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>US No:</th>
<th>NQF Level</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Understand animal nutrition</td>
<td>116055</td>
<td>2</td>
<td>7</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>
</tr>
</thead>
<tbody>
<tr>
<td>National Certificate in Animal Production</td>
<td>48976</td>
<td>2</td>
<td>120</td>
<td>☐</td>
</tr>
<tr>
<td>National Certificate in Mixed Farming Systems</td>
<td>48977</td>
<td>2</td>
<td>120</td>
<td>☐</td>
</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.

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.
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.

How to use the activity sheets...

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 and worksheets, 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 roll in reaching competence.
- When you have completed all the activities and worksheets, hand this workbook 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.

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.

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

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?

What will I be able to do? ........................................................................................................ 6
What do I need to know? ........................................................................................................... 6
Learning Outcomes ................................................................................................................... 6
An Introduction............................................................................................................................ 7
Session 1: Nutrient groups, functions, feed ingredients and groups ......................... 8
Session 2: On-farm storage procedures to maintain feed quality ................................. 20
Session 3: Apply stock control and records ................................................................. 25
Session 4: Feed processing for on-farm use ............................................................ 30
Session 5: Evaluate feed quality ...................................................................................... 34
Session 6: Apply correct feeding practices .............................................................. 37
Session 7: Identify abnormal feeding behaviour .................................................... 41
Glossary ................................................................................................................................. 45
Am I ready for my test? ........................................................................................................... 46
Checklist for Practical assessment ............................................................................. 48
Paperwork to be done ....................................................................................................... 49
Bibliography .......................................................................................................................... 50
Terms and Conditions .......................................................................................................... 50
Acknowledgements ................................................................................................................ 50
SAQA Unit Standard
What will I be able to do?

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

♦ Understand the basic concepts used in animal nutrition, maintaining, preserving, modifying and enhancing the nutrient value of animal feeds and follow correct on-farm feeding practices.

♦ Gain specific knowledge and skills in animal feeding and nutrition and will be able to operate in an animal production environment implementing sustainable and economically viable production principles.

What do I need to know?

It is assumed that a learner attempting this unit standard will demonstrate competence against the following unit standards or equivalent:

♦ NQF 1: Apply standard animal feeding practices.
♦ NQF 1: Apply basic food safety practices.
♦ NQF 1: Maintain basic water quality.

Learning Outcomes

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

♦ Basic comprehension and understanding of identification of groups of nutrients, ingredients and feeds.
♦ Following procedures of record keeping, stock control and sensory feed evaluation and feeding programmes.
♦ Responsibilities for following out tasks and apply known solutions to familiar problems.
♦ Co-operating with and guiding others (develop communication skills).
♦ Feed quality deviations.
♦ Abnormal feeding behaviour.
♦ Reporting skills.
♦ Data gathering skills
An Introduction

This unit standard purpose is to introduce learners to the basic concepts used in animal nutrition, maintaining, preserving, modifying and enhancing the nutrient value of animal feeds and to follow the correct feeding practices. The animal element can include (but is not limited to) one or more of the following species:

- Cattle: That include dairy / beef or dual-purpose breeds.
- Sheep and goats.
- Pigs and other monogastric animals such as poultry.
- Horses, mules and donkeys (equine family).
- Game.
- Fish.
- Ostriches, emus and other birds.
- Crocodiles, lions.

Why do we farm?

- To sustain man and livestock through production of nutrient rich food of both animal- and plant origin.
- To generate an income from the products produced on a farm such as milk, wool, eggs, feathers and other by- products derived from animals.
- To utilize the veldt and roughage produced through the cultivation of soil.
- To produce by-products like manure which can be used as fertilizer.
- To utilize other waste products such as crop residues, waste fruit, or by products such as oil cake and other products that is discarded by factories.

There is information that a potential farmer needs to know in order to plan an animal production unit.

A farmer must consider the following points in planning his production unit:

- Availability of feed, quantity and quality.
- The type of animal and its state of health
- Creating a stress free environment
- He must have knowledge and skill of feedlots and practices
- Knowledge of animal health and handling skills
- He must be able to identify certain behavioural patterns and rectify problems if they occur.
Session 1

Nutrient groups, functions, feed ingredients and groups

After completing this session, you should be able to:
SO 1: Understand basic nutrient groups, functions, feed ingredients and groups.

In this session we explore the following concepts:

♦ An understanding of each nutrient group and its role in the body is explained.
♦ The ability to identify principal ingredient groupings is demonstrated.
♦ The ability to identify principal feed groupings is demonstrated.

1.1 Introduction

You must be clear idea on how to follow instructions and how to check on the quality of feedstuffs.

The handling, storage, and stock control of the feed are important to make sure that the animals has adequate high quality and safe feed available. It is also necessary that good personal safety measures be maintained so that you do not ingest harmful substances such as certain animal medications and foodstuffs like urea.

You must also be able to constantly check for abnormal animal behaviour and report such behaviour to the supervisor or farm owner. You have to make sure that you constantly check on the following:

♦ Are the animals comfortable and relaxed?
♦ Do the animals have enough water and feed?
♦ Is the food and water clean and fresh?
♦ Is the water quality adequate?
♦ Is there enough shade?
♦ Can the animals find shelter from cold winds and rain?
♦ Are the young animals comfortable and well fed?
Understand animal nutrition

Primary Agriculture | NQF Level 2 | Unit Standard No: 116055

Are any of the animals showing signs of stress?
Do any animal behave strange? E.g. not eating

These questions will make sure that you learn to observe animals well.

1.2 Animal feed

As explained in unit standard 116191 on animal feeding procedures, animal feed can be categorized into two main groups:

Roughage: Which include hay, straw, pastures and other plant materials with high fibre content and concentrate with more concentrated foodstuff such as grains, oil cake meal, and carcass meal. Animal feed can also be categorized according to the main chemical composition of the roughage or concentrates (Table 1).

| Roughage: | Food containing more than 18 percent fibre when dry and are difficult to digest. |
| Concentrate: | Feed that are rich in nutrients and highly digestible, they contain less than 10 percent fibre when dry. |

Table 1 Six fractions of a feeding sample as analyzed by the Weende Method.

<table>
<thead>
<tr>
<th>Fraction</th>
<th>Components</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moisture</td>
<td>Water (Volatile acids and basis)</td>
</tr>
<tr>
<td>Ash</td>
<td>Essential Elements</td>
</tr>
<tr>
<td></td>
<td><strong>Major</strong> Ca, P, Mg, Na, Cl, S</td>
</tr>
<tr>
<td></td>
<td><strong>Trace</strong> Fe, Mn, Cu, Co, I, Zn, Mo, Se</td>
</tr>
<tr>
<td>Crude Protein</td>
<td>Protein, amino acids, amines, nitrates, glycosides, glycol-</td>
</tr>
<tr>
<td></td>
<td>lipids, B-Vitamins</td>
</tr>
<tr>
<td>Ether Extract</td>
<td>Fats, Oils, Waxes, Organic acids, Pigments, Sterols, Vitamin</td>
</tr>
<tr>
<td></td>
<td>A, D, E &amp; K.</td>
</tr>
<tr>
<td>Crude fibre</td>
<td>Cellulose, Hemi-Celluloses, Lignin</td>
</tr>
<tr>
<td>Nitrogen-free extractives</td>
<td>Cellulose, Hemi-celluloses, lignin, sugars, starch, fructose, pectin,</td>
</tr>
<tr>
<td></td>
<td>organic acids, tannins, pigments, water soluble vitamins.</td>
</tr>
</tbody>
</table>
Animal feed can also be divided into a moisture part and the solid part (dry matter). The ratio between moisture and dry matter vary, depending on the type of feed or feed ingredient and the processing method.

Feed ingredients are described according to their nutrient content. The nutrient analysis of a feed makes it possible to compare the value of different feed ingredients so that it can be best combined to fulfil the nutrient needs of a specific animal. In this way one is able to provide a balanced ration to the animal.

**Nutrient:** Component of the feed that gives nourishment to the animal.

**Ration:** Livestock feed consisting out of a mixture of ingredients.

Different types and classes of animals have different nutritional requirements. Growing and producing animals need more nutrients than full-grown non-producing animals.

The function of the farmer is to try to match the available quantity and quality of feed, with that which is required by an individual animal or a particular group of animals being fed.

### 1.3 Animals can be grouped according to type

The next table, table 2 explains the feeding groups (classes) of animals and the type of animals in the group as well as an example of the feed they normally consume.

**Table 2. Feeding groups of animals**

<table>
<thead>
<tr>
<th>Feeding class</th>
<th>Animal type</th>
<th>Examples of feed</th>
</tr>
</thead>
<tbody>
<tr>
<td>i. Herbivorous Ruminants</td>
<td>Cattle, antelope, sheep, goats.</td>
<td>Plant material, grass, bushes and shrubs.</td>
</tr>
<tr>
<td>ii. Herbivorous Monogastric animals (Equine family)</td>
<td>Horses, donkeys, rabbits.</td>
<td>Plant material and some concentrates like grains.</td>
</tr>
<tr>
<td>Omnivorous Monogastric</td>
<td>Pigs Domestics and Wild poultry.</td>
<td>Plant material, roots, meat, and insects, fish.</td>
</tr>
<tr>
<td>Carnivorous</td>
<td>Lions, dogs, cats, crocodiles.</td>
<td>Meat, fish.</td>
</tr>
</tbody>
</table>
1.4 Feeding strategies can be grouped according to the feed utilization

The next table, table 3 shows the different ways in which an animal can utilize its feed.

Table 3: Different ways of feed intake.

<table>
<thead>
<tr>
<th>Way of utilization</th>
<th>Animal type</th>
<th>Examples of feed stuffs and use thereof</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extensive grazing</td>
<td>Game, beef cattle, sheep, goats, angora goats and horses.</td>
<td>Natural vegetation and veldt consisting of grass, shrubs, Karoo veldt, small trees etc. Are used whenever the animal graze or Browse.</td>
</tr>
<tr>
<td>Intensive grazing</td>
<td>Dairy cows, mutton sheep, horses, chickens and sometimes pigs.</td>
<td>Cultivated pastures, crop residues, provided by the farmer.</td>
</tr>
<tr>
<td>Zero grazing</td>
<td>Feedlot animals, dairy cows, chickens and pigs.</td>
<td>A variety of feedstuffs are fed to animals that have no other source of feed available. In most cases the diet is balanced to supply required nutrients.</td>
</tr>
</tbody>
</table>

1.5 Feeds can be grouped according to their origin

Feeds can be grouped according to the general origin and appearance or the way it was processed. Animal feed can be fed in different forms. It may vary from natural pastures to complete feeds and from supplements to natural veldt.

Table 4 explains the different feed grouping with examples and description of the feed.
### Table 4 Different feed grouping and feed type.

<table>
<thead>
<tr>
<th>Feed grouping</th>
<th>Description</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural vegetation and veldt</td>
<td>Plants and grasses that grows naturally.</td>
<td>All indigenous and naturalized grasses, shrubs, forbs, sedges, trees, etc.</td>
</tr>
<tr>
<td>Cultivated pastures</td>
<td>Plants that are sown regularly (annually or at specific intervals) by man after lands have been (usually) mechanically prepared.</td>
<td>Rye grass, kikuyu, oats, Lucerne, cereals, various legumes, Smuts finger grass, kweek etc.</td>
</tr>
<tr>
<td>Hay</td>
<td>Plant material, usually in the early stages of seed setting that has been mown, dried and baled</td>
<td>Lucerne, Oats, Rye grass, etc.</td>
</tr>
<tr>
<td>Silage</td>
<td>Plant material, cut at various stages, that is fermented in an air-less environment (silage pit or bale)</td>
<td>Oats, maize, wheat, Lucerne, legumes, etc.</td>
</tr>
<tr>
<td>Straw</td>
<td>The baled stalks and chaff residues resulting from the seed harvesting process.</td>
<td>Wheat, oats, maize, bean.</td>
</tr>
<tr>
<td>Dry concentrates</td>
<td>Usually the seed component of the plant.</td>
<td>Maize, wheat, oats, cottonseed, Soya beans, lupines.</td>
</tr>
<tr>
<td>Algeal and bacterial cultures</td>
<td>Dried algae and / or bacteria</td>
<td>Usually a feed supplement e.g. brewer’s yeast.</td>
</tr>
<tr>
<td>Animal products</td>
<td>By products from animal processing plants.</td>
<td>Bone meal, blood meal, carcass meal, chicken manure, fishmeal, fish oil.</td>
</tr>
<tr>
<td>Complete feeds – well balanced.</td>
<td>Pre-mixed feeds from a feed factory or on farm mixing.</td>
<td>Complete dairy meal, Calf meal, Lamb fattening meal, and Pig growth meal.</td>
</tr>
<tr>
<td>Supplements.</td>
<td>Feeds that are offered in addition to other feedstuffs to supplement the diet.</td>
<td>Salt / mineral / protein / energy licks; molasses; Vitamin / Enzyme supplements.</td>
</tr>
</tbody>
</table>

Animal feed can be divided according to the nutrients it provides. Most of the nutrients are found in most of the types of feed. However some feed are better known for supply of protein and other for energy. In the next chapter the learner will get background on the fractions of feed and their purpose.

### 1.6 The chemical composition of feed

Knowledge of the basic nutrients of food is necessary. To understand the function of the different components of feed in the animal’s body the components must first be explained.
Enzymes: Biological catalysts or substances that enhance biological chemical reaction without changing its composition.
Crude protein: Substances in a diet containing nitrogen and contributing towards formation of protein.

The chemical composition of forages

The major diet of farm animals is made up of plant material. Plants and animals contain the same types of chemical substances. According to constituents, properties and functions, these substances can be grouped in classes as shown in the figure.

My Notes ...

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The dry matter of food is conveniently divided into organic and in-organic material, although, in living organisms, there is no such sharp distinction. All proteins, for example, contain nitrogen and some, also contain sulphur and many of the lipids and carbohydrates in plants contain phosphorus while iron is a structural part of the haemoglobin molecule. Some of the microelements are for instance intimately connected with the functioning of enzymes.

**The chief nutrients and their functions**

It is necessary that the learner have a basic understanding of the main nutrient components of feed. The table explains the function of the main nutrient components of feed.
## Functions of nutrient components.

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Function in the body</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crude Protein</td>
<td>Building blocks for all protein containing material in the body – primarily muscle and connective tissue, milk, fibre, blood, certain enzymes and hormones.</td>
</tr>
<tr>
<td>Carbohydrates / Starches</td>
<td>Supplies the day to day energy for “running” the body’s whole metabolism</td>
</tr>
<tr>
<td>Fats &amp; Oils</td>
<td>Supplies extra energy during times in which the carbohydrates are too few; Stores surplus energy as body fat; Necessary for the function of certain vitamins and enzymes.</td>
</tr>
<tr>
<td>Crude Fibre</td>
<td>Contains some carbohydrates and starches that can be utilized by some animals. The roughage aspect of this fraction helps to keep the gut working properly.</td>
</tr>
<tr>
<td>Minerals – Ca</td>
<td>99% of the Ca in the body is found in the bone and teeth. Essential for the normal functioning of the heart and skeletal muscles. Essential in the activity of the enzyme system. Also involved in the coagulation of blood.</td>
</tr>
<tr>
<td>P</td>
<td>80- 85% of the P in the body is found in the bone and teeth. Essential for the energy metabolism of the body. Essential for balancing the acidity of the body fluids.</td>
</tr>
<tr>
<td>K</td>
<td>Important in carbohydrate metabolism as well as nerve and muscle function. Also essential for the general balancing of fluids in the body. Urine contains high levels of K.</td>
</tr>
<tr>
<td>Na</td>
<td>Plays a role in transmission of nerve impulses and in the absorption of sugar and protein from the digestive tract. Essential in the balance of the body fluid and maintenance of muscle tone.</td>
</tr>
<tr>
<td>Cl</td>
<td>Chemical component of digestive juices- it aid digestion. Essential in the balance of the body fluid and maintenance of muscle tone</td>
</tr>
<tr>
<td>Mg</td>
<td>Activator for many different enzymes. Plays a role in balancing body fluids.</td>
</tr>
<tr>
<td>S</td>
<td>Essential for the formation of S-containing proteins. Wool contains high levels of S. Essential for hormone and enzyme functions.</td>
</tr>
<tr>
<td>Fe</td>
<td>Essential part of the haemoglobin molecule that carries the oxygen in the blood. Is either part of or activates a number of enzyme systems.</td>
</tr>
<tr>
<td>Vitamins</td>
<td>In general they are either a part of or help to activate the enzyme and co-enzyme systems of the body. Vitamins are essential for all aspects of energy transmission in the body.</td>
</tr>
<tr>
<td>Water</td>
<td>The body consists of between 75 and 85% water. Essential component of all systems in the body. It forms the ultimate mediator between the body and its environment.</td>
</tr>
</tbody>
</table>
Understand animal nutrition

Primary Agriculture
NQF Level 2
Unit Standard No: 116055

Version: 01                 Version Date: July 2006

Please complete Activity 1, 2 & 3 at the end of this session

My Notes ...

<table>
<thead>
<tr>
<th>Concept (SO 1, 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>The ability to identify principal ingredient groupings is demonstrated. Feed ingredients include but are not limited to grains, plant and animal proteins, NPN, pulses (oil seeds), fibre, minerals and vitamins.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The ability to identify principal feed groupings is demonstrated.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>An understanding of each nutrient group and its role in the body is explained. Protein, carbohydrates, fats, fibre, minerals, vitamins, water</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

My Notes ...

..........................................................
Make a list of nutrient groups and describe for each its function in the body.

<table>
<thead>
<tr>
<th>Nutrient group</th>
<th>Function in the body</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tr>
</tbody>
</table>

My Name: 

My Workplace: 

My ID Number:

Facilitator comments:

Assessment:

My Notes ...
Describe the principle ingredient groupings

My Notes ...

Facilitator comments:

Assessment:
3
SO 1 AC 1-3

Individual exercise.

Describe the principle feed groupings and their origin

My Notes ...

Facilitator comments:

Assessment:

Understand animal nutrition
Primary Agriculture  NQF Level 2  Unit Standard No: 116055

My Name: ...................................
My Workplace:  ...................................
My ID Number:  ...................................

Version: 01  Version Date: July 2006
Session 2

On farm storage procedures to maintain feed quality

After completing this session, you should be able to:
SO 2: Following correct on-farm storage procedures to maintain feed quality.

In this session we explore the following concepts:

♦ Correct feed storage procedures are demonstrated.
♦ Appropriate basic fire control and management precautions are explained.
♦ Precautionary insect and rodent control is explained.

2.1 Correct feed storage procedures are demonstrated.

What can be done to ensure proper storage of feeds?

♦ Ensure that feed storage areas are waterproof.
♦ If feed is stored loose, ensure that area is protected from wind, rain and pests/loose roaming animals.
♦ Store high cost feeds and supplements that can easily be loaded, in an area that can be safely locked.
♦ Small quantities of feed can be stored in plastic bins or containers
♦ Make sure that fire control apparatus is available and working. The basic fire control measures must be implemented on the farm. Attention should be given to the safe storage of dry matter like hay and silage to reduce risk of fire outbreaks.
♦ Rules regarding smoking of tobacco must be strictly enforced especially with regard to non-smoking areas. Fire prevention equipment like fire extinguishers must be visible, accessible and clearly marked out. All employees on the farm must receive proper training with regard to fire prevention.
An accessible register with all management to make sure everybody is accounted for in the case of a fire outbreak must keep the signed-in names of employees at hand. Proper evacuation routes must be in place with safe assembly areas away from barns etc. for the assembly of personnel in the case of fire. Retaining teams must be organized to retain fires and provide first aid if necessary.

Stack bags / bales in such a manner that cats can get to the rodents, but that the rodents do not have "nice" hiding places.

Ensure an active rodent and insect control program (use cats, dogs, baited traps, eco-friendly poison). The reason for such a program has 3 basic principles: Producers must apply food safety principles when producing foodstuffs for human consumption as prescribed by law. Significant losses may occur due to rodent consumption and/or contamination by insects or rodents. When containing the population of rodents and insects like flies one indirectly reduce the risk for infections and sickness to animals and livestock. This can help to improve production on the farm because of the reduction in loss of production and livestock.

Always keep stock control sheets up to date.

### 2.2 Records to be kept

- All feeds that are regularly stored should appear as an item on a stock control sheet. Before any new consignment of feed arrives, the existing levels of stock need to be controlled and an area prepared for the new consignment. Do not load fresh food on top of old food.

- All consignments of feed delivered to the farm need to be checked, as it is off-loaded on the farm. Check that the label corresponds to that on the delivery note. Check the condition of the bags (are they torn, punctured or badly worn?) Count / weigh the feed as it is off-loaded and jot the actual number /weight received down next to the amount on the delivery note. Make a note on the delivery note of any problems encountered. Once the entire load has been checked, the delivery note is signed and a copy is kept for the farm records.

- Whenever feed is taken out to be used in a mix or to be fed, the amount of stock that is removed from the store needs to be jotted on the stock control sheet.

- The stock levels need to be controlled on a regular basis and maintained at a specific level. This is done as follows:
  - Take the last actual count / weight of bags / bales / feed.
  - Add all deliveries / new mixes made.
  - Subtract all stock used.
  - Jot down figure calculated - this is the Expected Stock Level.
Now conduct an actual count / weigh and compare it to the expected stock level.

The Stock Control sheet indicates what the minimum acceptable level of every item is. Once stock levels have been checked, follow workplace procedure to order stock that is below the minimum required level.

Whenever stock levels are checked, a check on quality can also be done. Check e.g. for signs of mould, rancidity, wet, dung contamination, separation of components.

Report any signs of quality problems on the stock control sheet.

Please complete Activity 4 & 5 at the end of this session

<table>
<thead>
<tr>
<th>Concept (SO 2, 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>Correct feed storage procedures are demonstrated.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feed storage includes but is not limited to bags, bins, silos, heaps, warehouses, boxes, and cages, as relevant to the context of operation.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Appropriate basic fire control and management precautions are explained.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Precautionary insect and rodent control is explained.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

My Notes ...

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Go to the farm where you are doing your practical and ask for a copy of the fire prevention plans and procedures. Discuss this plan in class and assess if it is satisfactory. Make suggestions to improve it.
Make a list of the effects that a poor insect and rodent control plan might have on animal health and production on the farm.

My Notes ...

Facilitator comments:

Assessment:
3 Apply stock control and records

After completing this session, you should be able to:
SO 3: Apply stock control and records.

In this session we explore the following concepts:
♦ Recording and reporting on levels of feedstock is demonstrated.
♦ An appropriate measure to secure feedstock against theft is explained.
♦ Knowledge of requisitions, replenishment and stock assessment are demonstrated. All stock levels, gains or reductions are recorded and reported appropriately.

Introduction

As feed often makes up to between 60% and 70% of the costs of a farming operation, it is critically important that it is correctly stored and used. It is very important that you make sure that you understand the control of feed on a farm. The farmer must always know the rate of the feed-flow on the farm. In other words the farmer must have full control of the use and supply of feed on his farm. Keeping that in mind, it is important that the people who practically feed the animals on the farm must regularly report to the farmer or manager on the use and stock of feed.

3.1 What losses can be suffered if feed is not correctly stored?

Quantity
♦ Birds and rodents will eat the feed or, carry it away.
♦ Loose roaming animals might eat the feed.
♦ Human theft.
♦ Fire could destroy feed that are not stored away.
♦ Insects can turn grains into dust.
Understand animal nutrition

Primary Agriculture  NQF Level 2  Unit Standard No: 116055

26

- Wind blows loose meal away.

**Quality**

- Birds, rodents and other animals eating freely will contaminate the feed with a danger of disease transmission to livestock.
- If the feed gets wet, it will become mouldy and is then dangerous to feed to pregnant animals. It is likely that it will need to be discarded or used to make compost.
- High temperatures can turn oily / high fat feeds rancid.
- Open containers of molasses attract rodents that may fall into it and drown.
- If feed storage is such that the identity of the feed / mix is lost, it means that the feed may have to be discarded if it contains potentially dangerous substances such as antibiotics or urea.
- Always work on a FIFO (First in - first out) basis, so that feeds do not become too old.

**3.2 What can be done to ensure proper storage of feeds?**

- Ensure that feed storage areas are waterproof.
- If feed is stored loose, ensure that area is protected from wind, rain and pests/loose roaming animals.
- Store high cost feeds / supplements that can easily be loaded, in an area that can be safely locked.
- Small quantities of feed can be stored in plastic bins or drums.
- Make sure that fire control apparatus is available and working.
- Stack bags / bales in such a manner that cats can get to the rodents, but that the rodents do not have "nice" hiding places.
- Ensure an active rodent control program (use cats, dogs, baited traps, eco-friendly poison).
- Always keep stock control sheets up to date.
3.3 Records to be kept

♦ All feeds that are regularly stored should appear as an item on a stock control sheet. Before any new consignment of feed arrives, the existing levels of stock need to be controlled and an area prepared for the new consignment. Do not load fresh food on top of old food.

♦ All consignments of feed delivered to the farm need to be checked, as it is off-loaded on the farm. Check that the label corresponds to that on the delivery note. Check the condition of the bags (are they torn, punctured or badly worn?) Count / weigh the feed as it is off-loaded and jot the actual number /weight received down next to the amount on the delivery note. Make a note on the delivery note of any problems encountered. Once the entire load has been checked, the delivery note is signed and a copy is kept for the farm records.

♦ Whenever feed is taken out to be used in a mix or to be fed, the amount of stock that is removed form the store needs to be jotted on the stock control sheet.

♦ The stock levels need to be controlled on a regular basis and maintained at a specific level. This is done as follow:
  • Take the last actual count / weight of bags / bales / feed.
  • Add all deliveries / new mixes made.
  • Subtract all stock used.
  • Jot down figure calculated - this is the Expected Stock Level.
  • Now does an actual count / weigh and compare it to the expected stock level.
  • The Stock Control sheet indicates what the minimum acceptable level of every item is. Once stock levels have been checked, follow workplace procedure to order stock that is below the minimum required level.
  • Whenever stock levels are checked, a check on quality can also be done. Check e.g. for signs of mould, rancidity, wet, dung contamination, separation of components.
  • Report any signs of quality problems on the stock control sheet.
Understand animal nutrition

Primary Agriculture  NQF Level 2  Unit Standard No: 116055

2288

Version: 01                 Version Date: July 2006

Please complete Activity 6 at the end of this session

My Notes ...

<table>
<thead>
<tr>
<th>Concept (SO 3, AC 1-4)</th>
<th>I understand this concept</th>
<th>Questions that I still would like to ask</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recording and reporting on levels of feedstock is demonstrated.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>An appropriate measure to secure feedstock against theft is explained.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Knowledge of requisitions, replenishment and stock assessment are demonstrated.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>All stock levels, gains or reductions are recorded and reported appropriately.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

My Notes ...

...
Go to the farm where you are doing your practical and obtain the following documents.

a) Requisition forms for ordering of feed and other stock.

b) Documents for recording and reporting on available stock.
Session 4 Feed Processing for on-farm use

After completing this session, you should be able to:
SO 4: Feed processing for on-farm use.

In this session we explore the following concepts:

♦ Feed ingredients can be identified correctly according to instructions.
♦ Appropriate feed type, quality and quantity are selected from feed store for the appropriate application.
♦ Feed is mixed correctly according to formulation where appropriate.
♦ Recording and reporting on feed levels in stock is performed accurately.
♦ Evaluate feed quality before allowing animals access to the feed.

Introduction

Paragraph text as discussed earlier, notes different type of animals found within South Africa.

The most abundant animals farmed with are the ruminants. Ruminants make out a large group. Cattle, sheep, goats and most antelope fall in this group. Farmers may farm extensively with cattle, sheep and goats, but in the case of dairy cattle and sometimes, sheep and goats intensive or semi-intensive farming is practiced. In cases of intensive farming, the ration fed to the animals must include all the nutrients needed.

Extensive grazing pastures may also need extra feed in drought times in the form of licks. The farmer can feed already mixed feed or he can mix his own. Pig and poultry farmers feed concentrates to their pigs or chickens. Dairy cattle or beef cattle and sheep farmers will feed roughage as well as concentrates.

It is very important that farmers mix their rations in the correct way. The following must be kept in mind when mixing feeds and licks.

♦ Points to remember when mixing feed / licks:
  • For hand mixing ensure that the area on which the mix is going to be made, is clean and dry. If a concrete slab is not available, try and use a sheet of metal or plastic to work on. It is not good to mix soil in with feed. It may wear down animals' teeth and may cause digestive problems.
  • Ensure that spades and buckets are clean and dry.
• Use appropriate protective clothes.

• Have all the ingredients ready at hand - weigh or count out the ingredients before you start mixing.

• Make very sure that the correct ingredients are used in the correct quantities - check recipe often. Jot down ingredients as they are weighed or counted out.

• Ensure a thorough mix by always mixing the finest grain products together first, followed by course grained, adding any liquid last.

• If a very small quantity of powder is to be added (e.g. medicated powder, herbal powder etc.), mix this with a larger volume of similarly fine-grained ingredient and then mix with the whole or mix it with the liquid (if it is wet table) that is mixed in last.

• If you are mixing a large quantity of liquid in by hand, form a dam inside the well-mixed dried ingredients and add liquid slowly so that it does not break the wall. Gradually mix the dry ingredients with the liquid by taking spades full of dry ingredients off the inside of the wall and mixing it with the liquid in the dam. Continue this all around the dam as long as it takes to mix in the whole wall.

• Always check for foreign bodies such as wire or string or plastic while mixing. Remove such items before bagging / storing stock.

• Clean the mixing area / equipment after the mix has been bagged or otherwise removed.

• If equipment such as hammer mills or feed mixers are used, ensure that the relevant Safety Regulations are followed.

• Update stock sheets.
  ♦ Quantity of ingredients used - stock out / used
  ♦ Quantity of mix made - stock in / received.

Please complete Activity 7 at the end of this session

My Notes …

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<table>
<thead>
<tr>
<th>Concept (SO 4, AC 1-4)</th>
<th>I understand this concept</th>
<th>Questions that I still would like to ask</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feed ingredients can be identified correctly according to instructions</td>
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</tr>
<tr>
<td>Appropriate feed type, quality and quantity is selected from feed store for the appropriate application.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feed is mixed correctly according to formulation where appropriate.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recording and reporting on feed levels in stock is performed accurately.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**My Notes ...**

...
Divide into groups of 5 and go to the farm or feedlot, were you are doing your practical. Learners must demonstrate the poses of feeding livestock and should include:

a) Select appropriate feed quantities and quality from stock available.

b) Demonstrate correct mixing of ingredients and feed animals to ensure accessibility.
Session 5

Evaluate feed quality

After completing this session, you should be able to:
SO 5: Evaluate feed quality before allowing animals access to the feed.

5.1 Feed quality

Quality of feed

The quality of feed refers to its ability to provide in the nutritional needs of the animal and is measured directly by calculating the amount of feed in kilograms given to the animal and its growth in production.

The quality of a feedstuff is determined by:

♦ The freshness thereof
♦ The form in which it is given to the animal
♦ Degree of contamination of the feedstuff
♦ The amount of digestible nutrients within the feed
♦ The correct balance between concentrate and roughage.

To assess the quality of a feed it is important not only to physically assess the feed but also to make sure that none of its ingredients can be harmful to the animal.

In feedlot environments it is important to carefully monitor the feed in the troughs:

♦ Make sure there is always fresh feed in the troughs as most animals in feedlots can afford to feed very selectively.
♦ Feed should be provided at regular intervals and in amounts that can be finished in a relatively short period of time. Production improves drastically when large amounts of feed is divided and given at regular intervals.
♦ All leftover feed must be removed at the end of each day.
♦ Remove all foreign materials from the troughs as this may block the animals digestive system.
♦ Troughs should regularly be disinfected to prevent spreading of disease.
♦ Troughs should be well positioned out of the elements to protect feed from rain. Some feeds like urea may become poisonous when it gets wet.
Please complete Activity 8 at the end of this session

<table>
<thead>
<tr>
<th>Concept (SO 5, AC 1-4)</th>
<th>I understand this concept</th>
<th>Questions that I still would like to ask</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feed quality assessment is demonstrated.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The ability to remove sub-standard or waste feeds. Is demonstrated.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The ability to report and record actions taken is demonstrated.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The ability to identify reasons for deviations and actions is demonstrated.</td>
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</tbody>
</table>

My Notes ...

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Understand animal nutrition

Primary Agriculture

NQF Level 2

Unit Standard No: 116055

Version: 01                 Version Date: July 2006

Wright a report on how you would ascertain if feedstuffs were of good quality. Include the following:

a) Physical evaluation.

b) 'First in / First out'.

c) Information on product of suppliers.

Facilitator comments:

Assessment:
Session 6

Apply correct feeding practices

After completing this session, you should be able to:
SO 6: Apply correct feeding practices.

In this session we explore the following concepts:
- Water quality.
- Extensive feeding systems.
- Semi-Intensive feeding systems.
- Intensive feeding systems.

6.1 Water Quality

No livestock producer will ever be able to sell a good quality product if there is no clean water on the farm.

The quality of drinking water is definitely one of the most important production factors and is often not considered when the topic of feeding systems is being discussed.

Good quality drinking water must always be available and accessible in any production system.

Care must be taken to ensure that water troughs are cleaned daily and it must be constructed in such a way as to not allowing livestock to damage it. In most parts of the country water is scarce and losses must be prevented. If shade can be provided it will ensure that the temperature of the water is always cool which can boost production during the hot summer months and it also reduces the growth rate of algae in the water supply.

The most important task regarding water supply is the fact that it must be continuous. The producer must put in place infrastructure e.g. reservoirs, dams, purification systems and pipelines. To ensure the quality of the water stays the same, regular water sampling and analyses must be done. The infrastructure necessary for continuous water quality supply will differ for different farms but must ensure a good quality water supply and enough water to prevent shortages from occurring.
6.2 **Extensive feeding systems**

The basic principles of an extensive production or feeding system is the following:

- Low input from management.
- High degree of self-sufficiency of livestock.

Livestock in an extensive feeding system is normally free grazing or browsing in a camp or pasture and no additional feedstuffs are provided in addition to the natural vegetation of the veldt. The only component supplied by management is good quality drinking water. Livestock is regularly moved to different camps to prevent overgrazing of the veldt. Dry-land systems with no irrigation of the veldt are normally the case.

Where there is a shortage of nutrients in the consistency of the natural vegetation a producer often provides a lick to compensate for this deficiency. This normally includes a protein and micro-supplement lick.

**Good quality drinking water must always be available and accessible in any production system.**

6.3 **Semi-intensive feeding systems**

The principles of this kind of system is the following:

- A higher input level of management is required than with the extensive system but lower management than with intensive feeding systems.
- The animal’s nutritional needs are met by 50/50% ratio between free grazing and feeding supplied by management. Normally the animal takes in enough roughage when browsing or grazing and the concentrate part of its diet is supplied as an additional feed. In the case of semi intensive systems the grazing can differ from natural veldt to irrigated crops.

This type of feeding system is used in many production systems in South Africa.

**Good quality drinking water must always be available and accessible in any production system.**
6.4 Intensive feeding systems

The principles of this kind of feeding system is

- High input from management.
- Low level of self-sufficiency from livestock.

This type of system is normally used on dairy farms and feedlots and requires a high degree of input from management.

Management must provide both the roughage and concentrate parts of the balanced diet of the animals and this requires careful management skills as animals can easily be underfed, overfed or poisoned.

Every animal is different and all the animals in a group won’t necessarily have the same nutritional requirements. Furthermore, the production outputs of some animals are much higher than that of others. Producers had to overcome this problem because it is not cost effective to feed the group to the requirements of the animal with the highest or lowest nutritional requirement within the group. It is now possible to feed every animal in accordance to its individual need and production ability. This method ensures a more feasible input-output ratio.

Again, good quality drinking water must always be available and accessible in any production system.

Please complete Activity 9 at the end of this session

My Notes ...

Concept (SO 6, AC 1-4) | I understand this concept | Questions that I still would like to ask
--- | --- | ---
The ability to ensure continuous water supply is demonstrated.
The ability to observe and report regularly on feed availability is demonstrated.
The ability to co-ordinate maintenance of feeding equipment is demonstrated.
The ability to allow animals access to feed according to program is demonstrated.
Describe in detail the type of feeding system used on the farm where you are doing your practical.

a) Note all the different strategies and activities that make the specific feeding used, unique.
Identify abnormal feeding behaviour.

After completing this session, you should be able to:
SO 7: Identify abnormal feeding behaviour.

Introduction

Now that you have learned about feed and the type of animal that needs a certain type of feed, we can look at abnormal feeding behaviour of animals. There will always be competition among animals when fed. Feeding is a time when a keen observer can clearly spot abnormal behaviour and reporting that to the supervisor early might save some animals lives or to make management decisions. Feeding time is also a time where the weaker or younger animals will find it difficult to compete with the stronger and older animal. Therefore there must be enough feeding space or ration so that every animal gets its fair share. Feed intake is directly related to production levels. Supplying animals with adequate feed and water is critical for their well being and production.

Feed intake is very badly affected if any of the following problems occur:

- Too little feed is made available. This leads to severe competition between animals and the younger and weaker animals always gets the least access.
- Lack of clean water. Feed intake will stop sooner than later if no water is available.
- Feed is contaminated with urine and dung.
- Feed contains foreign matter such as plastic, wire, string etc. Death may be the result from swallowing of these foreign objects.
- Spoilt feed left in feed troughs accumulates due to a lack of intake by the animals. This leads to the false impression that there is sufficient feed available.
- Feed is out of reach of animals or feeders are not distributing feed properly.
- Incorrect quantity or type of feed is offered.
- Feed is selectively eaten - certain portions are left.
- Feed space is so limited as to result in severe competition between animals - some animals having very little if any access to feed. This also leads to weaker animals being injured.
Animals want to eat, but due to some physical problem is unable to do so (e.g. something stuck in the throat; smooth tongue; infections on the lips, tongue or gums; stasis of the gut; colic; bloat).

Sick animals rarely exhibit a healthy appetite.

Animals that are on heat usually do not eat much.

Pain reduces feed intake.

Stray voltage results in a low current being present in metal feeders. Animals exhibit low or erratic intake.

**Routine checks to prevent problems**

In order to prevent any of the above problems, certain routine checks should be in place. For example:

- Actual feed intake should be calculated regularly.
- Automatic feeders should be checked daily for correct functioning.
- Feed bunkers should be cleaned at least once or twice a week - depending on how wet and perishable the feed is and how the feed bins are shaped.
- Feed bunkers should be checked twice daily for contamination and spoilt feed removed.
- Remove any foreign matter such as wire, string, plastic etc.
- In an intensive feeding system, water troughs should be checked twice daily to ensure that fresh clean water is always available.
- Animals should be fed according to a regular routine.
- Availability of feed in a grazing situation should be monitored daily.
- Salt licks should be limited, to prevent animals from over-intake if it is only irregularly supplied. This can lead to diarrhoea.
- Animal health should be monitored and any of the following symptoms immediately recorded and reported:
  - Diarrhoea;
  - Lameness accompanied by swollen cornets (laminitis);
  - Bloat;
  - Sweet smell on the breath of a ruminant (ketosis);
  - Sour smelling, yellowish dung in a ruminant (acidosis);
  - Swollen muzzle / muzzle;
Drooling from the mouth;
Vomiting;
Excessive weight loss or gain.

Metal feeders should be checked for stray voltage from time to time.

Please complete Activity 10 at the end of this session

<table>
<thead>
<tr>
<th>Concept (SO 7, AC 1-4)</th>
<th>I understand this concept</th>
<th>Questions that I still would like to ask</th>
</tr>
</thead>
<tbody>
<tr>
<td>Animals are assessed regarding their feeding habits over time.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abnormal feeding behaviour is recorded and reported.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Any deviation or observations regarding feeding are observed and reported.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

My Notes ...

...
Observe and write a report on animal behaviour during feeding time. Special attention must be given to animals in poor condition and possible reasons and solutions must form part of your report.
## Glossary

<table>
<thead>
<tr>
<th>Term</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Browse</td>
<td>A method of feeding was the animals use its lips to pluck off leaves normally found with sheep and goats.</td>
</tr>
<tr>
<td>Concentrate</td>
<td>Feed that are rich in nutrients and highly digestible; they contain less than 18 percent fibre when dry.</td>
</tr>
<tr>
<td>Carnivorous</td>
<td>Animals that feeds on meat.</td>
</tr>
<tr>
<td>Graze</td>
<td>A method of feeding were the animal curls its tongue around a stand of grass and with a jerk of the head the grass is then cut off with the lower front teeth. This is the method of feeding used by cattle.</td>
</tr>
<tr>
<td>Herbivorous</td>
<td>Animals that feeds on plants and plant derivatives.</td>
</tr>
<tr>
<td>monogastric</td>
<td>The digestive system has only one stomach where ruminants have 4 stomachs.</td>
</tr>
<tr>
<td>Omnivorous</td>
<td>Animals that feeds on both plant and animal products.</td>
</tr>
<tr>
<td>Roughage</td>
<td>Feed containing more than 18 percent fibre when dry and are difficult to digest</td>
</tr>
<tr>
<td>Ruminants</td>
<td>A type of digestive system found in herbivores that has 4 different stomachs and used these animals chose the cud.</td>
</tr>
</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. Select a group of animals that belong to the Herbivorous Ruminants.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Chicken manure, Fishmeal, Bone meal, Blood meal belong to which feed grouping?</td>
<td></td>
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</tr>
<tr>
<td>3. How would you define the term &quot;Complete feeds&quot; (well-balanced)?</td>
<td></td>
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<tr>
<td>4. Define the description of Algeal and Bacterial cultures.</td>
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<tr>
<td>5. Baled stalks and chaff residues resulting from the seed harvesting process. This is a description of which feed grouping?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Give the description of Natural vegetation and veldt feed grouping.</td>
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<td></td>
</tr>
<tr>
<td>7. The main diet of farm animals contains / made up of what?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Crude Protein is a nutrient, what is its function in the animal body?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. What minerals do we need to maintain muscle tone and to balance body fluids?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Why is it important to store high fat / oily feeds away from high temperatures?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Questions</td>
<td>1. I am sure</td>
<td>2. I am unsure</td>
</tr>
<tr>
<td>--------------------------------------------------------------------------</td>
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<td>---------------</td>
</tr>
<tr>
<td>11. Why do we give animals licks?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. Cattle, sheep and goats are all examples of which group of animals?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. When an animal doesn't want to eat, what should you suspect?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. Why is it important for animals to have enough feeding space?</td>
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</tbody>
</table>

**My Notes ...**

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________________________________________________________________________
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>
</tr>
</thead>
<tbody>
<tr>
<td>Can you identify problems and deficiencies correctly?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Are you able to work well in a team?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do you work in an organised and systematic way while performing all tasks and tests?</td>
<td></td>
<td></td>
</tr>
<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>
<td></td>
<td></td>
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<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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<td>Can you base your tasks and answers on scientific knowledge that you have learnt?</td>
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<td>Are you able to show and perform the tasks required correctly?</td>
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<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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- 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 your 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>
<td><strong>Unit Standard</strong></td>
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Bibliography

- **World Wide Web:**
  wordnet.princeton.edu/perl/webwn

Terms & Conditions

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Acknowledgements

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- **Design:**
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- **Layout:**
  Ms P Prinsloo
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**SOUTH AFRICAN QUALIFICATIONS AUTHORITY**

**REGISTERED UNIT STANDARD:**

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<th>SAQA US ID</th>
<th>UNIT STANDARD TITLE</th>
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<td>Understand animal nutrition</td>
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<td>NSB 01-Agriculture and Nature Conservation</td>
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<td>Primary Agriculture</td>
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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 understand the basic concepts used in animal nutrition, maintaining, preserving, modifying and enhancing the nutrient value of animal feeds and follow correct on-farm feeding practices. In addition they will be well positioned to extend their learning and practice into other areas of Animal production in agriculture.

Learners will gain specific knowledge and skills in animal feeding and nutrition 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 1: Apply standard animal feeding practices.
- NQF 1: Apply basic food safety practices.
- NQF 1: Maintain basic water quality.

**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.
Specific Outcomes and Assessment Criteria:

SPECIFIC OUTCOME 1
Understand basic nutrient groups, functions, feed ingredients and groups.

OUTCOME RANGE
Functions for nutrients include but are not limited to maintenance, stimulation and production.

ASSESSMENT CRITERIA

ASSESSMENT CRITERION 1
An understanding of each nutrient group and its role in the body is explained.

ASSESSMENT CRITERION RANGE
Protein, carbohydrates, fats, fibre, minerals, vitamins, water.

ASSESSMENT CRITERION 2
The ability to identify principal ingredient groupings is demonstrated.

ASSESSMENT CRITERION RANGE
Feed ingredients include but are not limited to grains, plant and animal proteins, NPN, pulses (oil seeds), fibre, minerals and vitamins.

ASSESSMENT CRITERION 3
The ability to identify principal feed groupings is demonstrated.

ASSESSMENT CRITERION RANGE
Feed includes but is not limited to natural vegetation and veld, planted crops, pastures, hay, silage, dry concentrates, algeal cultures and whole animals, animal products, complete feeds and supplements.

SPECIFIC OUTCOME 2
Following correct on-farm storage procedures to maintain feed quality.

OUTCOME RANGE
Feed includes but is not limited to whole animals, animal products, natural vegetation and veld, planted crops, pastures, hay, silage, dry concentrates, algeal cultures and complete feeds and supplements, as relevant to the context of operation.

ASSESSMENT CRITERIA

ASSESSMENT CRITERION 1
Correct feed storage procedures are demonstrated.

ASSESSMENT CRITERION RANGE
Feed storage includes but is not limited to bags, bins, silos, heaps, warehouses, boxes, cages, as relevant to the context of operation.

ASSESSMENT CRITERION 2
Appropriate basic fire control and management precautions are explained.
ASSESSMENT CRITERION 3
Precautionary insect and rodent control is explained.

SPECIFIC OUTCOME 3
Apply stock control and records.

OUTCOME RANGE
Feed includes but is not limited to whole animals, animal products, natural vegetation and veld, planted crops, pastures, hay, silage, dry concentrates, algal cultures and complete feeds and supplements, as relevant to the context of operation.

ASSESSMENT CRITERIA

ASSESSMENT CRITERION 1
Recording and reporting on levels of feed stock is demonstrated.

ASSESSMENT CRITERION 2
An appropriate measure to secure feed stock against theft is explained.

ASSESSMENT CRITERION 3
Knowledge of requisitions, replenishment and stock assessment are demonstrated.

ASSESSMENT CRITERION 4
All stock levels, gains or reductions are recorded and reported appropriately.

SPECIFIC OUTCOME 4
Feed processing for on-farm use.

OUTCOME RANGE
Feed includes but is not limited to whole animals, animal products, natural vegetation and veld, planted crops, pastures, hay, silage, dry concentrates, algal cultures and complete feeds and supplements, as relevant to the context of operation.

ASSESSMENT CRITERIA

ASSESSMENT CRITERION 1
Feed ingredients can be identified correctly according to instructions.

ASSESSMENT CRITERION 2
Appropriate feed type, quality and quantity is selected from feed store for the appropriate application.

ASSESSMENT CRITERION 3
Feed is mixed correctly according to formulation where appropriate.

ASSESSMENT CRITERION 4
Recording and reporting on feed levels in stock is performed accurately.

SPECIFIC OUTCOME 5
Evaluate feed quality before allowing animals access to the feed.

OUTCOME RANGE
Feed includes but is not limited to whole animals, animal products, natural vegetation and veld, planted crops, pastures, hay, silage, dry concentrates, algal cultures and complete feeds and supplements, as relevant to the context of operation.
ASSESSMENT CRITERIA

ASSESSMENT CRITERION 1
Feed quality assessment is demonstrated.

ASSESSMENT CRITERION 2
The ability to remove sub-standard or waste feeds is demonstrated.

ASSESSMENT CRITERION 3
The ability to report and record actions taken is demonstrated.

ASSESSMENT CRITERION 4
The ability to identify reasons for deviations and actions is demonstrated.

SPECIFIC OUTCOME 6
Apply correct feeding practices.

OUTCOME RANGE
Feeding strategies appropriate to extensive, semi-intensive and intensive production systems.

ASSESSMENT CRITERIA

ASSESSMENT CRITERION 1
The ability to ensure continuous water supply is demonstrated.

ASSESSMENT CRITERION 2
The ability to observe and report regularly on feed availability is demonstrated.

ASSESSMENT CRITERION 3
The ability to co-ordinate maintenance of feeding equipment is demonstrated.

ASSESSMENT CRITERION RANGE
Troughs, dispensers, founts etc.

ASSESSMENT CRITERION 4
The ability to allow animals access to feed according to program is demonstrated.

SPECIFIC OUTCOME 7
Identify abnormal feeding behaviour.

OUTCOME RANGE
Feed includes but is not limited to whole animals, animal products, natural vegetation and veld, planted crops, pastures, hay, silage, dry concentrates, algal cultures and complete feeds and supplements.

Animals include but are not limited to mammals, reptiles, birds, crustaceans, molluscs, fish and insects.

ASSESSMENT CRITERIA

ASSESSMENT CRITERION 1
Animals are assessed regarding their feeding habits over time.

ASSESSMENT CRITERION 2
Abnormal feeding behaviour is recorded and reported.
ASSESSMENT CRITERION RANGE
Abnormal feeding behaviour in animals includes but is not limited to low intake, feed selection, feed rejection, vomiting, weight-loss (or lack of weight gain), over consumption or overfeeding.

ASSESSMENT CRITERION 3
Any deviation or observations regarding feeding are observed and reported.

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:

- Basic comprehension and understanding of identification of groups of nutrients, ingredients and feeds.
- Following procedures of record keeping, stock control and sensory feed evaluation and feeding programmes.
- Responsibilities for following out tasks and apply known solutions to familiar problems.
- Co-operating with and guiding others (develop communication skills).
- Feed quality deviations.
- Abnormal feeding behaviour.
- The purpose of achieving these outcomes.
- Reporting skills.
• Data gathering skills

UNIT STANDARD DEVELOPMENTAL OUTCOME
N/A

UNIT STANDARD LINKAGES
N/A

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

UNIT STANDARD CCFO IDENTIFYING
Problem Solving: Relates to outcomes:
• Follow correct on-farm storage procedures to maintain feed quality.
• Apply stock control and records.

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 all outcomes.

UNIT STANDARD CCFO COMMUNICATING
Communication: Relates to all outcomes.

UNIT STANDARD CCFO SCIENCE
Using science and technology: Relates to all outcomes.

UNIT STANDARD CCFO DEMONSTRATING
Interrelatedness of systems: Relates to all outcomes.

UNIT STANDARD CCFO CONTRIBUTING
Self-development: Relates to all outcomes.

UNIT STANDARD ASSESSOR CRITERIA
N/A

UNIT STANDARD NOTES
N/A

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