The prevention and treatment of animal diseases

The availability of this product is due to the financial support of the National Department of Agriculture and the AgriSETA. Terms and conditions apply.
Before we start...

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

<table>
<thead>
<tr>
<th>Title:</th>
<th>Explain the prevention and treatment of animal diseases</th>
</tr>
</thead>
<tbody>
<tr>
<td>US No:</td>
<td>116219</td>
</tr>
<tr>
<td>NQF Level:</td>
<td>3</td>
</tr>
<tr>
<td>Credits:</td>
<td>5</td>
</tr>
</tbody>
</table>

The full unit standard will be handed to you by your facilitator. Please read the unit standard at your own time. Whilst reading the unit standard, make a note of your questions and aspects that you do not understand, and discuss it with your facilitator.

This unit standard is one of the building blocks in the qualifications listed below. Please mark the qualification you are currently doing:

<table>
<thead>
<tr>
<th>Title</th>
<th>ID Number</th>
<th>NQF Level</th>
<th>Credits</th>
<th>Mark</th>
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<tbody>
<tr>
<td>National Certificate in Animal Production</td>
<td>49048</td>
<td>3</td>
<td>120</td>
<td>☐</td>
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<tr>
<td>National Certificate in Plant Production</td>
<td>49052</td>
<td>3</td>
<td>120</td>
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</tr>
</tbody>
</table>

Please mark the learning program you are enrolled in:

Your facilitator should explain the above concepts to you.

This Learner Guide contains all the information, and more, as well as the activities that you will be expected to do during the course of your study. Please keep the activities that you have completed and include it in your **Portfolio of Evidence**. Your PoE will be required during your final assessment.

What is assessment all about?

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.

Assessment takes place at different intervals of the learning process and includes various activities. Some activities will be done before the commencement of the program whilst others will be done during programme delivery and other after completion of the program.

The assessment experience should be user friendly, transparent and fair. Should you feel that you have been treated unfairly, you have the right to appeal. Please ask your facilitator about the appeals process and make your own notes.
Your activities must be handed in from time to time on request of the facilitator for the following purposes:

♦ The activities that follow are designed to help you gain the skills, knowledge and attitudes that you need in order to become competent in this learning module.

♦ It is important that you complete all the activities, as directed in the learner guide and at the time indicated by the facilitator.

♦ It is important that you ask questions and participate as much as possible in order to play an active role in reaching competence.

♦ When you have completed all the activities hand this in to the assessor who will mark it and guide you in areas where additional learning might be required.

♦ You should not move on to the next step in the assessment process until this step is completed, marked and you have received feedback from the assessor.

♦ Sources of information to complete these activities should be identified by your facilitator.

♦ **Please note** that all completed activities, tasks and other items on which you were assessed must be kept in good order as it becomes part of your **Portfolio of Evidence** for final assessment.

Enjoy this learning experience!
How to use this guide …

Throughout this guide, you will come across certain re-occurring “boxes”. These boxes each represent a certain aspect of the learning process, containing information, which would help you with the identification and understanding of these aspects. The following is a list of these boxes and what they represent:

**What does it mean?** Each learning field is characterized by unique terms and definitions – it is important to know and use these terms and definitions correctly. These terms and definitions are highlighted throughout the guide in this manner.

**Activity**

You will be requested to complete activities, which could be group activities, or individual activities. Please remember to complete the activities, as the facilitator will assess it and these will become part of your portfolio of evidence. Activities, whether group or individual activities, will be described in this box.

**Example**

Examples of certain concepts or principles to help you contextualise them easier, will be shown in this box.

**How am I doing?**

The following box indicates a summary of concepts that we have covered, and offers you an opportunity to ask questions to your facilitator if you are still feeling unsure of the concepts listed.

**My Notes …**

You can use this box to jot down questions you might have, words that you do not understand, instructions given by the facilitator or explanations given by the facilitator or any other remarks that will help you to understand the work better.
What are we going to learn?

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SAQA Unit Standard
What will I be able to do?

When you have achieved this unit standard, you will be able to:

- Carry out procedures related to animal health and supervise the restraint of animals for such procedures.
- Gain specific knowledge and skills in animal health and will be able to operate in an animal production environment implementing sustainable and economically viable production principles.
- Perform animal restraint and related procedures.
- Perform basic veterinary procedures.
- Treat and vaccinate animals under supervision.
- Supervise the carrying out of basic principles of bio-security.
- Carry out pre-planned programs.

Learning Outcomes

At the end of this learning module, you must is able to demonstrate a basic knowledge and understanding of:

- The names and functions of relevant equipment, procedures, implements and instruments related to the study of animal health.
- The sensory cues and symptoms involved in the execution of pre-planned animal health programmes.
- The purpose of the implementation of procedures and pre-planned animal health programmes.
- The implication of the correct and incorrect execution of the procedures under pre-planned programmes.
- Implemented procedures.
- All rules and codes of conduct relevant to the procedures implemented.
- The interrelations between the observations, procedures and the treatment of disease and other animal health issues.

What do I need to know?

It is expected of the learner attempting this unit standard to demonstrate competence against the unit standard:

- NQF 3: Explain Animal Anatomy and Physiology.
- NQF 3: Explain the planning and scheduling of tasks in a production environment.
1 Animal Restraint

After completing this session, you should be able to:
SO 1: Perform animal restraint and related procedures.

In this session we explore the following concepts:

- Restraint procedures applied correctly
- Incorrect methods of animal restraint are recognised and rectified
- Incorrect practices are correctly identified.

1.1 Introduction

The size, strength and behaviour of farm animals vary a lot. Dairy cows, which are in contact with humans every day, are easy handled and treated. Beef cattle grazing in the field and not having contact with humans are not so easy to handle. Thus then is the reason why all animals cannot be treated the same.

A veterinary surgeon and most of the big farming enterprises will have very modern equipment to handle and treat big, strong and wild farm animals. Modern restraining equipment may include crush pens, head clamps and immobilisers. Sometimes it is necessary to cast an animal to perform a procedure. The golden rule is to use as little force possible in casting of animals, since a sudden fall may result in a fracture of a limb or rib. Different methods are used for each species.

However, most of the basic procedures on a modern farm are possible in a well-designed crush pen and with the use of an immobiliser.

1.2 Handling cattle with an immobiliser

The immobiliser is a safe electronic apparatus, designed to immobilise the voluntary muscles of livestock. It is not only safe and harmless for use on cattle but it is just as safe for the handler.

Safety precautions

- The immobiliser should never be used on animals suffering from any systemic disease.
- The breathing of an immobilised animal should be checked continuously. If breathing stops, decrease the output level.
NB: There is a likelihood that some animals may stop breathing voluntarily. If breathing does not resume within 15 seconds, decrease the output level. The level should not be decreased to a degree where immobilisation is lost.

The manufacturer accepts no responsibility whatsoever for loss of livestock, damage to property or personal injury which may incur during the use of the immobiliser.

**Compilation**

The unit contains the following:

1. The main electronic unit.
2. Output connector and cable.
3. Clamps and cable set.
5. Recharging cable.
6. Carrying strap.

**Controls**

1. On/off switch.
2. Level control.
3. Alarm.
4. Battery level indicator.
5. Output socket.

**Application**

It is suitable for a wide range of cattle handling procedures, which normally are labour intensive and also have the inherent danger of injury to the animal and the handler. The following procedures could be executed safely with the unit e.g. castration, dehorning, branding (hot and freeze), ear notching, tattooing, nose-ring application, hoof care, sheath washing etc.

**Power supply and charging of the battery**

The immobiliser is equipped (when bought) with a sealed lead-acid rechargeable battery which requires no maintenance. The lifespan of the battery can lengthen by charging it regularly while not in use for a long period. It can be charged by connecting it to a 12-volt D.C. current source (a car’s cigarette lighter socket) for 3 hours. Ensure that its 12 volt and negative earthed. The built-in charger switches off automatically when the battery is fully charged.
When the battery level indicator light glows while operating the unit it is a sign that the battery needs re-charging.

- **Audio alarm**
  - Test function
    To test faulty cables, connect the clamps to the immobiliser and switch on the unit. The alarm will go off with a whistling sound. The whistling should stop when the unit is short-circuited, an indication that there is a current flowing through the two clamps. If the whistling sound continues, check for a faulty cable or a faulty connection.
  - During use
    When the immobiliser is connected to an animal there should be no whistling sound when the unit is switched-on. If the whistling persists, it’s an indication of a weak contact on one of the clamps (usually under the tail). To overcome this problem the contact area could be moistened with water or simply dip the clamp into water.
  - Important
    If the alarm should suddenly sound while the unit is in use, check for a loose clamp or a loose connection, as this is also a sign that the animal is no longer immobilised.

- **How to use**
  The operator will learn from experience which level settings are the ideal for his animals.

  Suggested settings are as follow:
  - Bulls : Eight or less
  - Cows : Ten to twelve
  - Calves : Eight to ten

  It is advisable to have the level control set on zero when switching it on and then gradually increasing the level until the animal is fully immobilised. Check the animal regularly ensuring that it does not get accustomed to the level setting. If the animal should start moving, slightly increase the level setting.
Where to use

It is suggested that the immobiliser is used at a dry, non slippery area where the animal can easily be controlled, e.g. in a holding pen with preferably a suitable neck clamp. The immobiliser can be tied to the top railing of the holding pen to prevent it of being damaged during the operation.

Effect on Animals

When the electrodes are connected to the animal, there is usually a slight reaction. The animal soon calms down and later tends to ignore the electrodes.

Heavy breathing will be noticeable on most animals. It is as a result of the chest muscles contracting and breathing through the stomach occurs. There is cause for concern only if the breathing does not stabilise. Excess saliva may form due to the stimulation of the salivary glands and should be no cause for concern.

Placing of Electrodes

The one clamp should be connected to the mouth and the other under the tail. Ensure that both clamps make good contact. It does not matter which colour clamp is used for the mouth or under the tail. It is however recommended that the red cable be exclusively used in the mouth to prevent the manure of one animal being transferred to the mouth of the next animal.

Areas for placing of electrodes

The red cable is clamped to the corner of the mouth, ensuring contact with the inner cheek.

The black clamp is placed on the tail root.

Imobilisation

♦ Complete immobilisation
  (standing)

To obtain maximum benefit the electrodes should be placed on opposite sides of the animal, e.g. the left upper-lip and the right tail root or vice-versa.
Explain the prevention and treatment of animal diseases

Primary Agriculture  
NQF Level 3  
Unit Standard No: 116219

Crush pen  A small area strong enough to hold and restrain an animal allowing the operator to treat it.

Head clamp  An iron clamp that restrains an animal by locking its neck.

Immobiliser  An electric apparatus that overrides the nervous system of the animal.

Please complete Activity 1:
The facilitator will arrange an outing to a farm or farming enterprise. Basic restraining exercises will be demonstrated to you and then you will be given the opportunity to restrain the animal yourself. Make sure that you know how the facility setup operates and how the restraining apparatus works before you attempt the procedure. Small animals like sheep and goats can also hurt the operator as well as themselves. Make sure you approach the animal in the correct way.

Warning: The immobiliser overrides the nerve system of an animal by means of an electric stimulus. An immobilised animal is therefore not capable of swallowing. A treatment in liquid form is thus not advisable unless it is done by a veterinary surgeon. Farmers use neck clamps for drenching large animals.

<table>
<thead>
<tr>
<th>Concept (SO1, AC 1-3)</th>
<th>I understand this concept</th>
<th>Questions that I still would like to ask</th>
</tr>
</thead>
<tbody>
<tr>
<td>Restraint procedures applied correctly.</td>
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</table>

The securing of pigs

The casting of cattle
Session 2

Basic veterinary procedures and vaccination

After completing this session, you should be able to:

SO 2: Perform basic veterinary procedures
SO 3: Treat and vaccinate animals under supervision

In this session we explore the following concepts:

- Equipment related to veterinary procedures is used correctly.
- Veterinary procedures are executed correctly.
- The appropriate hygiene procedures are demonstrated and explained.
- The procedures relating to specific animals are correctly and appropriately recorded.
- Appropriate hygiene procedures are used and explained.
- Instruments are used correctly.
- Instruments used are correctly cleaned.
- Instruments for re-use are correctly cleaned, packed and stored.
- Basic physical examinations of animals are correctly carried out.
- Minor ailments are correctly treated.
- Basic problems are correctly diagnosed by assessing the symptoms exhibited by the animal.
- Treatments applied are correctly and appropriately recorded.

2.1 Introduction

To perform elementary procedures on animals there are a few very important aspects that must be kept in mind. At first we will discuss a few of the procedures before we attempt to perform it. Make sure you understand how the apparatus work before you use it. Especially an instrument like a Burdizzo can cause the animal a lot of discomfort and can even damage the animal permanently if applied incorrectly.
2.2 Equipment for basic veterinary procedures and the methods to use them

- **Thermometer**

To measure the body temperature of an animal you only need a good clinical thermometer. The temperature is normally taken in the anus of the animal. Normally the animal will feel no discomfort and will not react too much. Large untamed animals can be difficult and needs a little bit of restraint when the thermometer is inserted and removed again.

- **Dehorning of animals**

There are more than one method to dehorn animals such as cattle, sheep and goats. Some of the methods can easily be performed while others must be done under local anaesthesia and must preferably be done by a veterinary surgeon.

2.3 Dehorning of cattle

The dehorning of cattle is recommended for various reasons namely; polled animals cannot injure each other, especially in a kraal, at dipping-tanks, at drinking and feeding troughs and in railway trucks. Losses due to wounds and bruises inflicted by sharp horns are avoided. Bruised meat on carcasses, usually acquired by horn blows during transport, are condemned for human consumption at abattoirs daily, leading to losses amounting to thousands of Rand annually.

Certain objections can also be raised against it:

- Horns are useful when catching and securing animals: (Halters and head clamps can, however, be used with success).

- Horns are indicative of the quality of the animal. (The skin, bone and hooves are also judgmental objects).
Methods

Various methods and apparatus can be used for the dehorning of cattle. It is, however, preferable to have cattle dehorned as calves. The most suitable age is from 2 - 4 weeks, or as soon as the horn bud is palpable. When the horn is well developed, the lumen of the horn is connected to the frontal sinus, which makes the process of dehorning a painful operation, and the risk of complications is greatly enhanced. Because of this the dehorning of mature cattle is not recommended, except in exceptional circumstances. A veterinarian should then do it under local anaesthesia.

♦ Dehorning iron

Cast the calf. Cut off the hair around the horn bud and make sure that the iron fits over the horn bud. (The tip of the iron is concave). If necessary the tip of the horn bud may be cut off with a sharp knife to ensure that the growth area around the horn bud is burnt. Heat the iron until it is red-hot and presses it down on each bud for about 6 seconds. No after treatment is necessary. Care must, however be taken to ensure that the skin around the bud is well burnt thus preventing the growth of a malformed horn.

♦ Dehorning paste (caustic potash)

Shave off the hair around the horn bud and smear petroleum jelly around the base of the bud. The dehorning paste is then rubbed in well on the horn bud for 15 - 20 seconds. Ensure that the paste does not moisten as it may burn the calf’s skin and damage the eyes or ears.

♦ De-budding forceps

This can be used for calves up to 4 months of age. Shave off the hair and paint the horn bud and the surrounding area with a germicidal agent e.g. tincture of iodine. Place the jaws of the forceps around the horn bud and close the forceps. It must be deeply recessed. Do not feel sorry for the calf as the operation may then be unsuccessful. Paint the wound with tincture of iodine, healing oil, etc.

♦ Hack-saw

This is used when horns are fully grown and should be done under local anaesthesia. Mature cattle should be well controlled and the head must be securely detained. It is often necessary to cast the animal for this operation. The horn can then be neatly sawn off simultaneously with a ± 1 cm ring of surrounding skin. An experienced person can do this operation quickly. If the frontal sinus is exposed, the hole should be plugged with cotton wool and painted over with Stockholm tar.
Keystone Dehorner

This is a large, heavy pincer with compound hinges. This is a quick method. A strong person or two people are needed to handle it. Cracking of the skull and serious haemorrhage are often complications with this method. This should be done under local anaesthesia and the head of the animal firmly secured. If the bleeding is profuse, a thin rope should be tied around the base of the horns in a figure 8 to stop the bleeding. After-treatment with cotton wool and Stockholm tar is prescribed.

Embryotomy wire

This cable-like wire is pulled to-and-fro around the base of the horns, generating heat while the horn is sawn off. This operation should also be done under local anaesthesia. Bleeding is limited when using this method. After-treatment is the same as described above.

Complications

- **Haemorrhage**: Can be controlled by means of a rope tied around the base of the horns in a figure 8 or by cauterisation with a branding iron.
- **Infection**: Local antibiotic treatment after disinfection of the wound.
- **Sinusitis**: The sinus cavities can be infected. "Boil" out the pus with proteolytic enzymes or hydrogen peroxide and treat with antibiotics afterwards. The pus can quite often be "poured" out by tilting the head of the animal.
- **Abscesses**: Disinfection and antibiotic treatment.
- **Cracking of the skull**: Rest and prevent infection.
- **Blowfly**: Clean the wound and treat for blowfly.

Sheep and goat rams may sometimes also be dehorned. The same methods are used as for calves. If a mature ram is to be dehorned, it is advisable to have it done by a veterinarian, who would most probably use the embryotomy wire method.
2.4 Branding and tattooing manual

- **Marking by means of tattooing**

  The first method of identification is the tattooing of animals with tattoo pliers and ink.

  - Sheep and goats (small stock) are tattooed.
  - Pigs and calves.
  - The characters of a tattoo may **not be bigger than 20mm** (high or wide).
  - The tattoo may have 1, 2 or 3 characters.
  - You must put the characters next to each other.

- **Equipment needed**
  - Cotton wool
  - Mentholated Spirits
  - Tattooing pliers
  - Letters
  - Ink
  - Old toothbrush and a tin of polish.

<table>
<thead>
<tr>
<th>Step 1</th>
<th>Get everything ready before you start.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 2</td>
<td>Get someone to help you. The helper must round up, catch and hold the animals.</td>
</tr>
<tr>
<td>Step 3</td>
<td>Position the characters into the tattoo pliers <strong>according to the certificate of registration</strong>. Test it on a piece of paper at first.</td>
</tr>
<tr>
<td>Step 4</td>
<td>Clean the ears before applying the ink. The <strong>ears are normally dirty and oily</strong> which will prevent the ink from filling the tattoo holes made by the tattooing pliers. Shake the inkbottle very well before and during the tattooing process. Apply the tattoo ink on the clenched area as well as on the characters in the pliers.</td>
</tr>
<tr>
<td>Step 5</td>
<td>Place the tattoo pliers in the correct position and apply enough pressure enabling the characters to penetrate the ear or the skin as deep as possible.</td>
</tr>
<tr>
<td>Step 6</td>
<td>The ink must now be well rubbed into the wound with the thumb and index finger or with a tooth brush. The tattooing process is completed! Remember to shake the bottle well during the procedure, use enough ink and rub it in.</td>
</tr>
</tbody>
</table>
■ Marking with a hot iron

◊ Equipment needed:
  - Immobilizer
  - Gas
  - Oven
  - Letters
  - Neck clamp
  - Ice
  - Wound oil

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td>Use a separate iron for each marking character. It is easier but not compulsory.</td>
</tr>
<tr>
<td>Step 2</td>
<td>Get everything ready before you start marking. Make sure that the sequence of the registered mark is correct according to the certificate of registration. This can be tested on a piece of wood.</td>
</tr>
<tr>
<td>Step 3</td>
<td>Get someone to help you. The helper must round up the animals and clamp or restrain them firmly. If you have more than one helper it will be easier.</td>
</tr>
<tr>
<td>Step 4</td>
<td>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.</td>
</tr>
<tr>
<td>Step 5</td>
<td>Immobilise the animals with an immobiliser and prevent them from kicking by using a knee halter. The immobilisation of the voluntary muscles prevents the animal from moving (see guidelines).</td>
</tr>
<tr>
<td>Step 6</td>
<td>Take the first iron and put it against the animal’s skin for up to 4 seconds. Press firmly. (Count 1001, 1002, 1003, 1004 slowly). Remove the iron. Go through the same ritual with the second and third iron. Keep the gap between the letters 20 mm apart. The letters must not touch each other. Release the immobiliser. The marking is completed! Clean each iron with a steel brush to get rid of the burned skin and hair before proceeding to the next animal.</td>
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<tr>
<td>Step 7</td>
<td>Make use of ice or water to cool down the wound. You can also spray wound oil on the wound. Do not wipe it with a cloth because you can tear the marks. Never rub manure on the wound because it can cause infection in the branded area.</td>
</tr>
</tbody>
</table>

■ Marking with a freeze branding iron

◊ Equipment needed
  - Coolant: – dry ice in ethyl, methyl or isopropyl alcohol and liquid nitrogen (± 50 kg dry ice / 100 cattle).
  - Isolated container for the coolant.
  - Set of copper or high-quality bronze alloy branding irons with handles.
  - Set of clippers.
- 95% ethyl or methyl alcohol.
- Gloves
- Immobiliser

<table>
<thead>
<tr>
<th>Step 1</th>
<th>Get everything ready before you start branding.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 2</td>
<td>Get someone to help you. The helper must round up the animals, clamp and restrain them firmly. If you have a crush-pen, branding will be easier.</td>
</tr>
<tr>
<td>Step 3</td>
<td>Immobilise the animals with an immobiliser and use a knee halter to prevent them from kicking.</td>
</tr>
<tr>
<td>Step 4</td>
<td>Shave off the hair on the spot to be branded.</td>
</tr>
<tr>
<td>Step 5</td>
<td>Freeze the iron by putting them in liquid nitrogen or in spirits which has been chilled by means of dry ice.</td>
</tr>
<tr>
<td>Step 6</td>
<td>When the irons stop bubbling they are cold enough to brand letters onto the skin. Shake off the nitrogen or spirits as the flow-off will also leave a mark on the skin. Wet the cleaned area with spirits.</td>
</tr>
</tbody>
</table>
| Step 7 | Press hard for the following exposure times:  
   - Animals of 6 to 8 months: **20 to 25 seconds**  
   - Animals of 9 to 18 months: **25 to 30 seconds**  
   - Animals over 18 months: **30 to 35 seconds**  
   Release immobiliser  
   After 3 months white hair will grow out in the place of the old hair. |

## 2.5 Techniques employed in the treatment of animals

The choice of drug and route of administration are determined by a number of factors viz. the disease afflicting the animal, the species, breed, size, temperament, manageability, etc. Different routes can be used for administering drugs, depending largely upon the disease condition, acuteness of the disease and general condition of the animal.

### Routes of administration

- **External application**
  - Injuries to and diseases of the skin, eye, ear and nose.

  Medicaments are applied to the skin, eye, ear and nose in the form of powders, lotions, sprays and liquid or oily solutions. The use of liquid solutions requires repeated applications (every 2 hours) while ointments act over longer periods, requiring application of smaller amounts with
longer intervals. Medicaments for the eye and ear should preferably be in the form of an ointment or in a liquid base. This method of application can be used for the local treatment of wounds, rheumatism and diseases of the skin, eye and ear.

Local treatment of skin lesions may frustrate dogs and cats as these animals constantly lick the lesion and can thus be poisoned by the medicaments. The local application of medicaments on dogs and cats often require constant securing, large collars around the neck or the administration of sedatives.

The medicament must be applied thinly and rubbed in well into the wound. Sprays are convenient in the sense that they dry fast and thus diminish the chances of the drug being rubbed off or washed away.

♦ Treatment of animals for external parasites

For the treatment and control of external parasites, local application of certain substances (e.g. dipping- compounds) to the skin by means of various methods, are discussed below.

Please complete Activity 2.

Arrange an outing to a farmer to demonstrate the treatment of:

- External parasites (dipping).
- Internal parasites (dosing).
- Dosing remedies, tablets and dry powder.
- Vaccinating animals.
- Using of a gag.
- Take note of the equipment used by the instructor when applying insecticides and drenching animals.
- Note the sequence of the whole procedure.
- How the strength of the concentration of the insecticide (or dip) is kept at an effective level.
- How the vaccines are cared for.
- The calibrating of the equipment.

Write short notes on your observation of the procedures and hand in as part of your portfolio of evidence.
2.6 Techniques employed in the treatment of Cattle

External parasites (dipping)

Engorging tick; some tick species are stated to ingest up to 4 ml of blood

Cycle of development of one or more host ticks
### Route of Application to Treat the Parasites

<table>
<thead>
<tr>
<th>Parasite</th>
<th>Sheep</th>
<th>Horse</th>
<th>Cow</th>
<th>Pig</th>
<th>Cat</th>
<th>Dog</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cheese Worm</strong></td>
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<tr>
<td><strong>Cattle Worm</strong></td>
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<tr>
<td><strong>Horse Worm</strong></td>
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<tr>
<td><strong>Sheep Worm</strong></td>
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<tr>
<td><strong>Blowfly</strong></td>
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<tr>
<td><strong>Maggots</strong></td>
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<tr>
<td><strong>Blood-Sucking Flies</strong></td>
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</tr>
</tbody>
</table>

**Notes:**
- Blue indicates internal routes.
- Red indicates external routes.
- Yellow indicates both internal and external routes.
Plunge-dip

Previously, when arsenic was the most important dipping-substance, large dipping tanks were generally used as the animal was forced to swim through, thus ensuring it to be in contact with the dipping-fluid for a longer period. Nowadays only proper wetting of the animal with the modern organic dipping-compounds is necessary.

Smaller dipping-tanks are now recommended (± 15 000 litre) as this also helps in keeping costs down when making use of the more expensive dipping-compounds. For efficient control of parasites, it is essential to wet the whole animal with a properly constituted dip-wash at the correct strength. (To obtain this, the label on the container should always be read carefully). The dipping-tank must be constructed in such a way that there are 5 to 6 steps at the entrance leading down to the water-level. This provides the animal with something to kick against when jumping in, while at the same time forcing the body of the animal into a position with its head down, thus forcing its head below the water surface when it plunges, ensuring complete wetting with the dip wash.

To maintain modern dips at the correct strength, where tank-site tests are time consuming or not available, it is easy and fairly accurate if done in the following way:

- Calibrate the tank and mark each 500 litres on the wall of the tank as well as on the dipstick for the top third of the tank-capacity.
- After preparing the contents of the dipping-tank correctly at the fresh filling rate, record the tank-level when the day's dipping is completed.
- Before commencing the next dipping, measure the tank-capacity and compare it with the measure at the end of the previous dipping to establish whether rain has diluted the dip-wash.
- If the latter is the case refill with dipping-fluid necessary for the volume of extra water which has entered the tank.
- This easy, on the spot check, when done regularly at each dipping, will ensure a fairly accurate dip-strength.

To protect the dip-wash in the tank as much as possible, avoid dirt and exposure to the sun. A foot-bath, 3 - 5 metres long, through which the animals have to walk before plunging, is of great help to clean the hooves and avoid soiling of the dip-wash.

A well constructed roof over the tank, to avoid evaporation and to prevent dilution by rain, is just as essential as a foot-bath.

Spray-races

The spraying of cattle was brought to the forefront with the introduction of the modern organic chemicals which were more costly and more difficult to test than arsenic; hence the development of the spray-race. Spraying of cattle has the
advantage that the dip is freshly made up, at full strength, before it is used, thereby
giving maximum control and at the same time any uncertainty regarding the dip
strength is eliminated.

The spray-race therefore has an advantage over plunge-dips, provided the following
points are observed:

♦ Use only an approved spray-race manufactured by a pharmaceutical company.

♦ These are synchronised with regard to the size of the nozzle, type of nozzle,
speed of the pump, size of the pump, the pressure and position of the pipes and
nozzles in order to ensure proper wetting of all parts of the animal.

♦ Mix only enough dip for the day's spraying to prevent dirty dip leftover remaining
in the sump or pump for the next dipping.

♦ Flush all the pipes and the sump with clean water after use to prevent blocking.

♦ Ensure that the pump pulley runs at ± 2 000 rpm. At this pulley speed and the
pressure set on 1, 4 bars, the delivery rate of 700 litres per minute will be
achieved.

♦ Ensure that all the nozzles and the strainer are clean before spraying is started.
Use clean water only.

♦ Never build a spray-race near to or under trees, as seeds and leaves may block
the strainer and nozzles.

♦ Build the spray-race facing north if possible. The animals, when entering, will
now walk away from the sun and not facing it. The prevailing winds must also be
considered.

♦ Wetting of the ears and under the tail is not always as efficient as in a plunge
dip, necessitating special attention to these parts (e.g. hand-dressing.)

### Hand-spraying

This should only be attempted when less than 25 animals are involved. It is proved
over and over again that the affectivity is greatly diminished where herds larger than
25 head were hand-sprayed weekly. It must be remembered that for hand spraying
at least 10 litres of dip-wash is required to properly wet an animal. It is also very
difficult to wet all the body parts of an animal standing still. Moreover, a high
pressure spray pump is needed to ensure thorough wetting of the skin.

### Hand-dressing

This method is sometimes used where animals cannot be brought to the dipping-
tank, where severe localised infestation or the presence of clusters of ticks in the
ears, under the tail or on bare parts occurs.

Apply hand-dressing materials only locally (patch-treatment) to parts where ticks
cluster. Never treat large areas of the animal, as the animal may become poisoned.

Products such as "Tick dressing S" (chlorphenvinphos) can be used for cattle.
**Pour-on solutions**

Products that can be pour on or painted on the infected parts of cattle and sheep/goats include: "Drastic Deadline", "Clout" and "Swift Pour-on".

**Aerosol**

Products such as "Bacdip aerosol" can be applied locally.

**Calibration of dip- or spray-tanks**

The most accurate method to fill a dipping-tank is to make use of an open oil drum, filled to the point of overflowing, as a measure.

When full, such a drum contains 200 litres. The dipping-tank is filled with this, and a dipstick, with the necessary calibration marks is prepared at the same time. The easiest and quickest method is to calculate the contents by measurement.

- The following formula can be employed:

<table>
<thead>
<tr>
<th>Dipping tanks:</th>
<th>Measure:</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>= Length at water-level.</td>
</tr>
<tr>
<td>b.</td>
<td>= Length at bottom.</td>
</tr>
<tr>
<td>c.</td>
<td>= Breadth at water-level.</td>
</tr>
<tr>
<td>d.</td>
<td>= Breadth at bottom.</td>
</tr>
<tr>
<td>e.</td>
<td>= Depth of water.</td>
</tr>
</tbody>
</table>

Now calculate as follows:
\[
\frac{a + b}{2} \times \frac{d + c}{2} \times e = \text{cubic capacity of dip-tank.}
\]

NB: 1 cubic metre = 1 000 litres.

<table>
<thead>
<tr>
<th>Spray-races</th>
<th>Measure:</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>= Length of sump.</td>
</tr>
<tr>
<td>b.</td>
<td>= Width of sump.</td>
</tr>
<tr>
<td>c.</td>
<td>= Depth of sump.</td>
</tr>
</tbody>
</table>

Now calculate as follows:
\[
a \times b \times c = \text{cubic capacity of the spray-race sump. Add the capacity of the sump foot valve.}
\]
2.6 Techniques employed in the treatment of Sheep

- **Plunge-dipping**
  
  Two types of dipping-tanks are recommended for sheep namely the oblong dipping-tank and the circular dipping-tank. Both types work extremely well, provided the following requirements are performed:
  
  - The draining-pen must be well constructed to facilitate draining and should be large enough to allow complete draining without delaying the dipping-process.
  - The sheep handling-facilities (i.e. kraals etc.) must be satisfactory and not slowing down dipping process.
  - The exact capacity of the dipping-tank should be known when preparing the dip-wash at the correct concentration.
  - The dipping-tank must be calibrated to facilitate accurate replenishing.
  - The presence of a replenishing tank next to the dip will speed up the dipping process and ensure that the dip-strength is maintained.
  - Ensure that each sheep is plunged underneath the fluid level at least twice for proper wetting.

  **NB.** There is a distinct advantage in dipping sheep 10 - 14 days after shearing when the wool is short as far as thorough wetting and economy are concerned.

- **Foot- and belly-dipping**
  
  Foot-dipping is recommended for the control of the bontpoot and bont ticks. In this case the water-depth through which the animals walk, should be from 15 to 30 cm. Belly-dipping is recommended for the control of the paralysis ticks where wetting of the legs and belly is essential. The depth of the dip-wash should be 50 - 60 cm.

- **Maintenance of dip-strength**
  
  This aspect cannot be overstressed when dipping sheep. Whether it is a plunge-, foot- or belly dip the following points must be kept in mind:
  
  - The exact capacity of the dipping-tank must be known to establish the dip-wash at the correct strength initially.
  - Replenishing must be done regularly and continuously to maintain the correct strength.
  - This will ensure that the first and the last animal to be dipped will come into contact with the correct concentration of dip-wash to ensure good results. Larger
dipping-tanks (4 000 to 5000 litres capacity) are replenished less often than smaller tanks (2000 to 3 000 litres). Nevertheless, it is essential to replenish with fresh water and dipping-compound at the prescribed replenishing rate before one third of the dip wash has been removed by the animals.

There is a lot of merit in constant replenishing from a replenishing tank alongside the dipping-tank. In the case of belly-dipping or foot-dipping where the dip-wash depth is of the utmost importance. The constant replenishment method is also recommended. This ensures both correct strength and depth of dip-wash throughout the dipping process.

### Horses

Methods which can be followed are:

(i) Dipping or spraying, as for cattle.

(ii) Hand-spraying with dipping compounds.

(iii) Dusting with dip-powders.

### Pigs

Dipping of pigs or spraying may be applied to small numbers. It is necessary to wet the pig thoroughly to obtain good results. Pigs with advanced mange should be scrubbed to ensure thorough wetting. It may also be necessary to add a wetting agent to the dip-wash.

### Poultry

Dusting of poultry under each wing and tail may be done mechanically or by means of a sandpit with dip-treated sand.
Internal Parasites

Normally there are two methods to control internal parasites.

♦ Dosing or
♦ Drenching

There are a lot of drenching remedies on the market; some of them can be administered orally while the other can be injected. (Dectomax).

The following are examples of different internal parasites that may occur in your area:

Intermediate hosts of liver flukes

My Notes ...
Explain the prevention and treatment of animal diseases

Primary Agriculture
NQF Level 3
Unit Standard No: 116219

28

Version: 01                  Version Date: July 2006

Life-cycle of the liver-fluke (Fasciola hepatica) after Wetzel
**Oral administration**

Oral administration is a very popular method of treatment. The efficiency depends upon the condition of the gastro-intestinal tract and in certain cases upon the tolerance of the tract with regard to the drug administered e.g. Vomiton.

Different methods can be followed, depending upon the nature of the remedy (e.g. powder, tablet, capsule or fluid), the palatability and temperament of the animal.

- **By means of food or water:**

  This is the easiest way of administration. The animal is famished for a day ensuring that it is hungry the next day. The drug, depending upon its palatability, is then mixed with a small volume of food or water (about half the amount usually taken by the animal) and given to the animal to ensure that the full dose of the drug is taken. When treating a group of animals in this way, it is important to ensure that every animal takes in treated food or water and that no animal is allowed to stray.

  Powders, fluids and crumbled tablets can also be administered in this way. This method is of particular value when administering drugs like vitamins or minerals, treatment against worm infestations, diarrhoea and also as preventative therapy e.g. coccidiostats in the case of poultry.
Coccidiostats Remedy to prevent coccidiosis, a serious digestive track disease that causes diarrhoea.

♦ By means of a tablet pistol:

This is a tube and plunger (a big syringe) for administering tablets or boluses. The tablet fits into the front end of the tube which is then pushed out by the plunger.

- Horses
  An assistant must open the horse’s mouth. The operator grabs the tongue with his left hand and pulls it out towards the side of the mouth. The tablet pistol being held in his right hand is then pushed alongside the palate to the back of the throat where the tablet is deposited. Water or food given afterwards will ease the swallowing process. The bolus can usually be seen moving downwards (on the left side of the neck) in the oesophagus.

- Cattle
  A gag is normally used to keep the mouth open before the bolus or tablet is administered by means of the tablet pistol - also right at the back of the mouth over the dorsum of the tongue.

Gunther Hepke mouth gag - for use when passing endo tracheal tubes
Mouth gag - This gag is made of solid stainless steel with a moulded rubber block. The rubber block is made of very durable material and is not traumatic so that tooth damage does not occur. In addition the wedge shape and the compliance of the rubber cause less stress to the horse. The rubber block is exchangeable - when it wears out it can easily be replaced.

- **Sheep**
  An assistant opens the mouth of the sheep with a gag, of which several types are available. The tablet, being held in the applicator, is pushed into the mouth and over the dorsum of the tongue and deposited at the back of the mouth. The mouth is then closed and the bottom side of the throat rubbed to stimulate the animal to swallow.

- **Dogs**
  Place the tablet in a small piece of fat or meat and allow the animal to take it. If that is not successful, the mouth must be opened by placing the left hand from the back over the eyes and mouth of the dog. Push the upper lips inwards over the upper teeth (to prevent biting) and force the mouth open with 4th and 5th fingers of the right hand and place the tablet over the dorsum of the tongue. Push the tablet down as far as possible, close its mouth and rub the bottom side of the throat to stimulate swallowing.

- **Dosing of fluids by means of a dosing-syringe:**
  When administering fluids, care must be taken to avoid inhalation of these drugs into the lungs (aspiration pneumonia will ensue if this happens).

  Various dosing-syringes are available in the trade, e.g. automatic, semi-automatic or hand operated dosing-syringes of different sizes and makes. Many of these are also fitted with an extension-tube which is pushed down the throat. The extension may be of metal- or rubber- or latex-tubing and vary in size and form. The choice of syringe depends on the species and number of animals to be dosed, the purpose for which it is needed, the volume of fluid to be administered as well as the mechanical manageability and ease of cleaning.
A strong, 300ml, nylon/metal syringe with two different nozzles: the tapered (flushing) nozzle takes a uterine infusion pipette for easy flushing and the dosing nozzle for easy dosing of oral medicaments. This syringe can also be used with the dosing nozzle to flush out a horse's mouths during dental procedures.

A few principles when fluids are administered:

- Give small quantities at a time to allow the animal to swallow properly.
- Do not hold the tongue. The tongue is used in the process of swallowing.
- Lift the head slightly to prevent the fluid from dripping out of the mouth. However, do not lift it too high, as the animal will then have difficulty in swallowing.
- Administer it at the side of the mouth where the upper and lower lips meet.
- Handle the animal firmly, but not robustly.
- When an animal coughs, dosing must stop immediately and the head released until the coughing has stopped.
- Do not be in a hurry. Overeager and rough handlers were responsible for many deaths (especially of sheep) in that the syringe had punctured the throat and mouth wall and poisonous drugs were deposited in the tissues.
- Ensure that the dosing-syringe functions correctly, especially when using poisonous drugs. This will ensure that the correct volume is being dosed.
- Never start dosing before the recommendations for the use of the remedy have been studied.
- Never use drugs of which the contents are not known.

Horses

It is advised that a horse is drenched by means of a stomach-tube (explained later) and not a dosing syringe.

Cattle

A long-necked bottle is usually used for this purpose. When large numbers of animals are drenched, it is advisable to use a dosing-syringe or pump. Insert the syringe into the side of the mouth, while an assistant holds the head of the animal (holding the horns or nose) and inject slowly. If it is preferred that the drug should go into the abomasums directly (milk stomach) a 10% solution of salt or sodium bicarbonate should be given before hand. This will allow the oesophageal groove to close for 10 - 15 seconds. The modern worm remedies can be dosed into the rumen and will still be affective.
• Sheep

Sheep can also be drenched with a long-necked bottle. It is however time consuming and therefore not recommended when a large flock is to be drenched. Use a gag and dosing-syringe instead. Small quantities are usually given with a special dosing-spoon or a small accurate syringe. Larger volumes of up to 30 - 60 ml must be given with a dosing-syringe. A long thin tube connected to a funnel can also be used. Hold the sheep in a standing position between your legs and keep the head steady. Put the one end of the tube in the mouth between the cheek and molar teeth. The funnel side is held high, the assistant pours in the fluid and the animal is given enough time to swallow.

• Pigs

Put a noose (with a strong rope) around the upper jaw and nose, just behind the canine teeth. The other end of the rope is pulled over a crossbar so that the pig is lifted from the ground and hangs by its mouth. An assistant can then stand over the pig to keep it steady, while dosing is performed slowly (by means of a bottle, syringe or tube).

• Dogs

If necessary, place a rope around the nose of the dog (to the front). Keep the head steady with one hand, in an almost vertical position and slightly to the one side. By pulling the lips of the animal away from the teeth with the forefinger of the other hand, a pouch is formed.

Pour the fluid into the pouch and rub the throat. Keep the nostrils closed for a while if the animal refuses to swallow. This will force the animal to swallow.

♦ Drenching by means of a stomach-tube:

A stomach-tube, if passed correctly, constitutes one of the most efficient ways of drenching an animal. Care should be taken though, to ensure that the tube is passed into the stomach and not into the lungs. The use of the stomach-tube has many advantages: absence of the risk of suffocation, administering the exact
volume without spilling and better manageability of the animal with fewer disturbances or struggling. Unpalatable and foul smelling drugs do not come into contact with the palate, eliminating the animal to refuse the drug. Different types of stomach-tubes are commercially available e.g. made of rubber, metal or leather, with different diameters (usually three sizes).

There are two marks on the stomach-tube for horses. When the first mark reaches the nostril the other end should reach the throat and when the second mark reaches the nostril it should be in the stomach. The free end of the stomach-tube is connected to a funnel where the medicine is poured in. Wind this apparatus when not in use.

- Horses

  It is advisable to use a stomach-tube when drenching horses. There are special tubes for mature horses and foals. Before using the tube, lubricate half of the tube with liquid paraffin.

  Clean the left nostril with cotton wool. By manipulating it with a finger, push the tube along the floor of the nasal cavity. When the first mark reaches the nostril, indicating that the end has reached the larynx, the horse will usually swallow. If this does not happen, move the tube backwards and forwards until the animal swallows.

  When this happens, the tube is passed further. If the tube is in the oesophagus, slight resistance will be encountered because it is passing against the peristaltic movements. However, if it reaches the trachea, no resistance in passing the tube will be encountered, but the horse may cough. When the tube reaches the oesophagus, it can be seen and felt in the groove just above the trachea on the left side of the neck. If the tube reaches the stomach, the stomach contents can be smelled and the stomach movements can be heard as well. Pour a small volume of water down the tube if any doubt still exists whether the stomach-tube is in the stomach or not. If the animal coughs, the tube is still in the trachea and did not reach the stomach yet.

  When satisfied that it has been correctly passed, the funnel is attached to the tube and the medicine poured down. Always pull the tube out slowly before the inner end reaches the throat. The tube on the outside must be held down to drain all the remaining fluid from the tube.

  It sometimes happens that the thin cartilage in the nasal cavity is injured and a slight haemorrhage may result. This is not serious and usually recovers quickly.

- Cattle

  A stomach-tube can also be used to drench cattle. The tube is passed through the mouth, which is kept open by a gag. The gag may be simple; a strong thick piece of wood (25 cm long and ± 5 cm thick) with a hole in the middle to allow the tube to pass through. This will prevent the animal
from biting the tube. As soon as the tube reaches the throat, the animal will swallow, which allows the tube to be pushed down into the stomach. Ensure (as in the horse) that the tube is in the stomach before administering the drug.

The tube is removed in the same way as described in case of a horse.

- Sheep
  It is done in the same manner as described for cattle but using a smaller gag and tube.

### Injections (parental administration) and vaccination of animals.

This implies injecting a substance into the body of the animal. The administration thereof also requires, with a few exceptions, the cleaning of the skin (with a disinfectant) as well as the disinfection of the lid of the bottle containing the drug which is to be used. Care must be taken when working with live vaccines (e.g. vaccines against virus diseases) so as not to destroy the vaccine in the process of cleaning. Sterile needles and syringes should be used (sterilisation should preferably be done by boiling the instruments in soft water for 20-30 minutes.) The person giving the injection should possess a sound knowledge of the anatomy of the animal regarding the muscles, veins and nerves. The animal must be effectively restrained enabling the correct administration technique. After the needle has been pushed into the injection-site, it is advisable to connect the syringe and pull back the plunger to ensure that the needle is correctly placed. (Withdrawal of blood into the syringe is an indication that a blood vessel has been penetrated). Where possible, a clean needle should be used for every animal to prevent transmission of diseases and germs.

♦ Routes used for injections

<table>
<thead>
<tr>
<th>Subcutaneous</th>
<th>In this case the drug or vaccine is injected under the skin. The drug is absorbed slower and over longer periods as is not the case with the other routes. Irritant drugs should not be injected subcutaneously. A site is chosen where the skin is loose and thus easily picked up. Most of the vaccines are administered just under the skin. Lift the skin (pulling it away from the muscle) with the thumb and fore finger and inject the prescribed amount (usually 1 - 5 cm) in the space between the skin and muscle.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Horses, cattle, sheep and goats</td>
<td>The loose skin in the region of the dewlap or breast, the side of the neck or over the shoulder is used.</td>
</tr>
<tr>
<td>Pigs</td>
<td>Just behind the ear.</td>
</tr>
</tbody>
</table>
Explain the prevention and treatment of animal diseases

Intramuscular

Here the drug is injected into the muscles. A sufficiently long needle should therefore be used to penetrate into the muscle. Small volumes should be injected in any one site (not more than 20 ml per site in the case of large animals). Pain and lameness may occur when large quantities are injected at one site. Absorption of the drug is rapid due to a good blood supply to the muscle. Normally hormones and antibiotics are injected into a muscle. You must make sure that the correct muscle is used and that the needle does not enter or damage the nerves and arteries. The choice of the injection site depends upon the thickness of the muscles at that site.

**Horses**

Preferably in the breast muscles at the bottom of the neck, although, the neck muscles may also be used (see illustration).

**Cattle, sheep, goats and pigs**

The muscles of the neck, rump or buttocks are the most suitable. Piglets are injected in the neck muscles behind the ear.

**Poultry**

Inject into the breast muscle.

Intravenous

In this case the drug is introduced into a vein, in other words, directly into the blood. Various advantages derive from this as the drug is immediately available to the body and larger volumes and more irritant substances may be administered at one time. Drugs are usually introduced slowly, while the animal is kept under control. The technique of administration is as follows:

If the jugular vein is used, place a rope around the neck just in front of the shoulder and tighten the rope. This causes the blood to accumulate in the vein, rendering it clearly visible. The needle (not connected to the syringe) is pushed through the skin with a stab-movement into the vein. If the needle entered the vein (and not into the wall of the blood vessel or the subcutaneous tissues) blood will flow freely through the needle. Fit the syringe, release the cord and inject the drug slowly.

**Horses, cattle**

Jugular vein.

**Sheep and Goats**

Jugular vein and also the vein on the inside of the front leg, just above the knee.

**Pigs**

Vein in the ear. The technique is the same as for large animals except that the cord is placed at the base of the ear.

**Dogs**

Front leg.

**Poultry**

Into the vein of the wing.
Intra-mammary

This method is used for the treatment of mastitis. Firstly, clean the teat thoroughly. The nozzle of the tube or plastic syringe (specially designed for this type of injection), is inserted into the teat canal. The contents are then squeezed into the udder, which is massaged upwards a few times. Special teat cannulas can also be used.

Illustrate injection sites
Intra-vaginal and intra-uterine

Here the drug is introduced into the vagina or the uterus. Peccaries can be placed in the uterus by hand. Absolute hygiene is a necessity! The hand being used in the operation must be washed and disinfected. If possible, wear a sterile glove! If it is impossible to insert the drug by hand (e.g. fluids) it should be deposited by means of a sterile tube or catheter. The same technique is used when doing artificial insemination.

Rectal

This means the introduction of suppositories, tablets or liquid medicaments into the rectum, mainly for the treatment of constipation.

Complications following injections are as follows:

- Abscesses may develop at the injection-site, especially when proper hygiene has not been maintained.
- Anaphylactic shock or allergic reactions may follow the administration of certain antibiotics or biological substances e.g. antiserum.
Explain the prevention and treatment of animal diseases

When irritating drugs, injected into the vein, leaks through the vein into the subcutis, large scabs will form on the skin leaving unsightly wounds.

The use of progeny substances e.g. certain vaccines may cause a fever reaction.

Administration of incompatible substances may result in severe systemic reactions.

<table>
<thead>
<tr>
<th>Concept (SO 2 &amp; SO 3))</th>
<th>I understand this concept</th>
<th>Questions that I still would like to ask</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equipment related to veterinary procedures is used correctly.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Veterinary procedures are executed correctly.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The appropriate hygiene procedures are demonstrated and explained.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The procedures relating to specific animals are correctly and appropriately recorded.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Appropriate hygiene procedures are used and explained.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Instruments are used correctly.</td>
<td></td>
<td></td>
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<tr>
<td>Instruments used are correctly cleaned.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Instruments for re-use are correctly cleaned, packed and stored.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basic physical examinations of animals are correctly carried out.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minor ailments are correctly treated.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basic problems are correctly diagnosed by assessing the symptoms exhibited by the animal.</td>
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<td></td>
</tr>
<tr>
<td>Treatments applied are correctly and appropriately recorded.</td>
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</tbody>
</table>
Carry out pre-planned programs and the basic principles of bio security

After completing this session, you should be able to:
SO 4: Supervise the carrying out of basic principles of bio-security.
SO 5: Carry out pre-planned programmes.

In this session we explore the following concepts:
- The correct chemical containers for bio-security are used and checked according to a schedule.
- Irregularities are recognised and reported appropriately.
- The correct protective gear is used and / or worn.
- Chemical containers are correctly filled and / or re-filled.
- Waste products and / or empty containers are appropriately collected, cleaned and / or discarded appropriately.
- Dead animals and / or other waste are correctly disposed of.
- Specific programmes are executed according to a determined time schedule.
- The programme schedule is explained and interpreted.
- A schedule of activities that implements the Management Programme is prepared.
- The programme requirements (instruments, chemicals) are on hand.
- Deviations from the schedule of activities are reported to a supervisor and alternative suggestions are recommended.

3.1 Introduction

South Africa is a country with contrasting environments. In high rainfall and moist regions a lot of pests and illnesses occur that must be controlled to keep farm animals healthy. In the more barren areas the diseases appear from time to time. There are also the diseases that can occur where animals are concentrated. To control these circumstances it is necessary to have a good knowledge of the region’s diseases and a well managed program. Some of these substances, in the concentrated form, can be very poisonous. A person handling these substances must wear protective clothing, gloves and other necessary protective gear. Also, take precautionary measures not to contaminate the environment, animal products or other people that come in contact with it.

The responsible person, who handles the remedies and vaccines, must also make sure that the remedies and vaccines have not passed their expiry date and are kept in a cold container. The supervisor must also see to the equipment’s condition before usage. It must be calibrated and in a good working condition. The prescription on
the labels concerning a remedy, dip or vaccine must be adhering to, to ensure that the treatment is effective. Empty containers must be dealt with as prescribe by the manufacturer.

The label, especially to poisonous dips and other insecticides must be at hand in case an animal or person accidentally ingested the poison enabling a doctor or veterinary surgeon to react upon.

Please complete Activity 3:  
**Research**

Do research in the local co-operatives and shops that sell animal remedies and vaccines to the farmer. Gather as much information on the diseases that might occur in your area. Certain diseases like bluetongue, Rift Valley fever and Wesselsbron may only occur when certain climatic changes takes place but the vaccine must be used much earlier to ensure that the animal develop immunity. The vaccination of such diseases must be planned because the animals cannot be vaccinated if they are pregnant. Some of the vaccines like Bluetongue also comes in more than one strain and must also be vaccinated over a period of a month and a half to incorporate all the strains. Some of the vaccines can be vaccinated simultaneous with others and some not.

This also applies when controlling ticks. The ticks that cause diseases like Heart water and other tick borne diseases do not occur all over the country. So the dipping program of farmers where these diseases occur will have different programs.

After all the relevant information is collected you must develop a management program for a farm. That must include:

- The mating season.
- The program for dipping or treating the animals for external parasites.
- The dosing program for the control of internal parasites
- The vaccination program for immunising the animals against the diseases that occur in your region.
- The expected season when the offspring of the animals will be born as well as the possibility of supplementary feed during a winter or summer draught.

There are a lot of animal pharmaceutical companies that supply these programs as mentioned. You must make sure that your program is applicable in your area. After you have finished the program, you must discussed it in class and hand it in as part of your portfolio of evidence.

### 3.1 The equipment used.

Special equipment is used to dose, apply pour-on dips and to vaccinate animals. This equipment is described in the previous sessions. The use of each instrument was also described or demonstrated to you. To keep the equipment in a good working condition it is necessary that it is looked after and clean.

Syringes and dosing guns have valves, springs and O-rings that damage easily and must be cleaned after each use and store in a protected place. If any part of the equipment is damaged it must be replaced immediately as it may effect the dosage. Some of the parts need a little bit of lubrication. Make sure that you use the prescribed lubricant. Don not clean syringes with a disinfectant as it will affect vaccines which have live organisms preventing the animals from developing
immunity. First take the equipment apart and then rather boil the parts in distilled or rain water.

**Handling of dips, remedies and vaccines.**

Dips are very poisonous stuff in concentrated form. Some dips look like milk and some animals, especially hand raised calves, can easily take it as food and may drink it. That will kill them. Therefore, take care that all the dips as well as other remedies are locked away after usage.

Always use the dips or drenching remedies according to prescription, either on the pamphlet or according to the veterinary surgeon.

Never use a substance that you are not certain of.

- In Session I we have looked at the different ways to restrain an animal.
- In Session II we have looked at dehorning of animals with different methods. We have also looked at the treatment techniques utilised for minor injuries.
- We have looked at the treatment and control of external parasites. We have looked at the maintenance of dip strength. We have looked at the different ways to control external parasites on different farm animal species.
- We have looked at the control of internal parasites. We have looked at the different methods to treat an animal against different parasites.
- We have looked at a few principles to be kept in mind when dosing fluids.
- We have looked to vaccinating farm animals.
- We have looked at the dangers in handling dip, remedies and vaccines.
- We have looked at all the important factors that matter when a management plan is compiled.
- We have developed or management plan for an animal production unit.
<table>
<thead>
<tr>
<th>Concept (SO 4, AC 1-6)</th>
<th>I understand this concept</th>
<th>Questions that I still would like to ask</th>
</tr>
</thead>
<tbody>
<tr>
<td>The correct chemical containers for bio-security are used and checked according to a schedule.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Irregularities are recognised and reported appropriately.</td>
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<tr>
<td>The correct protective gear is used and/or worn.</td>
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<tr>
<td>Specific programmes are executed according to a determined time schedule.</td>
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<tr>
<td>The programme schedule is explained and interpreted.</td>
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<tr>
<td>Deviations from the schedule of activities are reported to a supervisor and alternative suggestions are recommended</td>
<td></td>
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</tbody>
</table>
Am I ready for my test?

- Check your plan carefully to make sure that you **prepare in good time**.
- You have to be found **competent** by a qualified **assessor** to be declared competent.
- Inform the assessor if you have any **special needs** or requirements **before** the agreed date for the test to be completed. You might, for example, require an interpreter to translate the questions to your mother tongue, or you might need to take this test orally.
- Use this worksheet to help you prepare for the test. These are **examples** of **possible questions** that might appear in the test. All the information you need was taught in the classroom and can be found in the learner guide that you received.

1. I am sure of this and understand it well
2. I am unsure of this and need to ask the Facilitator or Assessor to explain what it means

<table>
<thead>
<tr>
<th>Questions</th>
<th>1. I am sure</th>
<th>2. I am unsure</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. What is an immobiliser?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. How would one use an immobiliser?</td>
<td></td>
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<tr>
<td>3. What effect does an immobiliser have on an animal?</td>
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<tr>
<td>4. What is a head clamp?</td>
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<tr>
<td>5. Name the methods used to dehorn animals?</td>
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<tr>
<td>6. Name 2 methods used to effectively treat internal parasites?</td>
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<tr>
<td>7. How would one perform an intravenous injection on a cow?</td>
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<tr>
<td>8. Describe an intra mammary treatment for mastitis?</td>
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</tbody>
</table>
**Checklist for practical assessment ...**

Use the checklist below to help you prepare for the part of the practical assessment when you are observed on the **attitudes** and **attributes** that you need to have to be found competent for this learning module.

<table>
<thead>
<tr>
<th>Observations</th>
<th>Answer Yes or No</th>
<th>Motivate your Answer (Give examples, reasons, etc.)</th>
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</thead>
<tbody>
<tr>
<td>Can you identify problems and deficiencies correctly?</td>
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<tr>
<td>Are you able to work well in a team?</td>
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<tr>
<td>Do you work in an organised and systematic way while performing all tasks and tests?</td>
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<tr>
<td>Are you able to collect the correct and appropriate information and / or samples as per the instructions and procedures that you were taught?</td>
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<tr>
<td>Are you able to communicate your knowledge orally and in writing, in such a way that you show what knowledge you have gained?</td>
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</tr>
<tr>
<td>Can you base your tasks and answers on scientific knowledge that you have learnt?</td>
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<tr>
<td>Are you able to show and perform the tasks required correctly?</td>
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</tr>
<tr>
<td>Are you able to link the knowledge, skills and attitudes that you have learnt in this module of learning to specific duties in your job or in the community where you live?</td>
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</tbody>
</table>

♦ The assessor will complete a checklist that gives details of the points that are checked and assessed by the assessor.

♦ The assessor will write commentary and feedback on that checklist. They will discuss all commentary and feedback with you.

♦ You will be asked to give your own feedback and to sign this document.

♦ **It will be placed together with this completed guide in a file as part of you portfolio of evidence.**

♦ The assessor will give you feedback on the test and guide you if there are areas in which you still need further development.
Paperwork to be done ...

Please assist the assessor by filling in this form and then sign as instructed.

<table>
<thead>
<tr>
<th>Learner Information Form</th>
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<tr>
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Bibliography

Books:

Book for farmers: Stock diseases

Terms & Conditions

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SOUTH AFRICAN QUALIFICATIONS AUTHORITY
REGISTERED UNIT STANDARD:

Explain the prevention and treatment of animal diseases

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<td>2007-10-13</td>
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PURPOSE OF THE UNIT STANDARD
The learner achieving this unit standard will be able to carry out procedures related to animal health and supervise the restraint of animals for such procedures. In addition they will be well positioned to extend their learning and practice into other areas of animal production and veterinary science.

Learners will gain specific knowledge and skills in animal health and will be able to operate in an animal production environment implementing sustainable and economically viable production principles.

They will be capacitated to gain access to the mainstream agricultural sector, in animal production, impacting directly on the sustainability of the sub-sector. The improvement in production technology will also have a direct impact on the improvement of agricultural productivity of the sector.

LEARNING ASSUMED TO BE IN PLACE AND RECOGNITION OF PRIOR LEARNING
It is assumed that a learner attempting this unit standard will demonstrate competence against the following unit standards or equivalent:

- NQF 3: Explain Animal Anatomy and Physiology.
- NQF 3: Explain the planning and scheduling of tasks in a production environment.

UNIT STANDARD RANGE
Whilst range statements have been defined generically to include as wide a set of alternatives as possible, all range statements should be interpreted within the specific context of application.

Range statements are neither comprehensive nor necessarily appropriate to all contexts. Alternatives must however be comparable in scope and complexity. These are only as a general guide to scope and
complexity of what is required.

UNIT STANDARD OUTCOME HEADER
N/A

Specific Outcomes and Assessment Criteria:

SPECIFIC OUTCOME 1
Perform animal restraint and related procedures.

OUTCOME RANGE
Restraint facilities may include but is not limited to holding tanks, crates, hives and crushes, etc. as relevant to the context of application.

ASSESSMENT CRITERIA

ASSESSMENT CRITERION 1
Restraint procedures applied correctly.

ASSESSMENT CRITERION 2
Incorrect methods of animal restraint are recognised and rectified.

ASSESSMENT CRITERION 3
Incorrect practices are correctly identified.

SPECIFIC OUTCOME 2
Perform basic veterinary procedures.

OUTCOME RANGE
Basic procedures include but are not limited to temperature determination, ear clipping, dehorning, vaccination, dipping, dosing, animal identification and branding, tattooing, etc. as relevant to the context of application.

ASSESSMENT CRITERIA

ASSESSMENT CRITERION 1
Equipment related to veterinary procedures is used correctly.

ASSESSMENT CRITERION 2
Veterinary procedures are executed correctly.

ASSESSMENT CRITERION 3
The appropriate hygiene procedures are demonstrated and explained.

ASSESSMENT CRITERION 4
The procedures relating to specific animals are correctly and appropriately recorded.

SPECIFIC OUTCOME 3
Treat and vaccinate animals under supervision.

OUTCOME RANGE
The treatment and vaccination of animals refer to the use of calibrated instruments that may include, but are not limited to syringes, dosing guns and pour-on applicators as relevant to the context of application.

ASSESSMENT CRITERIA

ASSESSMENT CRITERION 1
Appropriate hygiene procedures are used and explained.

ASSESSMENT CRITERION 2
Instruments are used correctly.

ASSESSMENT CRITERION 3
Instruments used are correctly cleaned.

ASSESSMENT CRITERION 4
Instruments for re-use are correctly cleaned, packed and stored.

ASSESSMENT CRITERION 5
Basic physical examinations of animals are correctly carried out.

ASSESSMENT CRITERION 6
Minor ailments are correctly treated.

ASSESSMENT CRITERION 7
Basic problems are correctly diagnosed by assessing the symptoms exhibited by the animal.

ASSESSMENT CRITERION 8
Treatments applied are correctly and appropriately recorded.

SPECIFIC OUTCOME 4
Supervise the carrying out of basic principles of bio-security.

OUTCOME RANGE
Bio-security refers to the implementation of a bio-security plan that takes into account the hygiene policies and practices relevant to the context. It includes, but is not limited to the use of systems such as food baths, showers and bait stations as relevant to the context of application. It also includes the use of protective gear that includes but is not limited to gloves, masks and boots.

ASSESSMENT CRITERIA

ASSESSMENT CRITERION 1
The correct chemical containers for bio-security are used and checked according to a schedule.

ASSESSMENT CRITERION 2
Irregularities are recognised and reported appropriately.

ASSESSMENT CRITERION 3
The correct protective gear is used and / or worn.

ASSESSMENT CRITERION 4
Chemical containers are correctly filled and / or re-filled.

**ASSESSMENT CRITERION 5**
Waste products and / or empty containers are appropriately collected, cleaned and / or discarded appropriately.

**ASSESSMENT CRITERION 6**
Dead animals and / or other waste are correctly disposed of.

**SPECIFIC OUTCOME 5**
Carry out pre-planned programmes.

**OUTCOME RANGE**
Management programmes may include, but are not limited to, vaccination, dipping and dosing regimes as relevant to the context of application.

**ASSESSMENT CRITERIA**

**ASSESSMENT CRITERION 1**
Specific programmes are executed according to a determined time schedule.

**ASSESSMENT CRITERION 2**
The programme schedule is explained and interpreted.

**ASSESSMENT CRITERION 3**
A schedule of activities that implements the Management Programme is prepared.

**ASSESSMENT CRITERION 4**
The programme requirements (instruments, chemicals) are on hand.

**ASSESSMENT CRITERION 5**
Deviations from the schedule of activities are reported to a supervisor and alternative suggestions are recommended.

**UNIT STANDARD ACCREDITATION AND MODERATION OPTIONS**
The assessment of qualifying learners against this standard should meet the requirements of established assessment principles.

It will be necessary to develop assessment activities and tools, which are appropriate to the contexts in which the qualifying learners are working. These activities and tools may include an appropriate combination of self-assessment and peer assessment, formative and summative assessment, portfolios and observations etc.

The assessment should ensure that all the specific outcomes; critical cross-field outcomes and essential embedded knowledge are assessed.

The specific outcomes must be assessed through observation of performance. Supporting evidence should be used to prove competence of specific outcomes only when they are not clearly seen in the actual performance.

Essential embedded knowledge must be assessed in its own right, through oral or written evidence and cannot be assessed only by being observed.
The specific outcomes and essential embedded knowledge must be assessed in relation to each other. If a qualifying learner is able to explain the essential embedded knowledge but is unable to perform the specific outcomes, they should not be assessed as competent. Similarly, if a qualifying learner is able to perform the specific outcomes but is unable to explain or justify their performance in terms of the essential embedded knowledge, then they should not be assessed as competent.

Evidence of the specified critical cross-field outcomes should be found both in performance and in the essential embedded knowledge.

Performance of specific outcomes must actively affirm target groups of qualifying learners, not unfairly discriminate against them. Qualifying learners should be able to justify their performance in terms of these values.

- Anyone assessing a learner against this unit standard must be registered as an assessor with the relevant ETQA.
- Any institution offering learning that will enable achievement of this unit standard or assessing this unit standard must be accredited as a provider with the relevant ETQA.
- Moderation of assessment will be overseen by the relevant ETQA according to the moderation guidelines in the relevant qualification and the agreed ETQA procedures.

UNIT STANDARD ESSENTIAL EMBEDDED KNOWLEDGE
The person is able to demonstrate a basic knowledge of:

- The names and functions of relevant equipment, procedures, implements and instruments related to the study of animal health.
- The sensory cues and symptoms involved in the execution of pre-planned animal health programmes.
- The purpose of the implementation of procedures and pre-planned animal health programmes.
- The implication of the correct and incorrect execution of the procedures under pre-planned programmes.
- Implemented procedures.
- All rules and codes of conduct relevant to the procedures implemented.
- The interrelations between the observations, procedures and the treatment of disease and other animal health issues.

UNIT STANDARD DEVELOPMENTAL OUTCOME
N/A

UNIT STANDARD LINKAGES
N/A

**Critical Cross-field Outcomes (CCFO):**

UNIT STANDARD CCFO IDENTIFYING
Problem solving relates to all outcomes.

UNIT STANDARD CCFO WORKING
Teamwork relates to all outcomes.

UNIT STANDARD CCFO ORGANIZING
Self-Management relates to all outcomes.

UNIT STANDARD CCFO COLLECTING
Interpreting information relates to outcomes:
- Treat and vaccinate animals under supervision.
- Carry out pre-planned programmes.
UNIT STANDARD CCFO COMMUNICATING
Communication relates to all outcomes.

UNIT STANDARD CCFO SCIENCE
Science and Technology relates to outcomes:
• Perform basic veterinary procedures.
• Supervise the carrying out of basic principles of bio-security.

UNIT STANDARD CCFO DEMONSTRATING
The world as related systems relates to outcome:
• Carry out pre-planned programmes.

UNIT STANDARD ASSESSOR CRITERIA
N/A

UNIT STANDARD NOTES
N/A

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