



NQF Level: **3** US No: **116216**

# Assessment Guide

## Primary Agriculture

# Advanced Breeding Practices for Farm Animals



Assessor: .....

Workplace / Company: .....

Commodity: ..... Date: .....

## Before we start...

This assessment guide contains all necessary activities and instructions that will enable the assessor and learner to gather evidence of the learner's competence as required by the unit standard. This guide was designed to be used by a trained and accredited assessor whom is registered to assess this specific unit standard as per the requirements of the AgriSETA ETQA.

Prior to the delivery of the program the facilitator and assessor must familiarise themselves with content of this guide, as well as the content of the relevant Learner Workbook.

The assessor, facilitator and learner must plan the assessment process together, in order to offer the learner the maximum support, and the opportunity to reflect competence.

The policies and procedures that are required during the application of this assessment are available on the website of the AgriSETA and should be strictly adhered to. The assessor must familiarise him/herself with this document before proceeding.

This guide provides step-by-step instructions for the assessment process of:

<b>Title:</b> Apply advanced breeding practices for farm animals
<b>US No:</b> 116216 <b>NQF Level:</b> 3 <b>Credits:</b> 4

This unit standard is one of the building blocks in the qualification listed below. Please mark the qualification you are currently assessing, because that will be determined by the context of application:

Title	ID Number	NQF Level	Credits	Mark
National Certificate in Animal Production	49048	3	120	<input type="checkbox"/>
National Certificate in Plant Production	49052	3	120	<input type="checkbox"/>

Please mark the learning program you are enrolled in:

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"/>

### Note to Assessor:

If you are assessing this module as part of a full qualification or learnership, please ensure that you have familiarized yourself with the content of the qualification.

**Instructions to learner:**

Individual written homework assignment

**Learner Guide: Page 17**

**Facilitator Guide: Page 11**

Does the learner adequately describe different problems that occur during birth?

**Model Answer(s):**

***The following problems may occur during birth :***

- *Too large newborn – the foetus gets stuck in the birth canal (called dystocia)*
- *Excessive bleeding during delivery - report to supervisor*
- *Newborn animal born dead*
- *In mammals the mother sometimes gets a disease called milk fever. This causes that she is unable to stand up after birth. This condition occurs very commonly in areas where calcium is abundant in the fodder and water.*
- *Foetus born too early. This is where the newborn animal is not yet ready to be born. If the new born animal is alive it must be fed artificially in the beginning because its sucking reflex may not yet be fully developed – This condition must be reported to the supervisor.*
- *Mother with poor maternal instincts. Some mothers leave the newborn animal alone and walk away after birth. This sometimes happens to female animals during dry periods and where the animal is in poor condition. – This must be reported to the supervisor.*
- *Injury to the mother during the delivery of the newborn animal. This may happen in difficult deliveries where a nerve can get damaged and the female has difficulty in standing up – This must be reported to the supervisor.*
- *After-birth covers the face of the newborn. If such a situation is observed, you must act quickly otherwise the newborn animal will suffocate. In this situation the after-birth is causing obstruction of the air passages and the newborn cannot breathe.*
- *In animals that normally have more than one offspring such as pigs, cats or dogs, the birth process will take some time. During the birth process the mother must be kept calm and she should not be bothered otherwise she may trample on the litter or lay on them. Many piglets are lost in this way.*
- *Sometimes female animals experience difficulty in giving birth. This is known as dystocia. A problem at birth is usually caused by the incorrect position of the neonate at the time of birth. The picture provided below shows normal and abnormal birth positions in a goat. Problems during birth are rare, but they can be fatal for both the mother and her young, this is why it is important to actually watch for signs of birth and to supervise during the birth process and thereafter. In this way, if there are problems she can be assisted.*



**Instructions to learner:**

Group written assignment and class presentation (II) and Group field trip and individual report and written assignment and

**Learner Guide: Page 20**

**Facilitator Guide: Page 11**

Learners will form part of one of four groups.

Group assignments include:

1. The advantages and disadvantages of mass mating
2. The advantages and disadvantages of group breeding
3. The advantages and disadvantages of hand mating (hand breeding)
4. The advantages and disadvantages of artificial insemination.

**Model Answer(s):**

**The advantages and disadvantages of mass mating**

**Disadvantages**

- Poor utilization of bucks, there is tendency for a buck to serve one doe repeatedly and different buck to serve the same doe.
- Bucks are inclined to fight.
- There is a tendency amongst dominant bucks to use the subordinate ones as teasers.
- No record can be kept with regard to the offspring of different bucks.
- Infertile bucks / or those with poor fertility, libido, or mating dexterity cannot be identified.

**Advantages**

- Requires relatively little labour, time and money
- It is much easier to manage one or two flocks
- More bucks are available if a large number of does come on heat simultaneously

**The advantages and disadvantages of group mating**

**Advantages**

- The buck can be used effectively and mating and progeny testing can be planned.

**Disadvantages**

- Requires more camps for mating
- Large losses can be incurred if the buck should be infertile

**Model Answer(s):**

**The advantages and disadvantages of hand mating**

**Advantages**

- *Good utilization of bucks*
- *Buck is used individually so that there is no dominance or fighting.*
- *Excellent records can be kept with regard to the offspring of different bucks.*
- *Infertile bucks / or those with poor fertility, libido, or mating dexterity can quickly be identified.*

**Disadvantages**

- *Teasers must be used*
- *Requires intensive labour and time*
- *Difficult to handle large numbers of animals*
- *Management is difficult if a large number of does come on heat simultaneously.*

**The advantages and disadvantages of artificial insemination**

**Advantages**

- *It is the only form of mating that allows efficient control of venereal diseases.*
- *A large number of does can be fertilized with the semen of one buck within a normal season; this offers a rapid method of upgrading a flock.*
- *As fewer bucks are required, better and more expensive bucks can be used.*
- *Old proven bucks and those suffering from specific injuries, which have difficulty in natural mating, can still be used effectively.*

**Disadvantages**

- *Large variety of undesired qualities could be rapidly introduced and bred into a flock if unproven bucks are used.*
- *As one buck can be used on large number of does, inbreeding poses a real danger unless non-related bucks are regularly introduced and proper records are kept.*
- *Expenses concerning facilities and equipment are relatively high.*
- *Does must be gathered and handled at least twice daily and an additional cost is incurred with respect to camps.*
- *AI does not guarantee higher kidding percentages.*
- *In the absence of proper sanitary measures, the danger exists that genital infection can be introduced and spread within the flock.*

**My Notes ...**

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**Instructions to learner:**

Field trip and report writing

**Learner Guide: Page 21**

**Facilitator Guide: Page 11**

Learners are required to take notes and write a report following a visit to a production unit where artificial insemination is used.

**Model Answer(s):**

*Artificial insemination (AI) is when sperm is placed into a female's uterus (intrauterine), or cervix (intra-cervical) using artificial means rather than by natural copulation. Modern techniques for artificial insemination were first developed for the dairy cattle industry to allow many cows to be impregnated with the sperm of a bull with traits for improved milk production.*

*Artificial insemination is used in animals to propagate desirable characteristics of one male to many females or overcome breeding problems, particularly in the cases of horses, cattle, pigs, pedigreed dogs, and honeybees. Semen is collected, extended, then cooled or frozen. It can be used on site or shipped to the female's location. The small plastic tube holding the frozen semen is referred to as a "straw". To allow the sperm to remain viable during the time before and after it is frozen, the semen is mixed with a solution containing glycerol or other cryoprotectants. An "extender" is a solution that allows the semen from a donor to impregnate more females by making insemination possible with fewer sperm. Antibiotics, such as streptomycin, are sometimes added to the sperm to control some venereal diseases.*

*Artificial insemination of farm animals is very common in today's agriculture industry, especially for breeding dairy cattle (75% of all inseminations) and swine (up to 85% of all inseminations). It provides an economical means for a livestock grower to breed their herds with males having very desirable traits.*

*Artificial insemination is the process whereby semen is collected artificially and is then injected into the cervix of the receptive female in either a diluted or undiluted state. It should be used as soon as possible after collection. High hygiene is required.*

*Artificial insemination, once established within a flock or herd, is a relatively easy and successful procedure with many advantages over natural mating. Initial establishment of AI in a flock or herd should be done in conjunction with specialists, as it requires knowledge and input regarding selection of male animals to be used in an AI programme, training of rams or bulls or buck, and semen collection.*

*Oestrus synchronization and planning of synchronization programmes in does and ewes and timing of inseminations according to the synchronization protocol being used are also important aspects that must be learned.*

*Artificial insemination allows the storage of the semen of superior male animals indefinitely as long as the semen storage containers are well managed (liquid nitrogen is regularly checked and replenished etc.).*

*Special equipment such as thermometers, forceps, straws, pipettes, pipette sleeves, sheath holders, pistolettes and pistolette holders are used to deposit the semen into the cervix of the female animal. Some of the equipment used in artificial insemination is shown below.*



- 1 – Thermometer**
- 2, 3, 4 – Pistolettes**
- 5 – Forceps**



*Plastic AI pipettes*

**Model Answer (s) to multiple choice questions**

A) How many cows or ewes can be inseminated from a specific bull or ram?

**(i) It depends on the amount of straws with semen that is available.** ✓

(ii) Only one cow or ewe.

(iii) Thousands of cows or ewes.

B) The following aspects are harmful to semen:

**(1) Metal** ✓

**(2) Direct sunlight** ✓

(3) Egg yolk

**(iv) Extreme cold** ✓ **(if not properly prepared)**

**(v) Heat higher than 38 degrees Celsius** ✓

(vi) Mechanical shock

(vii) Glass

**(viii) Variation in temperature** ✓

(ix) Blood

(x) Urine

C) How will you examine a semen sample before you inseminate the cow? Choose the correct answers (More than one answer may be correct)

(i) Use a telescope

**(ii) Use a microscope** ✓

**(iii) Make use of a glass plate warmed to body temperature** ✓

**(iv) Examine the sample for motility and colour** ✓

(v) Examine the sample on a cold glass.

(vi) Store the sample in a refrigerator before you examine it.

D) How will you clean the equipment used for insemination?

**(i) Disinfect with alcohol or other disinfectants.** ✓

**(ii) Clean it with soap and water and rinse off with distilled water before you dry it** ✓

(iii) Clean it with soap and water.

**(iv) Boil it in distilled water or clean rainwater before you dry it.** ✓

**(v) Clean it with cold water and put it in steam oven (autoclave)** ✓

**Instructions to learner:**

Group written homework assignment

**Learner Guide: Page 25**

**Facilitator Guide: Page 12**

Does the group's written report demonstrate understanding of the difference between seasonal and seasonal breeding and how these may be manipulated by the producer?

**Model Answer(s):**

*According to the periodicity of presentation of oestrous cycles, domestic species can be classified as monoestrous or polyoestrous. Monoestrous species have only one oestrus cycle per breeding season. Polyoestrus species are those that, in the absence of mating or when mated with a sterile male, has several oestrous cycles per breeding season.*

*Polyoestrous species can be further classified as seasonally polyoestrus or seasonal breeders and continuously polyoestrous or non-seasonal breeders. Seasonal breeders such as the sheep, goat and mare present several cycles, but only during a particular season of the year. Changes in the geographic location and climate and the provision of favourable environmental conditions may however, induce seasonally polyoestrous species to become continually polyoestrous, or at the very least, extend the breeding season.*

**Environmental influences on reproduction**

*Sexual reproduction and internal fertilization requires that the mating partners receive internal and external cues to elicit behavioural responses and stimuli, which synchronize the release of spermatozoa and oocytes. For most species, the courtship activities, which lead to ejaculation and the release and ovulation of oocytes, must occur within a matter of hours of each other to ensure a successful fertilization and pregnancy.*

*Circadian rhythms (internal rhythm of plants and animals which regulate biological processes), synchronized with external influences such as variations in the length of daylight, temperature and tidal cycles, are fundamental coordinating components of the reproductive activities of both males and females. Animals have developed a definite response to internal rhythms and to seasonal variations in the daily changes in the length of day-light and night-darkness hours.*

*These rhythms regulate the activities of the male and the reproductive cyclicality of the female to coordinate receptivity and mating and ensure that ovulation and fertilization occur at the most appropriate time for normal embryonic development, gestation, and delivery of young during the season of the year which is most suitable for the offspring to survive environmental stresses and predatory animals. Seasonal breeders initiate oestrous cycles at the appropriate time, warranting the survival of the offspring.*

*The orbiting of the earth around the sun causes changes in the length of daylight or photoperiod at the different seasons of the year. These seasonal changes in the photoperiod (daylight length) are more pronounced at the North and South Polar Regions than in the equatorial region, where photoperiodic variations between seasons are hardly noticeable. Goats and sheep are considered "short-day" breeders (at high latitudes and in*



**Instructions to learner:**

Four individual breeding programmes

**Learner Guide: Page 29**

**Facilitator Guide: Page 12**

The learners need to demonstrate their understanding of different production systems through the design of a breeding program for four different production units (dairy farmer, Merino sheep farmer, Angora Farmer and a Dorper sheep farmer). Only the breeding activities need to be noted in the breeding colanders.

**Model answer(s)**

**Breeding programme – Dairy Farmer**

*A dairy farmer has no definite breeding season. Straws of semen are constantly at the ready so that cows that come into oestrus can be inseminated as necessary. Thus, insemination takes place all year round, offspring is expected all year round, and there is no season of the year where no breeding activity takes place. This is done so that the farmer always has cows in milk, so that he always has a product to sell*

**Breeding programme – Dorper Farmer**

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Prepare rams for breeding season. check fertility, slightly improve nutrition, check feet and walk ability	Prepare ewes for breeding season, start flush feeding	Introduce rams to ewes	Keep rams with ewes so that ewes that were not covered in previous 21 day cycle have a second chance to be covered	Feed maintenance	Feed maintenance	Improve ewe nutrition. Prepare rams for 2nd breeding season. check fertility, slightly improve nutrition, check feet and walk ability	Maintain improved nutrition start watching for birth behaviour, Lambing season starts. Prepare ewes that were not covered in March for breeding season, start flush feeding	Lambing season (1st breeding season). Keep rams with ewes so that ewes that were not covered in previous 21 day cycle have a second chance to be covered	Feed maintenance (2nd breeding season)	Feed maintenance (2nd Breeding season)	Weaning starts (1st breeding season) Improve ewe nutrition.

**Breeding programme – Merino Farmer**

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Prepare rams for breeding season. check fertility, slightly improve nutrition, check feet and walk ability	Prepare ewes for breeding season, start flush feeding	Introduce rams to ewes	Keep rams with ewes so that ewes that were not covered in previous 21 day cycle has a second chance to be covered	Feed maintenance	Feed maintenance	Improve ewe nutrition	Maintain improved nutrition start watching for birth behaviour, Lambing season starts	Lambing season			Weaning starts

**Breeding programme – Angora Farmer**

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Prepare buck for breeding season. check fertility, slightly improve nutrition, check feet and walk ability	Prepare does for breeding season, start flush feeding	Introduce buck to does	Keep buck with does so that does that were not covered in previous 21 day cycle has a second chance to be covered	Feed maintenance	Feed maintenance	Improve doe nutrition	Maintain improved nutrition start watching for birth behaviour, Kidding season starts	Kidding season			Weaning starts

# Summative Test and Attitude & Attribute Evaluation

**B**efore the knowledge test is undertaken, the learner must be reminded of what is expected from him / her in terms of summative and reflexive competence. Read and explain to the learner, the **Preparation for Your Final Assessment** section in the learner workbook. Learners and assessor should sign off this section to acknowledge that this step was completed.

Please set up a knowledge test from the questions given as a guideline to learners and supply each learner with a test sheet.

Supply each report with the following heading:

<b>Unit Standard:</b>	116216	<b>NQF Level:</b>	3
<b>Learner Name:</b>			

Questions	Model answers
1. Name the three stages of the birth process.	<ul style="list-style-type: none"> <li>• Pre-parturient period</li> <li>• Parturition</li> <li>• Post-parturient period</li> </ul>
2. Name three behavioural changes when females are about to give birth.	<ul style="list-style-type: none"> <li>• Restlessness</li> <li>• nest building</li> <li>• Withdrawal from the herd or flock.</li> </ul>
3. What is the main difference between the birth of a foal and the birth of a calf?	The amniotic sac bursts before the calf is born, with the foal the amniotic sac stays intact until the foal is almost completely born.
4. What is placentophagia?	The eating of the afterbirth.
5. Name three potential birth problems.	<ul style="list-style-type: none"> <li>• Pregnancy toxemia</li> <li>• Hypocalcaemia</li> <li>• Hypomagnesemia</li> <li>• Mastitis</li> <li>• Dystocia</li> </ul>
6. Name four different types of breeding systems.	<ul style="list-style-type: none"> <li>• Mass breeding</li> </ul>



### Assessment Feedback Form

Comments / Remarks	
<p>Feedback to learner on assessment and / or overall recommendations and action plan for competence:</p>	
<p>Feedback from learner to assessor:</p>	
<p><b>Assessment Judgement</b> You have been found:</p> <p><input type="radio"/> Competent</p> <p><input type="radio"/> Not yet competent in this unit standard</p>	<p>Actions to follow:</p> <p><input type="radio"/> Assessor report to ETQA</p> <p><input type="radio"/> Learner results and attendance certification issued</p>
<p><b>Learner's Signature:</b></p>	<p><b>Date:</b></p>
<p><b>Assessor's Signature:</b></p>	<p><b>Date:</b></p>
<p><b>Moderator's Signature:</b></p>	<p><b>Date:</b></p>