

Lesson Three - Sheep Reproductive System

LEARN: Sheep Reproductive System

30 minutes

Purpose:

Participants will learn the parts and function of a Sheep's reproductive system.

Materials:

- Projector
- *Sheep Reproductive System* slide presentation
- *Sheep Reproductive System Student Notes*
- *Sheep Reproductive System Student Notes - Answer Key*

Facilitation Steps:

1. Look over the *Sheep Reproductive System* slide presentation to get a good understanding of what you will be presenting.
2. Hand out the *Sheep Reproductive System Student Notes* to the class participants.
3. Present the *Sheep Reproductive System* slide presentation to your class. Share and discuss the following information from each slide.

Slide 1: Sheep Reproductive System

Slide 2: Male and Female Reproductive System

The reproductive process between sheep depends on the right conditions of a ram(male) and ewe (female)

- Male factors include:
 - Ability to mate
 - Physical willingness
 - Ability to produce normal sperm in adequate numbers
- The female factors include:
 - Proper function of the anatomical and physiological workings of their reproductive system

Slide 3: Female Reproduction

Slide 4: Female Reproduction Parts

The female reproductive tract of a mature ewe is located in the pelvic cavity and has several parts: vulva, vagina, cervix, uterus, ovaries and fallopian tubes (oviducts).

Slide 5: Female Reproduction - Vulva:

The vulva is the external genitalia consisting of two parts, the vestibule and the labia. The vestibule is the inner portion of the female tract, while the labia is the visible external part. The vestibule connects to the vagina with the opening or meatus of the urethra. The labia has two distinct parts, the labia majora and labia minor, which are the outer and inner skin folds on the outside of the vagina.

Slide 6: Female Reproduction - Vagina:

The vagina is located between the cervix and vulva. The vagina has several functions:

1. It is the breeding organ of the female, receiving the sperm during mating
2. It expands during birth as the birth canal
3. It serves as an exit for urine

When the ewe is in heat, the vagina becomes very moist to accept the semen. At other times the vagina tends to be drier.

Slide 7: Female Reproduction - Cervix:

The cervix is a structure composed of fibrous cartilage. The cervix connects the uterus with the vagina and has an anterior and posterior opening. The cervix acts as a gatekeeper for the uterus, remaining closed. However, it opens during heat because of the hormone estrogen to assist in the penetration of the sperm cells. The cervix is also opened during the passage of the fetus during birth. During pregnancy, the cervix enlarges like the uterus. The inner layer of the cervix helps protect the uterine environment against pathogens, infections or foreign bodies from the outside.

Slide 8: Female Reproduction - Uterus:

A doe's uterus has two long horns that connect the uterine body to the oviducts (fallopian tubes). The uterus is about 3 cm in length and 2 cm wide. The primary function of the uterus is reproduction. It is a smooth, muscular organ that is the site of embryonic implantation. It will grow and stretch during the pregnancy along with the developing fetus. The uterus protects and provides nourishment to the fetus during pregnancy. The internal layer of the uterus, called the endometrium, is formed by glands that secrete the endometrial milk that nourishes the growing fetus. The uterus separates itself from the vagina through the cervix.

Slide 9: Female Reproduction: Ovaries (aka female gonads):

Ovaries are the primary sex organ. They are almond-shaped and located on each side of the pelvic cavity. There are two ovaries that produce eggs and the female sex hormones (estrogen and progesterone). They also produce the ova or female gametes. The development of the secondary sex characteristics of does and the physical and behavioral changes that does display during heat are because of estrogen. The progesterone is responsible for changes in the uterine environment for embryo implantation, as well as maintaining pregnancy and promoting mammary gland growth and development during pregnancy. An ovarian follicle is a fluid-filled sac that contains an immature egg. Follicles become larger and will release the eggs (ovum) at estrus.

Slide 10: Female Reproduction - Oviduct or Fallopian Tubes

From the follicles, the egg is passed into the oviduct, also known as the Fallopian tube. This is where fertilization occurs. After leaving the oviduct the egg travels into the uterus, where it implants.

Slide 11: Estrous Cycle

Sheep are considered “seasonally polyestrous”, which means that they have estrous cycles during late summer, fall and winter. The estrous cycle length of sheep is 17 to 24 days. Does are in heat for approximately 30 hours and ovulate 33 hours after the onset of estrus.

The estrous cycle is the interval between two estrus dates. This cycle has four periods: proestrus estrus, metestrus, diestrus.

Slide 12: Estrous Cycle

Proestrus or the preparatory phase lasts 2-3 days. It is the phase when several follicles in the ovaries start to grow because of follicle stimulating hormones. During this stage, some does may experience vaginal secretions; however, they are not sexually receptive to the male.

Slide 13: Estrous Cycle

The estrus (or heat phase) lasts 12-48 hours; however, the average length is 36 hours. To better control mating systems, and for artificial insemination, knowledge of timing is important for success. This is the period in which the ewe will stand and allow the ram to breed her.

Signs of an ewe in heat include: restlessness, frequent urination, seeking out the ram, vocalization, swelling of the vulva, allowing herself to be mounted, tail wagging, and vaginal discharge.

Slide 14: Estrous Cycle

Metestrus is the third phase that lasts 2-3 days. It starts at the end of the estrus period and the ewe is no longer receptive to the ram by then. Ovulation in does occurs approximately 12 to 36 hours from the end of heat. The fourth stage is diestrus, lasting 15-19 days. This is a lengthy stage where there is no sexual activity.

Slide 15: Male Reproduction

Slide 16: Male Reproduction Parts

The parts that make up the ram's reproductive system are the testes (testicles), epididymis, scrotum, vas deferens, urethra, accessory sex glands and penis.

Slide 17: Male Reproduction - Penis:

This organ is responsible for male copulation and deposits semen in the female reproductive tract. It acts as a passage for semen and urine. During mating, the ram deposits semen through an erection of the penis up to 12 inches. In the non-erect state, the penis is hidden in the sheath.

Slide 18: Male Reproduction - Accessory Sex Glands

The accessory glands are located next to the urethra consisting of 3 glands: vesicular, prostate and bulbourethral glands. Their function is producing seminal fluid that nourishes, buffers and provides

other substances needed for the movement and fertility of spermatozoa. The spermatid fluid and spermatozoa together form the semen. Accessory gland fluids empty into the urethra.

The urethra is a duct common to the urinary and reproductive systems. It is a muscular canal extending from the bladder through the penis, and it is responsible for final delivery of semen to the doe.

Slide 19: Male Reproduction - Vas Deferens:

The vas deferens are a pair of ducts tied to the tail of the epididymis. The vas deferens connects the epididymis to the accessory sex glands and ampulla (the ampulla is a holding area for sperm cells that are ready to ejaculate). These glands are located in the pelvic region and provide the sperm with the fluids that are ejaculated during mating. The primary responsibility of the vas deferens is delivering sperm from the epididymis to the urethra.

Slide 20: Male Reproduction - Scrotum (scrotal sac):

The scrotum is the pouch formed by the skin that is responsible for protecting the testicles and the epididymis. The scrotum also aids in the temperature regulation of the testicles. Spermatozoa produced by the testis enter the epididymis, also located in the scrotum. The epididymis transports, matures, nourishes and stores sperm prior to ejaculation.

Slide 21: Male Reproduction - Testicle (testis or male gonads):

The testis or testicles are a pair of symmetrical, oval-shaped and range from elastic to firm. They are the main reproductive organs of a ram. The testicles are housed in the scrotum and are responsible for the production of sperm cells and the hormone testosterone.

4. Answer any questions using the *Sheep Reproductive System Student Notes* – Answer Key.