

*Guidelines for*  
**Keeping Your  
Livestock Healthy**





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Compiled and edited by  
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Keith Perret, Alan Rowe, Donna Hornby and Brigid Letty

## **Guidelines For Keeping Your Livestock Healthy**

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# 1 Introduction

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## What is this manual about?

This manual gives livestock owners and people who support them information about how to keep animals healthy and how to deal better with animals that are sick.

## Content of the manual

- Animal health
- Sickness/disease
- Treatment
- Particular sicknesses/diseases and their treatments
- A vaccination programme for cattle
- Dosage guidelines
- Medicine costs

The section on **animal health** talks about improving the animal's natural capacity to fight disease. It asks what is a healthy animal and how does one keep an animal healthy?

The section on **sickness/disease** talks about different causes of sickness. It also looks at symptoms and factors that help the farmer to identify the diseases affecting his or her livestock.

The section on **treatment** talks about things to consider when a farmer wants to treat his or her livestock. This includes the kinds of treatments that are available, deciding which treatments to use, how much to use and how to give it as well as how to store medicines. This section also describes what it is useful to keep in a medical kit so that the farmer is always ready to treat his or her animals.

The section on **particular sicknesses/diseases and their treatments** deals with a range of diseases and sicknesses that animals can suffer from. The symptoms of each disease as well as methods of prevention and treatment are described.

## How to use the manual

You should start by reading the first part of the manual, which tells you why it's important to keep your animals healthy and gives you basic information about how to do this. The next sections will help you to understand what causes your animals to get sick as well as providing you with general information about treating sick animals.

The next section of the manual gives you more detailed information about how to recognise and treat diseases/sicknesses that your animals may be suffering from.

For each disease/sickness there is a small picture that shows what types of animals are affected.



## 2 Animal Health

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In this section we look at both the health of individual animals and the health of the whole herd.

### Why keep animals healthy?

A healthy animal is more able to resist diseases and can recover more easily when it does get sick. A sick animal also costs a farmer money and time. A farmer with a sick animal has to buy medicines, syringes and needles. It is therefore better for a farmer if his or her animals stay healthy and do not get sick.

Treatment is also more successful if it is given early before the animal is so sick that the medicine can't help it. This means that farmers must be able to tell very quickly if he or she has a sick animal, what sickness it has and what he or she can do about it.

### Why is herd health important?

One sick animal can sometimes contaminate other healthy animals and cause them to get sick as well. This can also result in the sick animal getting re-infected after it has recovered.

Sometimes when a farmer has many sick animals, or his neighbour has sick animals, it means that the amount of disease in the area is very high. It is very difficult to keep individual animals healthy when there is a lot of disease around.

This is also true of parasites that cause diseases, like ticks and worms. If a farmer, or his neighbour, has many ticks on some of his animals or some of his animals have a lot of worms, then it is difficult to stop the ticks and worms spreading to all the animals.

So before we consider how to treat diseases, it is best to think about how to recognize healthy animals and how to keep them healthy.

### How can you tell if an animal is healthy?

Being able to tell if your animal is healthy will help you monitor your animals and therefore to keep them well.

Most experienced farmers can tell very quickly if their animals are not well. It's important to describe what a healthy animal looks like so that you can describe what the animal looks like when it is not well. This helps to identify what is wrong with the animal because different types of diseases have different symptoms.

A healthy animal is one that:

- ✓ Eats its food in the normal quantities that it usually eats.
- ✓ Moves around during the day in order to find food, water and shelter.
- ✓ Moves with the other animals if it is a flock or herd animal and does not stand or lie alone in a corner.
- ✓ Is chewing its cud (ruminating)
- ✓ Is breathing easily and not panting or struggling to breathe.
- ✓ Does not limp or hunch its back while it's walking and standing.
- ✓ Has no patch of missing feathers or fur.
- ✓ The feathers or fur are not lumpy, greasy or unpleasant to touch and smell.
- ✓ The eyes are shiny and clear.
- ✓ The mucous membranes are pinkish and not white
- ✓ The nose is slightly damp for cattle and dry for goats.
- ✓ The nostrils and/or eyes are not runny with mucus.
- ✓ The faeces and urine are a normal colour and texture and the animal is defecating/urinating normally.

This list could be added to depending on the animals you keep. Take notice of how your animal looks when it is healthy so that you can easily describe what is wrong with it when it gets sick. This will help you to know what is causing it to get sick.

## What keeps animals healthy?

The immune system keeps the animal healthy. All animals have immune systems, including people.

The job of the immune system is to fight germs that invade the animal and could cause it to get sick. The immune system is like the animal's army, ready at all times to fight invaders that put the animal's life at risk.

The immune system is found all over the animals' body. It is made up of millions of little cells that are too small for people to see with their eyes. When germs enter the animal's body, these immune cells come from all over to attack the germs. If the cells win the battle, the animal stays healthy. If they lose the battle, the animal may get sick and need treatment. The cells reproduce in bone marrow and spread around the body in the blood.

The immune system can recognize diseases once it has fought these diseases. With some diseases, this recognition lasts the animals' whole life, like contagious

abortion (CA). With other diseases, however, the immune system can recognize the disease when it is present often but stops being able to recognize it when the animal hasn't had it for a long time. Common diseases of this kind are those that ticks cause. This is one reason why animals often get sick in early summer when there are a lot of ticks after there have been so few in winter. Once the animals' immune system is used to the ticks again, then the animal can often fight the tick diseases.

Livestock owners that come from areas where the disease heartwater occurs must be very careful about buying animals from other places because if they come from areas that do not have heartwater, their immune systems will not recognise the disease and cannot protect the animals and they will get sick.

It is also important to know that, again like an army, the immune system is divided into different sections that each has its own germs to fight. For example, one section fights redwater but it cannot fight heartwater. Only the heartwater section of the immune system can fight heartwater. This means that just because the immune system can recognize one disease does not mean it can recognize all diseases.

One way of getting an animal to have contact with a weakened form of the disease without killing the animal is vaccination. Some vaccinations must be given every year while others need only be given once in an animal's life. Another way for the animal to develop its immune system is through the infant animal being born with some of its mother's immune cells. Infant livestock also develop stronger immune systems if they suckle their mother's very soon after birth to drink the first milk called colostrum, which is filled with the mother's immune cells.

Animals that do not have to spend too much of their energy on getting warm or staying cool are more able to recover from disease. It is therefore wise to provide sick animals with shade and shelter from wind and rain.

## Why is food important?

No matter how good your animal's immune system, if it is constantly hungry and very thin, it will eventually become sick. This is because a thin animal's immune system cannot successfully fight all the different diseases trying to attack it. One or more of these diseases will eventually defeat the immune system of the hungry animal, making it weaker and more susceptible to all the other diseases waiting to attack.

It is better to try to feed an animal properly so that it is generally in good condition. If it gets sick, such an animal is more likely to recover from illness than a hungry, thin one. A well-fed animal that gets sick can sometimes recover by itself without treatment.

It is therefore important that animals have enough food so that they are able to maintain their immune system and to fight disease. A well-fed animal is usually a healthy animal with a strong immune system.

In winter when there is not enough good quality food, animals can get sick very easily. There are ways to help prevent this, such as giving them protein licks in sour veld areas and hay and supplements (if the quality of the hay is poor) in sweet veld areas.

Animals that are fed properly are also generally more productive, producing more milk, growing faster and getting back in calf quicker after calving.

## 3 Sicknesses and Diseases

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### Why do we need to understand what causes diseases?

A farmer who knows what has caused an animal to get sick will also know how to treat that animal correctly or will find it easy to get advice on how to treat the animal.

By knowing what causes a disease, the farmer is better able to know what risk there is for his or her animals. For instance, if animals are infested with lots of ticks they are more likely to encounter diseases that are caused by ticks – although even a single tick bite from an infected tick can cause a disease such as redwater.

Knowing what causes disease also helps a farmer to decide whether a sick animal will put his or her other animals at risk. A cow that has diarrhoea, for example, has probably been infected with a germ that will come out in the faeces and can contaminate other cows. Knowing this, a farmer may want to treat diarrhoea early in his or her herd and isolate affected animals to prevent the spread of the disease and the loss of young animals especially.

### What causes sicknesses/diseases?

An animal can only get sick if something causes it to get sick. There are two main causes of disease in animals – germs and parasites, such as ticks, lice and worms.

#### Germs

There are millions of different kinds of germs that can cause many different kinds of disease. These germs live all around us in the air, water and soil but are so small that we are not able to see them with our eyes. The immune systems of our animals work most of the time to stop these germs from causing disease but they cannot fight them effectively when there are a lot of one kind of germ in the area where the animals stay or if an animal's immune system has been weakened. Under these conditions, the animals have a greater chance of becoming sick with the disease that the germs cause.

Sick animals and people have many germs inside them, which is what has caused them to become sick. They can spread these germs to other animals and sometimes people through saliva, breathe, faeces or pus, depending on the kind of

This section looks at different causes of disease and how one can tell what might be causing the animal to get sick.

germ. With some diseases, like those caused by ticks, the disease spreads when a tick from an infected animal bites another animal.

Some diseases caused by germs can be treated easily with medicines if the farmer is able to identify what is wrong with his or her animal. However, there are some kinds of diseases that western medicine is not able to treat once the animal is contaminated. With some of these, the animal can develop an immune response once it has the sickness that prevents it from getting too sick in the future. However, it is best with many of these diseases to prevent the animal from becoming sick by using a vaccination. Some of the germs causing these diseases are so dangerous that if an animal becomes sick from these germs, government says the farmer should slaughter that animal (for example foot-and-mouth disease). Indeed, some are so serious that the carcasses of these animals should not be eaten but burnt and buried to prevent the germs from spreading to more animals or even to people, which is the case with diseases such as anthrax.

### Ticks, worms and lice

Parasites such as ticks, worms and lice are not the same as germs as they are generally big enough for us to see. There are parasites that live on the outside of animals, like ticks and lice. There are also parasites that live inside the animal, like worms.

Parasites cause animals to get sick in two ways:

1. They feed off the animal's blood and cause it to become sick because it loses condition. Worms do this.  
Ticks biting a cow's udder also cause damage.
2. Parasites can carry germs that go into the animal as the parasite is feeding. It is then these germs that cause the animal to get sick. Ticks are like a taxi for the germs that cause redwater, heartwater and gall sickness in cattle and goats.

#### Appendix

**Figure 1** shows how you can check the membranes of your goats' eyes for signs of anaemia (the membranes will be pale or even white instead of healthy pink). Wire worm infestations in the intestines of goats cause anaemia because they feed on the animal's blood.



**Bont ticks (left) transmit heartwater while blue ticks (right) transmit redwater**

(Source: Jenny Turton (1999) Tick borne diseases in ruminants – <http://www.nda.agric.za/docs/Ticks/ticks.htm>)



Parasites and the diseases they give rise to are controlled by medicines (for example tick dips and dewormers), preventative management and immune responses. Medicines are useful to dose animals in order to get rid of parasites. However, medicines by themselves cannot control all parasites. It's also important to prevent parasites, by dipping for ticks and rotating grazing to prevent worms. Animals can also develop an immune response to some of these diseases over a period of time. This happens with cattle and goats when they are allowed to have some ticks on them but not so many that they become very ill. To help develop this immunity, the farmer must NEVER dip young calves except for the udders of heifers. Some kinds of breeds also have a better ability to ward off ticks, such as inguni cattle, which do not seem to get as many ticks and seem to develop immunity more quickly.

If an animal does become ill from a tick disease, it must be treated otherwise it will die. It is also important to apply dip to cattle that have died from a tick disease because all the ticks on that animal will be infected with the disease. By dipping the animal, the farmer will prevent these infected ticks from biting other cattle and infecting them with the disease.

## **What kinds of symptoms are there?**

Symptoms help us to identify what is causing our animal to get ill. Symptoms of disease could be a high temperature, red urine, pale mucous membranes, etc. As a farmer, one will look at the symptoms as well as other factors to help one to assess the cause of illness.

These factors can include:

- the number of ticks,
- the time of year (when there are suddenly a lot of ticks or very green grass),
- whether the animal has suddenly become ill or has been slowly getting sick over time,
- whether the neighbours have had any sick animals.

Some diseases cause animals to have symptoms that are visible and easily recognizable. For instance, an animal with redwater will produce red urine.

However, some diseases do not show visible or easily identifiable symptoms. Sometimes an animal just doesn't want to eat and is lazy to move around. This animal might be sick but it is difficult to know what is causing it to get sick because its symptoms are not specific. This is when factors help the farmer to decide what the symptoms might mean. Over time, farmers will learn more and more about using symptoms and factors to help determine what disease an animal has and will get better at diagnosing diseases in time.

Many farmers and vets can tell very quickly what caused an animal to get sick once the animal has died. They can cut open the animal and look at the brain or liver or stomach and identify the type of disease that killed the animal. This helps confirm a diagnosis.



### **Warning!**

**Anthrax is one disease where vets advise farmers are not to cut open the animal and just bury the carcass. By cutting open the carcass of an animal that has died of anthrax, the farmer is allowing all the anthrax germs in the carcass to escape onto the ground ready to contaminate other animals and humans at another time.**

## 4 Treatment of Sicknesses and Diseases

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### What kinds of treatment are available?

Some treatments prevent the animal from ever getting the disease while others treat the disease once the animal is already sick.

Vaccinations prevent animals from getting the disease by giving the animal a small and weakened amount of the germ that causes the diseases. This allows the animal to develop its own immunity to fight the disease in the future but does not put the animal at any risk of getting too sick. Some vaccines must be given every year, like the vaccine for black quarter and lumpy skin. Others can be given once only the immunity lasts for the animal's whole life, such as the vaccine for contagious abortion.

Farmers can enquire from the state veterinarian what vaccines are provided by government for free to assist them in controlling certain diseases. For example, the vaccine Blanthrax vaccinates against black quarter and anthrax, while the vaccine RB51 vaccinates against contagious abortion.

Some diseases can be prevented through prevention management. For example, a farmer can reduce the risk of cattle getting redwater by dipping them regularly with the right quantities of dip before, during and after the tick season. Prevention management can also be used together with other treatments. For instance, a farmer can move his or her cattle to new grazing areas where there are no worms and dose them for worms every few months to prevent the poor condition worms cause.

If a disease cannot be prevented by vaccination or preventative management, it can usually be treated with medicine. There are many different kinds of medicine and it is important that the farmer knows what is wrong with his or her livestock before buying and using medicine. A very commonly used medicine that is not a vaccine is an anti-biotic, like Terramycin. These are used for illnesses that will come back from time to time, like mastitis or sores that have a lot of puss in them.

This section looks at different kinds of treatments that western medicine can offer. Many farmers use traditional medicines very successfully. Western medicine can contribute to the health of these farmer's livestock. New farmers must make sure they understand how traditional and western medicine works, how much medicine should be given and how to give it before using any medicine.

This section gives advice about how to use western treatments and why they must be used only in the way directed.

#### Appendix

*Figure 2 shows some simple equipment that you can use to dose your goats for internal parasites (worms).*

## What must you think about when treating an animal?

You will either be preventing your animals from getting sick or you will be treating an animal that is already sick. If you are treating a sick animal, you must have some ideas about what is wrong with it in order to treat it effectively. Once you have some ideas about what is causing your animal to get sick, you need to think about the following issues:

- **What drugs are required?** Make sure you buy or obtain the correct medicines to treat the animal. The incorrect medicine will not help the animal.
- **How much medicine must be given?** Most medicines are given according to the weight of the animal. A small animal is given a small amount and a big animal is given more. It's important to know the approximate weight of the animal you are treating so that you can work out how much medicine the needs. Too much of some medicines, like the treatment for an animal with redwater, can very easily kill your animal while other types of medicines will stop working if you don't give the animal enough to kill the germs.

A farmer can purchase a weightband that will give him or her an accurate way of measuring how heavy the animal is. Weightbands are available for cattle, pigs and horses. The band is placed around the body of the animal behind the shoulders and the measurement is read from the band, like a tape measure.

At the end of this manual is a guideline table that will give you an idea of how much animals weigh and how much medicine you need to give to a particular animal.

- **How is the medicine given?** Different medicines are given in different ways. Some medicines can only be given in the mouth, others require injections and others must be placed on the outside of the animal's body. It's very important to know how the medicine is given because some medicines that can help your animal if they are put on the skin can poison your animal if it is put in its mouth.

- **Where do I inject?** There are three types of injections that can be given depending on the medicine you are using.

The first type of injection is an intramuscular injection, which must be given deep into the muscle of the animal. If more than 20 cc is needed at once, the animal must be injected in two different places. This injection is usually given on the rump of the animal away from the spine near the back where there is a lot of muscle.

The second kind of injection is one that is given just below the skin. This is

### Appendix

**Figure 3** shows you how to use a weightband to determine how much your animal weighs.

### Appendix

**Figure 4** shows you how to give an intramuscular injection – this is an injection right into the muscle.

**Figure 5** shows you where to give an intramuscular injection.

known as a **subcutaneous** injection. The needle can be bent slightly and the skin squashed between the fingers to raise it so that the needle can slide under the skin without going into the muscle. This is usually given on the neck of the animal where some loose skin can be found.

The third type of injection is **intravenous**, which is given straight into a vein. This method gets the medicine all over the body very fast. However, it is a difficult injection to give because veins are difficult to find in a sick animal and one must be very careful not to push the medicine in too fast. This can kill the animal. However, if the animal is so sick that it is already lying down, then the farmer should give an intravenous because the other injections may take too long to work. There are big veins on the animals' neck and near a cow's udder.

- **What kind of needle and syringe should I use?** Always use very sharp needles and syringes that are either new or have been boiled in water. A dirty needle will give the animal you are injecting the disease of the animal it was last used on. A dirty syringe could contaminate the medicine you are trying to give your animal. In this way, instead of treating your animal, you could make it even sicker. Boiling needles and syringes allows the farmer to re-use them safely. However, they should be boiled immediately after being used. The farmer must also watch that the needle does not get rusted, which happens after it's been boiled more than three times. A needle that is rusted must be thrown away carefully so that children and other animals cannot touch it.

Vaccinations should be given with a new needle so that the rust does not affect the vaccine.

When injecting cattle, use a 20 cc syringe and an 18 gauge needle.

When injecting goats, use a 10 cc syringe and an 18 gauge needle.

When injecting chickens, use a 2 cc syringe and a 20 gauge needle.

The best needle and syringe for vaccinations, which are usually subcutaneous is a steel half inch needle with a 15 gauge Roux syringe. This makes vaccinating a much easier task. However, vaccinating can be done with the needles and syringes suggested above.

## What medicine should I buy?

There are many things to think about when buying medicine. The following are important questions to ask: Which medicine do I need for the diseases my animals get? Is the cheapest medicine the best one to buy? Does this medicine have to be kept in a fridge? When will this medicine expire? How many doses does this bottle have in it?

### Appendix

**Figure 6** shows you how to give a subcutaneous injection – this is an injection just under the skin.

There are two types of antibiotics. The first type is known as a long-acting (LA) antibiotic, which enters the blood very slowly and works for longer. In some instances, a single injection may be enough, in other cases it may be necessary to repeat the injection after 3 days. Long-acting antibiotics can be given to animals that are sick with diseases that get worse slowly, such as pneumonia or mastitis. The second type is known as short acting antibiotic. It enters the blood quickly but does not remain in the blood for much time and requires an injection to be given everyday for at least three days. Short-acting antibiotics must be given to animals sick with diseases that develop very fast, like gall sickness.

Sometimes when a farmer buys medicine, the shopkeeper will give him or her a packet of ice in which to take the medicine home. This means that the medicine cannot be kept out of a fridge or a very cold place for more than a few minutes at a time. If the farmer does not have somewhere very cold to store this medicine, he or she must administer it to the animal that same day. Medicine that needs to be kept cold cannot be kept in a freezer or it will stop working.

Many shops sell bottles of medicine that can treat many cattle but have to be used within a fairly short time after opening. The farmer will realize that he or she may be wasting money buying such medicine knowing that they do not have so many cattle. In this situation, the farmer must ask the shop if it can sell a portion of the medicine. However, most shops will not do this. Another option is to share a bottle of medicine with enough neighbours so that it is finished before it expires.

Therefore, when buying medicine, consider the following issues before making a decision:

- How much medicine must be given in one injection?
- How long does one injection last?
- Which type of antibiotic is needed?
- Can the medicine be stored in a cupboard or does it need a very cold place e.g. a fridge?
- How many animals can be dosed with the medicine in this bottle?
- When will this medicine expire?

Sometimes a disease will not be cured by the kind of antibiotics that you can buy at the cooperative and you may need to visit a vet to get a different kind of antibiotic.



## How do I store medicine?

The most important thing about storing medicine is that the farmer must make certain that small children cannot go anywhere near the bottles and containers. Some of them are very dangerous poisons and they will cause children to get sick and even die. They should therefore either be stored in a cupboard out of the children's reach or in a cupboard or room that is kept locked at all times.

The next most important thing to remember about storing medicines is that too much light or sun will destroy that part of the medicine that works to treat the animal. Medicine should therefore be stored in a place like a cupboard in a room where no sun can shine on to it.

It is also important for the farmer to check expiry dates so that he or she does not give animals medicine that can no longer help them.

However, there are some medicines that require very cold storage, especially live vaccines or vaccines that must be mixed with water. These must be kept either in a fridge or surrounded by ice in a cooler bag. They must also be kept in the shade and not in the sun on the day the farmer is preparing to use them if s/he is not ready to inject immediately.

It is also important that containers containing medicine are clearly marked, especially if you buy small amounts of medicine from someone and they are not in the original container. They need to be marked with the name of the product as well as the date when it will expire, which you will get from the original container.

## How do I transport vaccines?

Vaccines need to be kept cold but can also be damaged by freezing. If you are carrying a vaccine home from the shop then it is best to wrap it in newspaper, put it in a plastic bag and then put it in a cool box with a frozen ice pack.

## How do I know which animals keep getting sick?


Some form of identification of individual animals is important so that can keep a record of which animals you have treated. If your records show that you are spending a lot of money on a particular animal, you might decide to sell it.

## 5 Information About Sicknesses and Diseases



### Sickness/diseases mainly affecting cattle

Disease	Symptoms	Prevention	Treatment
<p><b>Anthrax</b></p>  <div data-bbox="805 1473 1114 1989" style="border: 2px solid red; padding: 10px; text-align: center;">  <p><b>Warning!</b> This disease affects people.</p> </div>	<p><b>The live animal</b> The animal often dies suddenly, with no symptoms having been seen even a few hours before.</p> <p><b>The dead animal</b> Thick, dark blood is seen coming from the animal's nostrils and anus. This disease can infect people so the carcass must be buried or burnt and <b>not eaten</b>.</p> <p>The carcass must not be cut open or it will release germs that affect the surrounding area.</p>	<p>Animals should be vaccinated with Blanthrax which will protect them from both anthrax and Black quarter.</p> <p>Blanthrax dosage:</p> <ul style="list-style-type: none"> <li>• Subcutaneous injection</li> <li>• 2 ml under the skin.</li> <li>• Repeat the injection once a year until the animals is 3 years old.</li> </ul>	<p>There is not normally enough time to treat the animal so prevention is essential.</p>

Disease	Symptoms	Prevention	Treatment
<p><b>Contagious abortion (CA) / Brucella</b></p>  <div data-bbox="608 1451 1433 2007" style="background-color: red; color: white; padding: 10px; border-radius: 10px;">  <p><b>Warning!</b></p> <p>This disease affects people - symptoms include fever, sweating and weakness, but not abortions</p> <p>The vaccines can all infect people and should be handled very carefully!</p> <p>Vaccination of heifers over 8 months of age requires permission from a state veterinarian.</p> </div>	<p><b>The live animal</b></p> <p>This disease causes abortions in the herd. They normally occur when the foetus is 4 to 7 months old but in some cases the cow will actually produce a calf, which is weak and dies. The disease also commonly results in retained placentas and the afterbirth often appears abnormal.</p> <p>Long-term infection of cows sometimes results in the development of a watery swelling on one or both knees.</p> <p>Bulls may become infertile due to infection.</p>	<p>Heifers should be vaccinated.</p> <p>Brucella S19 can be administered to heifers of 4-8 months of age (once-off vaccination). It cannot be used in animals over 9 months of age or will interfere with the blood tests and will cause animals tested for CA to test positive (a false positive)</p> <p>Brucella S19 dosage:</p> <ul style="list-style-type: none"> <li>• Mix fluid with tablet</li> <li>• Inject 5ml subcutaneously.</li> </ul> <p>Alternatively RB51 can be used – this can be used in female animals of any age – but pregnant animals may abort.</p> <p>RB51 dosage:</p> <ul style="list-style-type: none"> <li>• Mix fluid with tablet</li> <li>• Inject 2ml subcutaneously</li> <li>• If heifers are vaccinated at 4-10 months and then given a booster at 12-16 months, annual vaccination is not necessary.</li> </ul>	<p>No treatment is available.</p> <p>Infected cows should be culled to prevent the infection of other cattle as well as people.</p>

Disease	Symptoms	Prevention	Treatment
<p><b>Black quarter / Quarter evil (Umkhonywana)</b></p> 	<p><b>The live animal</b> Affects young cattle of 3 to 6 months the most. It never occurs in an animal older than 3 years.</p> <p>They become lazy, hot and then lame. One leg is usually swollen and it feels spongy.</p> <p>The sick animals will die quickly.</p> <p>Sometimes it looks as though the animal was struck by lightning on its leg.</p> <p><b>The Dead Animal</b> Red-brown water leaks from the swellings. It smells like rotting butter. When the animal is cut open, its muscles look like bubbly, black sponge.</p>	<p>Prevention is vaccination.</p> <p>To prevent black quarter, young cattle of 5-6 months must be vaccinated with a vaccine like Blanthrax.</p> <p>Dosage:</p> <ul style="list-style-type: none"> <li>• Subcutaneous injection</li> <li>• 2 ml under the skin.</li> <li>• Repeat the injection once a year until the animals is 3 years old.</li> </ul> <p>Bury or burn the carcass to prevent the disease from spreading to other animals. The meat can also cause humans to get sick.</p>	<p>Treatment is not often successful.</p> <p>The farmer can inject the animal with a penicillin injection, which must be obtained from a veterinarian.</p>


Disease	Symptoms	Prevention	Treatment
<p><b>Vibriosis</b></p> 	<p>This is a venereal disease of cattle that is mainly transmitted during mating. It is a bacterial disease that causes temporary infertility due to early abortions of foetuses. The abortions are often not noticed and the farmer only notices that there are fewer calves being born than is expected. Infected cows will become pregnant again after 5-6 months and will then be immune against the disease although they may still spread the disease to other animals in the herd. Bulls are not affected although the spread the disease to other cows.</p>	<p>Prevention is vaccination. Vaccinate with Vibrio/Leptoform 5 vaccine. Dosage is 2ml / animal (intramuscular injection) Vaccination should take place 1-2 months before the breeding season or before new animals are introduced into the herd. If there is no incidence of the disease in the area, animals vaccinated for the first time, should receive a booster injection 3 weeks after the first. It is recommended that all breeding heifers and cows be vaccinated annually. The vaccine should be stored in a refrigerator.</p>	


Disease	Symptoms	Prevention	Treatment
<p><b>Redwater (Umbendeni)</b></p> 	<p><b>The live animal</b> It has a very high temperature (40-42° C) and doesn't want to eat. It is tired, often lying down and breathes very fast.</p> <p>In the advanced stages of the disease, the inside the mouth, the rims of the eyes and the vagina are pale yellow instead of pink. The animal also produces urine that is red in colour.</p> <p>Some animals become aggressive.</p> <p>As the disease progresses, the temperature drops to normal and then to below normal until the animal dies.</p> <p><b>The Dead Animal</b> The blood in the animal is watery. The inside is yellow instead of pink. The liver, gall bladder and spleen are enlarged.</p>	<p>To prevent redwater, try to maintain the animals' immunity by letting a small number of ticks stay on the animals all the time.</p> <p>Dipping about once a month in areas when there are many ticks will also help prevent redwater.</p> <p>Calves born in redwater areas become immune without severe sickness as long as they are not dipped for ticks while they are young.</p> <p>If an animal dies of redwater, apply dip to kill the ticks on its body. The ticks are infected with redwater and will infect other animals if they bite them.</p> <p>Humans can safely eat the meat of an animal that dies of redwater.</p>	<p>Treat by injecting with a medicine like Dizene, Berenil or Veriben.</p> <p>Veriben dosage:</p> <ul style="list-style-type: none"> <li>• A deep intramuscular injection.</li> <li>• Inject 5ml/100kg livemass.</li> <li>• Do not inject more than 10ml at any one site.</li> </ul> <div data-bbox="616 248 1007 712">  <p><b>Warning!</b> This medicine can kill the animal if too much is given.</p> </div>






Disease	Symptoms	Prevention	Treatment
<p><b>Gallsickness – tick borne</b></p> 	<p><b>The live animal</b> Symptoms are similar to redwater except there is no red urine. The animal has a very high temperature (40-44oC) and doesn't want to eat. It is tired, often lying down and breathes very fast. Cows can stop producing milk and become thin. The inside the mouth, the rims of the eyes and the inside of the vagina are white instead of pink, later becoming very yellow. The animal is very constipated with hard yellow-brown dung. When it is very sick, the animal's temperature drops back to normal and then below normal.</p> <p><b>The Dead Animal</b> The blood in the animal is watery. The lining of chest and stomach are yellow instead of pink. The flesh is pale. The liver is enlarged and orange. The gall bladder is swollen with dark green bile. The spleen is enlarged and soft.</p>	<p>Young calves are only slightly affected and develop immunity if born in an area where the tick carrying this disease is found. Do not dip young calves. They must get bitten by the ticks to develop immunity. Animals can be vaccinated but storing this vaccine is very difficult. It is therefore better to allow livestock to have some ticks so that they can develop immunity. Except for the udders of cows and heifers, which can be damaged by ticks, only dip when there are a lot of ticks on the cattle. If an animal dies of gallsickness, apply dip to kill the ticks on its body. The ticks are infected with gall sickness and will infect other animals if they bite them. Humans can safely eat the meat of an animal that dies of gall sickness.</p>	<p>Treat by injecting into the muscle a short acting anti-biotic, like Terramycin 100 or Hi-Tet 120, for three days in a row. Dosage rates will vary depending on the make of the injection that you buy. Hi-tet 120 dosage:</p> <ul style="list-style-type: none"> <li>• Intramuscular injection</li> <li>• 1 ml/15kg livemass</li> <li>• Inject every day for 3 days</li> <li>• Remember not to inject all the medicine into the same site – rather put a maximum of 25ml into any one site and then find another site.</li> </ul> <p>Good nursing is necessary. Give the animal shelter from rain and sun and plenty of fresh, clean water to drink.</p>

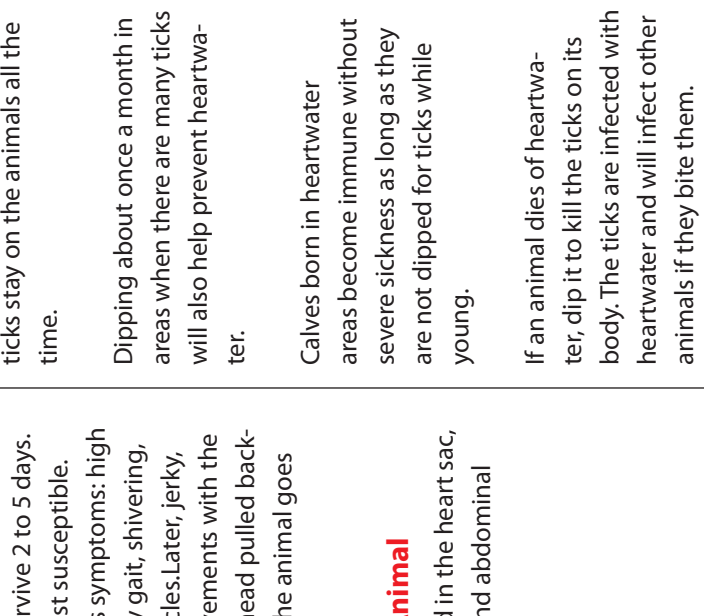
Disease	Symptoms	Prevention	Treatment
<p><b>Mastitis (Ukufa kwemibele)</b></p>  <div data-bbox="526 1456 989 1993" style="background-color: red; color: white; padding: 10px; border-radius: 10px; margin-top: 10px;">  <p><b>Warning!</b> Do not drink the milk from cows that have been treated – adhere to the recommended withdrawal period.</p> </div>	<p>One or more of the quarters is swollen and painful.</p> <p>Udder produces either a brownish watery fluid or watery milk containing white or yellow clots.</p> <p>Can cause the death of the quarter or even the animal if not treated.</p> <p>Once a cow has had mastitis, it is more susceptible to getting it again.</p> <p>Remember that too many ticks on a cow or heifer's udders will also cause the udder to die. The udders of cows and heifers must be dipped regularly when there are a lot of ticks.</p>	<p>Infected quarters are a serious source of infection for other quarters and cows. So, milk the cow with mastitis after all the other cows have been milked. Also, milk the infected udder after milking the others. This stops mastitis from spreading.</p> <p>Wash hands and udders carefully every time you milk.</p> <p>Always milk cows that have more milk than the calf can drink. Too much milk will cause mastitis.</p> <p>Treat wounds on the udder with iodine spray.</p> <p>Allow the calf to suckle after milking as this helps prevent mastitis.</p>	<p>Insert Pendiclox Blue into the infected teat.</p> <p>To insert medicine into the teat: Milk the cow out completely. Clean the teat of the affected quarter well with methylated spirits or hot water. Use one tube per teat. Push medicine deep into the udder by massaging the quarter upwards. Treatment can be repeated for three consecutive milkings if necessary.</p> <p>You can also inject with cow with a long acting antibiotic such as Terramycin LA or Hi-Tet 200 LA.</p> <p>Hi-tet 200 LA dosage:</p> <ul style="list-style-type: none"> <li>• Intramuscular injection.</li> <li>• 1ml / 10kg livemass</li> </ul> <p>Repeat injection after 3 days if necessary</p> <ul style="list-style-type: none"> <li>• Remember to inject half in one site and the other half in a new site.</li> </ul>



Disease	Symptoms	Prevention	Treatment
<p><b>Sweating sickness (Imfudomalo)</b></p>  <div data-bbox="842 1585 1056 1823" style="border: 1px solid black; border-radius: 10px; padding: 5px; margin-top: 10px;"> <p style="text-align: center;"><b>Appendix</b></p> <p><b>Figure 7</b> shows a calf with sweating sickness.</p> </div>	<p>This disease is caused by the toxins produced by bont-legged ticks.</p> <p>The animals become ill and run a high temperature.</p> <p>Sticky moistness of the skin behind the ears, behind the elbows and between the hind legs.</p> <p>Loss of hair and inflammation of the mouth and eyes.</p> <p>January-March is worst time.</p> <p>The moisture on the animal is not sweat.</p> <p>Young animals (1-9 months old) are most susceptible.</p> <p>The whole skin may be affected. The hair becomes loose and cakes with pus from under the inflamed skin.</p>	<p>If your animal gets this disease, it means you are allowing it to have too many ticks. This disease is caused by ticks biting livestock.</p> <p>Allow some ticks on the livestock but not too many. Dip when there are a lot of ticks on the animals or, about once a month, when it is the time of many ticks.</p>	<p>Inject into the muscle with a long acting antibiotic such as Terramycin LA or Hi-Tet 200 LA, as well as Metastin and Vit B complex.</p> <p>Metastin dosage: 5 ml</p> <p>Vit B complex dosage: 5ml.</p> <p>Hi-Tet 200 LA dosage:</p> <ul style="list-style-type: none"> <li>• Intramuscular injection.</li> <li>• 1ml / 10kg livemass</li> </ul> <p>Repeat injection after 3 days if necessary</p> <ul style="list-style-type: none"> <li>• Remember to inject half in one site and the other half in a new site.</li> </ul> <p>Keep the animal in the shade and try to make it drink water. Remove all bont-legged ticks by hand, not forgetting the tail.</p>


Disease	Symptoms	Prevention	Treatment
<p><b>Lumpy skin disease</b></p>  <div data-bbox="703 1585 919 1827" style="border: 1px solid red; border-radius: 10px; padding: 5px; margin-top: 10px;"> <p style="text-align: center;"><b>Appendix</b></p> <p><b>Figure 8</b> shows a calf with lumpy skin disease.</p> </div>	<p>The animal becomes hot and sweaty.</p> <p>Lumps of between ½ and 5 cm form in the skin over either the whole animal or parts of it.</p> <p>Affected animals usually have painful legs and are lame.</p> <p>The lumps dry out and form scabs, which peel.</p> <p>Lumpy skin lesions on the testicles may cause permanent sterility, while lumps in the udder may cause the loss of one or more quarters.</p>	<p>Cattle must be vaccinated every year with Lumpy Skin Disease Vaccine. They should be given 5ml (subcutaneous injection).</p>	<p>Lumpy skin cannot be treated, but secondary infections can be prevented by injecting the animal with penicillin, which must be obtained from a veterinarian.</p> <p>Sick animals should be given shelter and plenty of water and food.</p>

Disease	Symptoms	Prevention	Treatment
<p><b>Warts (Amaqhuqhuba)</b></p>  <p style="text-align: center;">    <b>Appendix</b>  <b>Figure 9 shows a cow with warts.</b> </p>	<p>Two kinds of warts are usually found. One is a lumpy, solid growth. The other is a growth that looks feathery.</p> <p>They are found on the necks of young cattle as well as teats of cows, especially during their first pregnancy. They often go away by themselves.</p>	<p>Most animals become immune as they get older and then the warts go away by themselves.</p>	<p>Cut a number of warts off so that they bleed. This can stimulate an immune response, which will clear them.</p>
<p><b>Bloat</b></p> 	<p>The animals stomach swells. It becomes uncomfortable and may lie down.</p>	<p>Do not allow cattle to graze green lucerne. They must be introduced VERY slowly to green lucerne and given large quantities of hay before grazing lucerne for a short while.</p> <p>Make sure there is no wire or plastic lying around where cattle graze.</p>	<p>Make the animal drink 500 ml of cooking oil or bloat guard. Do not let it lie down. If it is down, get it back on its feet and make it walk around until it has burped.</p>


# Sickness/diseases mainly affecting cattle and goats

Disease	Symptoms	Prevention	Treatment
<p><b>Heartwater (Umqhaqhazelo emazinyaneni)</b></p> 	<p><b>The Live Animal</b> It can result in death within 24 hours in lambs and calves, but most cases survive 2 to 5 days. Calves are most susceptible. Show nervous symptoms: high stepping jerky gait, shivering, walking in circles. Later, jerky, paddling movements with the legs and the head pulled backwards when the animal goes down.</p> <p><b>The Dead Animal</b> Excessive fluid in the heart sac, chest cavity and abdominal cavity.</p>	<p>To prevent heartwater, try to maintain the animals' immunity by letting a small number of ticks stay on the animals all the time.</p> <p>Dipping about once a month in areas when there are many ticks will also help prevent heartwater.</p> <p>Calves born in heartwater areas become immune without severe sickness as long as they are not dipped for ticks while young.</p> <p>If an animal dies of heartwater, dip it to kill the ticks on its body. The ticks are infected with heartwater and will infect other animals if they bite them.</p>	<p>Treat the animal early before nervous symptoms show. Use short-acting antibiotic for three days in a row.</p> <p>Use an intravenous injection if you can, otherwise intramuscular.</p> <p>Dosage rates will vary depending on the make of the injection that you buy.</p> <p>Hi-tet 120 Dosage:</p> <ul style="list-style-type: none"> <li>• Intramuscular injection.</li> <li>• 1ml/15kg livemass</li> <li>• Inject every day for 3 days</li> <li>• Remember not to inject all the medicine into the same site – rather put a maximum of 25ml into any one site and the find another site.</li> </ul>


Disease	Symptoms	Prevention	Treatment
<p><b>Abscesses (Amathumba)</b></p> 	<p>Swelling that is hot, red and painful. Sometimes, they burst open and ooze pus.</p>		<p>Open and drain the abscess when it has a yellow spot on it or when it softens. This can be done by cutting a cross over the soft spot. Use a boiled razor blade to cut the abscess. Then syringe warm (boiled) water with a lot of salt in it (1 tablespoon of salt in a cup of water) or iodine into the wound.</p> <p>Spray daily with Woundsept Plus. Keep the wound open to allow it to drain.</p> <p>Bury or burn the material used to wipe the pus. This can infect other animals and people.</p> <p>Always boil the razor blade before using it.</p> <div data-bbox="925 255 1385 719">  <p><b>Warning!</b> If an animal has several very bad abscesses or gets abscesses often, it should be culled.</p> </div>

Disease	Symptoms	Prevention	Treatment
<p><b>Scours or diarrhoea</b></p> 	<p>Diarrhoea can be the symptom of a disease. There are many different causes of scours and each one can cause a different kind of runny stomach. They can include:</p> <ul style="list-style-type: none"> <li>• Smooth, yellow diarrhoea</li> <li>• Smooth, white diarrhoea</li> <li>• Whitish diarrhoea with lumps of thin skin in it</li> <li>• Red or brown diarrhoea, which may mean blood in it.</li> </ul>	<p>Regular treatment for worms will prevent scours caused by worms.</p> <p>Consider vaccinating against paratyphoid.</p>	<p>A good general treatment is a mix of one spoon salt, 8 spoons sugar in two litres of clean, warm water. For young animals that have not been weaned, feed this mixture twice a day instead of milk (but not for more than three days).</p> <p>If scours is due to an infection of the gut (blood in the scours), then inject with a long acting antibiotic or give a dose of terramycin powder mixed with water.</p> <p>Hi-Tet 200 LA dosage:</p> <ul style="list-style-type: none"> <li>• Intramuscular injection.</li> <li>• 1 ml/10kg livemass.</li> <li>• Repeat after 3 days if necessary</li> </ul> <p>Terramycin powder dosage:</p> <ul style="list-style-type: none"> <li>• Mix with water and give as a drink.</li> <li>• 1 level teaspoon powder / 7kg livemass</li> <li>• Repeat daily for 3 to 5 days</li> </ul>





Disease	Symptoms	Prevention	Treatment
<p><b>Coccidiosis</b></p> 	<p><b>The Live Animal</b> This disease normally affects young animals.</p> <p>The animal produces slimy, bloody scours because the disease attacks the lining of the stomach, intestines, lungs and mouth.</p> <p>The animal gets very thin and weak and the inside of its eyelids, mouth and vagina are white because it is losing blood.</p> <p><b>The Dead Animal</b> Tiny, greyish-white spots are often visible in the mucous membrane of the small intestine.</p>	<p>Regular treatment for worms will prevent scours caused by worms.</p> <p>Consider vaccinating against paratyphoid.</p>	<p>Sulfazine 16% dosage:</p> <ul style="list-style-type: none"> <li>Initially give 14ml/10kg live-masso</li> <li>Then give 7ml/10kg daily for two days</li> </ul>



## Sickness/diseases mainly affecting goats

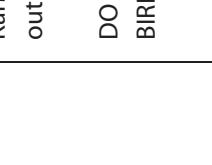
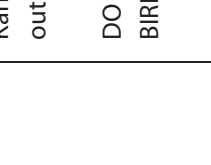
Disease	Symptoms	Prevention	Treatment
<p><b>Limping associated with abscesses (Ukuxhuga ibenamathumba)</b></p> 	<p>Swelling that is hot, red and painful. Sometimes, they burst open and ooze pus.</p>	<p>Do not leave goats standing in water or mud for a long time.</p> <p>Dip the feet to kill ticks</p> <p>Regularly check your goats' feet for ticks, especially ones that are limping.</p> <p>Clean overnight kraals / facilities monthly</p>	<p>Open and drain the abscess when it has a yellow spot on it or when it softens.</p> <p>Use a boiled razor blade to cut the abscess. Then syringe/ pour warm boiled water with a lot of salt in it (1 table spoon of salt in a cup of water) or iodine into the wound.</p> <p>Spray daily with Woundsept Plus. Keep the wound open to allow it to drain.</p> <p>Bury or burn the material used to wipe the pus. This can infect other animals and people.</p> <p>Always boil the razor blade before using it.</p>

## Sickness/diseases mainly affecting poultry


Disease	Symptoms	Prevention	Treatment
<p><b>Newcastle Disease (Uvolomisa)</b></p> 	<p>This is the only disease that makes chickens walk backwards.</p> <p>The birds gasp when they breathe and breath with an open beak.</p> <p>Sticky mucous comes from the mouth and there may be yellowish diarrhoea.</p> <p>Later the bird becomes paralysed and is unable to stand up.</p> <p>Most of the birds that contract the disease will die.</p>	<p>Vaccinate with La Sota or ND Clone 30.</p> <p>Directions for dosing:</p> <ul style="list-style-type: none"> <li>• Boil 20 litres of clean water and allow it to cool completely</li> <li>• Dissolve the vaccine tablet in the 20 litres of water</li> <li>• Allow the birds access to the medicated water for an hour or two, directly after mixing.</li> <li>• Confine the birds the night before without water so that they are thirsty and all drink the medicated water.</li> </ul>	<p>There is no treatment for Newcastle but sick birds can get other diseases that can be treated. Some birds with Newcastle Disease will recover. To help them, treat with an antibiotic such as Terramycin Powder or Cosumix Plus.</p> <p>Terramycin Powder dosage:</p> <ul style="list-style-type: none"> <li>• Mix 4 level teaspoons in 7 litres of water</li> <li>• Give to the chickens for 6 days in drinking water after restricting water for a few hours in the morning</li> </ul> <p>Cosumix Plus dosage:</p> <ul style="list-style-type: none"> <li>• For adult chickens mix 1.5 g in 1.5 litres of water (1 heaped teaspoon in 5 litres of water)</li> <li>• Give to the chickens for 3 to 6 days in drinking water after restricting water for a few hours in the morning</li> </ul>

Disease	Symptoms	Prevention	Treatment
<p><b>Fowl pox (Izilonde emehleweni)</b></p>  <div data-bbox="663 1630 871 1872" style="border: 1px solid black; border-radius: 10px; padding: 5px; margin-top: 10px;"> <p style="text-align: center;"><b>Appendix</b></p> <p><b>Figure 11</b> shows a chicken with fowl pox.</p> </div>	<p>Sores occur on the wattles, comb and skin of the face. They start as a pale spot and become yellowish and swollen before drying out to a scab.</p> <p>Raw, yellowish sores can also occur in the mouth and windpipe. This is serious and can lead to suffocation and death</p>	<p>Prevent the disease by vaccinating with Fowl Pox Vaccine.</p> <p>Use a syringe to mix the fluid and the freeze dried vaccine. Then dip a 14 gauge needle into the vaccine and shallowly pierce the skin on the outside of the chickens thigh (to a depth of 3mm).</p> <p>It is recommended that birds be vaccinated between 3 and 12 weeks of age but older birds can be vaccinated.</p> <p>Vaccination should result in life-long immunity.</p> <p>Isolate sick birds to prevent spread of disease.</p>	<p>There is no treatment for fowl pox but the farmer can use an iodine spray on the sores to prevent further infection.</p>

Disease	Symptoms	Prevention	Treatment
<p><b>Bumble foot</b> (<b>Izilonda ngaphansi kwezinyawo (amabatha)</b>)</p> 	<p>The birds become lame in one leg and the pad is found to be swollen and painful.</p> <p>A brownish corn is usually found over the centre of the swelling. Pus may come from the side of the corn.</p>		<p>The corn should be removed and the swelling should be disinfected with iodine or methylated spirits. Pus should be removed from the lesion – make an incision if necessary.</p> <p>Clean the cavity with iodine. Cover the wound with a dressing and confine the bird in a cage on straw. Change the dressing every 3-4 days. Inject ½ ml long acting Terramycin into the chicken's leg.</p>
<p><b>Mites</b> (<b>Okhupe</b>)</p>  <div data-bbox="1212 1630 1420 1870" style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p style="text-align: center;"><b>Appendix</b></p> <p><b>Figure 12</b> shows a chicken with scaly leg mites.</p> </div>	<p>There are two types of mites, one that lives on the chicken's legs and the other that lives on the chicken's body.</p> <p>Scaly leg mites burrow underneath the scales on the feet and legs causing roughness and lameness.</p> <p>Red mites are very small and appear blue or red after feeding on chickens' blood.</p> <p>They infest poultry houses, hiding in cracks.</p>		<p>Rub benzyl benzoate over the legs. This can be bought from chemists where it is known as ascabeiol, the treatment for scabies in children.</p> <p>Pour Karbadust on to the birds and spray the house carefully with Karbaspray.</p> <p><b>DO NOT SPRAY KARBASPRAY ON BIRDS.</b></p>

Disease	Symptoms	Prevention	Treatment
<p><b>Tampans (Fowl ticks)</b></p>  <div data-bbox="552 501 730 741" style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p><b>Appendix</b></p> <p>Figure 13 shows a fowl tick.</p> </div>	<p>The bird become pale and is often paralysed.</p> <p>Tampans are parasites related to ticks. They are greyish-blue and hide in the chicken house. They only feed at night.</p>		<p>Treat birds with Karbadust and spray the house carefully with Karbaspray whenever there is an outbreak.</p> <p><b>DO NOT SPRAY KARBASPRAY ON BIRDS.</b></p>
<p><b>Biting lice</b></p>  <div data-bbox="1161 501 1340 741" style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p><b>Appendix</b></p> <p>Figure 14 shows fowl lice.</p> </div>	<p>Ruffled feathers that fall out from all over the body.</p>		<p>Treat birds with Karbadust and spray the house carefully with Karbaspray whenever there is an outbreak.</p> <p><b>DO NOT SPRAY KARBASPRAY ON BIRDS.</b></p>

## Sickness/diseases mainly affecting horses

Disease	Symptoms	Prevention	Treatment
<p><b>African Horse Sickness</b></p>  <div data-bbox="901 1624 1189 1859" style="border: 1px solid red; border-radius: 10px; padding: 5px; margin-top: 10px;"> <p><b>Appendix</b></p> <p><b>Figure 15</b> shows a horse with swellings above the eyes due to African horse sickness.</p> </div>	<p>This is a viral disease transmitted by midges (small biting insects). The disease is common in late summer and autumn.</p> <p>There are different forms of the disease, which may include fever, haemorrhages in the mucous membranes, swelling under the skin of the head (especially above the eyes) and fluid in the lungs (causing a frothy discharge from the nose and difficulty breathing).</p> <p>It often results in the death of the horse.</p>	<p>Vaccinate every year with African Horse Sickness vaccine.</p> <p>The vaccine is sold as two separate injections (AHS I and AHS II) that must be given 3 weeks apart as subcutaneous injections.</p> <p>Horses should be vaccinated in early summer (October to November).</p> <p>The vaccine must be stored in a fridge.</p>	<p>Treatment is difficult and costly and the horse will often not recover. The disease does not respond to antibiotics.</p>

## 6 Vaccination Programme for Cattle

This is a programme for a herd that does not have a controlled breeding season.

Month	Vaccination
January	
February	<ul style="list-style-type: none"> <li>• Deworm calves for tapeworms and roundworms</li> </ul>
March	<ul style="list-style-type: none"> <li>• 15 March: Vaccinate female calves that were born between the previous July and December for contagious abortion (CA) - The vaccine Brucella S19 can only be given to female animals that are 4 to 8 months of age</li> <li>• Castrate male calves that you are not keeping for breeding (use a burdizzo)</li> </ul>
April	<ul style="list-style-type: none"> <li>• Vaccinate all animals for quarter evil and anthrax (Blanthrax vaccine)</li> <li>• Vaccinate calves again for quarter evil 3 weeks later</li> <li>• Deworm calves for tapeworms and roundworms</li> <li>• Deworm all animals except calves for liverfluke</li> <li>• Deworm thin cows for roundworms</li> <li>• Start feeding winter licks</li> </ul>
May	
June	
July	
August	<ul style="list-style-type: none"> <li>• Vaccinate all animals for lumpy skin disease</li> <li>• Recommend: vibriosis and leptospira combination vaccination to all cows, heifers and bulls</li> </ul>
September	<ul style="list-style-type: none"> <li>• 15 September: Vaccinate female calves born in the period January to June for CA (The vaccine Brucella S19 can only be given to female animals that are 4 to 8 months of age)</li> <li>• Castrate male calves that you are not keeping for breeding (use a burdizzo)</li> <li>• Deworm all animals except calves for liverfluke</li> <li>• Deworm thin cows for roundworms</li> </ul>
October	<ul style="list-style-type: none"> <li>• Start feeding summer lick</li> </ul>
November	
December	

(Developed by Joanne Mann, DAEA)

**Note: Depending on the area and the diseases that are prevalent, additional vaccinations can be carried out - consult your local vet.**



## 7 Dosage Guideline Table

This table has been developed to show approximate weights that can be used when deciding how much medicine to give to a particular animal.

With cattle, the farmer must decide whether the animal he/she is treating is the size as a new born calf, a bigger calf, a young cow, a fully grown cow or a big ox (the same process must be followed if a goat is being treated). Then the farmer can use the weight given in the table below to assess how heavy his or her animal is and how much medicine it needs.

However, it is much better if the farmer can measure its weight more accurately, using a scale or a weightband.

		Hi-tet 120	Hi-tet 200 LA	Dizene	Veriben / Berenil	Sulfazine 16%	Terramycin soluble powder
Type of animal	Weights (kg)	1ml per 15kg ml	1ml per 10kg ml	7ml per 100kg ml	5ml per 100kg ml	14ml/10kg ml	1 tsp per 7kg teaspoons
New born goat kid	3	0.5	0.5			4	0.5
Half grown goat	20	1.3	2.0			28	3
Full grown female goat	40	2.7	4.0			56	
Full grown male goat	60	4.0	6.0			84	
New born calf (imvemve)	45	3.0	4.5			63	6
Calf 2-6 months	100	7	10	7	5	140	14
Calf 6-12 months	200	13	20	14	10		
Small cow	350	23	35	25	18		
Full grown cow	500	33	50	35	25		
Big ox	650	43	65	46	33		

## 8 Medicine Costs

PRICES AT FARMCITY (PIETERMARITZBURG 033 8977 300 ) – DEC 2006		
PRODUCT	QUANTITY	PRICE (INCL. VAT)
Dizene	100 ml	119.00
Veriben	100 ml	91.00
Berenil RTU	100 ml	124.78
Sulfazine 16%	100 ml	41.60
Terramycin Soluble Powder	200 g	136.03
Cosumix Plus	20 g	17.01
Iodine Spray	500 ml	58.38
Oberdine	500 ml	75.23
Terramycin 100	100 ml	93.79
Hi-Tet 120	100 ml	29.79
Hi-Tet 120	500 ml	97.41
Hi-Tet 200 LA	100 ml	138.54
Pendiclox Blue	12 syringes	179.25
Woundsept Plus	350 ml	64.53
Metastin	100 ml	71.84
Vit B Co	100 ml	50.28
Bloat Guard	500 ml	121.51
Weightband	1	130.00
Vaccines		
Lumpy Skin Disease	20 doses	106.40
Blanthrax	75 doses	203.91
Brucella S19	20 doses	74.42
African Horse Sickness	1 dose	63.46
ND Clone 30	1000 doses	25.60
RB51 CA (Howick Veterinary Wholesalers 033 3307171)	25 doses	333.13
Vibrio/lepto Ferm 5 (Howick Veterinary Wholesalers 033 3307171)	50 doses	655.05
Fowl Pox (Howick Veterinary Wholesalers 033 3307171)	100 doses	21.32



Fig 1: Check the membranes of your goats' eyes for signs of anaemia – if they are pink the goat is not anaemic



Fig 2: Simple equipment for dosing goats for worms



Fig 3: Using a weightband to determine the weight of an animal

Fig 4: Giving an intramuscular injection (an injection into the muscle)



Fig 5: The injection site for cattle when giving an intramuscular injection into the rump



Fig 6: Giving a subcutaneous injection (an injection under the skin)



Fig 7: An animal with sweating sickness showing moist area around ears and on the face where hair-loss has occurred<sup>1</sup>



Fig 8: A calf with lumpy skin disease<sup>2</sup>



Fig 9: Warts on the nose of a cow<sup>3</sup>



Fig 10: An abscess on a goat's jaw<sup>4</sup>

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1 Source: Bristol Image Archives, University of Bristol (found on the website: [www.proteaanimalclinic.co.za/Siektes/diseases.htm](http://www.proteaanimalclinic.co.za/Siektes/diseases.htm))

2 Source: Manual on meat inspection for developing countries (Herenda et al, 2000) ([www.fao.org/docrep/003/t0756e/T0756E03.htm](http://www.fao.org/docrep/003/t0756e/T0756E03.htm))

3 Source: Article by Richard Laven (NADIS) ([http://www.mdcfmp.org.uk/uploadeddocuments/Disease/Warts\\_in\\_Cattle.pdf](http://www.mdcfmp.org.uk/uploadeddocuments/Disease/Warts_in_Cattle.pdf))

4 Source: Maryland Small ruminant page (<http://www.sheepandgoat.com/diseaseimages.html>)



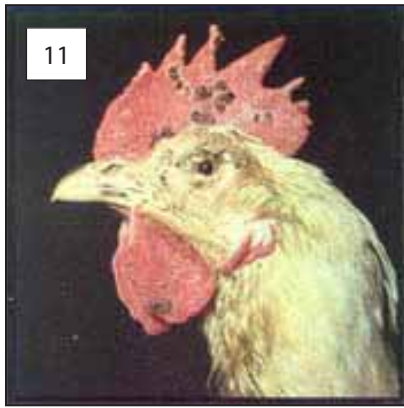


Fig 11: Chicken with fowl pox<sup>5</sup>

Fig 12: Chicken's leg affected by scaly leg mites<sup>6</sup>



Fig 13: Picture of a poultry tick<sup>7</sup>



Fig 14: Picture of lice that affect poultry<sup>8</sup>



Fig 15: Horse with African Horse Sickness showing swellings above the eyes<sup>9</sup>

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5 Source: [www.vethomopath.com/fowlpox.jpg](http://www.vethomopath.com/fowlpox.jpg)

6 Source: <http://www.feathersite.com/Poultry/Health/Dis/scaly.html> (Photo courtesy of Virginia Martin)

7 Source: Susan Bibby (2002) Common diseases of backyard poultry (<http://www.dpi.vic.gov.au>)

8 Source: Clemson University Cooperative Extension/UDSA (<http://entweb.clemson.edu/cuentres/cesheets/poultry/index.htm>)

9 Source: [http://www.spc.int/rahs/Manual/images/african\\_horse\\_sickness.htm](http://www.spc.int/rahs/Manual/images/african_horse_sickness.htm) (FAO)