test the iron on a piece of wood to see if it is hot enough.
Step 5	Knee-halter the animals so that they do not kick you.
Step 6	Take the first iron and put it against the animal's skin for 3 counts. <b>Do not press.</b> Count 1, 2, 3 slowly. Take off the iron. Take the second iron and do the same. The same with the third. Now the mark is complete.

	
Step 7	Spray some cold water onto the brand so that the animal's skin can cool down. You can also spray wound oil on the mark. Do not wipe it with a cloth and never rub manure on the mark.

### Marking With a Freeze Branding Iron

A freeze brand may replace an iron brand in dark coated animals, as initially used in dairy cows and most recently also in horses and mules.

Advantages of freeze branding, when compared to hot iron branding, are less discomfort and reaction from the animal. Freeze branding is less damaging for hide than fire branding if the application period is adequate, and no weakness occurs in the leather.

Disadvantages of freeze branding are that it is more expensive and time consuming than fire branding, the final brand takes up to 4 months and the technique is less suited to light-coloured stock. Moreover, freeze brands may be temporary tinted for fraud. Nevertheless, freeze branding is accepted as a reasonable identification method in most of cases.

The main effect of freeze branding is to destroy the cells that produce the pigment in the skin and hair (melanocytes). After the skin is exposed to the chilled branding iron, it is frozen in the shape of the brand applied and within 2 - 3 min the skin thaws and the area reddens. A marked edema with fluid-filled swelling develops 5 -10 min after brand application, and persists for approximately one day, depending on the exposure time. The edema then recede, and the branded area becomes dry and scurfy. Varying amounts of skin and hair are lost over the next 2-3 weeks.



Overexposure to the freeze brand may result in excessive hair follicle loss in the centre of the brand, and consequently the growth of white hair will occur only on the edges of the brand site. Subsequent hair growth occurs usually 6-10 weeks after branding, depending on the season. Freeze branding produces a permanent mark on the skin, the hair re-growing in a lighter colour and the skin itself lacking in pigments.

The resulting brand, if adequate, is legible from about 30 m. In the case of white and grey horses a bald area is frequently observed after freeze branding.

Although liquid N was used initially, it is expensive and more care is needed by the operator. The temperature of liquid N is lower, and the application timing is much more critical in order to avoid over freezing the brand. Moreover, it can only be transported in suitable thermos with vented tops. Dry-ice made directly from a CO<sup>2</sup> cylinder or dry ice-methyl alcohol mixtures are more currently used than liquid N. For application, clipping the brand site as close to the skin as possible and removing loose hair and dirt, which increases time and preparation requirements, is recommended. Soaking the brand site with methylated spirits immediately before applying the brand, and repeating for each character improve the brand.

The brands moulds are cold enough when bubbling (boiling) stops and application on the hide for approximately 15 - 40 seconds depending on freezing solution and age of the animal. Restraint of the animal is essential. Animals in poor condition do not brand as well

as those in moderate to good condition. The branding of calves (under 4 months) is not recommended.

Freeze branding irons should be made of copper or bronze alloy. Solid copper is the best but it is most expensive. Conventional steel irons work but are more likely to result in a poor unreadable brand. The face of the irons should be rounded to uniformly transfer the cold from the iron to the skin. Suggested dimensions for the branding face are 6-10 mm wide, 70-100 mm high and 38-50 mm deep. Handles should be about 380 mm long.

Approximately 7 kg CO<sub>2</sub> will produce enough dry-ice to fill approximately 100 digit molds. A mixture of 5 kg dry-ice to 9 l of methylated alcohol is enough for 150 animals to be branded with three characters each.



### **Equipment Needed**

- Coolant – dry ice in ethyl, methyl or isopropyl alcohol and liquid nitrogen.
- Isolated container for the coolant.
- Set of copper or high-quality bronze alloy branding irons.
- Set of clippers.
- 95 % ethyl or methyl alcohol.
- Gloves.

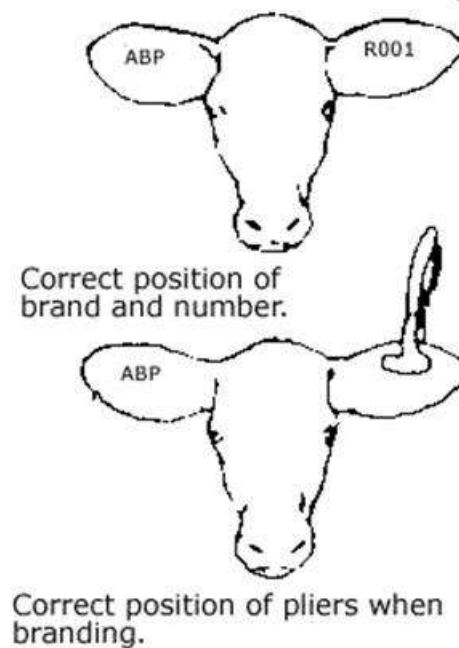
## Freeze Branding Process

Step	Action
1	Get everything ready before you start branding.
2	Get someone to help you. The helper must bring the animal closer and hold it firmly. If you have a crush-pen, branding will be easier.
3	Knee-halter the animals so that they do not kick you.
4	Shave off the hair on the spot to be branded.
5	Freeze the irons by putting them in liquid nitrogen or in spirits which has been chilled to $-40\text{ }^{\circ}\text{C}$ by means of dry ice.
6	When the irons stop giving off bubbles they are cold enough to brand letters onto the skin. Shake off the nitrogen or spirits, otherwise the flow-off will also leave a mark on the skin.
7	Press hard for the following exposure times: <ul style="list-style-type: none"><li>• Animals of 6 to 8 months – 20 to 25 seconds.</li><li>• Animals of 9 to 18 months – 25 to 30 seconds.</li><li>• Animals over 18 months – 30 to 35 seconds.</li></ul>

## Marking By Means Of Tattooing

Ear tattooing is one of the best conventional methods of permanently identifying animals. The number code that is applied will be in most cases permanent throughout the animal's life. Tattoos are usually applied on either the left or right ears (all species), lip (horses), groin (pets) and under the tail (sheep and goat). Since the tattoo can only be read when the animal's head is restrained, it should be used in conjunction with another system which allows the animal to be identified in the paddock.

The diagram below indicates the correct method of applying the tattoo pliers.



Black dye paste is normally used for tattoos, but green dyes are preferred with dark or black-eared breeds. The use of a back light may also help to read tattoos in animals with dark skin.

Tattooing should be done with restrained animals in an skin area which is free of hair, cartilaginous ridges and large veins. Tattoos in the top half of the ear retain their clarity better than those in the bottom half. Although ear is the most common place for tattoos, horses were widely tattooed in lower lip in the army and in many purebreds.



For dairy sheep and goat the base of the tail was also commonly used. In both cases it is recommendable to tattoo the numbers towards down for easy reading.

Tattooing hammers with big numbers were also used for tattooing the holding numbers in pig expedition, although this practice is not recommended currently because is increasing pig stress at transportation to slaughtering.


For better tattooing, skin should be cleaned and wax in excess removed by using alcohol. After cleaning and applying the dying paste on the area to be tattooed, the tattooing pliers should be applied firmly and quickly, making sure the digits are the right way up for reading. Thereafter, the tattooing paste should be rubbed strongly into the punctures.

Brass digit plates with nickel plated steel needles punch out clean and clear tattoos. Commercially available digits for tattooing range between 5 and 20 mm high. The minimum ear tattoo size for lambs, kids and piglets is 10 mm; for calves, sheep, goat and pigs is 15 mm, and larger numerals should be used for adult cattle. Two sets of numerals are necessary if both young and adults are to be tattooed in a farm. Rotary 4-chain tattoo devices are also available for marking large number of animals. Carefully disinfection of the tattooing digits is recommended to avoid infections and diseases transmission. Moreover, frequent ear tissue necrosis or fly worm attacks are described after ear tattooing in subtropical conditions.

### **Tattooing Process**

Step 1	Get everything ready before you start tattooing.
Step 2	Get someone to help you. The helper must put the animal down and hold it firmly.
Step 3	Put the characters in the right order and position in the tattoo tongs.
Step 4	Apply the tattoo ink on the area to be branded (ears or oxters).
Step 5	Press the tongs until little holes on the skin appear.



	
Step 6	Rub the ink into the holes.

### **Paint Branding**

Sheep branding is usually done by painting the wool after shearing with the symbol of the owner or with digit moulds similar to those used for freeze branding. As this mark is temporary, a second system (ear notching, tattooing, ear tags, etc.) needs to be used for a permanent indication of ownership. Paint is also used for short term marking of other livestock species (cattle, pigs). With these aim sprays of biocompatible paints and wax coloured sticks are used.

Life of paint branding is long in fine wool sheep breeds, but it is short and unsatisfactory in coarse wool breeds. Same problem is observed in hairy lambs.

Paint must be washable to avoid wool depreciation. Colours commercially available are usually yellow, blue, green, black, red, or purple. Brands are usually painted for the side, hip, nose, or jaw on either the left or right side of sheep. No owner brand should be recorded across the back of a sheep, which are normally reserved for individual sheep numbers in most countries.

### **Ear Tagging (Identification)**

Ear tags are currently the most common method of identifying individual animals in practice. They can be done in a great variety of shapes (flag, button, loop, etc...), materials (metal and plastic), sizes and colours.

Only tamper-proof and non-reusable ear tags should be considered as a permanent means of identification. Ear tags are easier to read if numbered with the same numbers on both sides, which is recommended for practice.



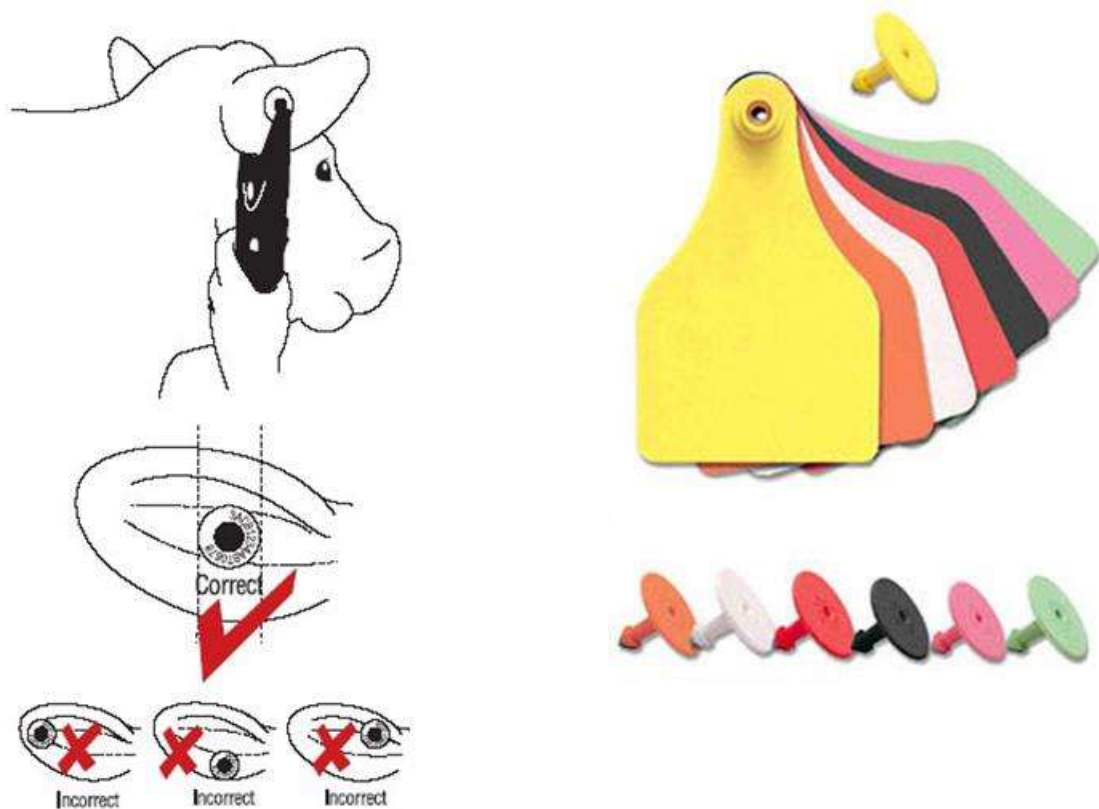
Retention rate of ear tags is extremely variable ranging from 60-98% depending on tag features, species, breeds and environmental conditions.

Animal welfare in regard to ear tags is also questioned in some breeds and conditions. Resistance to environmental conditions and biocompatibility are critical features for choosing the materials used in ear tags. The placement site is specific for each type of tags and critical for its permanency on the animal.



Moreover, environmental conditions affect infection rate of newly applied ear tags, and no ear tagging is recommended with very hot temperatures or during fly activity season. It is advisable to perforate the ear one or two weeks before application in order to reduce the risk of infection of the tagging site. Dipping tags in an antiseptic solution before application is a controversial practice but it is thought that it helps to improve retention and to reduce the risk of infection of ear tags.

Metal loop ear tags are made in brass or aluminium. Brass ear tags with tamperproof closing system have been commonly used for cattle tuberculosis and brucellosis control in many countries. Small aluminium loop tags are easy to stamp and to apply, but also easier to remove. Both metal era tags should be placed in the top of the ear, with an overhang of 5-8 mm, and within the inner half of the ear. Placing the tag in the inner portion of the ear means that they are less likely to be torn out.



Plastic ear tags are currently the most common method of identifying individual animals in many countries, and when they are well designed and adapted for the animal species and breed, they are a recommendable option for livestock identification. They are ideal as a management tool but only tamper-proof and non-reusable ear tags should be considered for permanent identification.

With developments in plastic industry, plastic ear tags have improved considerably, with free-swinging, soft, self-piercing multi-coloured types available. Among the different variety of shapes, sizes and colours available, only soft polyurethane ear tags are currently recommendable for greater retention on the animal. Improved metal or hard plastic points for the ear tag pins are also recommended. Plastic ear tags are available pre-numbered or plain. Specific numbers can be mechanically recorded or hand written on the plain tags by using special markers.

### **Ear Notching (Identification)**

Ear notching is worldwide used for holding identification and in some cases as a cheap system for numbering. Moreover, tuberculosis positive cattle were marked in the past with a T notch in the ear to identify animals to be slaughtered. Ear wound

necrosis and breakage, as well as development of fly worms on the wounds may alter the notch codes.

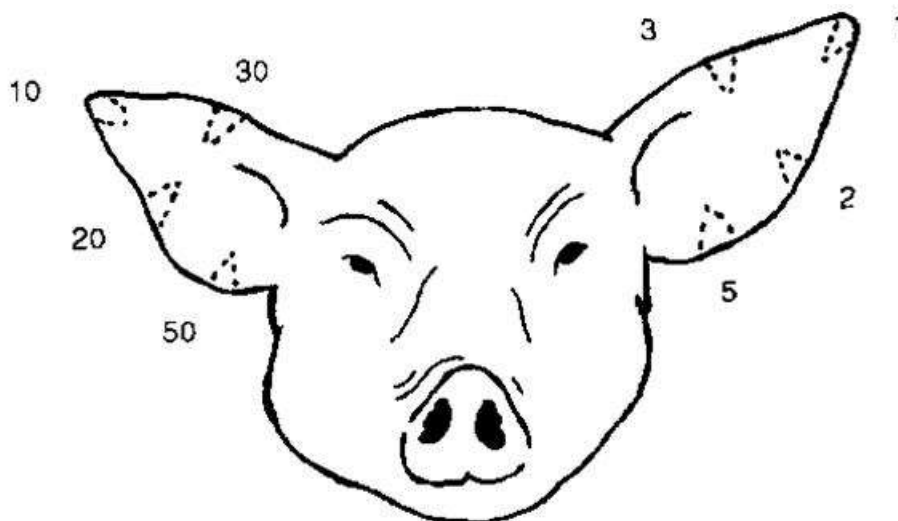
A mathematically interesting system of numbering based in ear notches is still being used in pigs (Official Berkshire Ear-Notching System). In this system (Figure 2), a smart combination of notches in the right ear (coded as numbers 1, 3, 9, 27 and 81) and in the left ear (coded as numbers 100, 200 and 600), are used for litter marking. Up to 1 199 litters can be marked with this coding system. Right ear is also used to add the individual marking of a pig inside a litter (coded as digits 1, 3 and 9).

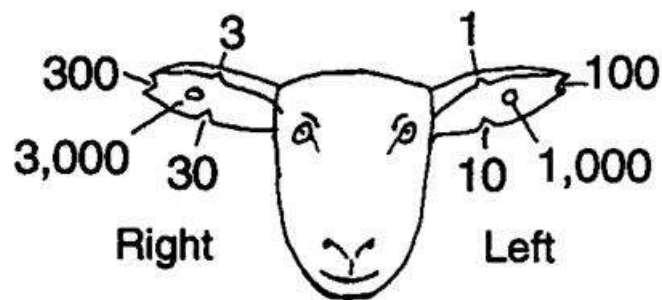
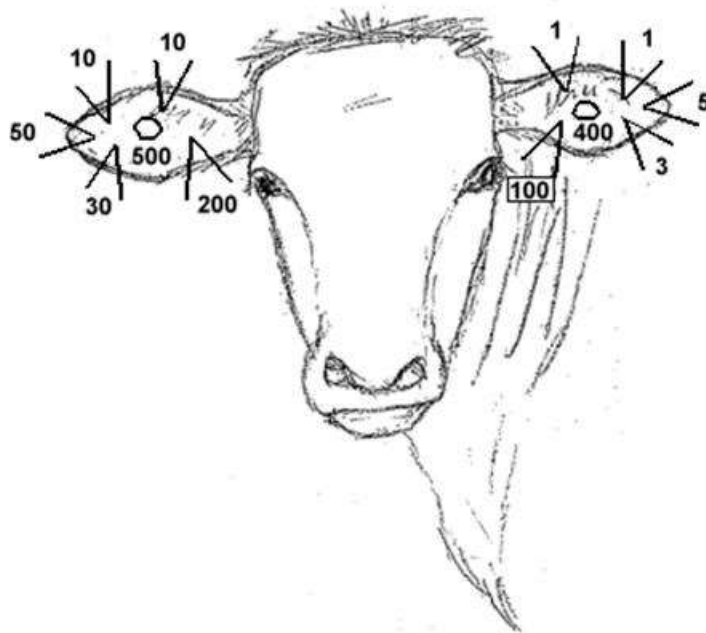
Each pig in a litter will have the same notches in the right ear and different notches in the left ear. This method can be used to identify other animals, e.g. sheep and goats.

### **Notching the Ear**

A V-shaped notch can be cut out of the edge of the ear using a pair of clean scissors. Make the notch a few centimetres deep so in future you will be able to read it from a distance.

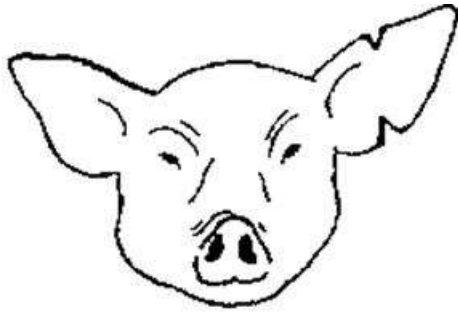
The notches on the left ear are for single numbers and on the right ear the notches are for tens.



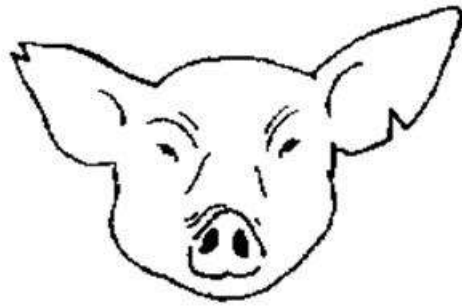


### Recording the Number of the Pig

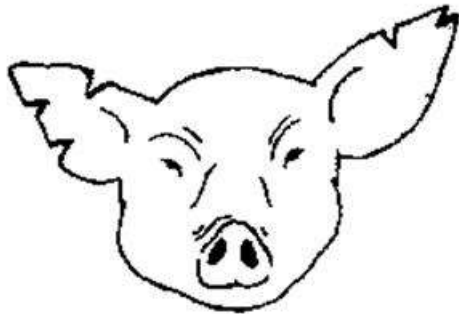
Look at the notches on the right and the left ears then add up the number on each ear to give the number of the animal.



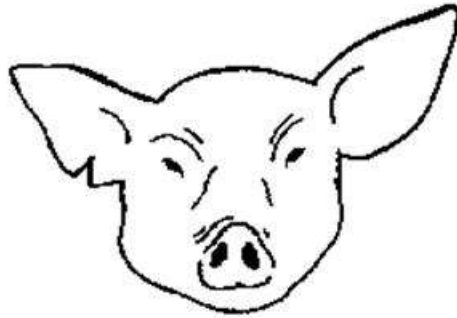
Number 8



Number 15



Number 104



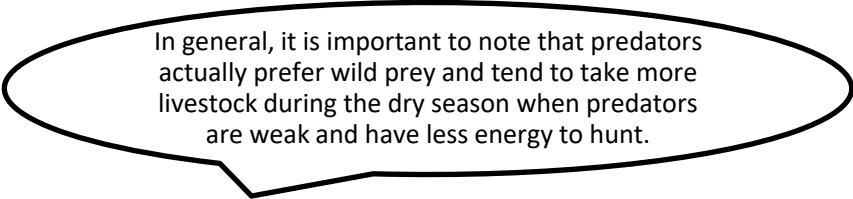
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# Learning Unit 4

## Predation Management

# 1. PREDATION

Predators are wild animals that hunt or prey on other animals as a source of food. They are Carnivores (Carnivora), meaning it is natural for them to kill and eat meat. Livestock is looked after by people and they have as a result not evolved to run as fast as wild prey species and are thus 'easy targets'. Predators learn hunting techniques from their own group when they are young and once one animal has found a way to hunt livestock, it will teach the others.



In general, it is important to note that predators actually prefer wild prey and tend to take more livestock during the dry season when predators are weak and have less energy to hunt.

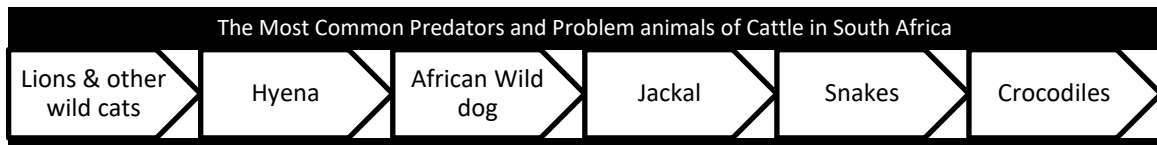
Rapid expansion of livestock farming throughout Africa is leading to greater conflicts between predators and humans and has reduced the amount of wild prey available to predators. Predators kill livestock causing large financial losses and in turn humans destroy the predators. The problem is multiplied on the edges of protected areas as predators are often drawn out of parks for the water that is always present for livestock, and then they discover a grocery store full of easy prey items; the good life until their untimely death. Continuous removal of predators leaves the territory open, which serves as a vacuum sucking in new predators all the time and leading to large predator losses. Without a significant breakthrough for mitigating predation on livestock it is likely that the precipitous decline of e.g. lions will continue and e.g. African wild dogs are already highly endangered.

The Carnivora, as the name implies, are generally predatory, and to a greater or lesser extent, all canids live by killing prey. This fact raises three related questions in the context of conserving and managing wild canids.

- First, to what extent are the populations of canids limited by their prey, and to what extent do they limit the numbers of their prey?
- Second, and with respect to valuable prey, is the impact of predation by canids disadvantageous to people?
- Third, where predation by canids throws them into conflict with people, how might such conflict best be resolved?

Problems are likely to arise with predation on three categories of prey: domestic stock, wild game, and endangered species. Clearly the delineation of these three categories is

indistinct; for example, the management of incubator and pen-reared game birds such as pheasants has more in common with the domestic stock than it does with wild game.



The identification of the predator involved in killing livestock and animals is fairly difficult to master as there are many variables. Sometimes scavenger/predators get blamed for a kill when in fact they are just eating what was killed by local dogs or died of natural causes. Getting to the carcass quickly after the animal's death is critical for proper identification of the guilty species.

## 2. IDENTIFYING PREDATION

- Predation is rarely observed; therefore, the accurate assessment of losses to specific predators often requires careful investigative work.
- Determine cause of death by checking for signs on the animal and around the kill site.
- Size and location of tooth marks will often indicate the species causing predation.
- Extensive bleeding usually is characteristic of predation. Where external bleeding is not apparent, the hide can be removed from the carcass, particularly around the neck, throat, and head, and the area checked for tooth holes, subcutaneous haemorrhage, and tissue damage. Haemorrhage occurs only if skin and tissue damage occurs while the animal is alive. Animals that die from causes other than predation normally do not show external or subcutaneous bleeding, although bloody fluids may be lost from body openings. Animal losses are easiest to evaluate if examination is conducted when the carcass is still fresh. Animals may not always be killed by a throat attack, but may be pulled down from the side or rear. Blood is often on the sides, hind legs, and tail areas. Calves can have their tails chewed off and the nose may have tooth marks or be completely chewed by the predator when the tongue is eaten.
- Tracks and droppings alone are not proof of depredation or of the species responsible. They are evidence that a particular predator is in the area and, when combined with other characteristics of depredation, can help determine what species is causing the problem.
- Many livestock operations include extensive pastures which feature ravines, scrub land and woodlots. These situations are likely to be attractive to predators.



- The identification of the predator involved in killing livestock and animal is fairly difficult to master as there are many variables.

## **Tracking Principles**

Tracks are an excellent way to determine the presence of an animal. The problem is, however, that rarely does one find a "textbook" track. Tracks are often smudged or only partial. Frequently tracks only help one narrow down potential suspects and so they have not been included in the central key. However, here follows some information that may help you identify tracks.

1. Perfect tracks are rarely found in the field.
2. Look carefully at the track and the nature of the substrate holding the track impression.
  - What is its width? (with snow measure at the bottom not at the top of the snow).
  - What is its length?
  - What is its shape? round? oval? oblong?
  - Are claw marks showing? How many? (could the ground be too hard to show claws?)
  - Are pads showing? How many?
  - Are toes showing? How many?

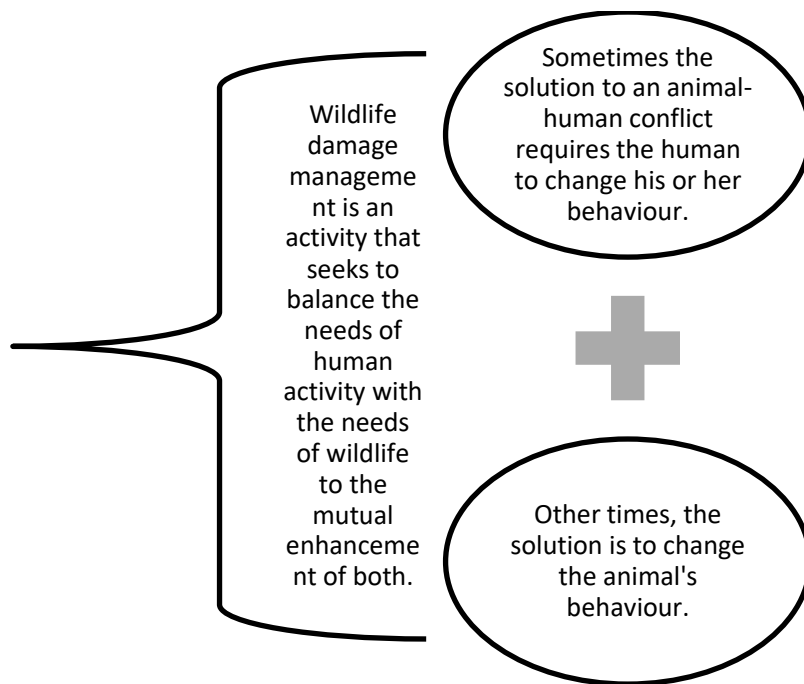
3. Are there other tracks?

If so what is the distance between this track and the other track? This is known as the animal's gait! Knowing the gait can be very helpful in identifying the species.

4. What is the habitat?

Where is the animal going and what is it doing? These will provide helpful clues to narrowing down your list of suspects!!

### 3. PREDATION MANAGEMENT



Various tools and strategies are used to reduce human-animal conflict, such as behaviour modification, repellents, exclusion, habitat modification, relocation, lethal control etc. Wildlife damage management is truly a diverse and complex field.

Every citizen of the country is an owner of the wildlife that lives here. All species of wildlife belong to the public. The people as a whole are responsible for managing wildlife problems.

Wild animals are an important part of our environment. For thousands of years people relied on wild animals for food and clothing. Wildlife adds to the beauty of the outdoors. Wildlife adds excitement and fun to such activities as hiking, camping and photography. As a renewable natural resource, wildlife provides hunting and fishing opportunities. Some hunters use the animals they hunt for food and clothing. Wild animals can help control animals and insects that we consider pests. Pests can cause damage to our crops and homes.

Sometimes wildlife can carry diseases that can make people sick. Skunks can carry the rabies virus which can be fatal (cause death) to your pets. Some animals are predators. This means they eat other animals. Predators can cause problems for farmers when they eat livestock. It is not a problem when they eat other wild animals, such as rabbits and mice.

There are individuals and government agencies who work to solve wildlife problems. These agencies may be part of local, provincial or national governments. These agencies have people who work solving wildlife problems. These agencies provide information and sometimes equipment to solve wildlife conflicts.

Prevention is an imperfect discipline. Animals adapt to our methods and materials and workmanship break and decay over time. Monitoring and maintenance are necessary in any prevention program. Acting quickly before a problem gets out of hand will save you a lot of trouble down the road.

Environmental protection requires that farmers and communities avoid destroying predators where possible and rather find alternative solutions to harming, hunting and poisoning these predators.

Where cattle farms are adjacent to wild life sanctuaries and game farms, the farms must be sufficiently fenced off from one another, making use of e.g. electronic fences, game fences, razor wire, etc. It is important that the cattle farmer be alert to the dangers that these fences hold for his cattle and prevent them from electrical shock, cuts and strangulation near fences by keeping the heard away from such fences.

For farmers in areas with predators such as Lion, leopard, hyena and cheetah, one of the biggest problems is the loss of livestock to the predators. There are however a number of measures that can be taken by farmers to reduce the scale of the problem.

**The first step is to identify the predators present on the farm or in the local area.**

There is little point building expensive protection against lions for instance if there are no lions around. Spoor is a good way to identify what animals are in an area, as predators are often hard to spot.

**The second step is to implement good livestock management techniques to reduce the risks from predators.**

There are a number of techniques that can be used.

## **Kraals**

Kraals are a widely used method of protecting livestock from predators, and are used across much of Africa. A Kraal is an enclosure which is used to keep livestock safe. Typically livestock is let out to graze during the day and then returned to the kraal for the night. The

kraal can be constructed in a number of ways. One of the most common is a thorn bush kraal where thorny branches are used to create a wall which keeps predators out. Other construction methods include the use of wicker (woven poles), wire fencing, wood or stone walls.



The kraal should have high enough sides to stop a predator jumping over them and into the kraal. It also needs to be strong enough to keep the livestock inside. If cattle smell a lion outside the kraal then they can easily panic and stampede - and if the kraal isn't strong enough then they can break out of the kraal to where the lion is waiting.



Research has shown that a kraal is most effective if its sides are thick enough or constructed in such a way that the predators cannot see through the walls of the kraal. When making a kraal out of wire mesh, cloth can be used to screen off the lower metre or so of the fence to stop the predators seeing through. With thorn bush kraals then making the thorn bush walls thicker helps restrict the view of the predators.



Another factor shown to be key to the success of a kraal is the number of gates in the walls. Ideally there should just be a single gate.

The kraal should be sited near a home so that if there is a disturbance at night, it will be heard and can be investigated immediately.

Moving livestock in and out of kraals can be seen as extra work for a farmer, but it has several benefits. Firstly the livestock is a lot safer if it is kept in a kraal at night (when predators such as Lions, Leopards and Hyenas are most active). Secondly by making sure the animals are counted in and out of the kraal then any missing animals can be quickly noticed and a search started for the missing animal. In contrast, farms where the livestock is allowed to wander freely during the day and night may not notice a missing animal for a much longer period. Also when moving the livestock in and out of the kraal the farmer is able to visually inspect the animals to identify any health problems, and get sick or injured animals treated.

Kraals should also be used for calving animals. Keeping the calves and their mothers in a separate kraal for a few months after the birth of the calf gives the calf extra protection at the time when it is most vulnerable. This increases the chances of survival of the calf.



## **Fencing**

Although it is not always practical, fencing grazing areas is one option to reduce or eliminate the threat from predators. By using wire fences plus electrified strands, it is possible to create a fence that will keep predators out. Fencing like this is expensive and is only generally used on larger commercial farms. Fencing has to allow places for animals such as warthogs to cross under the fence (usually using swing gates) as they would otherwise simply dig their way under the fence and leave an easy entry point for predators. Fences also need regular inspection and maintenance to ensure they are in good working order and there are no gaps for predators to enter.

## **Livestock Guarding Animals**

One way to protect livestock is through the use of livestock guarding animals. Usually these are dogs, but other animals such as donkeys are sometimes used. Guarding dogs protect the livestock by patrolling, scent marking and barking. They act as a deterrent to predators, particularly smaller predators such as caracal and cheetah, and will also chase off predators they see.

Example:

Anatolian Shepherd dogs originate in the Anatolian plateau of Turkey. A plateau is a high, flat-topped mountain like Table Mountain. Summers are hot and dry, and winters are cold, but the Anatolian Shepherd Dogs live outside all year round. They were bred to guard sheep against predators, and are still used for this purpose.

The breed still exists in Central Turkey. From ancient days they have defended sheep from dangerous animals like bears, and wolves. They have also been used as fighting dogs in wars, and as hunting dogs.

They are large, imposing dogs, but not too heavy and fat to run fast! Agility is an important factor - not size alone. They must be able to stalk and chase a cheetah! Anatolian shepherds reach maturity at around 4 years of age.

In Namibia and South Africa, Anatolian shepherd dogs are being used on farms to protect flocks of sheep & goats from jackal, caracal, leopard and cheetah. God created all the animals for a purpose. We only live on earth temporarily. Let's not shoot all the wild life, but use natural means like dogs to protect our assets! If we destroy all the small animals, the big predators will have no choice but to kill domestic animals for food.

The cheetah is the fastest land animal, able to accelerate from standstill to 80 km/h in only three seconds; its top speed is 120 km/h. Their spines bunch up and release as they run, and their hips are flexible. At top speed, a cheetah does not touch the ground for eight meters. It is flying! Cheetah is the most endangered African cat. If these cats see a big dog, they are unlikely to approach! This is a much better way of controlling them than using cruel traps or poison.

## **Temperament**

Anatolian Shepherds are alert, observant, and intelligent dogs. They are protective & possessive towards their families and territory. Care should be taken when friends visit! Careful bonding with the owner is necessary in puppyhood, in order to control a large dog when it is grown. This breed will not suit a meek, unassertive owner! The dog must not take charge of the owner!

Anatolians excel at guarding flocks, and if they are to be used for this, they should not be treated as pets, but should live outside in all weathers with the flock, from a puppy. Thus the dog adopts the sheep as its family that it has to protect. One dog can protect a large flock of sheep.

If they are pets, then a big, secure yard is needed, and they should be taken for walks or runs every day.

## **Colour and Appearance**

All colour patterns and markings are acceptable, but the usual colours are fawn with a black mask, pinto, white and brindle. The dogs have black lips, a black or brown nose and muzzle. The almond shaped brown eyes may be outlined with black or brown.

The head is big and broad. Ears normally hang down, but stand up when listening. The neck is thick and powerful.

Anatolians have a solid robust neck, and their legs are long and straight with muscular paws. Their tail hangs low and has a slight curl at the bottom.

The back is short in proportion to the leg length.



## **Guard Donkeys**

Guard donkeys, guard dogs, and guard llamas have all been used successfully to protect livestock. The choice depends on the livestock being protected, local terrain, hectare area, predator threats, budget, and personal preference. Whichever animal you choose, count on some training, extra feed, vet care, and housing expenses.

In some cases you may need more than a single guard animal to protect livestock. Guard dogs can work together to patrol large areas and to fight off marauding packs of e.g. feral dogs and jackals that would overwhelm a single guard dog. Dogs and llamas sometimes can be trained to work together.

Guard animals can be effective, but in some situations, packs of predators will defeat the most diligent guard animals. If you are following an aggressive rotational grazing program, with livestock in several paddocks at the same time, you may need a guard animal for each paddock. Sometimes, even in a small field, a single guard animal can be overwhelmed.

### **How do guard donkeys protect a flock?**

Donkeys have been used for centuries to protect sheep and other herding animals. Donkeys are extremely intelligent, with acute hearing (there is a reason for those big ears) and sight, and they are conservative by nature: they do not like change in their surroundings, and will drive off a predator or stray dog as much because it is an intruder as from any instinctive dislike of canines.

Donkeys are easy to care for — good grazing or hay and water is all they need — and delightful farm pets, if you accept that they are clever and rigid.

But not all donkeys are instinctive guards. Some will ignore an intruder, and there are stories of donkeys who run away from intruders, and donkeys who attack the livestock they



are supposed to protect. If you're shopping for a guard donkey, stay away from intact (stallion) jacks in favor of a gelded jack or a jenny (female). Some breeders test and/or train donkeys for guard duty and will sell them with an agreement that will allow you to exchange the donkey for another if it doesn't work out as a guard. Remember too that a jenny with a foal may be too busy to watch livestock. Even a jenny in season is thinking more about jacks than about predators. Two donkeys together may spend their time playing donkey games instead of watching for predators.



## Guard Dogs

Guard dogs have been used to protect livestock from prehistoric times. The breeds used have ranged from mix-breed dogs to the traditional guard dog species: Akbash (Turkey), Maremma (Italy), Komondor and Kuvasz (Hungary), Liptok or Chuvatch (Czechoslovakia), Tatra or Podhalanski (Poland), Ovcharka (Caucasus), Shar Planinetz (Yugoslavia), and the Great Pyrenees (France). By tradition most guard breeds are light-coloured; the light coloured dogs are all-but-invisible to predators when they bed down with the livestock, and they are easily distinguished by a herdsman from darker-coloured predators.

Guard dogs have been bred and trained to enhance a trio of traits. To be effective, the guard dog must bond with the animals it is protecting, it must be courageous in the face of a predator, and it must accept the responsibility of its job. The dog lives day and night with the livestock it is protecting, and can be stand-offish toward people. Despite this essential independence, the owner needs to establish him or herself as the *alpha* figure in the dog's world.

Guard dogs have a repertoire of techniques to defend their livestock from predators. They are sensitive and primitive enough to be able to *read* the intent of a predator, and to use the minimum measures necessary to defend the territory and flock. Attacking the predator is the last resort, after other measures have failed. The first line of defence is a perimeter marking with faeces and urine that warns predators to *Stay out!* If the markings do not deter a prowling predator, the guard dog will warn the predator with a staccato bark that announces *Stay where you are; I can see/smell/hear you*. If that fails, the bark escalates to a loud warning. If the predator persists in the face of the warnings, the guard dog will advance and charge at the predator, barking. The next step is a shoulder blow to the predator, saying, *I can expose your jugular and kill you if you persist*. The final defensive action could include killing the predator.

Guard dogs are bonded with the livestock they are supposed to protect by being introduced to stock as puppies, generally from 8 to 12 weeks. Once bonded, dogs accept the animals they are guarding as equals, or even as dominant. It takes some training and patience to get the bond right; puppies are playful, and will sometimes chase, bite, or even kill stock. Eventually, a good guard dog learns its role, and will acknowledge an irate cow guarding her calf by moving away, lying down, or averting its eyes. Guard dogs live with the stock they guard, bedding down with the animals. Most guard dogs are fed with the stock. Sometimes stock will eat the dog's food, although most dogs learn to protect their food.

Guard dogs are by disposition independent. Most will make their rounds at some time during the day, and spend a good deal of time at a favourite spot where they can watch the flock and the surroundings. It takes training and experience to teach a guard dog to accept pets and other adults, while not losing its instinctive wariness toward predators. When it spots an intruder, the dog will position itself between the intruder and the flock and make threatening gestures toward the intruder. If the intruder does not withdraw, the dog will attack. These are brave dogs, not afraid to attack predators much larger than themselves.

Some potential problems with guard dogs include wandering, chasing or playing with stock, and dogs that are territorial rather than bonded to the flock. The early training of the dog needs to take place in an enclosure so the dog learns not to wander. Some dogs later need a strand of electric fencing around the pasture to remind them where they should stay. Animals that chase or play with stock must be curbed immediately; the challenge, sometimes, is to teach a dog how to hold its own against aggressive animals. There are also cases of dogs with territorial instincts. A territorial dog can do a good job as a guard, as long as the livestock doesn't move to a new grazing area while the dog is protecting the old turf.

Finally, predators can overwhelm even the best guard dogs; in some instances guard dogs may solve a predator problem for a number of years, until the number of predators is so great that losses return to pre-guard dog levels. A guard dog may be successful against some large predators, even small cats, but a full-grown or large predator may overwhelm a trusted guard dog.

Guard dogs are not pets. To do their job, they need to have a primary identity and bond with the livestock they protect, rather than with the owner or family of the owner. Trying to mix the roles will confuse the dog, and lessen or destroy the effectiveness of the dog as a guard.



## Guard Llama

Llamas are intelligent, instinctively dislike canines, and are capable of protecting livestock from some predator attacks. A tall, alert llama can be intimidating to a predator. Because they are ruminants, llamas can eat the same diet as a flock of sheep or goats they are guarding. They can be expensive to purchase, and in most areas vets have little experience with llamas. A guard llama should always be gelded. It is generally recommended that llamas not be gelded before one year of age because of problems in the growth of leg bones if the male hormones are not available.

Although the snorting and stomping of a llama can be an effective deterrent against a prowling predator, llamas can themselves be vulnerable to packs of predators. Many llama breeders now refuse to sell llamas as livestock guards because their guarding manner — out of natural curiosity, a llama walks *toward* a marauding predator — can increase their

vulnerability. Many sheep farms have had good luck with llamas as guard animals. Some llama breeders use guard dogs for their llamas.



## **Herding**

In parts of Africa it is usual to see herds of cattle, or flocks of sheep and goats roaming around with nobody watching them. While this is the easy option, it is also the least effective way to ensure the safety of the livestock. Predators are opportunistic and unguarded livestock is an easy meal for them. In East Africa, the Masai keep someone with the herds of cattle to watch for threats from predators. If spotted, then a predator can usually be scared off.

## **Trapping**

A live trap is a trap that doesn't kill the animal. They are generally built by employing a cage with a trap door that lowers when the animal crawls into it. Bait is placed inside the cage and the animal's weight trips the door and closes it. Live trapping is an effective animal control alternative that is both humane and earth-friendly. Whether you are successful in catching a live animal depends on choosing the right bait and location among factors.

It is recommended that you get all the necessary information from local vets and authorities before setting a trap to determine the lawful method of releasing a captured wild or nuisance animal. Many species are protected by law.



The following tips should be used when preparing to live catch your nuisance animal:

### **Testing the Trap**

Following the instructions contained in the carton, you may want to test the trap and spring it a few times to make sure that it works properly. For example, spring it by touching the trip plate from each end.

This should be done also after the trap has been set and camouflaged to make sure it works freely. If you feel the doors do not work fast enough, place small stones or other weights on top of the door. This will cause doors to drop faster.

### **New Traps**

When you receive the trap it will be bright and new. Therefore do not be discouraged in case you do not catch what you anticipated the first night or day. The effectiveness of traps usually improve with age. Some animals do not mind a new trap while others do.

So instead of setting the trap to catch the first animal to come along, bait the trap, or simply place it where you intend to set it and fasten the doors open by means of a stick or wire.

After a couple of days, when you notice the bait has been disturbed or taken, it is time to set the trap.

### **Camouflaging your Trap**

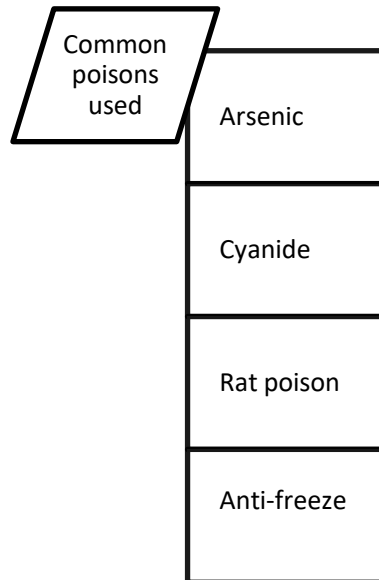
Camouflaging the trap is an effective means to entice the animal.

Place twigs and leaves all over the trap to remove a lot of the glare from the trap. You can even spray it with water and throw dirt on it to give it a conditioned look.

Animals will not be discouraged from entering the trap by the smell of your handling the trap or from supposed machine/oil odours in the manufacturing process.

## Poisoning

Poisoning animals is not recommended and you also run the risk of the cattle of the farm ingesting the poison. Here follows some information on common poisons encountered and some recommendations for antidotes.



The use of chemical compounds will, and should, always be controversial. Most poisons kill sentient animals inhumanely and should not be considered for use on vertebrate animals. However some poisons Kill as humanely as any other lethal method and can often be applied in ways not possible with the other methods. This is very significant in the light of the facts about the learning ability of the animals. As many acceptable control options as possible need to be used to effectively stop damage. The most effective weapon against abuse is to furnish the affected parties with the ability to stop damage in acceptable ways.

The toxic collar being an example. This is the only method yet devised that has the potential to be 100% selective in killing only damage causing individual predators. The Coyote Getter, when used with pheromonal lure is another indispensable tool to be used in selectively alleviating predator damage. The prerequisite is proper training to empower the livestock owner to use the equipment effectively.

Poisoned carcasses has been popular in the past and this caused an untold amount of damage to our natural heritage. This abuse has been whittled down to small Single Lethal Dose Baits (SLDBs) that are still in common use the world over. SLDBs has little application in damage control. It has been used mainly in population suppression efforts, but when

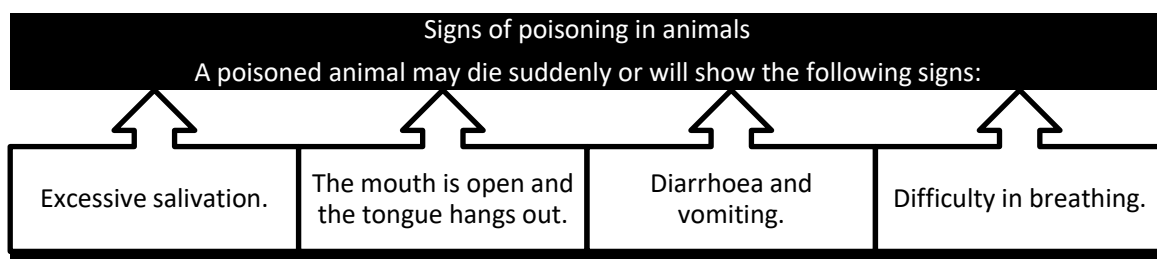
dealing with the intelligent animals that we encounter in ADC, it proves not to be effective. It mostly targets the wrong sector of the population and animals in any particular area learns to avoid the baits. The fundamental problem with SLDBs in ADC is that it is bait and that damage causing individuals are the least prone to take bait.

Lures to get SLDBs more selective have been suggested. All the really selective lures that has been discovered has pheromonal properties and is not perceived as food by the animal. They may even pick up the bait in their mouth and carry it for a distance, but then drops it. To get poisoned the animal has to swallow the bait! This is where the coyote getter comes into its own with a pheromonal bait. When the animal picks it up it sends a deadly dose of cyanide down the animals throat.

The chemical used as poison has to be screened and selected with great care. There are thousands of poisons on the market - by definition all to kill. Some show selectivity between taxonomic groups of animals but this could not yet be fully utilized in the vertebrate ADC field of operation. When distributing poison in our environment extreme responsibility is a prerequisite. Environmentally damaging poisons have been promoted by well-known and respected conservation NGOs, by not properly investigating the substance.

Agricultural poisons may only be used as prescribed on the label. When eelworm or stemborer poisons are used to kill predators it is illegal. There is quite a stiff fine or even jail time for a person when caught.

Selectivity almost always is dependent on intimate knowledge of the target animal (even individual) as well as the non-target animals present, and thereby use of the best equipment for the situation, but most importantly the exact placement of the equipment. This is as true of SLDBs as it is of leghold traps or capture cages.



# Causes of poisoning in animals

There are many causes of poisoning in animals:

There are very many poisonous plants. You should talk to your community and discover what poisonous plants are in your area.

Seeds for planting may have been treated with chemicals. If animals or humans eat these they can die..

Strychnine is a poison which can be used to kill wild dogs and wolves. It will also poison other animals

Weed killers used in agriculture may be poisonous.

Chemicals used to kill insects on plants or used for dipping against external parasites.

Old paints, kerosene, diesel and other fuels and oils.

Poison used to kill rats and mice.

Animals can be poisoned by salt if they are not able to drink a lot of water.

Sometimes people deliberately poison animals.

## Treating Poisoned Animals

You cannot do much in a case of poisoning. You should ask for veterinary help as soon as possible. Try to discover what caused the poisoning and stop other animals from being poisoned.

Charcoal mixed with water and given as a drench is a good treatment for poisoning. Give 1 g m for every 20 kg of body weight.

Kaolin (china clay), a white powder, can be mixed with water and given as a drench. Give 10 gm. to a small animal and 200 gm. to a horse or camel.



## 2. Individual Formative Exercise: Predation Questionnaire



## Learning Unit 5

### Preventing Livestock Theft

# Manual for the prevention of Livestock Theft

Learning Unit 6  
Code of Best Practice

# RPO / Nerpo Code of Best Practice

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