

Sheep Nutrition Fact Sheet

Developed by the Saskatchewan Sheep Development Board in conjunction with the Saskatchewan Ministry of Agriculture.

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Saskatchewan

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Ministry of
Agriculture**



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Sheep Nutrition

Fact Sheet

Feed vs. Nutrients

A balanced feed ration is essential for normal health, growth and reproduction. Nutrients in the feed are utilized by the sheep to meet their nutritional requirements. It is not the feed itself that meets these needs, but the components that make up the feed.

Definitions

Protein %

Used for muscle and bone development, body maintenance and reproductive processes. Results are expressed as a percentage of the diet.

Total Digestible Nutrients (TDN) %

An estimate of the energy content in the diet which can be used by the animal. TDN values are expressed as a percentage of the diet.

Calcium %

Important in bone strength and development, reproduction, milk production and body maintenance. Calcium levels are expressed as a percentage of the diet.

Phosphorus %

Required in association with calcium for proper bone development, energy processes and reproduction. Expressed as a percentage of the diet.

Water

Water is the single most important nutrient required by livestock. Sheep require a daily amount of 1 gallon per 100 lbs of bodyweight. One square foot of surface water area must be provided for every 40 head of sheep.

Water can contain dissolved minerals, pollutants, micro-organisms, suspended solids as well as organic and inorganic compounds. Water sources should be tested to determine the quality, as poor water quality will have negative affects on production.

Maximum Safe Level (mg/1 or ppm)

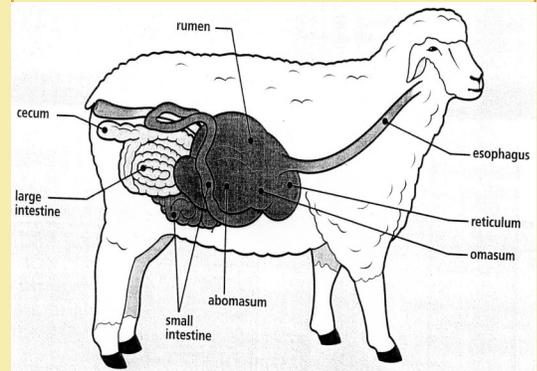
Total Dissolved Solids (TDS) 5000 - can cause diarrhea and digestive upset

Sulfates (SO₄) <900 - reduces copper availability; associated with thiamine deficiency

Nitrates <100 - additive with nitrates in feed; decreases Vit A and E, Iodine and Phosphorus availability

Digestion in Sheep

Like cattle, sheep are ruminants. A ruminant animal has a compartmental stomach which contains the rumen, reticulum, omasum and abomasum. The rumen allows the animal to consume plant material and retain it long enough to allow bacteria, protozoa and fungi to break down and digest the material. The plant material is consumed quickly, regurgitated and re-chewed and then swallowed. This process is called cud-chewing. A healthy mature sheep will chew their cud for several hours each day.



Body Condition Scoring

Body weight and condition scoring can help producers make important feed management decisions throughout the production cycle. Condition scoring is a technique by which the producer can measure the amount of muscle and fat a sheep is carrying at a certain time. This information can be used to categorize breeding animals relative to body fat and allows decisions to be made for maximum profitability.

Body condition scoring should be done at least three times per year. Six weeks prior to breeding, mid pregnancy and in late pregnancy. To condition score the ewe should be felt over and around the backbone, in the loin region, behind the last rib and above the kidneys. This should be done with thumb and fingers. Ewes are scored on a scale of 0 - 5. A score of 0 is a ewe that is completely emaciated, whereas a score of 5 is a ewe that is extremely fat. Ideally, a score of 2.5 should be achieved when on a maintenance ration and increasing to a 3.5 prior to breeding. It is important to maintain a body condition score of 3.5 for the first 30 days following breeding to optimize conception rates.

There are four important nutritional periods for the ewe:

- Flushing and breeding
- Last four weeks of gestation
- Lactation
- Dry period

Ewes should be condition scored prior to flushing to determine the effectiveness of flushing. Ewes with a condition score of 4-5 cannot be economically flushed, whereas ewes with a condition score 3-4 respond to flushing.

Score 1

- Backbone feels very sharp, skeletal features are prominent with no fat cover
- Muscle is evident, but very shallow

Score 2

- Spinal processes have a smooth and rounded feel due to depth of muscle tissue
- Absence of fat cover
- Animal appears thin but skeletal features are smooth and do not protrude

Score 3

- Loin muscle is full with moderate fat cover
- Spinal processes can be felt with pressure
- Fat can be felt in shoulder, tail head and fore rib areas
- Still recommended to flush prior to breeding

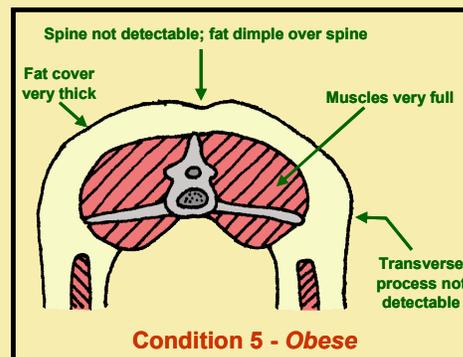
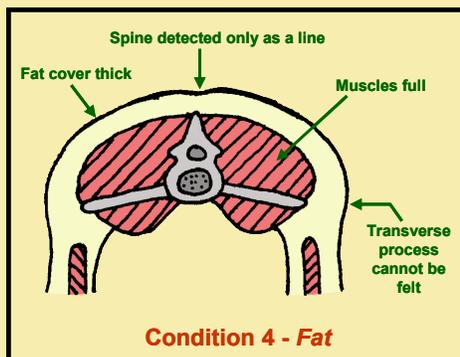
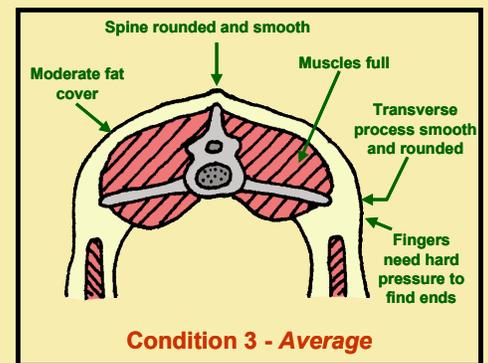
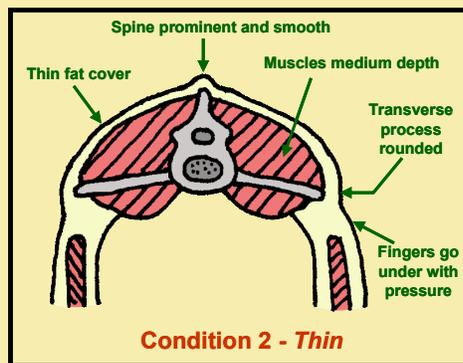
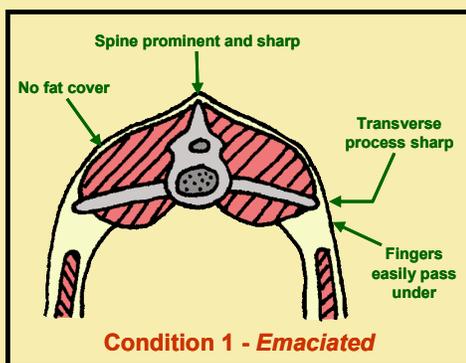
Score 4

- Spinal processes are covered with a moderate layer of fat and muscle
- Overall appearance of the sheep is smooth, hipbone is not visible
- Firm fat deposits are evident in the tail head and brisket
- This may be acceptable for the show ring but is considered too fat for breeding

Score 5

- The sheep are over fat
- They appear uncomfortable and reluctant to move
- Vertical process appears indented due to fat build up

** It is important to BCS some of the same ewes to get a realistic comparison each time.



Requirements through the Production Cycle

Nutrient requirements vary during the production cycle as there are different demands put on the body. Ewes, rams, lambs and replacement ewe-lambs all have varying nutritional needs. It is important to know the production phases and what is required for each stage nutritionally.

Production phases:

- Ewes - Maintenance, Early and Late gestation, Lactation and Breeding
- Replacement Ewe-Lambs - Growth, Pre-breeding, and Post breeding
- Lambs - Pre-weaning, Post weaning, and Finishing
- Rams - Maintenance, Pre-breeding, Breeding

Maintenance

- Production phase with lowest nutrient requirements.
- Can use lowest quality feeds including pasture or poor quality crop residue.
- Still require salt and minerals.

Pre-Breeding/Flushing Ewes

- Increasing dietary energy prior to breeding.
- Usually done by increasing the level of grain in the ration 30 days prior to ram turnout.
- Continue about 3 weeks after ram turnout.
- Minerals are important.

Late Gestation

- The last 40-45 days before lambing.
- There is major fetal development during this time and energy requirements increase substantially.
- A higher energy diet is required.
- Overfeeding at this time can cause dystocia.

Lactation

- This phase requires a very high level of energy.
- Milk production peaks at 2-3 weeks after lambing and declines to a low by 8-10 weeks.
- Mineral supplementation is important.

Suggested Nutrient Level in Diet (%) (Based on 100% dry matter)

	Maint.	Breeding	Late Preg.	Lactation
Protein	9.0	9.4	10-12	13-14
Energy TDN	55	59	60-65	65
Calcium	0.20	0.32	0.40	0.40
Phosphorus	0.20	0.18	0.24	0.29

Suggested Dry Matter Intake (% of body weight)

Ewe Maintenance	1.75 - 2.20
Flushing	2.20 - 2.80
1st 15 Weeks of Gestation	1.80 - 2.30
Last 4 Weeks of Gestation 130-150% lamb crop	2.20 - 2.60
Last 4 Weeks of Gestation 180-220% lamb crop	2.40 - 3.00
Lactation	3.80 - 4.20

Analysis of Feed Used - Forages

Feed	Protein	TDN %	Calcium	Phosphorus
Alfalfa	16%	55	1.5%	.19%
Grass Hay	9.2%	50	.50%	.16%
Oat Green feed	8.0%	55	.32%	.20%
Barley Straw	4.2%	45	.40%	.09%
Lentil Straw	6.4%	46	.65%	.20%
Flax Straw	2.9%	39.5	.30%	.20%
Barley Silage	12%	59	.46%	.30%
Vetch Hay	18%	58	1.25%	.34%

Dry Matter Basis

Analysis of Feed Used

- Grains, Byproducts and Supplements

Feed	Protein	TDN %	Calcium	Phosphorus
Barley	11.2%	83	.06%	.36%
Oats	11.6%	77	.06%	.33%
Peas	29%	87	.11%	.44%
Canola Meal	30%	76	.72%	1.28%
Lentil Screenings	21%	77	.11%	.44%
Screening Pellets	13 - 16	72 - 78	.14%	.32%
Limestone			38%	

Dry Matter Basis

Feeding Ewes

Nutrient Requirements 150 lb ewe

	Protein lbs	TDN lbs	Calcium grams	Phosphorus grams
Maintenance	0.25	1.45	2.6	2.4
Flush/Breed	0.36	2.32	5.7	3.2
Late Gest.	0.51	2.47	7.5	4.4
Early Lac.	1.00	3.77	11.0	8.1
Late Lac.	0.63	2.61	6.8	5.3
110 lb Replacement	0.35	2.5	4.8	2.4

Replacement ewe lambs must be fed appropriately and should be fed separately from the feedlot lambs. Feeding replacement ewes a finishing ration will cause them to be too fat for breeding.

A suggested feeding method would be to move the ewe lambs from the feedlot to an area where their feeding can be controlled with a measured ration. Allow for a controlled finish and maturity.

Feeding Rams

Nutrient Requirements 275 lb ram

	Protein lbs	TDN lbs	Calcium grams	Phosphorus grams
Maintenance	0.31	2.44	3.8	3.7
Pre-Breeding	0.36	2.68	4.2	4.1
Replacement (90 lbs)	0.54	2.5	7.8	3.7

Ram lambs can be fed similar to feeder lambs but should not be allowed to over fatten. It is very important to ensure that ram lambs receive enough energy in their ration especially if being utilized as breeding rams prior to reaching full maturity. If their energy requirements are not met it is possible to stunt their growth permanently.

Feeding Lambs

Creep rations fed to lambs assist in rumen development and allows for a quicker adaptation to dry rations. Lambs can be started on a creep ration as early as 7 to 10 days. Provide a few

handfuls of this ration in a feeding area available only to the lambs. Keep the feed fresh. A suggested creep and pre-grower ration is 18% protein and 90% Dry Matter basis.

Things to Keep in Mind

Energy

Energy is the most limiting nutrient, and therefore the most important nutrient in sheep rations. Energy is derived from carbohydrates, fats, oils and protein in the ration and is generally measured as Total Digestible Nutrients (TDN) or as Digestible Energy (DE). It is the energy that provides fuel to enable the body to maintain normal functions.

Insufficient energy intake can lead to malnutrition and result in:

- Weight loss
- Reproductive failure
- Decreased milk production
- Lower resistance to parasites and disease
- Increased mortality

Energy requirements vary depending on the environment as well as the stage of production. Factors that influence energy requirements are:

- Age of the ewe/ram
- Body condition
- Environment
- Disease and parasites
- Stage of production (gestation/lactation)

Protein

Protein greatly affects production and reproduction. Inadequate levels of protein can result in appetite reduction, thereby decreasing feed intake which causes poor growth, poor muscular development and reduced reproductive efficiency. Extremely low levels of protein cannot maintain rumen microbes.

Protein is degraded by the rumenal reticular micro-organisms and synthesized into high quality microbial protein. For this reason, the quantity of the protein is more important than the quality fed in the ration.

Protein requirements vary with the stage of production. During late gestation and lactation

Calcium & Phosphorus

Calcium and phosphorus are interrelated in the development and maintenance of the skeleton. Forages and legumes are a good source of Ca, where as grains are a good source of P. Too much of either Ca or Phos can reduce the availability of the other. A ratio of Ca:Phos should be in the range of 1:1 to 5:1.

See the SSDB Sheep Minerals Fact Sheet for more information.

Importance of Feed Testing

It is very important to have your feed tested as nutrient levels vary depending on the quality of the feed.

When planning your feed rations it is best to consult with your nutritionist using your feed test results. This will ensure that you are adequately meeting the nutrient requirements of your livestock during each stage of production.

Sample Creep Ration

Alternative	#1		#2	
	%	lbs/100 lbs	%	lbs/100 lbs
Alfalfa Meal	-	-	5	5
Wheat (coarsely chopped)	40	40	-	-
Barley	38.5	38.5	73.5	73.5
Soybean Meal	18	18	20	20
2:1 Mineral	1	1	1	1
Salt	0.5	0.5	0.5	0.5

Long stemmed, good quality hay should also be available to these lambs continuously to assist with proper rumen development.

Sample Grower Ration (50-70 lb size)

	%	lbs/100 lbs
Wheat	25	
Barley	56.5	81.5
32% Protein Supplement	17.0	17.0
2:1 Mineral	1.0	1.0
Salt	0.5	0.5

The grower ration can be fed up to 2.5 to 3.0 lbs per day. A good quality, long stemmed hay should be available at all times to allow for adequate fibre intake to help prevent digestive upset.

Sample Finisher Ration (70 lbs - finish)

	%	lbs/100 lbs
Barley	88.5	88.5
32 % Supplement	10.0	10.0
2:1 Mineral	1.0	1.0
Salt	0.5	0.5

The above ration can be fed at a level of up to 3 pounds per day or more. Long stemmed hay should be available at all times to help maintain proper rumen function and reduce digestive upset.

Note: The 2:1 mineral utilized in these rations should not contain more than 0.50% copper to prevent copper toxicities. A vitamin premix should also be supplemented in the finishing ration. These sample rations were taken from the Sheep Feeding Guidelines document put together by the Saskatchewan Feed Testing Laboratory.

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This fact sheet has been prepared in conjunction with the Saskatchewan Ministry of Agriculture.

Disclaimer: The information in this fact sheet are based on general averages and differences may occur among breeds and individual animals. The SSDB makes no warranties expressed or implied about the information . It is the users responsibility to evaluate the accuracy and completeness of any content.

