

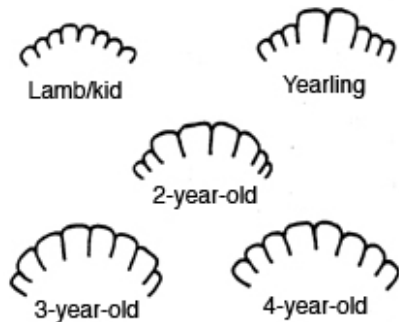
Normal Physiological Values and Reproductive Parameters of Sheep and Goats

	Sheep	Goat
Rectal temperature	102.8 degrees F (102.5 to 103.2)	101.7 degrees F (101.7 to 104.5)
Heart rate	75 beats/minute (60 to 120)	Beats/minute (70 to 80)
Respiration rate	20 breaths/minute	12 to 15 breaths/minute
Reproductive characteristics of females		
Nature of cycles	Polyestrous (seasonal anestrus)	Polyestrous (seasonal anestrus)
Age at puberty	8 months (6 to 9)	8 to 10 months
Breeding weight	60 to 75% of adult weight	60 to 75% of adult weight
Estrous cycle		
Length	17 days (14 to 20)	21 days (18 to 22)
Estrus	24 to 36 hours	24 to 48 hours
Signs	Relatively inconspicuous	Bleats frequently, wags tail
Ovulation	24 to 27 hours from onset of standing heat	24 to 36 hours from onset of standing heat
Type	Spontaneous	Spontaneous
Time from onset (hours)	24 to 27 hours	24 to 36 hours
Rate number per cycle	1 to 3	2 to 3
Gestation length	140 to 155 days	146 to 155 days
Breeding season	August—January	August—January
Seasonal anestrus	February—July	February—July
Buck effect on estrous	Positive	Positive
Optimum time to service	18 to 24 hours after onset of heat	Toward the end of estrus

	Sheep	Goat
Reproductive characteristics of males		
Age of puberty	4 to 6 months	4 to 8 months
Breeding weight	40 to 60 percent of adult weight	40 to 60 percent of adult weight
Breeding age	8 to 10 months	8 to 10 months
Breeding season	All year	All year
Breeding ratio	1 ram: 20 to 30 ewes	1 buck : 20 to 25 does
Semen		
Volume(ml)	0.8 to 1.2	0.1 to 1.5
Concentration(billion/ml)	1.5 to 4	2 to 6

Estimating the Age of a Sheep or Goat

The approximate age of sheep or goats can be determined by the teeth, as illustrated below. At birth, lambs and kids have eight milk teeth, or temporary incisors, arranged in four pairs in the lower jaw. The central pair of temporary incisor teeth is shed and replaced by the permanent teeth at approximately 1 year of age. At 2 years, the second pair of milk teeth is replaced by a pair of permanent incisors. At 3 and 4 years, the third and fourth pairs of permanent teeth appear, respectively. At 4 years of age, the sheep or goat has a “full mouth.” The amount of wear on the permanent teeth is an indication of the approximate age of animals older than 5 years. When a ewe or doe loses some of her incisor teeth, she is called a “broken mouth.”



Space Requirements for Sheep and Goats

Breeding ewes and does	Bred ewes and does	Lactating ewes and does
Lot space		
All dirt	20 square feet	25 square feet
Housing		
Open sheds	8 square feet	12 square feet
Confined sheds (solid floors)	12 to 16 square feet	16 to 20 square feet
Confined sheds (slotted floors)	8 square feet	10 to 12 square feet
Confined sheds (lamb creep space)		2 square feet
Feeders for concentrates		
Hand-feeding (fenceline feeders)	16 linear inches	16 linear inches
Self-feeders (concentrates including pellets)	Not recommended	6 linear inches
Self-feeders (complete rations not pellets)	Not recommended	12 to 14 linear inches
Feeders for roughages		
Hand-fed	16 linear inches	16 linear inches
Self-fed	8 to 12 linear inches	8 to 12 linear inches
Watering equipment		
Open tank	1 foot per 15 head	1 foot per 15 head
Automatic bowl	1 bowl per 40 head	1 bowl per 40 head

Feeder lambs and kids	
Lot space	Space/head
All dirt	15 to 20 square feet
Dirt and paving	16 square feet
All paving	16 square feet
Housing	
Open sheds	6 square feet
Confined sheds (solid floors)	8 to 10 square feet
Confined sheds (slotted floors)	4 to 6 square feet
Confined sheds (lamb creep space)	2 square feet
Feeders for concentrates	
Hand-feeding (fenceline feeders)	10 to 12 linear inches
Self-feeders (concentrates including pellets)	1 to 2 linear inches
Self-feeders (complete rations not pellets)	4 linear inches
Feeders for roughages	
Hand-fed (fence line feeders)	10 to 12 linear inches
Self-fed	4 linear inches
Watering equipment	
Open tank	1 foot per 25 heads
Automatic bowl	1 bowl per 50 heads

Adapted from *Sheep Pocket Guide* AS-989, North Dakota Extension Service, Fargo, North Dakota

Equipment for Lambing and Kidding

- Two clean buckets
- Mild soap (for cleaning the genital area of ewe or doe)
- Disinfectant and commercial obstetrical lubricant
- Vinyl gloves and KY Gel, Septi-Lube, or mineral oil
- Fingernail clippers and emery board, if needed to make sure your fingernails are short
- Lamb puller, obstetrical leg snare, or obstetrical chain
- Paper towels, old towels, and rags
- Bottles, nipples, and stomach tube in case lamb needs help getting colostrum
- Thermometer (normal temperature for sheep is 102.8 degrees F and for goats is 101.7 degrees F)
- Suturing material or dental floss to tie off umbilical cord
- Scissors for cutting umbilical cord
- Iodine (7 percent) solution for saturating and disinfecting umbilical cord

Minimum Recommended Scrotal Circumference by Age in Rams and Bucks

Age	Minimum Circumference
5 to 6 months	29 centimeters
6 to 8 months	30 centimeters
8 to 10 months	31 centimeters
10 to 12 months	32 centimeters
12 to 18 months	33 centimeters
18+ months	34 centimeters

Normal Semen Quality in Mature Rams and Bucks

Semen	Ram	Buck
Volume (ml)	1 (0.8 to 1.2)	0.8 (0.5 to 1.0)
Sperm concentration (billion/ml)	2.5 (1 to 6)	2.4 (2 to 5)
Motile sperm (%)	75 (60 to 80)	80 (70 to 90)
Morphological normal sperm (%)	90 (80 to 95)	90 (75 to 95)

Ratio of Ewes per Ram or Does per Buck

Age of rams or bucks	Ratio of ewes per ram or does per buck
Ram lambs and buck kids (approximately 8 to 10 months of age)	15 to 30 ewes or does per 1 ram lamb or buck kid
Yearlings (approximately 12 to 16 months of age)	25 to 50 ewes or does per 1 yearling ram or yearling buck
Mature rams and bucks	100 ewes or does per 2 to 3 rams or bucks

Gestation Table

Aug Jan	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	Sep
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
Sep Feb	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	1	2	3	-	-	-	Oct
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	-	-	-	
Oct Mar	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	Nov
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
Nov Apr	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	1	2	3	-	Dec
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	-	
Dec May	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	Jan
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
Jan Jun	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	-	Feb
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	-	
Feb Jul	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	1	2	3	4	5	Mar
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	

Mar Aug	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	Apr
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
Apr Sep	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	1	2	3	4	5	-	May
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	-	
May Oct	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	Jun
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
Jun Nov	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	1	2	3	4	5	-	Jul
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	-	
Jul Dec	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	Aug
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	

*Find breeding date in upper line; look below to find lambing or kidding date. Based on a 148-day gestation period.

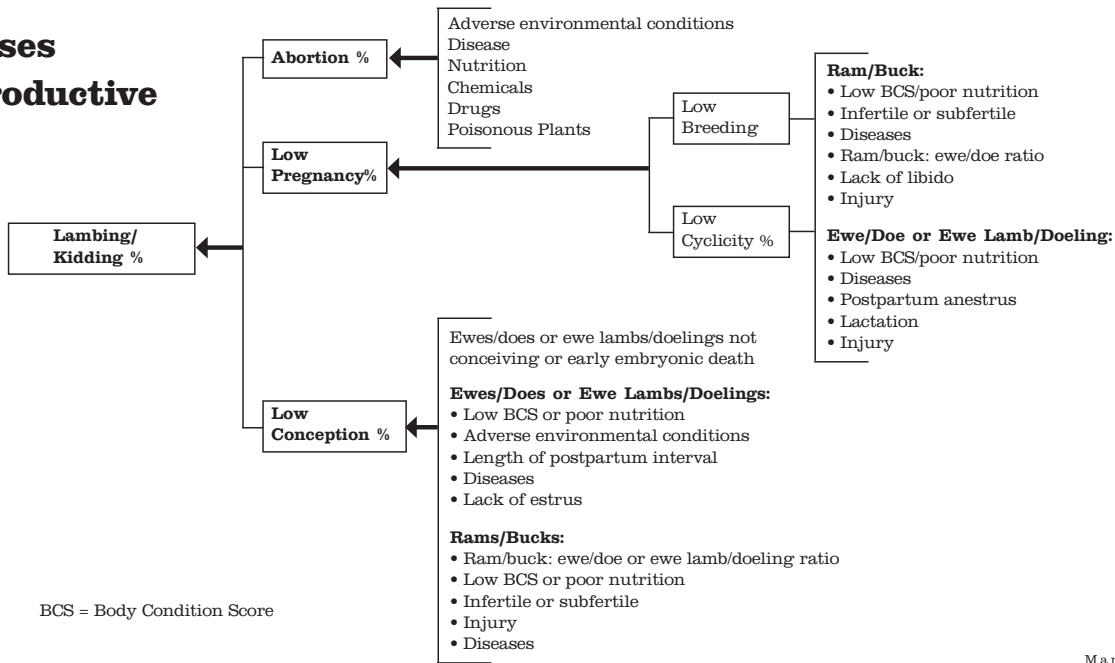
Source: *Sheep Pocket Guide* AS-989, North Dakota Extension Service, Fargo, North Dakota.

Stages of Lambing and Kidding, Related Events, and Duration

Stage	Events	Ewe lamb or doeling duration	Ewe or doe duration
Preparatory (dilation of cervix)	Lamb or kid rotates to upright position. Uterine contractions begin. Female is very restless.	6 to 12 hours	4 to 8 hours
Delivery (expulsion of fetus)	Lamb or kid enters birth canal. Water sac appears. Water sac ruptures. Front feet and head protrude first. Lamb or kid is delivered.	1 to 4 hours	Less than 1 hour
Cleaning (expulsion of placenta)	Ewe or doe straining decreases. Button attachment between uterus and placenta relaxes and separates. Placenta is expelled.	1 to 8 hours	1 to 8 hours

Source: Adapted from G.H. and D.B. Hudson. 1988. *Assisting The Beef Cow At Calving Time*. University of Nebraska—Lincoln. Agricultural Publication G81-539A.

Possible Causes of Poor Reproductive Performance



BCS = Body Condition Score

Rearing Orphan and Rejected Newborn Lambs and Kids

Sheep and goat producers will often have extra or orphaned lambs or kids at lambing or kidding time. These lambs and kids may be the result of abandonment, rejection, insufficient milk, or the death of the ewe or doe. Options to consider are grafting the lamb or kid to another ewe or doe or artificial rearing with a milk replacer.

Within 2 or 3 hours after birth, follow these guidelines:

- Be patient.
- Ensure that a newborn lamb or kid receives colostrum.
- Be sure a newborn lamb or kid receives 3 ounces of colostrum per pound of body weight during the first 18 hours of life. Give this in four equal doses—at birth, at 6 hours, at 12 hours, and at 18 hours.
- Use colostrum from a cow if milk from a ewe or doe is not available. Do not dilute with water or warm too quickly if colostrum is frozen. The best method for thawing is to let frozen colostrum reach room temperature.
- Do not use high heat. High heat destroys the antibodies, which is the reason for feeding colostrum to newborn lambs or kids. Avoid thawing colostrum in microwave ovens.
- Do not use special "home brew" recipes for colostrum. They are not effective because they do not contain antibodies.
- Just before grafting, rub fetal fluids and membranes from the ewe or doe on the lamb or kid to be grafted.
- Graft extra lambs or kids to another ewe or doe as soon as possible after birth; colostrum intake in the first 24 hours is important. A number of grafting methods are available.
- Place a piece of cloth over a ewe's or doe's own lamb or kid for 2 to 3 days. Then remove it, turn it inside out, and place it on the lamb or kid to be grafted.
- In all cases, place the ewe's or doe's head in a stanchion so she can eat and drink but not turn to smell and fight the lambs or kids.
- Put the newborn lambs or kids on milk replacer or put them on goats, if available, when attempts to graft lambs fail.

Biosecurity

- Prevent and control transmission of infectious diseases and pathogens.
- Remember that biosecurity is related to food safety.
- Reduce occurrence and treatment of infectious diseases.
- Control diseases with possible human health implications.
- Control infectious agents of concern to human health.

Implementation of Biosecurity

- Isolate all purchased animals for 2 weeks or, preferably, 30 days.
- Isolate all animals returning from shows the same amount of time as you would isolate purchased animals.
- Be aware that contact with other animals or livestock equipment can expose your animals to disease.
- Make sure livestock trailers are cleaned, sanitized, and sterilized.
- Avoid sharing grooming, feeding, and watering equipment.
- Discourage fair visitors from petting or feeding the animals.
- Practice good personal hygiene.
- Be cautious with visitors to your farm.