

Reproduction Goats

Female

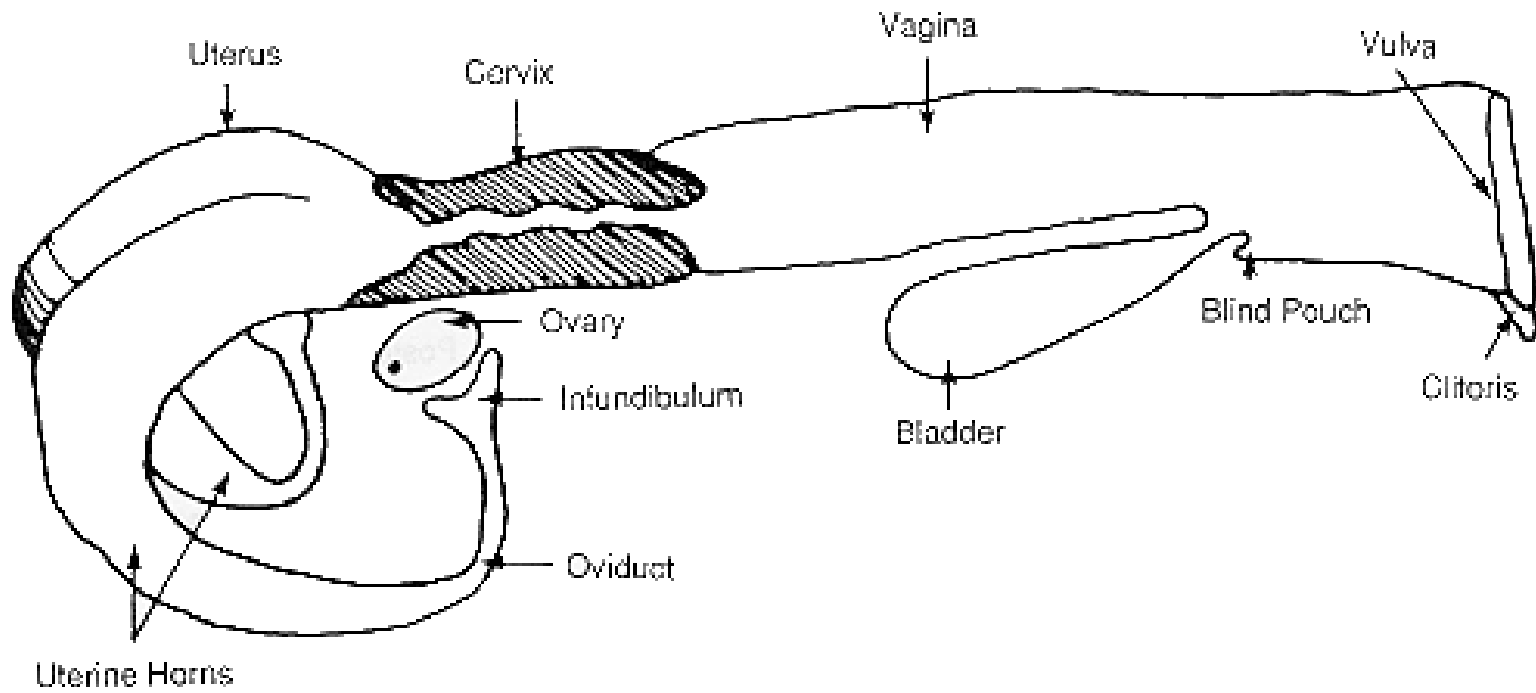
Age of Puberty	7-10 Months
Breeding Weight	60-75% of Adult Weight
<u>Estrous</u> Cycle	18-22 Days (Avg 20 days)
<u>Estrus</u> Duration	12-36 hrs (Avg 24 hrs)
Ovulation	12-36 hrs from onset (Avg 24 hrs)
Gestation Length	146-155 days (Avg 150 days)
Signs of Estrus:	Tail wagging, Mounting, Bleating

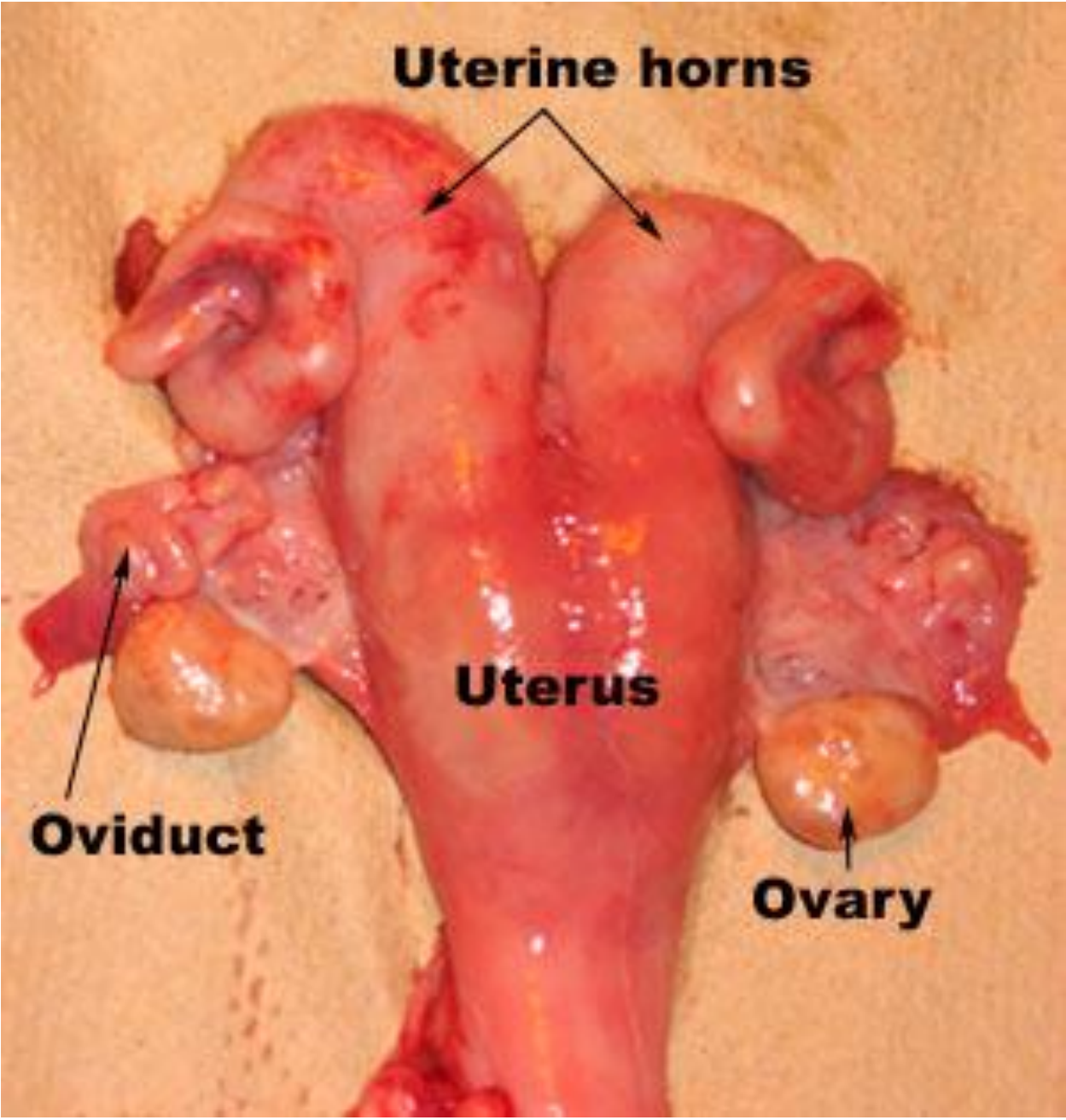
Reproduction Sheep

Female

Age of Puberty	5-12 Months
Breeding Weight	60-75% of Adult Weight
<u>Estrous</u> Cycle	14-20 Days (Avg 17 days)
<u>Estrus</u> Duration	20-42 hrs (Avg 30 hrs)
Ovulation	20-42 hrs from onset (Avg 30 hrs)
Gestation Length	144-152 days (Avg 148 days)
Signs of Estrus:	Tail wagging, Mounting, Bleating

Reproduction



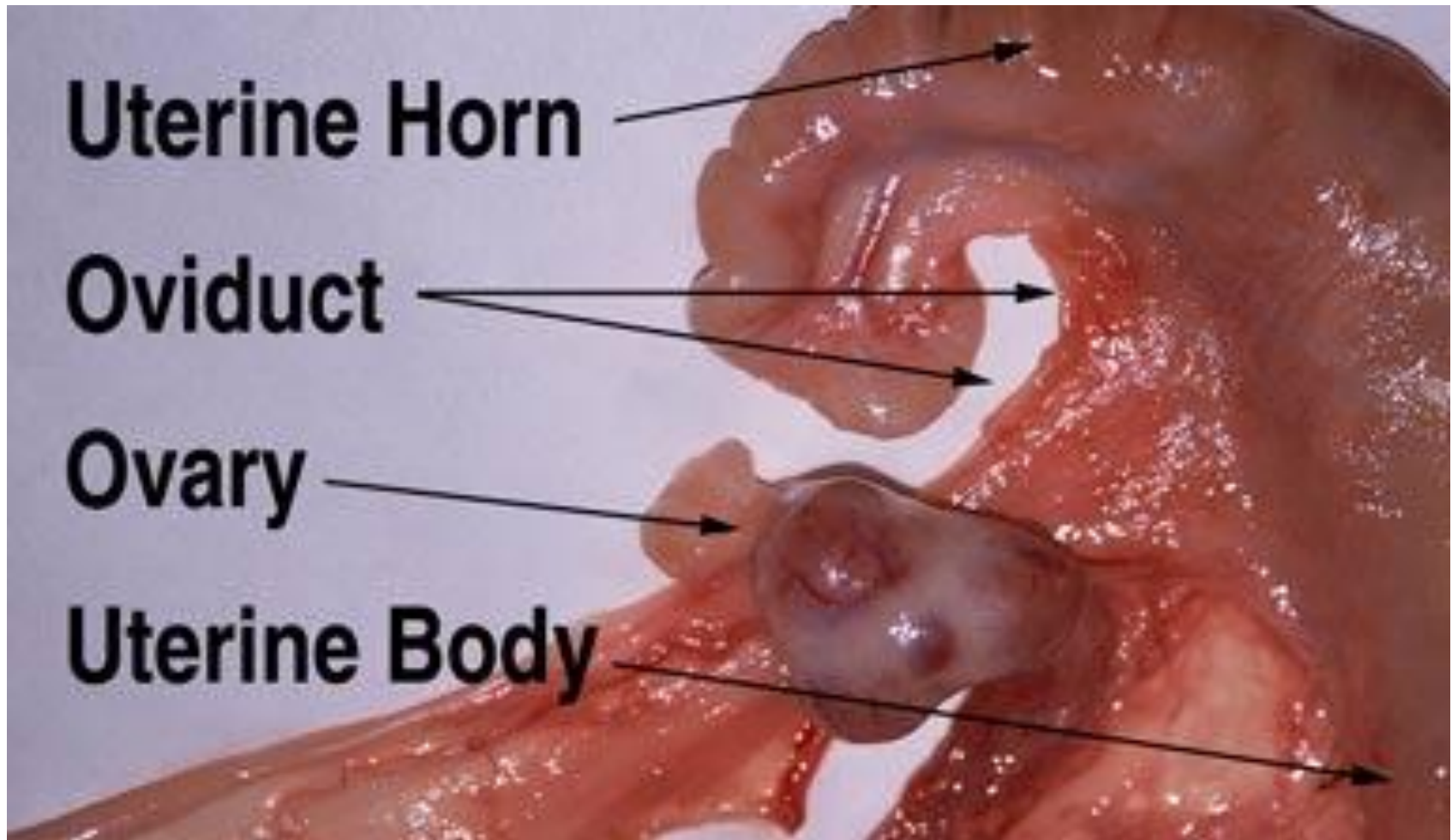


Uterine horns

Uterus

Oviduct

Ovary



Uterine Horn

Oviduct

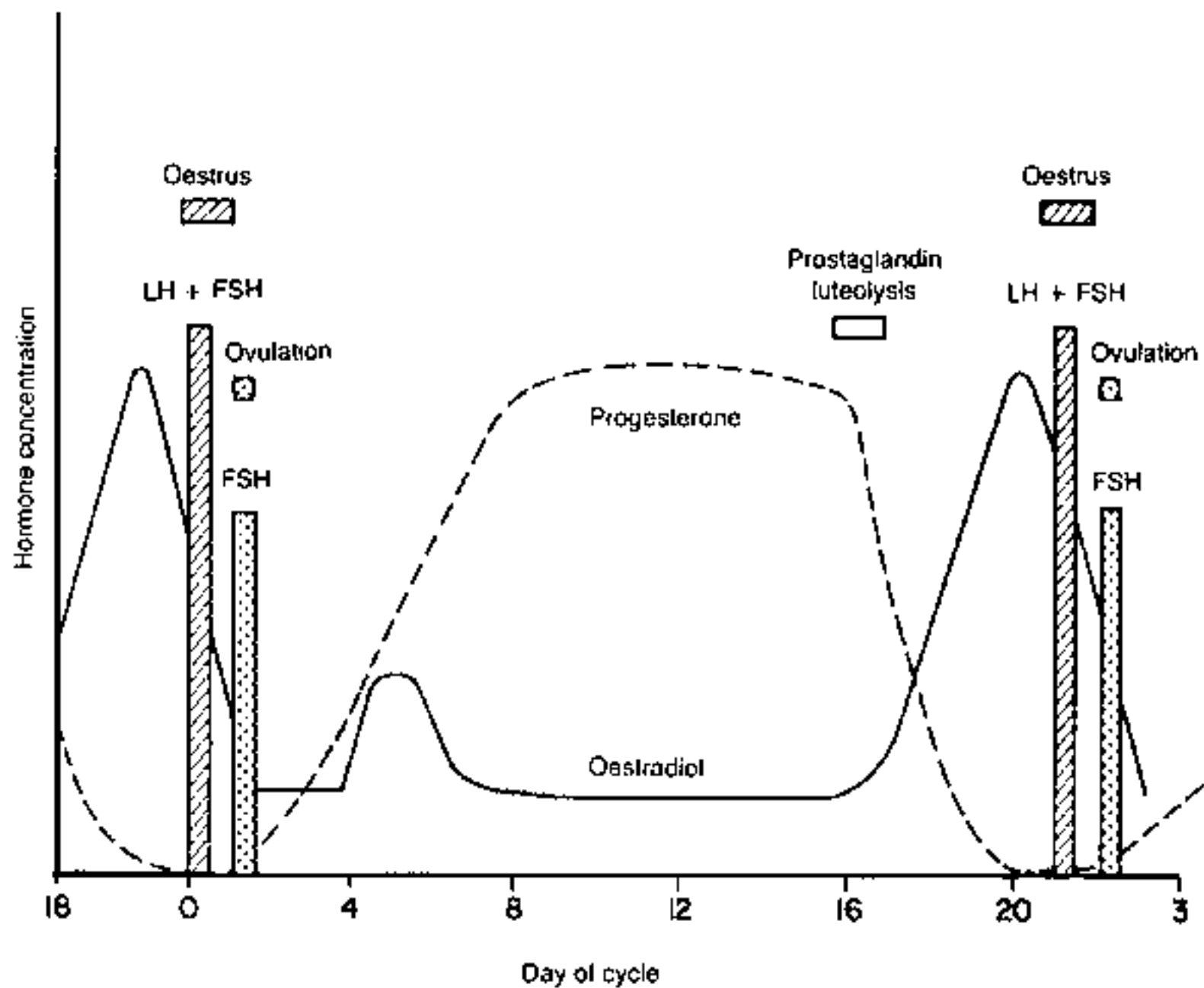
Ovary

Uterine Body

Reproduction

Hormones

- Estrogen - Steroid hormone, Excitatory, follicles
- Progesterone - Steroid hormone, corpus luteum
- Luteinizing Hormone (LH)- stimulates ovulation and CL growth
- Follicle Stimulating Hormone (FSH) – follicular growth
- Gonadotropic Releasing Hormone (GnRH) – stimulates release of FSH & LH
- Prostaglandins- induces the regression of the corpus luteum ; *lutalyse*



Reproduction

Gestation period

- The medium-wool and meat-type breeds - shorter gestation period than fine-wool breeds.
- High temperatures and high nutrition levels may shorten the gestation period two or three days.
- Ewes bred to white-faced, wool-breed rams may have a slightly longer gestation period than those bred to black-faced, meat-type rams.

Factors affecting Reproduction

- Heredity
- Age
- Photoperiod (seasonal)
- Temperature and humidity
- Nutrition and Exercise
- Parturition and lactation
- Disease and parasites
- Fertility of & assoc. with the ram

Reproduction

Breeding ewe lambs

- Ewe lambs that lamb as yearlings - greater lifetime production than ewes that lamb as 2 year olds.
- Onset of puberty depends largely upon body weight
 - Nutrition
 - Two-thirds of mature weight

Reproduction

- Ewes that lamb as yearlings
 - Separate from mature ewes
 - manage and feed
 - Reach potential size
 - shy breeders
 - breed them separate from older ewes
 - use rams of smaller breeds
 - lambing difficulties

Reproduction

Breeding Season

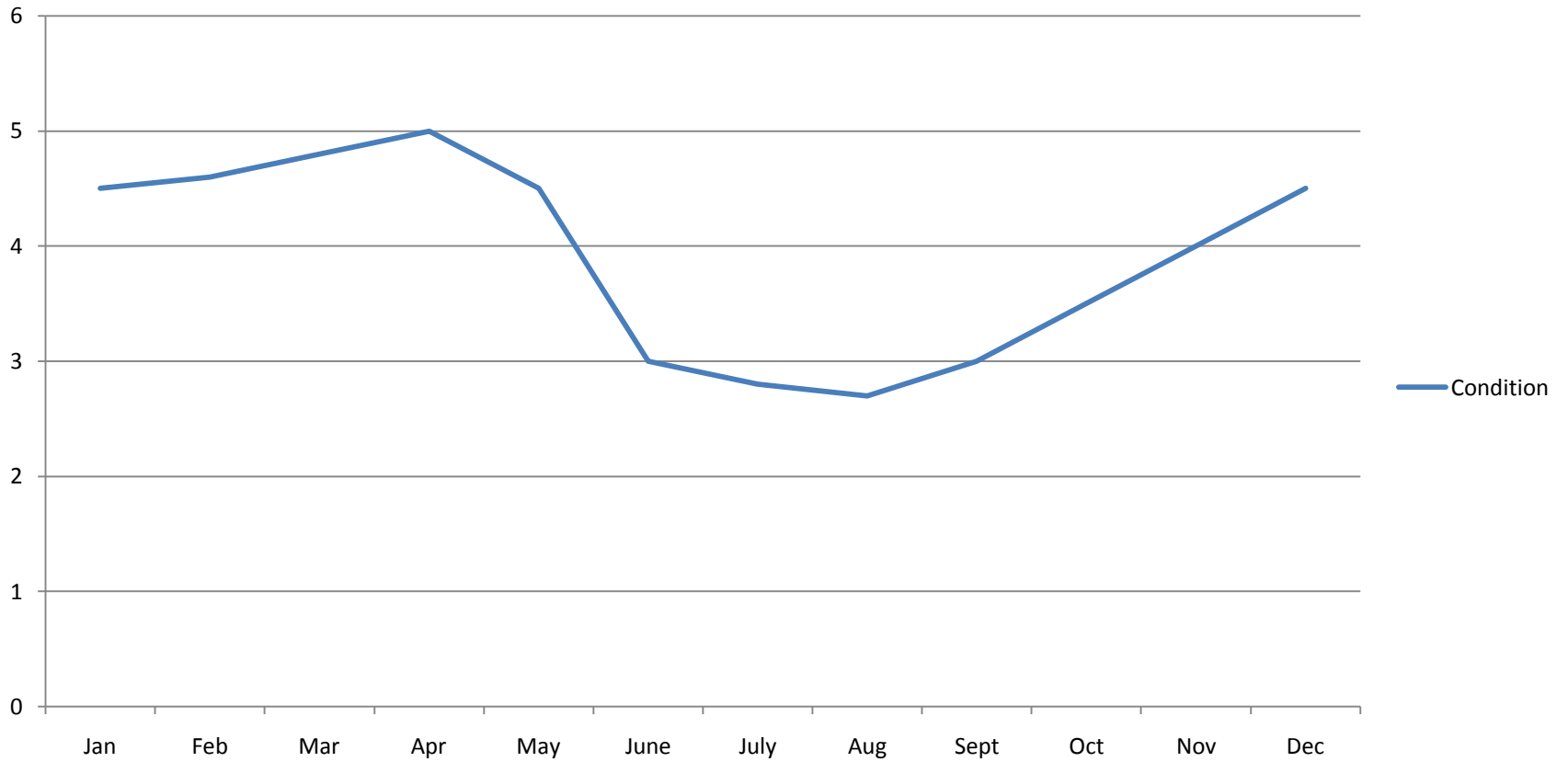
- Melatonin
- hormone that controls sheep breeding cycles
- produced during the hours of darkness
- In mid to northern latitudes breeding is strongly seasonal
- photoperiod - the determining factor
 - environmental temperature
 - nutritional status
 - social interactions

Reproduction

Natural system of controlling the breeding cycle

- ensures that the lambs are born at a time of year when there is an increasing availability of food resources
- ewes should be in good condition for mating as a result of the autumn flush of grass
- ewes loose condition during pregnancy and lactation
- recovery period between weaning and re-breeding

Condition



Reproduction

- daylight (<14 hrs/day), temp. (<74 F or > 100)
- nutrition
- flushing

Reproduction

Lambing

- > 4 sq. ft. pen for ewes, clean & dry
- presentation of front legs
- orphan lambs is not uncommon
- 25% death loss is common
- No Grain for 24 hours
 - Hay
 - Water
- Introduce feed slowly

Pregnancy Testing

- Breeding Marks
- Ultrasonic Scanning- best detected between 30 & 40 days
- Bagging or Udder Palpation
- Blood Progesterone- at the time of the next expected heat
- PSPB- a protein called Pregnancy-Specific Protein B after day 21 of breeding

Reproduction

Insemination

- Natural- 3-5 billion sperm inseminated
- AI – vaginal approach – 200 million
- AI – trans-cervical approach- 100 million
- AI - Intrauterine insemination via laparoscopic surgery- 20 million
- Time of insemination – vaginal or cervical = 12 to 18 hrs after onset of estrus
- Synchronizing with CIDR should be 48-58 hrs after removal

Desirable traits for “Accelerated Lambing”

- Ewes can breed year round
- Lamb more than one time per year
 - Gestation 5 mo., Nurse 3 mo., Open 4 months
- Ewes that can mate while lactating
- Ewes that have a good lambing rate (i.e. twinning)
- Sires that produce a desirable market lamb and have the libido and fertility for conception year round
- *Increased Feed, Labor; Decreased Productive Life*

Reproduction

Out-of-Season Lambing

- Early weaned Lambs
- Hormone treatment
- 2 milligrams of estradiol two days prior to progesterone treatment
- progesterone administered for 10 to 12 days
- 500 to 750 IU gonadotropin on Day 13, and 16 days later
- expect some loss in reproductive efficiency

Reproduction

Anestrous period (*reproductive inactivity*).

- period when ewes normally do not demonstrate estrous/estrus
- Three types of anestrous are observed in ewes:
 - seasonal (influenced by length of day)
 - lactation (influenced by the sucking stimulus of lambs)
 - postpartum

Reproduction

Effects of Environment

- Estrus increases as day length decreases
- September, October, or November
 - highest percentage of multiple births.
- Fall Lambing, High temperatures are detrimental to:
 - Fertility (conception rate)
 - embryo survival
 - fetal development
 - Small at birth

- <http://faculty.tarleton.edu/morgan/>

Reproduction

Effect of Nutrition

- direct effect on reproductive performance
- Flushing – weight gain before and during the breeding season
- Ewes in acceptable condition produce more lambs if they are flushed
- flushed with rested pastures or by supplementation.
- Begin three weeks before breeding
- continue through the first cycle
- Flushing is most effective when mated early in the breeding season. Since ovulation rate is near a maximum during the middle of the season, flushing at this time is not as beneficial.
- Less effect on ewes that are already on a high level of nutrition

Reproduction

Effect of Nutrition

- Nutrition affects total lifetime productivity by influencing mature size.
- Well-developed ewes consistently have higher lamb crop percentages than smaller ewes.
- Fat ewes are typically less fertile
 - do not respond to flushing
 - may experience more embryonic death loss.
- Ewes grazed on legume pastures, such as alfalfa and clover, may at times be less fertile.
- the estrogen content of these legumes is related to reproductive disorders
- Breeding dates may be delayed
- conception rate reduced
- *the estrogen content of legumes declines during the later stages of maturity.*

Reproduction

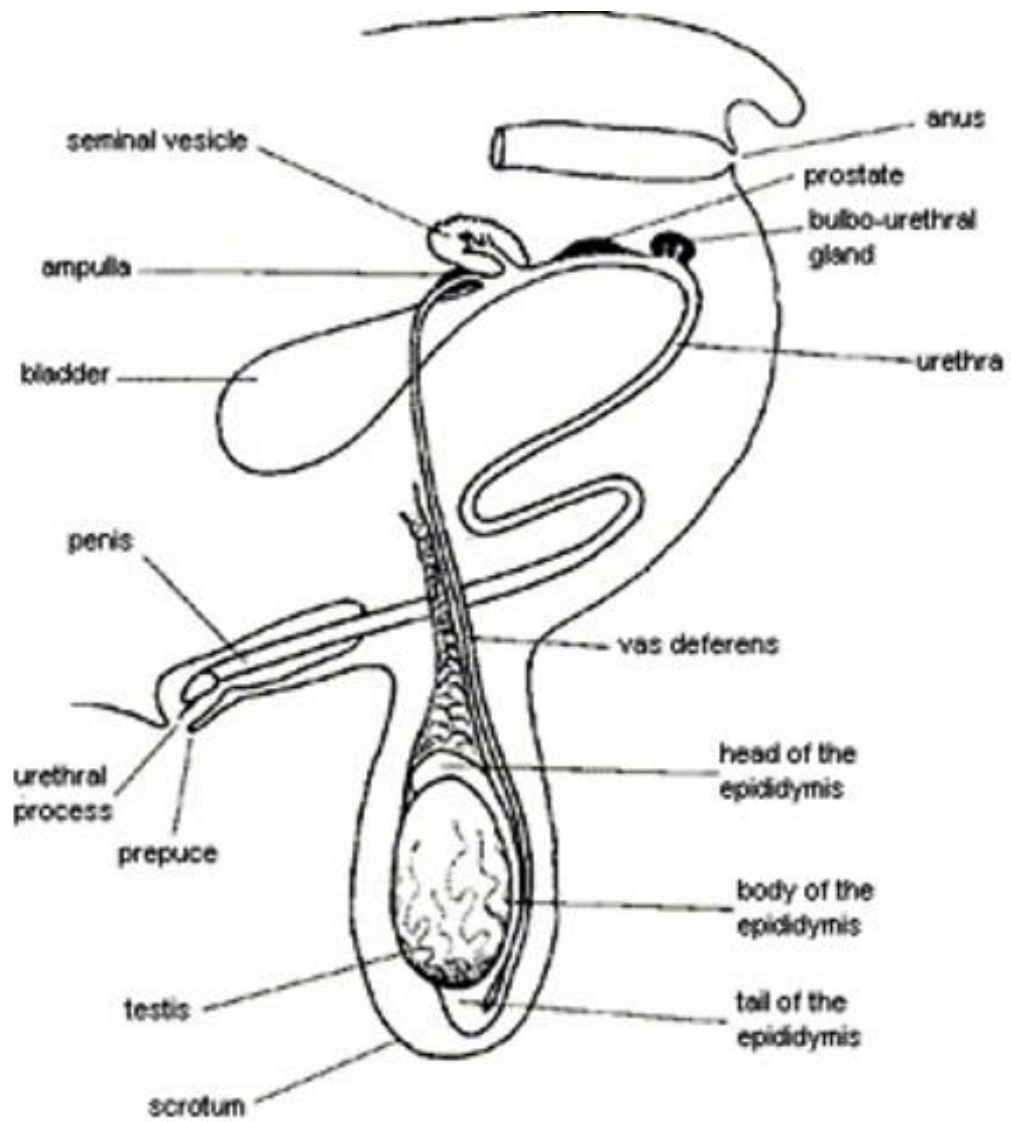
Effect of Lambing and Lactation

- Both lambing and lactation suppress estrous
- the postpartum anestrous period lasts through lactation
- Involution - two to three weeks after lambing
- Most ewes that lamb in late winter or spring do not exhibit estrus until the following breeding season.
- Ewes that lamb in the fall usually exhibit a fertile heat four to eight weeks after lambing, or approximately two weeks after weaning.

Reproduction

Effect of Disease and Parasites

- Internal parasites reduce body condition and reproductive performance
- To minimize negative effects, follow a regular parasite control program and vaccination schedule. A local veterinarian should be able to provide sufficient information to develop a flock health program.



Reproduction

- Males (rams)
- fertile year round
- 1 ram to 15 to 50 ewes
- The selection processes has resulted in breeds that are weakly-photoperiod-responsive
 - greater control over the timing of breeding
- Target markets

Factors affecting the Reproduction in the Ram

- Breeding soundness exam
- Palpation of the testicles, epididymis, and penis and visual appraisal of feet, legs, eyes and jaws.
- Semen evaluation
- Disease prevention
- Heat stress

Reproduction

Effect of Ram

- Infertile
- Diseased
- Disinterested
- = poor lambing rates

Reproduction

Effect of Ram

- well-matured ram lambs, 15 to 30 ewes
- yearlings to five-year-old rams, 25 to 50 ewes
 - Rates depend upon:
 - Season
 - Temperature
 - sex drive
 - body condition.
- *Rams vary in their sexual behavior. Some rams mate repeatedly with the same ewes, even though several other ewes in heat are present. Some rams prefer black-faced or white-faced ewes when both groups are in the same flock.*

Semen Collection

- Components- seminal fluid and sperm
- Quality of sperm – morphology and viability (percent live)
- Methods- artificial vagina and electroejaculation
- Semen handling-dilution characteristics: glucose or fructose, egg yolk, citrate or phosphate, antibiotics, glycerol

Reproduction

Semen Quality

- Effected by:
- Temperature
 - lower fertility during late summer
 - $>90^{\circ}\text{F}$ for an extended period, especially if the humidity is high, fertility of most rams is reduced.
- Physical condition
- Malnutrition
- Internal parasites
- Disease

Reproduction

Semen Quality

- The formation and development of sperm requires six to seven weeks
- A single dominant infertile ram in a large flock incorporating several rams can prevent fertile rams from mating
- Fertility test rams, particularly in one-sire flocks
- marking harness
 - If several of the ewes return to heat, it may be necessary to substitute another ram.

Reproduction

Teaser Buck

Psychologically Stimulate

- Induce estrous activity
- Introduce 40 days prior to breeding
- Remove 10 to 14 days prior breeding
- Then Introduce rested fertile rams
- *stimulation does not occur when rams are placed with ewes earlier, or left with the ewes continuously*

Surgically Sterilized

- Penile deviation
- Vasectomized

Marking Harness