

NQF Level: 1 US No: 116191

Learner Guide

Primary Agriculture

Animal feeding procedures



My name:

Company:

Commodity: Date:

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:

Title: Apply standard animal feeding procedures
US No: 116191 NQF Level: 1 Credits: 6

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:

Title	ID Number	NQF Level	Credits	Mark
National Certificate in Animal Production	48970	1	120	<input type="checkbox"/>
National Certificate in Mixed Farming Systems	48971	1	120	<input type="checkbox"/>

Please mark the learning program you are enrolled in:

Your facilitator should explain the above concepts to you.

Are you enrolled in a:	Y	N
Learnership?	<input type="checkbox"/>	<input type="checkbox"/>
Skills Program?	<input type="checkbox"/>	<input type="checkbox"/>
Short Course?	<input type="checkbox"/>	<input type="checkbox"/>

You will also be handed a Learner Workbook. This Learner Workbook should be used in conjunction with this Learner Guide. The Learner Workbook contains the activities that you will be expected to do during the course of your study. Please keep the activities that you have completed as part of your Portfolio of Evidence, which 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.

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.



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.

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What will I be able to do?

When you have achieved this unit standard, you will: -

- ◆ Follow correct on-farm animal feeding practices.
- ◆ Ensure healthy and well-fed animals, optimising production.
- ◆ Gain specific knowledge and skills in animal feeding and nutrition.
- ◆ 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 show competence against the following unit standards or equivalent:

- ◆ Basic functional literacy.

Learning Outcomes

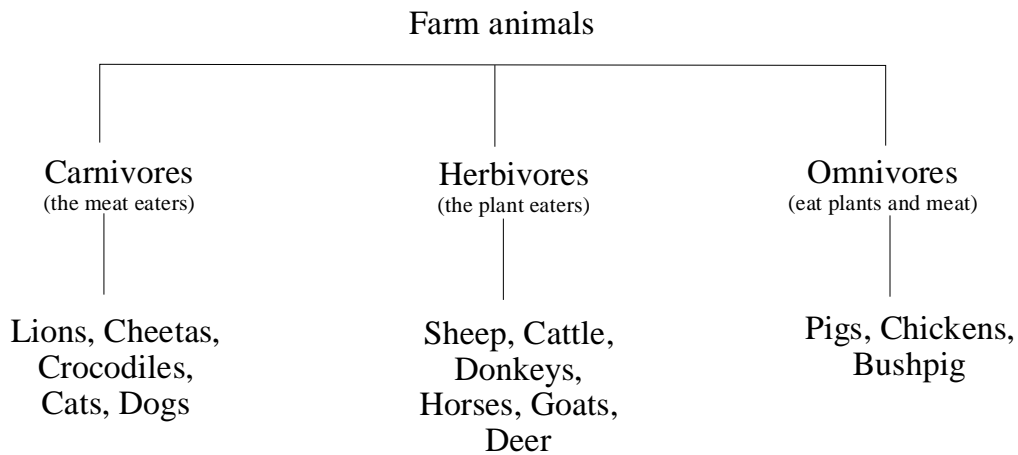
When you have achieved this unit standard you will have a basic knowledge and understanding of:-

- ◆ The basic responsibility for given tasks.
- ◆ Feed quality.
- ◆ Normal feeding behaviour.
- ◆ Abnormal feeding behaviour.
- ◆ Maintaining feed quality and hygiene.
- ◆ The identification of basic appropriate feeds.
- ◆ Feeding procedures to be followed.
- ◆ The importance to develop a two-way relationship with supervisor with regards to responsibilities and reporting.
- ◆ The purpose of the outcomes of this unit standard.

Introduction

In the modern world where information is easily available it becomes very easy to farm with animals. There are farmers in South Africa that farm with animals like crocodiles, lions, ostriches, emus, rabbits, sheep, cattle, the list can go on and on. In some cases the availability of feed contributes to the farming enterprise. For instance if meat, is not fit for human consumption, but still fit for use by animals like lions and crocodiles, that can motivate a farmer to farm with lions or crocodiles. So the availability of feed at a proper price plays a big role in establishing a farming enterprise.

Farm animals can roughly be divided in categories according to the types of food they consume. The diagram below gives an example thereof:



André Snyman



P W Vorster-museum



André Snyman

The herbivores can also be divided into two main groups: Ruminants (most have 4-chambered stomachs and chew the cud) and Monogastric herbivores (single stomach animals).

To feed the different animals on a farm, one must have a good knowledge of the type of feed, the quality of feed, the cost of the feed and the way it is handled and stored. In this Unit Standard, we will look into the abovementioned.

Session

1

Maintain feed quality.

After completing this session, you should be able to:

SO 1: Follow correct on-farm procedures to maintain feed quality.

In this session we explore the following concepts:

- ◆ An understanding of the correct condition and quality of feed is explained.
- ◆ An understanding of the first-in first-out principle is explained.
- ◆ The importance of correct procedures is explained.

Introduction

Animal feed is the biggest production cost for a stock-farmer and it is for this reason that the storage and use of these feeds must be done in such a way that there is very little loss of quality. To ensure that there is as little loss as possible of feed quality is to feed it as fresh as possible. That however is not always possible and depends on many factors. The farmer must be able to store feed for both shorter and longer periods so that he doesn't run out of feed during the year.

1.1 Condition and quality of feed

The concept of condition and quality in relation to animal feed must be seen in perspective. The main objective in agriculture is to produce food for humans and animals. Some plants like maize and wheat can be consumed by both humans and animals and such is the case with meat. Other agricultural products are used exclusively as animal feeds and other is used exclusively for human consumption.

With products consumed by both animals and humans such as maize it is important to remember that the best quality produce will always be targeted for human consumption and only after that market is completely saturated will high quality produce be used as animal feed.

Under normal market conditions, people use the terms: first grade and feed grade to describe the intended market for a product.

Always remember that even if feed for animals is of lower quality than that intended for humans, one must always strive to provide animals with the highest quality feed available.

1.2 Importance of correct condition and quality

In South-Africa most farms in the extensive farming areas make use of extra supplementary feed from time to time. It is therefore necessary to build up a feed store on the farm as well as a storage facility to keep up the quality of the feed by keeping the feed dry and out of the sun.

Some problems that farmers could occur concerning feed store:

- ◆ Feeds that become wet (rain, leaking roof, damp or moist bales).
- ◆ Mould forming on damp or moist foodstuffs.
- ◆ Rodents and pests in the food storage facility.
- ◆ Excess exposure to sunlight and heat.
- ◆ Easy accessibility by animals.
- ◆ Fire.
- ◆ Contamination of any kind of poison plants or other contaminants.
- ◆ Losses during handling.
- ◆ Losses at the feeding point.
- ◆ Contamination during the feeding process
- ◆ Pig, chicken and dairy Farmers should plan their farms in such a way that the facility for food storage is adequate. The minimum labour must be used to feed the animals and at the same time the losses of feed due to bad management must be kept to the minimum. Very good control must be kept to make sure that all nutritional needs are met. The farmer cannot afford to run out of feed or to feed wrong rations.
- ◆ Availability of feed.

1.3 First in – first out.

A good method to ensure feed freshness and quality is to use the first in – first out principle which means that the stock that has been in storage for the longest period of time must be used first before using stock that is in store for a shorter period of time. There are 2 advantages of this method:

- ◆ Feeds are not wasted because no feeds will get too old before use.
- ◆ Storage managers will learn how much feed to order to prevent feedstuffs from becoming too old for usage.



Please complete Activity 1 and 2 in your learner workbook

My Notes ...

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Concept (SO 1)	I understand this concept	Questions that I still would like to ask
An understanding of the correct condition and quality of feed is explained. An understanding of the first-in first-out principle is explained. The importance of correct procedures is explained.		

My Notes ...

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Session

2 Apply feed level control and record keeping

After completing this session, you should be able to:
SO 2: Apply feed level control and record keeping.

In this session we explore the following concepts:

- ◆ The ability to report on feed levels is demonstrated.
- ◆ The ability to identify irregularities is demonstrated.
- ◆ The ability to correctly report on irregularities is demonstrated

The concept of **good communication** is critical when any type of information must be transferred through the different levels of management within a business like a stock farm. Good communication is always a **two way system** where management is able to transfer the right information to workers and workers must also have the ability to transfer important information to management. There are different ways for people to communicate and the most important are: **verbal-, written** communication with regard to any business enterprise. It is very important for both management and workers to have a free verbal communication flow between each other in order to do exactly what is required within the business. It is however just as important to transfer the correct information at the right time in the form of a written report. A written report has the advantage of tracking and may be used to create a good database for future reference.

When quality maintenance of feed is in question, management should concentrate on a system that is implemented on the farm to ensure that all the procedures used to optimize feed quality is adhered to. The table below can be used to draw up a system of procedures to ensure high levels of feed quality control. When creating a system like this one the success will only be as good as the efficiency of record keeping of each individual step. Note that this is only an example and must be changed to suite the production system of the farm.



Step 1	Obtain good quality feed	<ul style="list-style-type: none"> Some farms produce their own feedstuff on the farm. Some farmers buy feed from other producers and suppliers. Take care to obtain the best quality feedstuff available to you
Step 2	Packaging	<ul style="list-style-type: none"> Most concentrates and some roughages has a longer shelf life when packaged properly. Packaging prevents physical contamination and limits waste of feedstuff. Packaging also helps to ensure that the feedstuff maintain fresher for longer periods. Packaging will enhance the quality of products such as silage through a process where it is wrapped in plastic Plastic seals in natural moisture and keeps out rain etc.
Step 3	Transport	Once the feed is obtained it is now necessary to transport it in a manner that will not affect negatively on its quality
Step 4	Storage	<ul style="list-style-type: none"> Concentrate and roughage are stored in different ways. Roughage requires big storage areas such as an open sided hay shed is the most suitable and cost effective alternative. When storing roughages three factors must be adhered to: <ol style="list-style-type: none"> Keep out moisture Provide good aeration Keep out of sun. Concentrate is normally sacked in bags of 50 kg and is heavy to handle but not as bulky as roughage, this enables producers to store many tons of concentrate in a relatively small storage room or area of a barn. Take care to keep different types of concentrates and roughages in different piles, this will prevent the feeding of wrong feedstuffs to animals and will also assist record keeping of available stock.
Step 5	Record keeping	<p>Most stock farmers buy there feedstuffs in bulk because this is more cost effective. One of the most important aspects of good quality control is effective record keeping. A good system should include:</p> <ul style="list-style-type: none"> Intake records; Usage; Persons responsible and their signatures; Documentation of requisitions; Documentation of invoices; Documentation of reseats; Thorough checks when new feed is received to ensure that invoices and stock is in correlation; Record keeping will ensure that recommended amounts of feed, is fed to animals. In return this will ensure a feasible enterprise; Good record keeping will help producers to order new feedstuffs in time.
Step 6	Equipment	<p>There is a variety of equipment used in the feeding of animals.</p> <ul style="list-style-type: none"> An important task is to ensure that the condition of equipment in good and functional order. It is therefore important to implement a cleaning and maintenance plan and procedure for the farm.
Step 7	Placement of feed	When feeding animals feed must be positioned in such a way as to prevent animals to contaminate it by trampling upon it or urinating and defecating on foodstuffs which often happens at feedlots.
Step 7	Fire, rodent and insect control	Measures must be in place to prevent fires, rodents and insects from contaminating or destroying feedstuffs.
Step 8	Theft	Good record keeping and protective procedures must be in place to prevent theft.

2.1 Different storage facilities

■ The shed or hay shed

To keep the quality of roughage high, it is necessary to keep it dry and out of the sun. Because of the bulkiness of roughage, the space needed to store a years supply, could become a problem.

■ Safe storage and stock control

Dry roughage is normally stored in the following state:

- ◆ The dry roughage is pressed tightly in bales.
- ◆ The pressed bales are stored in a well-ventilated dry shed.
- ◆ Sometimes the dry roughage is milled and stored in bags in a shed.
- ◆ Sometimes the dry roughages are milled, pressed in pellets and stored in bags in a dry well-ventilated shed.

Silage, which is also roughage, but with a higher moisture content, is stored in an airtight bunker, covered with plastic and soil or in special silos. The more modern way is to pump the silage in a big, strong plastic bag and suck all the air out before it is sealed. Wet, freshly cut roughage material is sometimes baled (round bales) and wrapped with plastic.



Round Hay bales

André Snyman

The biggest problem with roughage is its bulkiness. In the case of silage another factor is added namely moisture. Moisture is heavy and that makes silage handling difficult and time consuming.



André Snyman

Silage Bunker

■ **Storage of concentrates**

Concentrates can be stored in bulk form or in bags. Roughage must be kept dry and out of the sun. Rodents and insects could impose a problem and care should be taken. It is easier to store concentrates safely because the volume to weight ratio is small and therefore the space needed to store a few tons is small compared to that of roughage.



Please complete Activity 3 and 4 in your learner workbook

My Notes ...

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Concept (SO 2)	I understand this concept	Questions that I still would like to ask
The ability to report on feed levels is demonstrated. The ability to identify irregularities is demonstrated. The ability to correctly report on irregularities is demonstrated.		

Session

3 Selection of appropriate feed type and quantity

After completing this session, you should be able to:
SO 3: Selection of appropriate feed type and quantity as per instruction.

In this session we explore the following concepts:

- ◆ Feed type is identified and selected correctly according to instructions.
- ◆ Sufficient feed is selected according to instructions.
- ◆ Feed levels are observed and reported correctly.

3.1 Feed type is identified correctly.

We can roughly classify animal feed in two categories, namely:

- ◆ **Roughages** Hay, straw, Lucerne-hay bales, peanut hay bales.
- ◆ **Concentrates** Maize meal, oil cake meals, fishmeal, bone meal, and wheaten bran, Grains like wheat, barley, oats, and millet.

Selecting the correct feed type for the various types of animals is a very important task.

The next table 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.

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◆ **Feeding groups of animals**

Feeding class	Animal type	Examples of feed
i. Herbivorous - Ruminants	Cattle, antelope, sheep,	Plant material, grass,
ii. Herbivorous - Monogastric animals (Equine family)	goats. Horses, donkeys, rabbits.	bushes and shrubs. Plant material and some concentrates like grains.
Omnivorous Monogastric	Pigs Domestic and Wild poultry.	Plant material, roots, meat, and insects, fish.
Carnivorous	Lions, dogs, cats, crocodiles.	Meat, fish.

3.2 Sufficient feed is selected.

When selecting feed for animals we know that the feed must ensure normal growth and production under normal farming conditions.

Every animal's ability to produce is different and all the animals in a group don't have the same nutritional requirements. Furthermore the production outputs of some animals are much higher than that of others. Producers have 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.

All types of animals have specific nutritional requirements to maintain normal growth and body functions. The specific amounts of nutrients required by an animal will be determined by a number of factors of which bodyweight of the specific animal is the most important.

A very important concept to understand is that when farmers or producers keep livestock they expect the animal to produce a product. There are various products which include but is not limited to mohair and wool, milk production, meat in the form of weight gain in a feedlot or when reproducing calves or lambs to be sold to feedlots or as breeding stock. There is an increasing number of different products on market today. To ensure that the animal produce a quality product the farmer must not only feed the animal according to its needs for self maintenance but extra feed will be needed to produce a quality product.

◆ **Feeding only for body maintenance**

Animal will be able to maintain normal growth and body functions but not produce a quality product.

◆ **Feeding for maintenance and extra feed for production**

Animal will be able to grow and produce a quality product.



Please complete Activity 5 in your learner workbook

My Notes ...

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Concept (SO 3)	I understand this concept	Questions that I still would like to ask
Feed levels are observed and reported correctly. Sufficient feed is selected according to instructions. Feed type is identified and selected correctly according to instructions.		

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Session

4 Observe and report on feed quality

After completing this session, you should be able to:

SO 4: Observe and report on feed quality before allowing animals access to the feed.

In this session we explore the following concepts:

- ◆ The ability to identify spoilage in feed is demonstrated.
- ◆ The ability to identify the presence of contaminants in feed is demonstrated.
- ◆ The ability to report observations is demonstrated.

4.1 The ability to identify spoilage in feed

Under normal farming conditions the best way to assess if there is any spoilage in feedstuffs is to use the sense of smell, taste, touch and sight. Most roughages and concentrates may lose a fair amount of their nutritional value before becoming unfit for consumption by animals. For the purpose of this concept we will use a bail of Lucerne as an example.

■ Sight

When looking at bail one must compare the colour to that of fresh Lucerne. The closer the colour is to that of fresh Lucerne the higher the nutritional value thereof. Spoilage may also be observed. Any foreign material may cause spoilage e.g. pieces of string, wire, unwanted alien plant material and mould. Mould causes digestive systems and possible poisoning when consumed by some animals.

■ Smell

A product with high nutritional value always has a smell that is not repulsive to humans. The rule of thumb is to smell for corruption of the feedstuff and a rotting smell will be recognized. It is important not to make the mistake with silage because silage will go through a process of decomposing that will enhance their quality as a feedstuff.

■ Touch

The texture of feedstuff is also a good indication whether it is spoiled or not. Concentrates that has hard clods in it must be seen as spoiled because most animals will not be able to feed on it.

■ Taste

It is not prescribe to taste animal feedstuffs as it may be unsuitable for human consumption but one must close observe animals when they feed.

4.2 Contaminants in feed

Contaminants can be classified into three groups:

- ◆ **Physical contaminants.** This type normally includes visible foreign materials such as pieces of string, wire etc and can be removed fairly easily by screening and filtering or removal by hand.
- ◆ **Chemical contaminants.** Various chemicals may contaminate feedstuffs on the farm e.g. lubricants like oil and grease, fuel and fertilizer. This type of contamination normally results in the total loss of affected feedstuff.
- ◆ **Micro-biological contaminants.** This term refers to contamination caused by the growth of harmful micro organisms such as viruses, certain types of bacteria and funguses like mould. Prevention of the growth of these micro-organisms is the only cost effective method to prevent contamination.

4.3 Reporting of observations

Any abnormalities that were observed during the feeding of animals must be reported to the supervisor.

Reporting is also covered in detailed under Session 2.

Session 5 Apply correct feeding practises

After completing this session, you should be able to:
SO 5: Apply correct feeding practises under supervision.

In this session we explore the following concepts:

- ◆ Water supplies are maintained.
- ◆ Feed supplies are maintained.
- ◆ Feeding equipment is maintained (Troughs, dispensers, founts).

5.1 Water requirements

Water is necessary for digestion and body functioning. Insufficient water supply can decrease yields. Make sure that the water is cool and sufficient to provide in the animals needs. Farm animals' appetites for water can be fulfilled long before its reaches its capacity. If the water therefore flows into the trough too slowly, it will be quite satisfied, but its production yield can decrease with as much as 25%.

For the purpose of this concept we will use the dairy cow as an example.

The quantity of drinking water needed by a dairy cow depends on the physiological condition of the animal. Age, the tempo of her mass increment, live mass, whether the cow is in the lactating or dry period and even the breed influences her water needs. Weather conditions play an important role in the quantity of water that a cow will drink.

During hot weather conditions she will drink more to cool down and to compensate for water loss by evaporation. As a rule of thumb, it can be accepted that a cow needs between four and seven liters of water for each kilogram of dry fodder eaten.

The water content of the fodder varies from less than 10% to more than 93%. The higher the water content of the fodder, the smaller the amount of water that will be required.

The British Agricultural Research Council (ARC, 1980) gives the following comparison for determining water requirements:

$$I_w = 12,3 + 2,15I_d + 0,37M$$

Where: I_w = water intake (litre)
 I_d = dry material intake (kg)
 M = live mass (kg)

The above table compares the water requirements of a lactating cow with that of a dry cow. Rotation water is the water released by the breakdown of organic compounds. The breakdown of fats releases reasonably large volumes of water. Note that evaporation water in this study exceeded the water in the milk and that more water was discharged by means of defecation than by urine.

Cows that graze and have access to water day and night, will drink water throughout the day with a noticeable peak after the afternoon milking. Up to 30% of the day's water intake can take place after the afternoon milking session. Cows drink very little from midnight until after the morning milking. To ensure sufficient water supply, a herd of 100 cows should have a peak requirement of 3 000 liters of water. Water troughs should be large enough to handle this volume of water.

Table : Daily water balance of Holstein (Georgievskii et al, 19)

Water Balance (litre)	Dry Cow	Lactating Cow
Absorbed:		
From the crib	26	51
With the fodder	1	2
Rotation water	2	3
Total	29	56
Discharged:		
By defecation	12	19
By urination	7	11
By evaporation	10	14
By milking	0	12
Total	29	56

One can now understand the need for a well maintained water supply because of its relation to production.

■ **Maintenance of water supply involves 2 concepts**

- ◆ **Water quality:** The water consumed by the animal must be of a high quality to increase the animal's health. The best way to ensure high quality water is to take regular water samples from the water source on the farm and have it analyzed in a laboratory to ascertain if it is suitable for consumption. Keep records of the results of water sampling to build up a data base. This database will help to ascertain sudden fluctuations in the quality of the water. If there is a problem with poor water quality it must be rectified before allowing access to farm animals
- ◆ **Provide sufficient amounts of water:** Good reservoirs of water must be kept on the farm that can be used in the case of emergency when there are a temporary problem with water supply e.g. a windmill brakes down. Most farmers are aware of the importance of water to the health of their animals and will build big dams to ensure that they have adequate water supplies throughout the year.

To conclude: Keep lots of water and see to it that it stays in good quality.

5.2 Feed supplies are maintained

Maintaining feed supplies is an integrated process and requires excellent record keeping.

This concept was already covered in session 1 & 2



Please complete Activity 7 in your learner workbook

My Notes ...

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Concept (SO 6)	I understand this concept	Questions that I still would like to ask
Water supplies are maintained. Feed supplies are maintained. Feeding equipment is maintained (Troughs, dispensers, founts).		

Session

6 Abnormal feeding behaviour in animals

After completing this session, you should be able to:

SO 6: Identify and report abnormal feeding behaviour in animals.

In this session we explore the following concepts:

- ◆ Any abnormal deviation is observed.
- ◆ Any abnormal deviation is reported.
- ◆ understand various systems of abnormal feeding

■ Behaviour of animals that are well fed

High producing animals like dairy cows, pigs, chicken and other animals that are kept in captivity develop a feeding routine. This feeding routine will lead to habitual behaviour that is not always visible in the wild. A lion that is kept in captivity and other wild animals in captivity does not always develop a routine but they will quickly become aware of the fact that they will be fed. Animals like cattle, sheep, pigs, dogs and even chickens will make noises, drool, and run after the person that carries the feed. They will show anxious behaviour. That is normal and is part of the way the animal prepares itself for the meal. Lions will even become more aggressive and small puppies will make very distinguished noises.

The fact that the animal cannot feed or hunt at will makes it depended on the farmer. That will change the animals' natural behaviour. Most farm animals will become aware of the fact that a meal is on its way and will behave tenser and will come closer to the person or vehicle that brings the feed.

The person that handles the ration or drive the vehicle must be aware of the animal behaviour at feeding time. If an animal does not behave like the other animals by not showing interest in the feed, it needs attention. The reason for the behaviour must be established. Sometimes it is a newly introduced animal to the group, or the animal may be sick. Any abnormal behaviour must be reported to the supervisor or farmer immediately. Animals should be calmer after they've been fed.

■ Abnormal behaviour of animals

Should animals appear restless after a feed, there must be another problem. Normally animals will become very thirsty if fed with dry rations. If animals behave strange after a meal it may be that they don't have enough water.

Animals such as geese, dogs, cats, dairy cows will also become disturb if unfamiliar people or animals enter their territory. They will make noise or become restless.

Young cattle will also show excitement when a strange or unfamiliar object enters their territory. They can also become aggressive and attack the intruder. Cows will also behave strange after calving. It is very important to remember that cattle are strong animals and especially cattle with horns can be potentially dangerous. When feeding cows with small calves beware of their actions and keep an eye on them. If they make short snorts, don't enter their territory. Report it to the supervisor if her behaviour makes it difficult to feed her.

Should an animal during feeding behave in a manner different to that of the group an assessment must be done to establish whether there is something wrong with the animal. The following problems are often found when animals are fed within a restricted area.

- ◆ *Animals that will not stand up.* Competition for food is often the cause of injury which causes the animal to lie down. Digestive problems caused by feedstuffs or foreign material may cause the animal to lie down. There are also a number of sicknesses that may cause animals to lie down.
- ◆ *Separation of animals from the rest of the group.* Animals in an extensive feeding system often wonder around on their own and separate themselves from the rest of the herd especially when they are on heat or when they are about to deliver their young. If separation of animals in a feedlot situation occurs, it must be noted and the cause must be rectified.
- ◆ *Aggressive behaviour* must be taken very seriously as injury to other animals may cause losses. Injuries to personnel may lead to claims etc. The two main causes of aggressive behaviour are temperament and injury. With animals such as cattle, aggressive behaviour should not be tolerated and such animals should be slaughtered. In the case of injury an animal should be tranquilized if necessary and then medical attention should be given to help the animal.
- ◆ *Chewing of strange materials.* Sometimes one finds that animals chew or feed on something they would under normal circumstances avoid. Sometimes herbivores will pick up bones from the veldt and feed on them. This is a sign of a lack of minerals like calcium and magnesium. Carnivores will sometimes eat grass if they suffer from digestive problems.

Animals can't tell you if they have a problem therefore any good stock farmer must develop a good sense for the behaviour of the animals in his/her care. The better this skill is developed the better the chance of the farmer to identify problems within his heard of animals.



Please complete Activity 8 in your learner workbook

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Concept (SO 6)	I understand this concept	Questions that I still would like to ask
Any abnormal deviation is observed. Any abnormal deviation is reported. Understand various symptoms of abnormal feeding.		

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Glossary

Ad lib / ad libitum	Giving animals access to feed without limits.
Ration	Diet / feed, which has been formulated / mixed for animals from different sources.
Complete ration	Ration containing all the required nutrients.
Creep ration	Fed to young unweaned animals. Adult animals are somehow restricted from having access to the feed.
Monogastric animal	Animals with one stomach.
Roughage	Feed with a high fibre content.
Crude protein	The total protein content of a ration.
Equines	Horse family like horses, donkeys and zebras
Acidosis	When a ruminant eats a lot of starch the rumen's content becomes acidic.

Terms & Conditions

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**SOUTH AFRICAN QUALIFICATIONS AUTHORITY
REGISTERED UNIT STANDARD:**

Demonstrate an understanding of plant propagation

SAQA US ID	UNIT STANDARD TITLE		
116119	Demonstrate an understanding of plant propagation		
SGB NAME	NSB	PROVIDER NAME	
SGB Primary Agriculture	NSB 01-Agriculture and Nature Conservation		
FIELD		SUBFIELD	
Agriculture and Nature Conservation		Primary Agriculture	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 2	3
REGISTRATION STATUS	REGISTRATION START DATE	REGISTRATION END DATE	SAQA DECISION NUMBER
Registered	2004-10-13	2007-10-13	SAQA 0156/04

PURPOSE OF THE UNIT STANDARD

The learner achieving this unit standard will have the ability to propagate plants.

Learners will gain specific knowledge and skills in plant propagation and will be able to operate in a plant production environment implementing sustainable and economically viable production principles.

They will be capacitated to gain access to the mainstream agricultural sector, in plant 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 show competence against the following unit standards or equivalent:

- NQF 1: The propagation of plants.
- NQF 2: Basic soil fertility and plant nutrition.
- NQF 2: Utilise and perform minor repair and maintenance tasks on implements, equipment and infrastructure.
- NQF 1: Collect agricultural data.

UNIT STANDARD RANGE

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**

Recognise the environmental requirements for propagation in a specific agricultural production context.

OUTCOME RANGE

The environmental needs may include but are not limited to humidity, ventilation, temperature, light intensity, moisture, etc.

ASSESSMENT CRITERIA**ASSESSMENT CRITERION 1**

Suitable humidity levels for propagation of a specific agricultural production system are described.

ASSESSMENT CRITERION 2

Suitable ventilation for the propagation of a specific agricultural production system is defined.

ASSESSMENT CRITERION 3

The ability to distinguish between direct and indirect sunlight requirements are demonstrated.

ASSESSMENT CRITERION 4

The suitable moisture levels of growth media are described.

SPECIFIC OUTCOME 2

Identify appropriate propagation methods, applicable tools and equipment for specific agricultural production systems.

OUTCOME RANGE

Propagation methods include but are not limited to direct sowing, seeding tray, seed bed, vegetative cuttings of rhizomes, corms, tubers, scaling of bulbs and tissue culture, budding, grafting and layering. Appropriate tools include but are not limited to pruning shears, budding knives etc. while equipment could include heating, cooling, hydration etc.

ASSESSMENT CRITERIA**ASSESSMENT CRITERION 1**

The appropriate method for the propagation of a specific crop is described.

ASSESSMENT CRITERION 2

The appropriate tools for a propagation method are selected.

ASSESSMENT CRITERION 3

The safe and proper use of the applicable tools is demonstrated.

ASSESSMENT CRITERION 4

The necessary hygiene requirements applicable to the appropriate methods used are described.

ASSESSMENT CRITERION 5

The basic troubleshooting of equipment is described.

SPECIFIC OUTCOME 3

Distinguish between successful and unsuccessful propagation under specific agricultural production context.

OUTCOME RANGE

Success indicators include but are not limited to root development, germination of seed, bud / graft union, shoot development, etc.

ASSESSMENT CRITERIA**ASSESSMENT CRITERION 1**

The indicators for successful propagation of a specific crop are described.

ASSESSMENT CRITERION 2

Indicators of unsuccessful propagation are described.

ASSESSMENT CRITERION 3

The necessary environmental factors for successful propagation are explained.

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 safety requirements related to the propagation environment and procedures.
- Basic hygiene requirements for the propagation environments.
- Growing media - wet and dry.
- Weeds, pest and diseases.
- Nomenclature related to all aspects of plant propagation.
- Sensory cues related to the various aspects of plant propagation
- The purpose of learning about plant propagation.
- All procedures, legislation, rules and codes of conduct pertaining to plant propagation.
- All procedures related to the propagation of plants.

UNIT STANDARD DEVELOPMENTAL OUTCOME

N/A

UNIT STANDARD LINKAGES

N/A

Critical Cross-field Outcomes (CCFO):

UNIT STANDARD CCFO IDENTIFYING

Problem solving: Related to all outcomes.

UNIT STANDARD CCFO WORKING

Teamwork: Relates to specific outcome:

- Identify appropriate propagation methods and applicable tools for specific agricultural production systems.

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

Use Science and Technology: Relates to all outcomes.

UNIT STANDARD CCFO DEMONSTRATING

The world as a set of related systems: Relates to all outcomes.

UNIT STANDARD CCFO CONTRIBUTING

Self-development: Related to all outcomes.

UNIT STANDARD ASSESSOR CRITERIA

N/A

UNIT STANDARD NOTES

N/A

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