Need to Know: Reproductive processes in sheep

Sheep, like all mammals, give birth to live offspring. These offspring are nourished with their mother’s milk. A ewe’s ability to conceive, give birth to and nourish a healthy lamb is an important aspect of sheep production.

The ewe’s reproductive tract includes the vulva, vagina, cervix, fallopian tube, uterus and ovaries.

- The **vulva** is the external opening of the urogenital tract. It is part of the birth canal and the area where urine is voided.
- The **vagina** is also part of the birth canal and is where semen is deposited.
- The **cervix** is approximately 10 cm in length and lies between the vagina and the uterus. It relaxes when the ewe is in heat and closes when she is not or when she is pregnant.
- The **oviduct**, also called fallopian tubes, transport sperm and ova, or egg, to the site of fertilization, which occurs in the upper one-third of the fallopian tube. The fertilized ovum is then transported to the uterus.
- The **uterus**, or womb, is where the major development and nourishment takes place. The uterus consists of two separate uterine horns.
- The **ovary** is the primary sex organ of the ewe. The ovary produces the ovum to be fertilized and produces the estrogen and progesterone hormones.

Mature male sheep are called **rams** or **bucks**. Mature female sheep are called **ewes**. A **wether** is a castrated male prior to puberty. A **stag** is a castrated male after puberty. A ewe gives birth to a **lamb**.
A ewe’s reproductive activity is seasonally polyestrous, which means she has reproductive and non-reproductive activity during certain seasons of the year.

KNOW ABOUT THE ESTROUS CYCLE

Once a ewe reaches puberty, she has an estrous cycle of about 17 days, plus or minus 3 days. The cycle is composed of the estrous period, which means she is in heat and producing ova, and the diestrous period, which means she is out of heat. The estrous period lasts for an average of 1 to 2 days. It ends when the cow ovulates and releases the ovum into the oviduct. Ovulation occurs 24 to 30 hours after the onset of heat. The normal diestrous period lasts 7 to 10 days.

Hormones are substances produced by a ductless gland and transmitted via the bloodstream to another organ, where they trigger a physiological response.

1 The estrous cycle is controlled by hormones. A follicle stimulating hormone (FSH) and luteinizing hormone (LH) are produced by the pituitary gland.

2 FSH is released into the blood stream and travels to the ovaries to cause the development of a follicle that contains an ovum.

3 Estrogens are then released into the blood stream.

4 Estrogens in the blood cause LH to be released and act on the brain to put the ewe into the physical state of being in estrus, or having an estrous cycle. Estrogens also act on the fallopian tube, uterus and cervix to prepare the reproductive tract for pregnancy.

5 The LH hormone helps the maturation and ovulation of the egg-bearing follicle. Ovulation occurs when the mature egg leaves the follicle and begins its trip into the uterus.

6 After ovulation, the level of estrogen drops and what’s left of the ovulated follicle are converted to form a corpus luteum (CL), which is a temporary glandular mass, also called yellow body. Cells in the CL secrete the progesterone hormone. This hormone shuts down the estrous hormones and sets the stage for a pregnancy.

7 If the ewe is pregnant, progesterone will maintain the pregnancy by suppressing other hormonal activity.

8 If the ewe does not become pregnant, she will come back into heat.

Signs of estrus in the ewe are much less pronounced than in the cow or doe and can usually not be detected unless a ram is present. When mature ewes are in heat, they will seek out the ram and stand still for him to mount them. Sometimes they wag their tails vigorously. They may nuzzle the ram around the belly or scrotum and even try to mount the ram. Young ewes rarely exhibit these behaviours.

KNOW ABOUT THE MALE’S ROLE IN REPRODUCTION

The ram’s role in the reproductive process involves:

- Producing reproductive cells known as sperm or spermatozoa and the male sex hormone testosterone
- Introducing sperm into the female reproductive tract to fertilize the egg and produce a lamb

The ram’s reproductive organs include the testes or testicles and the penis.

- The ram has two testes or testicles suspended by a spermatic cord that extends from the abdomen to its attachment on the testicle. The testicles are ovoid, which means they are shaped like an egg, and are housed in the scrotum, which is an out-pouching of skin.
- The ram’s testicles are formed within the abdominal cavity and descend into the scrotum when the lamb is anywhere from a few days to three weeks old.
- The scrotum is made up of two scrotal sacs, which are separated by a septum. The scrotal sacs are located on either side and in back of the penis.
- The penis is the male organ of copulation and has three parts. The root attaches the penis to the pelvis with two strong ligaments and a pair of muscles. The body or shaft is the main portion of the penis. The glans penis is the enlarged front end of the penis.
- The urethra, a tube the length of the penis, conducts urine and semen to the outside.
- The body of the penis is formed by the corpus cavernosa, which are sponge-like columns of erectile tissue that become engorged with blood during erection.

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The reproductive performance of a ram is affected by its structural soundness, reproductive organ capability, quality of semen and nutritional health. A ram’s mating capacity can vary according to season, being highest in the normal fall breeding season.
DO YOU KNOW


A ram may lose up to 15 percent of his body weight during the breeding season. Consequently, rams need to be in good body condition at the time of breeding. Thin rams may have difficulty getting the ewes bred, while fat rams may be too lazy to breed, and their fertility may be affected during periods of hot weather.

Rams should be sheared, treated for internal parasites if necessary, have their feet trimmed and be started on the diet they will consume during breeding from 2 to 4 weeks prior to breeding. They should be included in the flock vaccination program.

Some information provided courtesy of Sheep 201: Reproduction in the ram. www.sheep101.info/201/ramrepro.html

KNOW ABOUT PREGNANCY & BIRTH

- Most ewe lambs reach puberty by five to 10 months of age or 60% of their adult weight.
- Ewe lambs are ready to be bred when they reach 70% of their adult weight.
- Ewe lambs should be fed to reach this target weight by two to three weeks prior to the planned breeding exposure.
- Again, there is tremendous variation between breeds with respect to adult weight and age of puberty. It is important to know what is correct for your breed.
- Ewe lambs of more prolific breeds reach puberty earlier than range-type lambs.

- It is important not to over-feed lambs after puberty or this will decrease fertility.
- The average duration of pregnancy in sheep is 147 days; the range is 144 to 151 days.
- Animals with twins or triplets will give birth sooner than those carrying singletons bred on the same day.
- The date the first lambs are expected can be calculated from the date the ram was introduced.
- Birth facilities should be ready at least two weeks before the expected arrival of the first lamb.

The lambing process

The whole lambing process is controlled by a complex series of hormonal changes. When a ewe is getting ready to deliver her lambs, she may not eat. Her udder and teats will be distended. Her vulva will be dilated. She will appear a bit hollow just in front of her hips, and she’ll be not as wide and full over the rump, because the musculature has relaxed.

Lambing is divided into four main phases.

Preparation for delivery

In the first phase, the cervix dilates and the birth canal is prepared for delivery. This phase lasts for approximately 12 to 24 hours. At the end of this phase, a clear-whitish discharge appears. The presence of the mucous discharge means that lambing has begun.
What does the Code of Practice for the Care & Handling of Sheep say about pregnancy and lambing?

Breeding, management and feeding programs that promote unassisted lambing foster animal well-being and reduce the need for help at lambing time.

**Pregnancy**

Adequate nutrition throughout gestation is important to assure proper placental and fetal growth. Balanced nutrition, coupled with proper management during gestation is important for fetal development, lamb vigour and survival at birth. Additionally, proper nutrition during gestation is important to prevent nutritional disorders, which may impact the health and performance of the ewe and her lambs and influences milk production of the ewe.

Pregnancy diagnosis using ultrasound is a useful tool for managing the nutrition of pregnant ewes to avoid large single lambs or avoid under feeding ewes pregnant with multiples.

Shearing or crutching ewes with long fleece prior to lambing helps to reduce the risk of disease transmission, improves colostrum consumption and facilitates suckling.

The following requirements are identified in the Code of Practice.

**During gestation, monitor body condition scores and health on an ongoing basis and adjust the feeding program to maintain suitable body condition scores; seek the help of a nutritionist or veterinarian if required.**

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**Uterine contractions**

In the next phase, uterine contractions will increase.

**Labour and delivery**

As labour progresses, the ewe will spend more time lying down on her side with her head turned in the air. Eventually, a large “bubble” or water bag will appear, break, and expel the water. At this time, the tip of the nose and front feet of the lamb can be felt. The lamb is expelled. As ewes often have multiple births, the same sequence of the rupture of the water bag and expulsion of the lamb will be repeated for the delivery of each lamb. Ewes will vary in the time taken to complete lambing.

**Expulsion of placenta**

The last phase of lambing includes the expulsion of the afterbirth or placenta. The placenta is usually expelled 30 to 60 minutes after the delivery of the last lamb. If the placenta is not expelled after 24 hours, there may be a problem. The ewe will eat the placenta because her instincts tell her to hide evidence of lambing to protect her offspring from predators. The placenta should be discarded to prevent the spread of disease.

Information provided courtesy of Sheep 101: The lambing process. www.sheep101.info/201/lambingprocess.html
Supervise lambing and take timely action as required, while keeping disruption and disturbances to a minimum.

Good hygiene and sanitation must be practiced when lambing assistance is required.

In confinement systems, a clean dry area for lambing must be provided.

These recommended practices are also provided in the Code of Practice.

a. Scan (ultrasound) females for pregnancy diagnosis at 45-60 days of gestation to better manage pregnant ewes.

b. Seek veterinary advice for pain management for obstetrical problems such as dystocia and prolapse.

c. Ensure the ewe is capable of producing sufficient high quality colostrum through management of nutrition and udder health during the final 6 weeks of gestation.

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The process for the development of updated Codes can be accessed through the National Farm Animal Care Council at www.nfacc.ca/codes-of-practice.