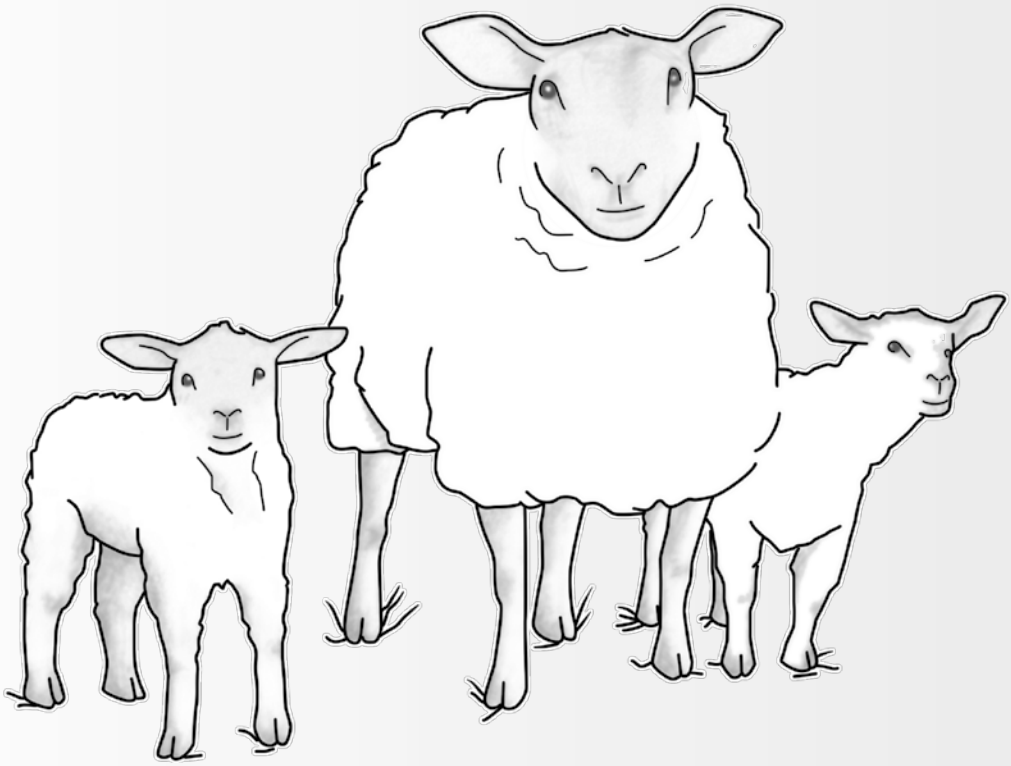
4-H Sheep Manual



BRITISH COLUMBIA | Ministry of Agriculture

CANADA B.C. 4-H

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Introduction

The 4-H sheep project is organized to provide experience for young people in the selection, feeding, husbandry, and exhibiting of lambs and sheep. Handling a live animal, watching it grow for several months and exhibiting the animal has value far beyond the monetary gain which is possible from the project. This fact should be kept in mind by the 4-H Club member at all times.

The 4-H sheep project has many unit options for members with varying abilities and amounts of experience. 4-H sheep projects range in length from 4-12 months depending on the objectives of the unit. Review the BC 4-H Sheep Project Regulations (publication # 1405) and discuss unit options with the 4-H Club Leader when selecting units at enrolment time.

New or inexperienced members are encouraged to begin the 4-H Sheep project with one of the following units:

- Fed Lamb
- Ewe Lamb
- Wool Type Ewe Lamb

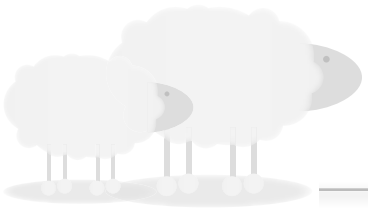
As members develop they are encouraged to challenge themselves by expanding trying one of the more advanced units such as:

- Yearling Ewe
- Ewe with Lamb(s)
- Wool Type Yearling Ewe
- Wool Type Ewe with Lamb(s)
- Market Lamb
- Sheep Flock

Senior 4-H members with extensive sheep experience are encouraged to try a Senior Management project.

Record Keeping

Record keeping is a very important part of 4-H project work. Records should be kept accurately, neatly, and continuously. The completed 4-H record book should tell the complete story of the 4-H project from the time it was born or purchased until the end of the project. A completed record book is necessary for 4-H Achievement.

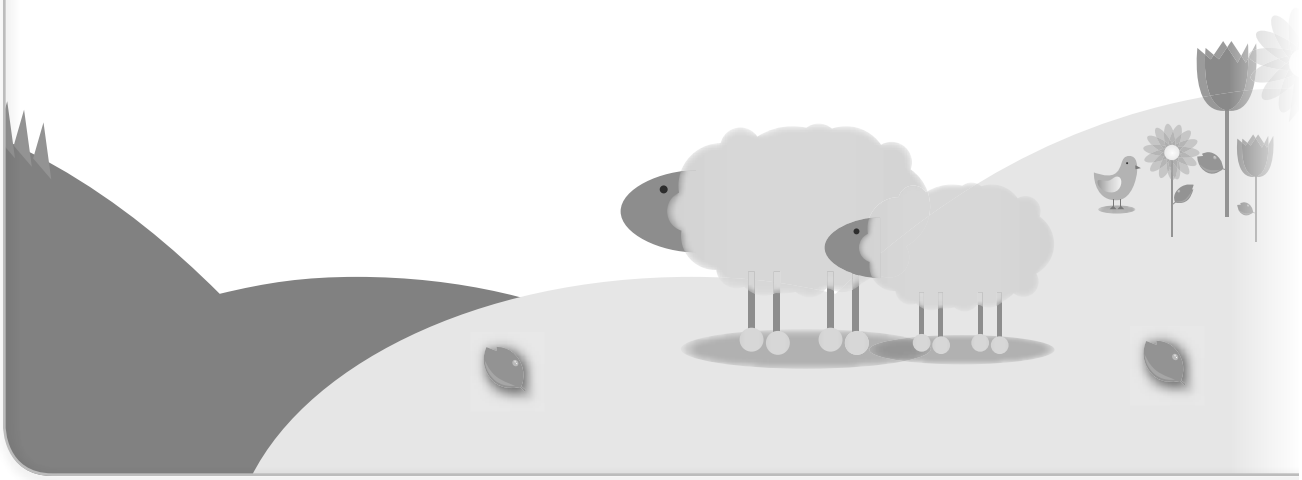


Livestock Care

4-H members are responsible for providing the highest quality of care for their 4-H livestock project(s). This can be achieved by ensuring that the "Five Freedoms" of farm animal care are being provided.

Five Freedoms

1. **Freedom from Hunger and Thirst** – provide access to fresh water and adequate feed.
2. **Freedom from Discomfort** – providing appropriate shelter from the elements and a comfortable resting area.
3. **Freedom from Pain, Injury or Disease** – take steps to prevent accidents and disease, monitor health, and provide rapid treatment when disease or injury is detected.
4. **Freedom to Express Normal Behaviour** – provide sufficient space and company of the animal's own kind.
5. **Freedom from Fear and Distress** – ensure conditions and treatment which do not alarm the animal.



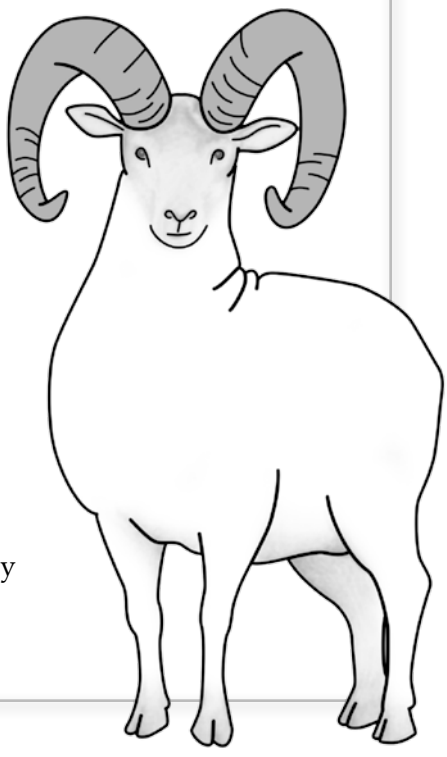
History and Project Selection

History

It is believed that sheep originated in the mountains of central Asia and were tamed and raised in that area 10,000 years ago. The ancestors of your 4-H lambs were wild sheep that looked much like goats. They had coarse hair instead of wool and were much bigger than most domestic sheep today. Sheep belong to the family of hollow horned ruminants. Ruminants have four stomachs; sheep are able to digest feed that is much coarser than anything humans can eat. Cattle, goats and deer are also ruminants. Domestic sheep were gradually changed from their wild ancestors. Sheep were first raised to produce hides and milk but not meat or wool. They were sometimes used as pack animals. After many generations the coarse hair was replaced by soft wool. Sheep then furnished wool for man to weave clothing. Wool was processed into fabric for use in making clothing as early as 4000 B.C. Sheep have become important as meat animals only during the past two hundred years. Today, domestic sheep are raised everywhere. There are more than three hundred breeds scattered throughout the world. In some countries such as Australia and New Zealand there are many more sheep than there are people!

British Columbia Sheep Industry

There are approximately 1800 sheep farms in BC with a total of about 83,000 sheep. The sheep and lamb industry in BC is estimated to be worth 7-8 million dollars. There are two main goals in the sheep industry; either to produce a high quality carcass, or to produce a high quality wool or hair. To a lesser extent sheep may be raised to produce milk for specialty dairy products. In British Columbia, the sheep industry is primarily concentrated on producing a high quality carcass. Even so, BC is not able to fill its own lamb requirements. Lamb produced in BC accounts for only 15-20% of the lamb consumed here, the other 80-85% is imported primarily from New Zealand and Australia. BC produces approximately 85 tonnes of wool annually and a minor amount of sheep milk.



Breeds

There are more than 300 breeds of sheep worldwide. A common way to classify sheep breeds is by their most common use: meat, wool, or milk. Most sheep breeds in British Columbia and Canada are primarily raised for meat. Some breeds are dual purpose, producing both a high quality fleece and a high quality carcass.

The ***meat breeds*** are noted for their deep, wide and symmetrical carcasses. Among these breeds are the Suffolk, Hampshire, Southdown, and Dorset. When crossed among themselves or to ewes of the wool breeds, the meat breeds will produce vigorous, fast-growing lambs. The hair type breeds are also primarily raised for meat but some of these, such as the St. Croix, may be finer boned than those breeds traditionally classified as meat breeds.

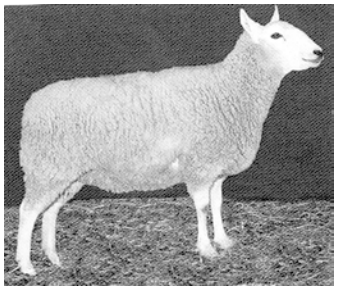
The ***wool breeds*** are broken down further by wool type:

- The *fine wool breeds*, which include Rambouillet and Merino, are noted for their dense, wavy, heavy fleece. The ewes are good mothers and have an estrous period that tends to be longer than that of most meat breeds. The fine wool breeds produce good quality lambs when bred to rams of the meat breeds.
- The *medium wool breeds* which include North Country Cheviot, Border Cheviot, and Corriedale, have a fleece lighter than that of the fine wool breeds. The wool is also shorter and coarser. Ewes of these breeds are heavier than those of the fine wool types and when crossed with rams of the meat breeds, produce fast growing, good-quality lambs.
- The *long wool breeds* are larger than the medium wool types, are adapted to cool, moist climates and produce a heavy fleece of long, coarse wool. These breeds include Leicester, Lincoln, Cotswold and Romney.

The ***milk breeds*** are not common as sheep milk is a minor commodity. The East Friesen is one of the highest producing milk breeds. The milking sheep tend to be prolific but do not produce a strong meat carcass.

Common Sheep Breeds in British Columbia

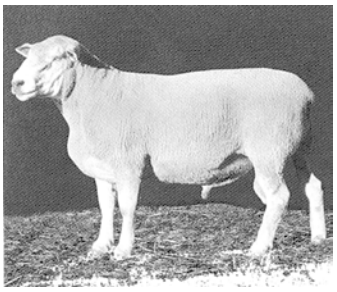
Border Cheviot



The Border Cheviot is native to the hills between Scotland and England. They have been raised in Canada since the 1850s. Border Cheviots are extremely hardy and are good foragers that can survive in harsher conditions than many other sheep. The Border Cheviot has short blocky body and a bare white face and legs. It is easily recognizable because of its black nostrils and lips and its sharp erect ears. The Border Cheviot is quick and may be high strung but they are good very good mothers who need little help at lambing and have very strong lambs.

Adult Size: Rams: 150 – 190 lb. Ewes: 120 – 150 lb.
Fleece: Long, strong and lustrous.

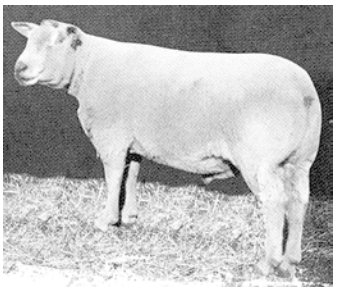
Canadian Arcott



The Canadian Arcott was developed by the Canadian Government in the 1970's. They are large, well muscled sheep with better than average wool quality. The face and legs are variable in color, but are generally white or tan. There is usually a small amount of wool on top of the forehead, the ears are large and held horizontally. Growth rate and carcass quality are very good, with excellent muscling and finish. Hardiness is a key trait; adult sheep are able to maintain body condition even when foraging on low quality pasture.

Adult Size: Rams 175 – 220 lb. Ewes 165 – 210 lb.
Fleece: Soft, lustrous.

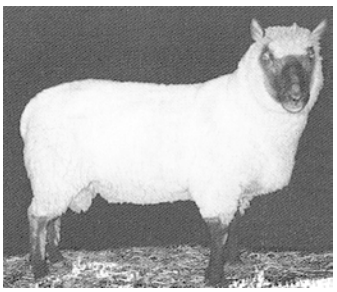
Charollais



Charollais originated in France in the early 1800's from a cross of Leicester Longwool and local landrace breeds. The breed is often used in crosses to increase the muscling and growth rate of the lambs. The Charollais is long, well muscled and has a strong hindquarter. Its face and legs are bare; in some areas the hair on the face is so sparse the skin may be visible. Charollais have excellent maternal qualities, early maturity, good fertility, high prolificacy and are excellent milkers.

Adult Size: Rams 220-330 lb. Ewes 175-220 lb.
Fleece: Fine, dense.

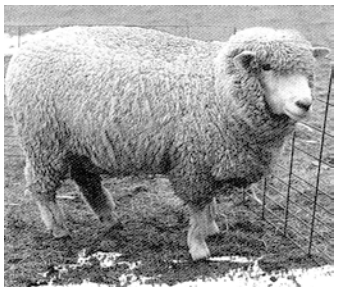
Clun Forest



The Clun Forest became popular following an agricultural depression in Britain in the 1870s because of its ability to thrive in a challenging environment. They are highly adaptable to all climates and are recognized as good foragers. The Clun Forest was first imported to North America in 1959. It is a medium sized sheep with a dark brown face and legs. The face is long and bare except for a patch of fleece that extends onto the forehead. The Clun Forest is characterized by easy lambing, multiple births, rich milk and lamb vitality.

Adult Size: Rams 165 – 230 lb. Ewes 140 – 175 lb.
Fleece: Fine, dense.

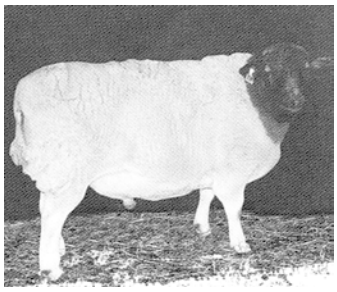
Corriedale



The Corriedale was developed in New Zealand during the mid-19th century by cross-breeding Merinos with British longwool breeds, especially Lincoln. The Corriedale was imported to North America from New Zealand in 1914. For many years it was a popular dual purpose breed, used for producing both meat and wool. The Corriedale is a medium-sized sheep with a bare muzzle below the eyes. The lambs may be slower-growing than some other breeds but finish well as light or heavy lambs.

Adult Size: Rams 175 – 275 lb. Ewes 130 – 175 lb.
Fleece: Medium-long, fine, soft.

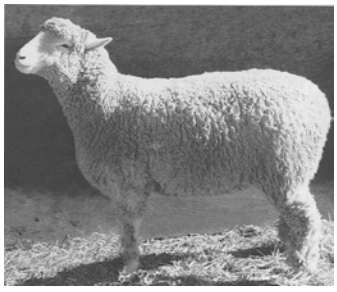
Dorper



Dorpers were developed 60 years ago in South Africa as a meat breed by crossing the Dorset Horn and Persian Blackhead (a fat tailed South African sheep). They are not a true hair type breed as they have a mix of hair and wool, but they will shed their coat in warm weather. They normally have a black head and upper neck with white body, but some may be all white. Dorpers have a high lambing rate, the ability to breed all year, outstanding mothering ability, hardiness and many other qualities that make them easy to raise.

Adult Size: Rams 200 – 220 lb. Ewes 150 – 220 lb.
Fleece: Hair/wool mix.

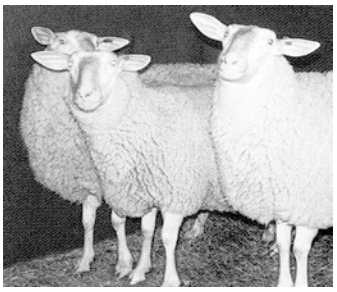
Dorset



One of Canada's most popular breeds, the Polled Dorset descended from the Horned Dorset, which has been one of the most widely kept breeds in Southern England and Wales since the 16th century. The Polled Dorset was developed in North Carolina and first registered in 1956. Since that time they have spread into Canada and become a major contributor to the light lamb market. The ewes are prolific, good milkers, breed out of season and adapt well to confined, accelerated cross-breeding programs.

Adult Size: Rams 200 – 275 lb. Ewes 120 – 200 lb.
Fleece: Bright white, dense.

East Friesen Milk Sheep



The East Friesian sheep is of German origins and is raised primarily for milk. The East Friesian is considered to be the world's highest producing dairy sheep. They are highly specialized animals and do poorly under extensive and large flock husbandry conditions. The East Friesen is polled in both sexes with white wool and bare white faces, ears, and legs. Their most distinctive physical feature is a thin, wool-free tail.

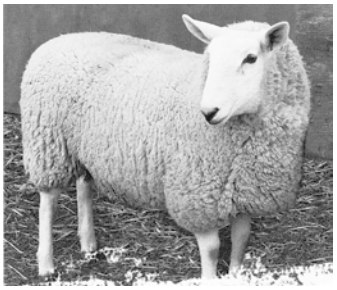
Adult Size: 150 – 200 lb.
Fleece: Heavy, white.

Hampshire

The Hampshire originated in England during the 18th century when Southdown rams were crossed with the local horn sheep. Fixed as a breed in 1889, it was exported to Canada at the turn of the century and since then has remained, with the Suffolk and the Dorset, one of the most consistently popular breeds in Canada. Hampshires have dark legs and face with some fleece extending onto the forehead and cheeks. Hampshires are large fast-growing sheep with excellent meat characteristics and high-yielding carcass. They are usually docile and easy to manage.

Adult Size: Rams 250 – 330 lb. Ewes 175 – 250 lb.
Fleece: Medium, coarse, semi-bright.

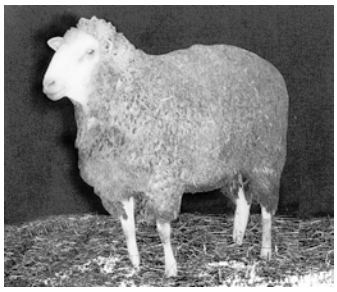
North Country Cheviot



The North Country Cheviot is similar to the Border Cheviot and has the same origins. Although it shares the blocky body shape and bare white face and legs, the North Country is larger than the Border and has a more pronounced Roman nose. The North Country Cheviot is noted for its hardiness and strong mothering ability. It is often used in crossbreeding for lamb production.

Adult Size: Rams 220–275 lb. Ewes 130 – 175 lb.
Fleece: Lightweight, medium.

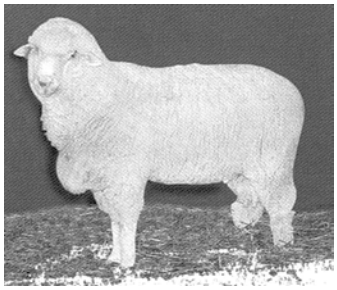
Polypay



The Polypay was developed at the Experimental Station in Dubois, Idaho beginning in the late 1960s. It is a prolific sheep that can lamb out of season and produces a fast growing lamb with a high-yielding carcass. The breed was fixed in 1975 and has since spread to farms across the U.S., Canada and Mexico. Polypays are docile, easily managed and able to thrive in pasture, rotational grazing and confinement systems.

Adult Size: Rams 200 – 275 lb. Ewes 120 – 200 lb.
Fleece: Fine, pronounced crimp.

Rambouillet



The Rambouillet was developed in France in the 1700's by crossing Spanish Merinos with the native French sheep. They were imported to North America in 1840. Rambouillets are a dual purpose sheep with good wool and carcass production. They have a bare white face and white feet and may have some wrinkling across the brisket. They are recognized for their adaptability and remarkable herding instincts..

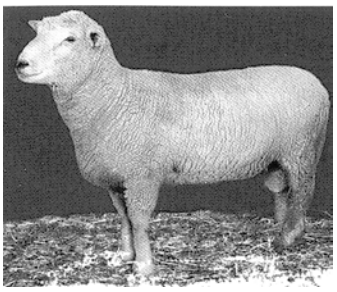
Adult Size: Rams 250-300 lb. Ewes 150-200 lb.
Fleece: Long, dense, fine wool.

Romney

The Romney is a British longwool sheep that originated in a marshy area Southeast England during the 13th century. Because of its resistance to footrot and internal parasites, the Romney has become popular in the wet coastal regions of British Columbia. The lambs are large and lean and convert feed well. They are docile and easily managed. Romney wool can be white or coloured and is often in demand with hand spinners.

Adult Size: Rams: 200 – 220 lb. Ewes: 140 – 175 lb.
Fleece: Long, lustrous, fine.

Southdown



The Southdown was developed in Sussex, England during the late 1700s and early 1800s and exported to the U.S. shortly after. It is a medium-sized sheep that excels in producing meaty carcasses. The Southdown has a short broad face that is partially covered with wool. Its muzzle and legs are a pale brown colour. The Southdown is very docile, adapts well to confinement operations and can easily be finished on pasture. Because of its size and gentle nature, the Southdown make an excellent starter flock or 4-H project for children.

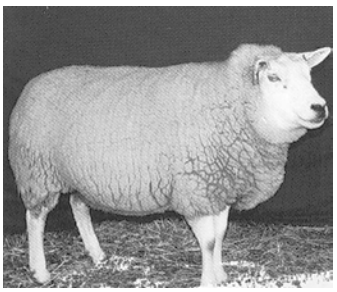
Adult Size: Rams: 190 – 230 lb. Ewes 130 – 175 lb.
Fleece: Dense, fine.

Suffolk

The Suffolk breed was developed in England by crossing Norfolk Horn ewes with Southdown rams. In 1888 it was introduced into Canada, where there are now more Suffolk's than any other breed. The Suffolk has a deep broad body with well-developed hindquarters. Head and legs are black. The fleece often contains black fibers that reduce its value. As a purebred or crossed with white-faced ewes, the Suffolk will produce heavy, fast growing lambs. The ewes are considered to be good milkers.

Adult Size: Rams 250 – 330 lb. Ewes 220 – 250 lb.
Fleece: Dense, fine.

Texel



The Texel originated in the Netherlands early in the nineteenth century. The first Texels in North America were imported in 1985. The Texel is a white-faced breed with no wool on the head or legs. The breed is characterized by a distinctive short, wide face with a black nose and widely placed, short ears with a nearly horizontal carriage. The Texel also can be recognized by its black hooves. The most outstanding feature of the Texel breed is its remarkable muscle development and leaness. It is a hardy sheep with a rapid growth rate.

Adult Size: Rams 240 – 310 lb. Ewes 150 – 200 lb.
Fleece: medium, fine.

Project Selection

When selecting your 4-H project animal there are some characteristics that will be desirable in all breeds.

- All animals should show overall balance from the perspective of length, height, body capacity and body conformation. Overall balance is very important since the basic purpose of the sheep is meat and wool production.
- Body conformation should exhibit adequate muscle development and wool production characteristics while maintaining ease of lambing.
- Teeth should meet upper pad evenly. Undershot or overshot mouths are a serious defect.
- Ewes should have two teats.
- Legs should be strong and sturdy, especially in breeding stock.

Although there are many similarities between all breeds there are also some differences to consider when selecting a 4-H project animal. The following score card can be used as a guide in judging or evaluating potential project animals.

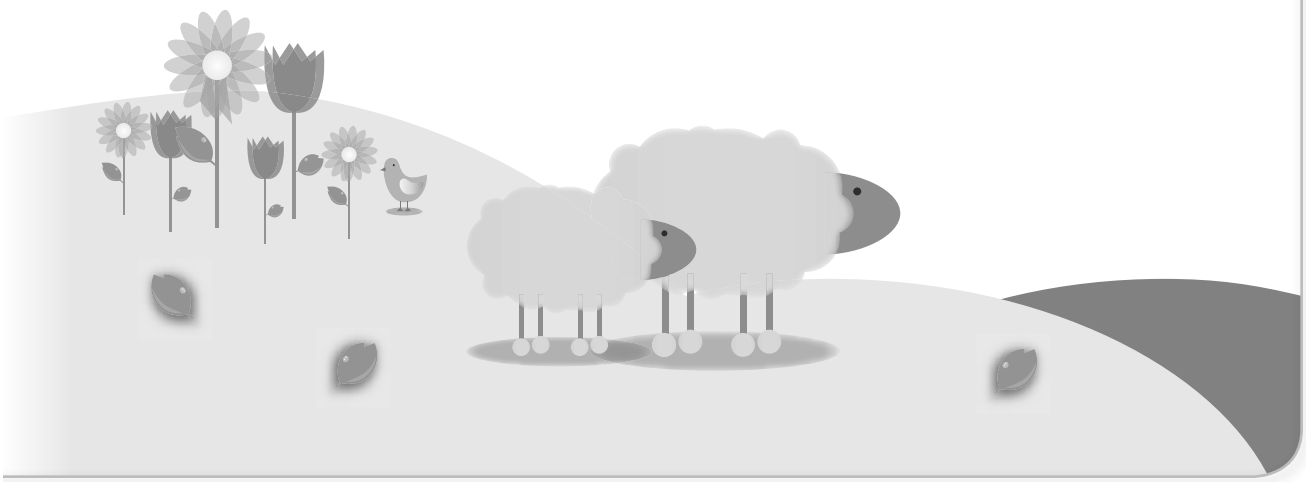
	POINTS		
	MEAT BREEDS	**WOOL BREEDS**	**HAIR BREEDS**
General Appearance	25	20	25
Physical Soundness	20	20	20
Body Conformation	40	20	40
Wool	15	40	0
Colour & Covering	0	0	15
Total	100	100	100

Source: Canadian Sheep Breeders Association

This is a guide for evaluation of physical appearance; however, in the process of selecting a project animal other factors are also important. Consider:

- The type of sheep most suitable for the unit(s) you plan to enrol in.
- The size of the sheep relative to yourself, can you safely handle it?
- The temperament of the sheep.
- The breeding qualities, in case you decide to keep it for future breeding projects.
- If you are buying a purebred sheep, consult the breed standards and determine if the sheep is registered or able to be registered.

See the Livestock Judging Guide (Publication #427) for more specific instruction on sheep conformation.



Feeding and Nutrition

Food and its Use

Animals require food for three main purposes, which are as follows:

1. To give heat and energy to the body

2. To provide essentials for building various body tissues

3. To supply materials for bone building.

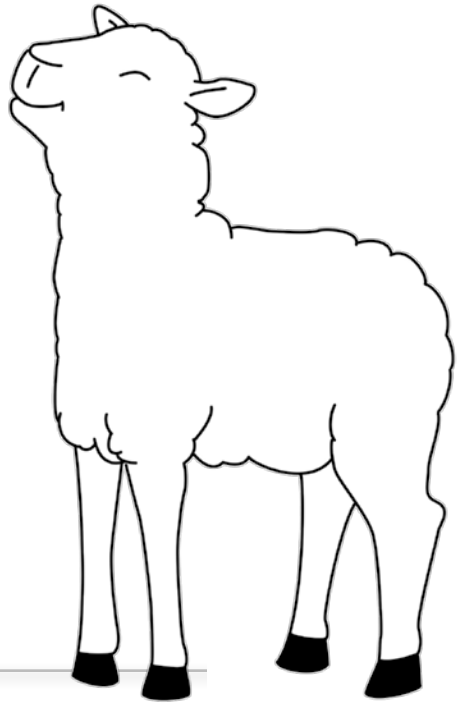
Sheep are very efficient users of roughages and these should form the bulk of the ration. However, in all the different feeds, only six different kinds of substances can be found which are of value to animals. These are called basic nutrients. The term "nutrient" is applied to any chemical compound or group of compounds of the same general chemical composition that aids in the support of animal life. The six basic nutrients are:

1. Protein

Essential for: growth; reproduction; muscles; milk production; wool production

In all animals protein is absolutely essential for life, for the formation of muscles, organs, bones and milk. If lambs do not receive enough protein their appetite will be reduced which will reduce the amount of feed they eat. As a result, they will grow much slower and will not have proper muscle development. In ewes, a lack of protein during the final six weeks of pregnancy will cause the fetus to grow poorly resulting in poor reproduction. If ewes lack protein they will not produce sufficient milk for their lambs and wool production will be reduced.

Sheep are very fond of good roughage and have a high capacity to consume it. Therefore, sheep fed legume hay of good quality will have their protein requirements met. Mature sheep can utilize non-protein nitrogen to synthesize protein. Non-protein nitrogen sources such as urea and biuret can constitute up to a third of the ration's protein content but should be fed with grain or other readily available source of carbohydrate since a high-energy source is needed. The digestibility of poor quality roughages is increased if a nitrogen source is supplied as a supplement. The non-protein nitrogen should be introduced gradually in the feed so that the rumen bacteria can adapt to it.



2. Carbohydrates

Essential for: heat; energy; fattening.

Carbohydrates are the chief source of energy in the ration. Energy is required for maintenance, growth, fattening, reproduction and milk production. Excellent quality hay will provide enough energy for the ewe during the winter months with extra energy required before and after lambing. Young lambs require additional energy for rapid growth and fattening. Excess energy is stored as fat.

3. Fats

Essential for: heat; energy; fattening.

Fats, along with carbohydrates, are sources of heat and energy with excesses stored as fat.

4. Vitamins

Essential for: good health; production; body processes.
Important Vitamins: A, D and E.

Vitamin A: from carotene in green plants

- *Essential for:* health; reproduction; lactation.

Carotene is a yellow-coloured material found in green plants and is converted to Vitamin A in the body. Carotene is found in green forages such as pasture and yellow corn. Vitamin A is stored in the liver. If sheep have been on green feed during the summer they will have a store of Vitamin A for approximately 220 days. Hay badly weathered or stored for long periods will be low in carotene. Corn silage can also be low in carotene because moisture and heat damage cause Vitamin A to be lost. Shortage of Vitamin A causes poor growth, poor muscular control and reproductive troubles.

Vitamin D: from sunlight

- *Essential for:* bone development

Vitamin D is obtained from exposure to sunlight and through the feed. Sun-cured hay is a good source of Vitamin D whereas green feeds are poor sources of Vitamin D but good sources of Vitamin A. Vitamin D is essential along with Calcium and Phosphorous for proper formation of bones.

Vitamin E: from fresh feeds

- *Essential for:* general health

White muscle disease or stiff lamb disease in young lambs has been related to Vitamin E deficiency. Vitamin E is contained in most feeds but is lost quickly; therefore old hay is a poor source of this vitamin. As white muscle disease may occur in many areas, consideration should possibly be given to a routine preventative treatment with an injection of a Selenium-Vitamin E combination to the newborn lamb.

5. Minerals

Essential for: bone and teeth formation, milk production (Calcium and Phosphorous), stimulates appetite (Salt), activity of thyroid gland (Iodine), general maintenance of health (Cobalt)

Sheep should be allowed cobalt iodized salt (blue salt) free choice to supply the requirements for cobalt, iodine and salt. Legume hay is high in calcium and low in phosphorous. Grain, generally, is low in calcium and high in phosphorous. Under normal feeding practices, calcium and phosphorous norm are supplied in adequate amounts. Additional calcium and phosphorous can be provided by free choice feeding of cattle mineral.

6. Water

Essential for: transportation of nutrients, control of body temperature, digestion

Water is important in transporting all the nutrients throughout the body in the blood stream, digestive tract, etc. For food to be useful to the animal it must go into solution, in order to pass through the intestinal wall into the blood stream. Water is used to control body temperature. Plenty of fresh water should be available to the ewe at all times at a temperature of at least 2° to 10° C.

Animals require nutrients for:

- **Maintenance** – the animal must be kept warm and must have energy for the work of eating and digesting food, for breathing, for the work of the heart, and for moving itself about. In addition, the tissues must be kept in repair, and nutrients are required for growth of hair and hide. The principle requirements for maintenance are energy and heat producing nutrients. Maintenance takes first priority on the use of the feed. If fed below maintenance needs, the ewe will use up her body reserves of fat and other nutrients, dropping off rapidly in milk production. Eventually, when these are used up, starvation or serious malnutrition sets in and her health is affected. Maintenance requirements are approximately proportional to the animal's weight. The nutrients needed for maintenance will be about the same, whether the ewe is dry or nursing offspring.
- **Growth** – growing animals require nutrients for the production of new tissues as the bones, muscles, and organs of the body increase in size. Growth requires an abundance of protein minerals, vitamins and energy.
- **Milk Production** – the nursing ewe requires nutrients for manufacturing the milk she produces. Milk is high in protein, minerals, vitamins and energy. Requirements, therefore, are very heavy for these nutrients. The ewe also requires a great deal of water for her body needs and for milk production.

- **Reproduction** – the pregnant ewe requires additional nutrients for the growth of the fetus (unborn kid), especially during the last two to three months of pregnancy. This is the period of most rapid growth of the unborn lamb.
- **Fattening** – the nutrients needed for fattening are those supplying energy. This will include carbohydrates, fats and any protein not needed for other purposes.
- **Work** – work requires energy and calls for the same nutrients as for fattening. When the sheep is forced to climb over hilly, scanty pastures, or to walk long distances to and from the pasture, she may be using much of the energy she gets from her food for this work.

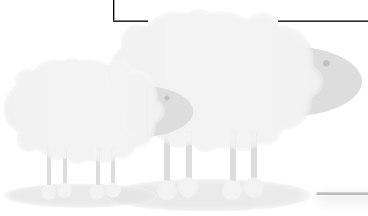
Classes of Feeds

Feeds can be classified into two main groups: Concentrates and Roughages.

Concentrate Feeds

The concentrate feeds include farm grains, mill feeds and manufactured supplements. They are feeds low in fibre and high in digestible nutrients. They are able to supply large quantities of energy for the animal to use quickly. Some of the common concentrates are: oats, barley, wheat, wheat bran, shorts or middlings, corn, molasses, dried beet pulp, linseed meal, fish meal, pea meal, cottonseed meal and soybean meal. Several manufactured feeds for sheep are on the market. They are mainly composed of concentrates to which minerals have been added.

CONCENTRATE	QUALITIES
Barley	Barley is higher in digestible nutrients than oats. It is essentially an energy or fattening feed. Ground barley is a heavy meal that should be mixed with other lighter, bulkier feeds. Crushed barley may form up to 50% of the concentrate ration.
Oats	Oats are one of the most popular livestock feeds. Oats contain nearly as much protein as barley, but less total digestible nutrients (T.D.N.) than barley or wheat because they have a fibrous hull. In sheep rations, oats are very palatable and they are bulky.
Wheat	Wheat is high in T.D.N. and often contains more protein than barley. Ground wheat is an entirely satisfactory feed for sheep. Even for long periods it is satisfactory if fed in a suitable concentrate mixture and in properly balanced ration. When ground, wheat tends to make a heavy pasty meal. The best results are obtained when wheat does not form more than 1/3 to 1/2 of the concentrate mixture.
Rye	Rye is a fattening feed also, but has one serious fault. It is unpalatable to most animals and they will not eat it readily. One-third rye is the maximum that should be fed to sheep.



CONCENTRATE	QUALITIES
Wheat Bran	The bran is removed from wheat in the milling of flour. Widely used as a feed for sheep, bran is fairly high in protein, high in minerals and has a mild laxative effect. It is a favourable feed for sheep. It is palatable and because of its bulky nature, is very useful for mixing with heavier grains to lighten the ration.
Wheat Shorts and Middling	These are by-products in the milling of wheat. They are slightly higher than bran in feed value but they are not generally recommended for sheep.
Dried Beet Pulp	Beet pulp is the residue left after the syrup is extracted from sugar beets. It is a bulky feed, low in protein, and has a laxative effect on the animal. Many consider it more a high-class roughage than as a concentrate.
Dried Brewer's Grains	A by-product resulting from the manufacturing of malt liquors from barley. They are rich in protein, high in fibre content and contain comparatively little carbohydrates. This feed is palatable and because of its bulk, may be used to lighten up a heavy meal mixture. In feeding value, dried brewers' grains are similar to bran.
Molasses	There are two kinds of molasses; one is a by-product of the beet sugar industry and the other is a by-product of cane sugar manufacture. They contain about the same T.D.N. as medium quality oats. Both types are very low in protein and phosphorus. Molasses is one of the most palatable feeds for sheep. The best way to feed molasses is thinned with hot water and sprinkled over dry roughages.
Linseed Oilmeal	This is the residue left over after the oil is extracted from flaxseed. It is rich in protein and is widely used to boost the protein content of a ration. Linseed oilmeal is very palatable and has a laxative effect on the animal. It is suitable for sheep of all ages.
Soybean Oilmeal	A by-product after the oil has been removed from soybeans. This feed is high in protein and mineral material, and is very palatable. This product is the most popular plant protein supplement used by feed manufacturers.

CONCENTRATE	QUALITIES
Rapeseed Meal	Rapeseed meal gives performance equal to other vegetable oilmeals. It is lower than soybean oilmeal in protein content. Avoid sudden introductions of rapeseed meal because the difference in taste may cause reduction of feed intake. It is often available at a lower cost if produced locally.
Milk and Milk Products	Milk contains protein, minerals, fats and vitamins necessary for good growth. Skim milk and milk by-products are excellent protein supplements for young lambs.
Fish Meal	A high-protein product, it contains 60–75% protein, depending on the type of fish used and the method of manufacture. It also contains over 10% mineral material. The oil content should be low in order to avoid rancidity. Fishmeal is widely used by feed manufacturers as a protein source of rations.

Roughage Feeds

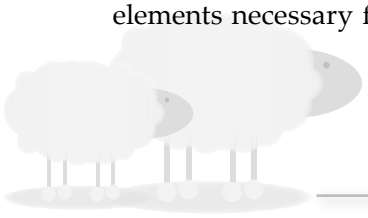
High quality roughages reduce the expensive concentrates required by supplying a great portion of the nutrients. They also supply most of the vitamins and minerals required. Green, leafy, early cut legume or mixed hay and green well-cured silage make good winter feeding for the dairy herd simple and economical. Poor roughages, such as straw or stemmy overripe grass hay, make better bedding than feed. So much energy is used up in eating and digesting this lowgrade roughage that very little is left for useful nourishment of the animal.

Dry Roughage Feeds

The dry roughage feeds include such feeds as hay and straw. These are feeds that are high in fibre but low in digestible nutrients. The stomachs of sheep are designed for the utilization of such feeds. They are part of all livestock diets but it has been proven that animals can be raised in good condition on concentrate feeds without the use of roughages. Dry roughages used in western Canada for sheep feeding include alfalfa and clover hays (rich in protein), mixed hay, timothy hay, meadow hay, and grain hay. These hays differ considerably in the content of protein, carbohydrates, mineral and fibre. In general, hay containing a high proportion of legumes is most suitable for sheep feeding. Early cut or immature grasses and legumes may contain as much as twice the nutrient percentage as late cut, mature plants.

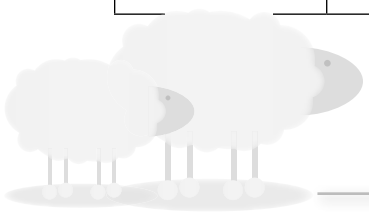
Succulent Feeds

By succulent feeds we mean any feeds that are fed in the green or preserved stage; silage and green grass are examples. Green feed, both legume and grass, is the most economical feed for livestock. It is highly nutritious and palatable feed that supplies a great many of the food elements necessary for health and growth.

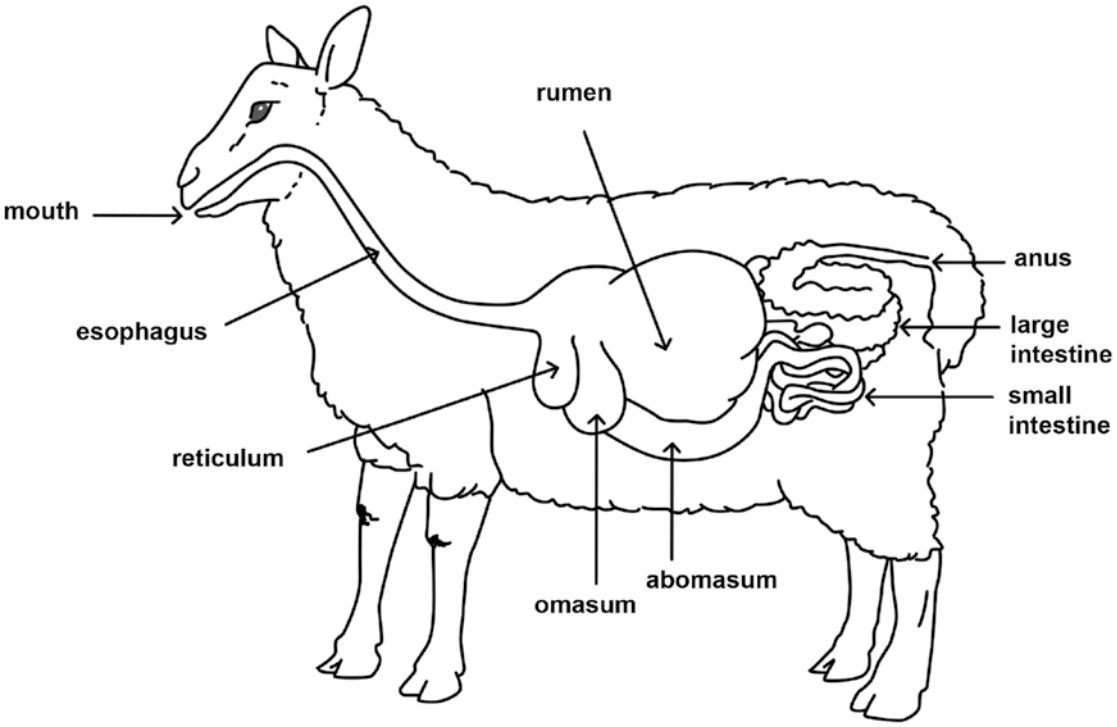


	ROUGHAGE	QUALITIES
Legume	Alfalfa	This legume is often called the king of forage crops. It is a high yielding perennial in many parts of the province. It is rich in protein and mineral matter. While it is quite drought resistant, it requires good moisture conditions for high yields.
Legume	Sweet Clover	Biennial legume that is seeded one year, produces a crop the next, arid then dies out. It is a heavy yielder of good quality hay that is inclined to be coarse. It is better used as a pasture crop or a silage crop and as a soil builder.
Legume	Red Clover	It is a widely used legume in hay mixtures. Being a biennial, red clover produces the heaviest yield of forage the second year after planting and then dies.
Legume	Alsike Clover	It is a short lived perennial and more persistent in hay mixtures than red clover. It thrives in wetter locations than other clovers.
Legume	White Clover	White clovers are either dwarf or tall types. White Dutch clover is dwarf and stands up well in a pasture mix. Ladino clover, a tall strain of white clover, is recommended for irrigated pasture and hay mixes.
Legume	Pea Hay	Made from pea vines following pea harvesting. Rich in protein and very palatable.
Grass	Slender Wheat Grass	A short-lived, fairly drought resistant bunch grass. It produces good hay yields for 3 to 4 years and is useful in short rotations.
Grass	Intermediate Wheat Grass	A fairly long-lived, creeping rooted grass which is easy to establish. It grows tall and produces a high yield of hay and pasture.
Grass	Tall Wheat Grass	A fairly long-lived grass with a tall stemmy type of growth. It is lower in feeding value and palatability than some of the other grasses.
Grass	Russian Wild Rye	A long-lived drought-resistant bunch grass. It is strictly a pasture grass and not recommended for hay. Russian Wild Rye is highly palatable to livestock. It maintains a high protein conter throughout the summer and fall.

	ROUGHAGE	QUALITIES
Grass	Broome	It is a creeping rooted, long-lived and drought-resistant grass. The plants are leafy and tall. Broome is a good pasture and hay crop. The protein and mineral content of broome is much lower than alfalfa hay.
Grass	Crested Wheat Grass	A bunch type, long-lived, hardy and drought-resistant grass. It is good spring and early summer pasture crop. It makes good hay if cut at heading time. Crested wheat grass gets tough and wiry if not cut at the proper stage.
Grass	Reed Canary	Reed canary is a long-lived creeping rooted perennial. The crop grows up to six feet tall and is leafy. While the stems are coarse, livestock relishes the hay.
Grass	Orchard Grass	A perennial that resumes growth early in the spring. Suited to a wide range of soil and climate conditions, it is a very productive hay and pasture species. Combines well with red clover in a hay crop mixture.
Grass	Timothy	Difficult to establish, low in protein and not well liked by sheep unless as a mixture containing large proportions of legumes.
Grass	Perennial Ryegrass	A bunch type grass that will establish very quickly. It is tolerant of wet conditions and will produce an abundance of spring pasture.
Grass	Oat Hay	This crop is usually used to supplement the supply of roughages from the hay crops in drier years. If-put up properly, it is equal in feeding value to broome hay.
Grass	Straw	All types of straw are high in fibre and most-is of little value as feed. Some straw may be used as part of the roughage, but the ration, should be supplemented with protein.



Digestion



Sheep are part of a class of animals known as ruminants. Ruminant animals including, sheep, cows, goats, deer, camels, giraffes and more are hooved animals that digest their food in two stages. Ruminants start by eating the raw material, and then they regurgitate it in a semi-digested form known as cud. Ruminants then chew the cud and reingest it in the second stage.

The digestive system of ruminants can be divided up as follows:

1. Mouth
2. Esophagus
3. Rumen
4. Reticulum
5. Omasum
6. Abomasum or true stomach
7. Small Intestine and Cecum
8. Large Intestine
9. Anus

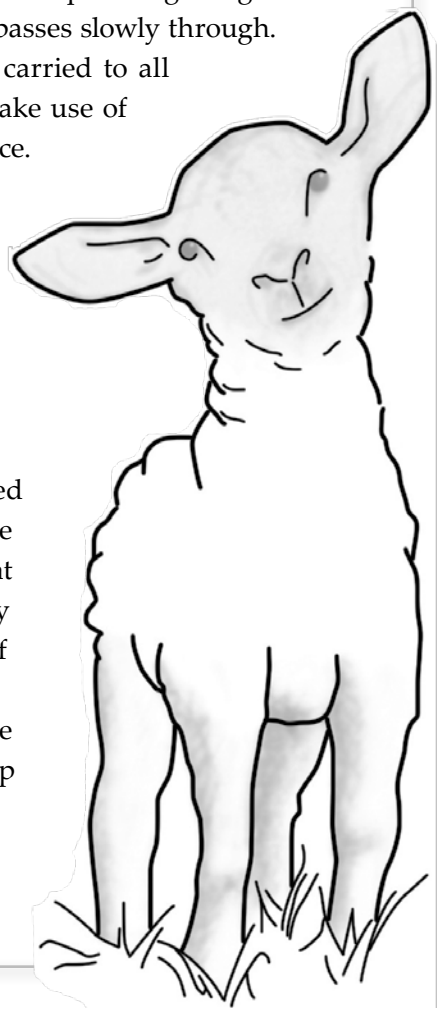
The digestive tract has a great capacity. The rumen makes up about 80% of the total. The rumen is the location in the digestive system where food is held for remastication and for digestion by microorganisms. Tremendous numbers of bacteria (microscopic one-celled plants) and protozoa (microscopic one celled animals) grow in this compartment. They attack the feed, breaking down the fibrous feeds and digesting them. This is why ruminants are able to digest efficiently large quantities of roughages or other fibrous feeds.

The microorganisms in the rumen may use up a very substantial part of the nutrient value of the feed. This may amount to as much as one quarter, but these microscopic plants and animals themselves are in turn used for food by the sheep. They manufacture vitamins that the original feed did not contain. They may take poor quality proteins and from them make higher quality proteins. They can even use nitrogen to build proteins that the sheep can use. The fibrous, hard to digest carbohydrates of roughages may be changed into easily digested carbohydrates, fats, and acids. They also produce large quantities of gas. This gas is normally removed from the animal by belching.

The second compartment with its honeycombed wall, known as the reticulum, is not distinctly separated from the rumen. Heavy objects such as wire or nails eaten with the feed have a tendency to settle out into this compartment. The liquid and finer solid material is constantly being drawn from the rumen into the reticulum.

The third compartment, the omasum, is lined with plies or folds of tissue. Because of these, it is sometimes called the "many plies". Its specific purpose is not fully understood.

The abomasum is the true stomach where digestive juices are secreted. These juices have a further breakdown action on the feed materials preparing them for absorption by the blood stream. The sheep has a long digestive tract. It is adapted to getting the maximum amount of nutrients out of the digested feed as it passes slowly through. The nutrients and water absorbed by the blood stream are carried to all parts of the body. Not only is the sheep well equipped to make use of roughages, it must have them for a normal, healthy existence. If the sheep is handled in any way that upsets the growth of microorganisms in her rumen, her digestive system is upset and it becomes sick. The feeding program is built around pasture and roughages, not merely as a matter of economy, but because the sheep's whole system is geared to a diet made up largely of such feeds.



Rumen Development in Lambs

When they are born lambs do not yet have a fully developed rumen. Their rumen is much smaller and does not contain the bacteria found in the rumen of adult sheep This means that lambs can not digest fibrous feeds early on. The rumen may take weeks to months to fully develop and become capable of efficiently digesting.

To promote the development of the rumen and to encourage consumption of solid foods, many sheep producers will creep feed their lambs before they are weaned.

Feeding Lambs

Creep Feeding

Creep feeding lambs is a very common practice that improves weaning weights 10 to 20%. Additionally, it allows for a smoother transition on to full feed during the post-weaning period. Creep feeding allows lambs access to supplemental food sources while keeping older animals out. Creep feeding may be done using concentrates (creep ration) or pasture depending on the time of year when lambing occurs. If done correctly creep feeding can encourage lambs to increase their feed intake at an early age, taking advantage of the high feed conversion efficiency which young lambs are capable of.

If you creep feed with concentrates young lambs prefer feeds with relatively small particle size. As they get older, they prefer coarser diets and whole grains. Young lambs find soybean to be very appetizing, and some people use straight soybean meal for their creep starter. Other people Sprinkle soybean meal on top of the creep feed to get lambs started.

Lambs will begin to nibble on creep feed at 7 to 10 days of age. Consumption will be low at first but by keeping the creep feed fresh you will encourage lambs to return and increase consumption. Intake of creep feed is influenced by the design of the creep area as well as the feed provided. The creep should be easily accessible and close to the ewe flock. It should be out of the traffic flow but near a high traffic area so that lambs will naturally find their way into it. The creep area should be kept clean, dry, well bedded and well lit so the lambs will be attracted to it. The creep area should be large enough that the majority of the lambs may be in it at any one time. Creep gates should provide spaces between 8 to 12 inches to allow lambs in but keep ewes out. Creep gates with rollers allow larger lambs through a smaller space. As lambs grow, creep gates may need to be adjusted to allow lamb access yet continue to prevent ewe access.

Growing and Finishing Diets

Once they are weaned lambs can be switched to a growth or finishing ration. Grower rations should have 16 to 18% protein. Lambs will finish well on grower ration but lambs over 70 – 85 pounds do not need as much protein so it may be economical to switch to a lower protein, lower cost finishing ration at this time. Since lambs are ruminant animals they also require some roughage (at least 15 to 20% of their diet). For productive gains, lambs should be fed about 3% of their body weight in total feed (hay and grain) per day.

Set up a regular feeding schedule and follow it as close as possible. Lambs eat better if fed when it is cool (evening or morning). Observe your lambs closely while they eat to make sure they are healthy. Keep your feeders and water tanks clean. Make sure the lambs always have access to fresh water. Have a salt and sheep mineral mix available for your lambs on a free choice basis.

Facilities

To successfully raise sheep it is important to provide adequate shelter and protection for them. This includes not only when they are enclosed in farm structures such as barns but also when they are out grazing.

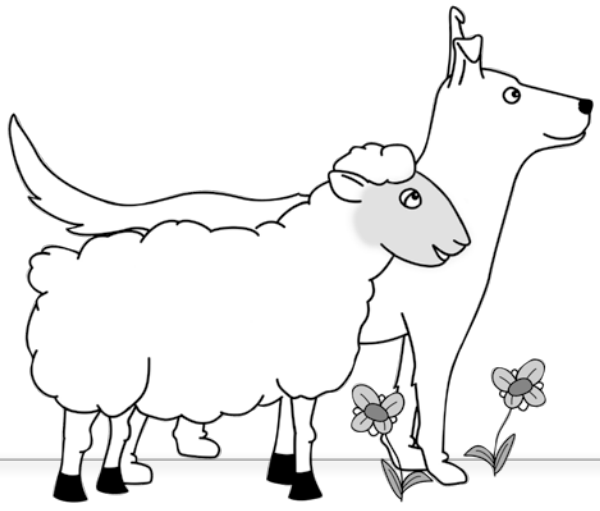
Protection from Predators

Control of predators among sheep flocks is very important. The wildlife species known to prey on sheep in Canada include the coyote, wolf, fox, black bear, cougar, grizzly bear and bobcat. In British Columbia the major predators of sheep are coyotes and domestic dogs. Other predators are rarely involved in predation of sheep, although losses caused by them can be severe when they occur. Losses can be reduced by the use of: guardian animals, fencing, night confinement, removal of dead stock, human presence, lighting, and novelties such as bells on the sheep.

Guardian Animals

Many sheep farms use livestock guardians to protect their sheep and lambs. Guardian dogs, llamas, and donkeys have all used successfully to prevent or reduce predation in sheep flocks. There are advantages and disadvantages to each type of guardian.

- **Dogs** are the most popular livestock guardian. Dogs have been used for centuries to protect livestock. Guardian dogs work by staying near the sheep and aggressively repelling predators. Under range conditions or with large pastures, more than one dog may be necessary. Guardian dogs work best in pairs. Guardian dog pups should be raised with sheep, with minimal human contact. A guardian dog's job is to bond with the sheep, not the shepherd. Guardian dogs should be purchased from a reputable breeder as genetics plays a role in their effectiveness. The breeds of dogs used to guard sheep are typically large (80-120 lbs) white or fawn colored dogs with dark muzzles. They include: the Great Pyrenees, Komondor, Akbash and Anatolian Shepherd, Maremma, and Mastiff. Research and surveys indicate that about 75 per cent of guard dogs are effective.



- **Llamas** offer an economical alternative for predator control. Llamas are particularly aggressive towards dogs and coyotes. Females or geldings (castrated males) are generally recommended (intact males may try to breed the ewes and could cause injuries or death). A single llama is usually more effective in a pasture as some llamas may bond with each other and fail to protect the flock. Llamas should be introduced to sheep in a small pasture or corral. They do not need to be raised with sheep to be effective and do not require training. Human contact with a guard llama should be avoided. The care and feeding of llamas is similar to sheep making it very easy to integrate them into your operation. Alpacas are not used as guardians. They are defenseless like sheep and will flee when they are frightened.
- **Donkey's** natural dislike and aggressiveness towards coyotes and dogs make it a appropriate guardian for sheep flocks. Most donkeys will bond with sheep and protect them from predators. If the donkey isn't raised with sheep, it should be housed next to the sheep for 1 to 2 weeks. A jenny-foal pair, a single jenny or a gelding is preferred because intact males may be too aggressive with the sheep and people. Not all donkeys make good guardians. Some are too aggressive with the sheep. While all donkeys dislike canines, the miniature donkeys may be too small to provide adequate predator control. It is generally recommended that medium to large sized donkeys be used as livestock guardians. Like llamas, donkeys are long-lived and have minimal upkeep.
- **Cattle** can serve as natural protectors as long as the two species to bond together. If the sheep have bonded with the cattle, they will seek protection by grouping with them when threatened. If they have not bonded to the cattle, they will form their own group independent of the cattle when they are threatened.

Fencing

Fencing is important for two reasons: keeping sheep in and keeping predators out. Two types of fencing are required on a sheep farm:

- Perimeter
- Interior

Perimeter fencing is usually installed around the border of the property and is the primary protection against predators. It should be made of durable, high quality materials to ensure that it is strong and will last for a long period of time.

Interior fences are used to subdivide fields into smaller areas (paddocks) for efficient grazing. Interior fences may be constructed from permanent, semi-permanent, or temporary fencing materials. An interior fence does not need to deter predators but it should be sturdy enough to keep weaned lambs away from their mothers and rams away from ewes.

Fence Types

- **High-tensile, electric**

High-tensile fences are made with smooth wire pulled very tight. They require strong corners and end braces to achieve adequate tension. The wire is held on fence posts with staples. 5-7 strands of electric wire are common for sheep fences. The charger converts power into a high voltage pulse or "shock" as felt by the animal when it touches the fence wires.

- **Woven Wire**

Woven wire is the traditional type of fencing for sheep. It consists of horizontal lines of smooth wire held apart by vertical wires. The spacing between horizontal line wires may vary from as close as 1 1/2 inches at the bottom for small animals, to as wide as 9 inches at the top for large animals. A four-foot high woven wire fence, with one or two strands of barbed or electric wire along the top of the fence makes an excellent perimeter fence for sheep.

- **Barbed Wire Fences**

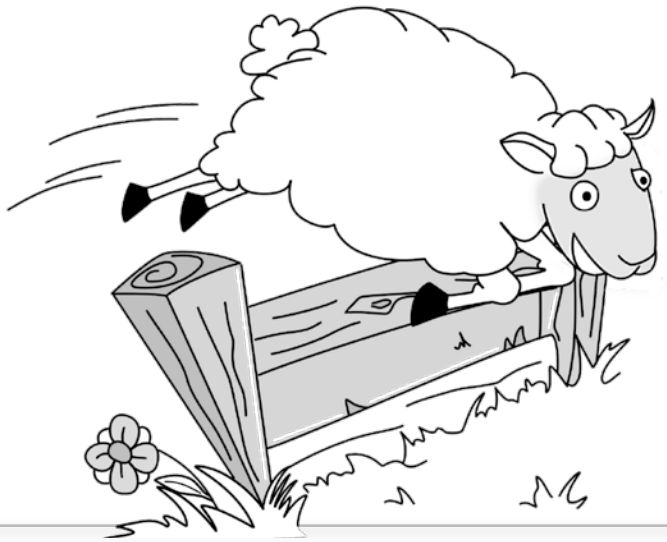
Barbed wire fences are generally not recommended for sheep because they do not effectively deter predators and they can cause injury to livestock. Sheep can get their wool snagged in the barbs. The best use of barbed wire is to rejuvenate old fences or enhance woven wire fences.

- **Rail Fencing**

Rail fencing will generally not contain sheep or repel predators unless electric wires are placed between the boards or the entire fence is covered with woven or mesh wire. Rail fences are expensive to build and maintain. On the other hand, permanent, wooden fences are often used for corrals and barnyards.

- **Temporary Fencing**

Various materials including polywire, polytape and electric netting can be used to construct temporary fences. Temporary fencing may be suitable for interior fences.



COMPARISON OF FENCING TYPES			
TYPE OF FENCE	**ADVANTAGES**	**DISADVANTAGES**	**BEST USE**
Barbed Wire	• Less expensive than woven wire • Easy to install	• Non predator-proof • Injury to livestock • Wool gets snagged in barbs	• In combination with woven wire fences • Should not be electrified
Woven Wire	• Physical barrier • Controls predators if extra wires are installed	• Expensive • More difficult to install • Sheep can get heads stuck	• Permanent • Perimeter
Rail Fence	• Physical barrier • Attractive	• Most expensive • High maintenance (board) • Will not contain sheep or control predators unless electric, mesh, or woven wire is added to fence	• Corrals and holding areas
High Tensile, Electric 5 to 7 strands	• Long life • Less expensive than woven, mesh, or barbed wire or board • Relatively easy to install • Neat appearance • Predator-proof	• Maintenance required (e.g., clean fencelines) • Physiological barrier	• Permanent • Semi-permanent • Perimeter • Interior
Electric (polywire) 2-3 wires	• Least expensive • Easiest to install • Easy to move	• Non predator-proof • Short life	• Interior • Temporary
Electric Netting	• Mental and physical barrier • Better predator protection than other temporary electric fences	• Expensive • Entanglement • Short life	• Interior • Temporary • Small areas

Adapted from **www.sheep101.info/201/fencing.html**

Pasture

Most people who raise sheep graze their animals for at least part of the year. A common question is: how many sheep can my pasture support? Unfortunately there is no easy answer to that question. Stocking rate will vary greatly between different areas. Some of the most significant factors impacting stocking rate include:

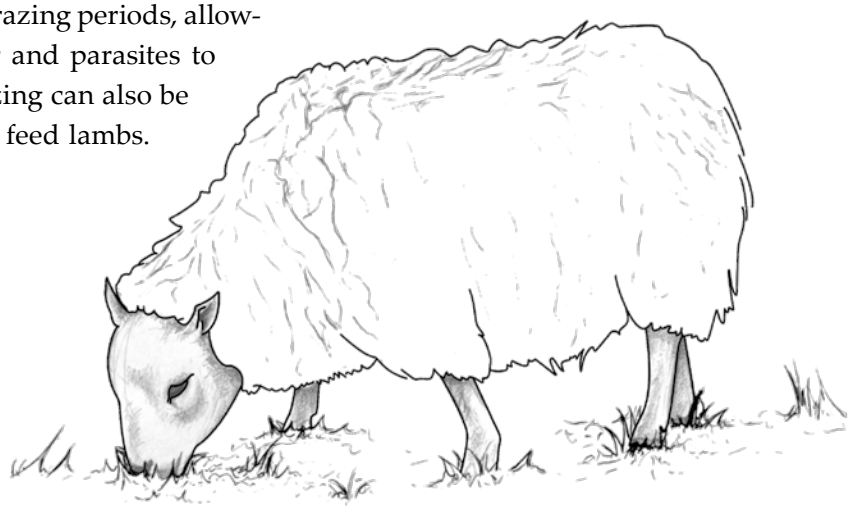
1. the production system used (i.e. winter lambing vs. spring lambing)
2. the grazing system used (i.e. continuous grazing vs controlled grazing)
3. forage types
4. soil type and fertility
5. climate

The important thing is to ensure your animals are receiving adequate feed. Learn to recognize behavioural signs in your flock:

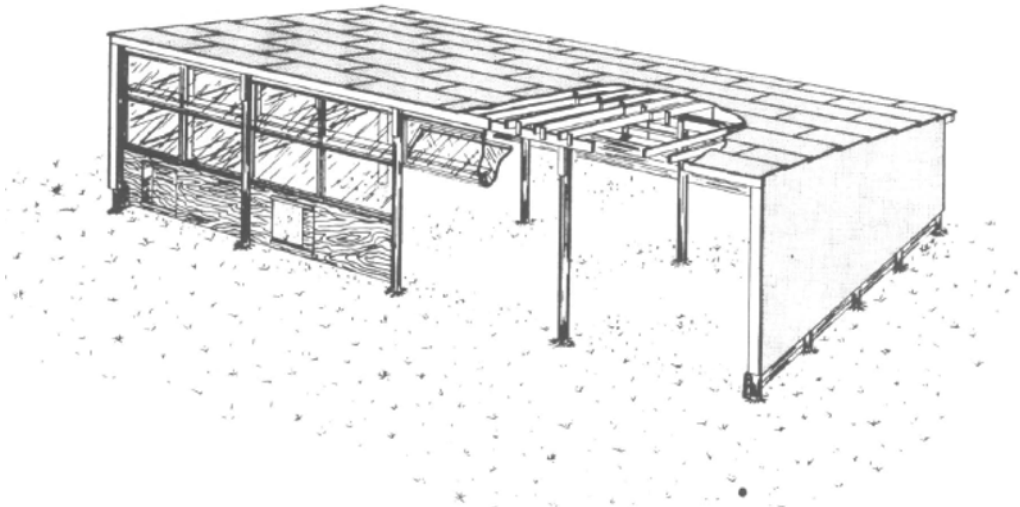
- If forage is plentiful and of good quality animals will spend less time grazing than if quality or quantity is limited.
- Sheep tend to graze as a group when forage is plentiful, but will graze individually if it is scarce.
- Grazing at midday during hot weather indicated forage is limited

If your flock is not receiving sufficient feed from pasture you will need to supplement them with other feed sources.

One way to increase the productivity of your pasture is through rotational grazing. Rotational grazing involves the planned movement of sheep through multiple small pastures rather than allowing them to graze freely on a single large pasture. This type of grazing may be more costly initially as new fencing and watering resources may need to be purchased to subdivide the pastures. In the long run rotational grazing can contribute to a successful flock because pastures are able to sit dormant between grazing periods, allowing pasture to recover and parasites to die off. Rotational grazing can also be used to forward creep feed lambs.



Sheep Housing



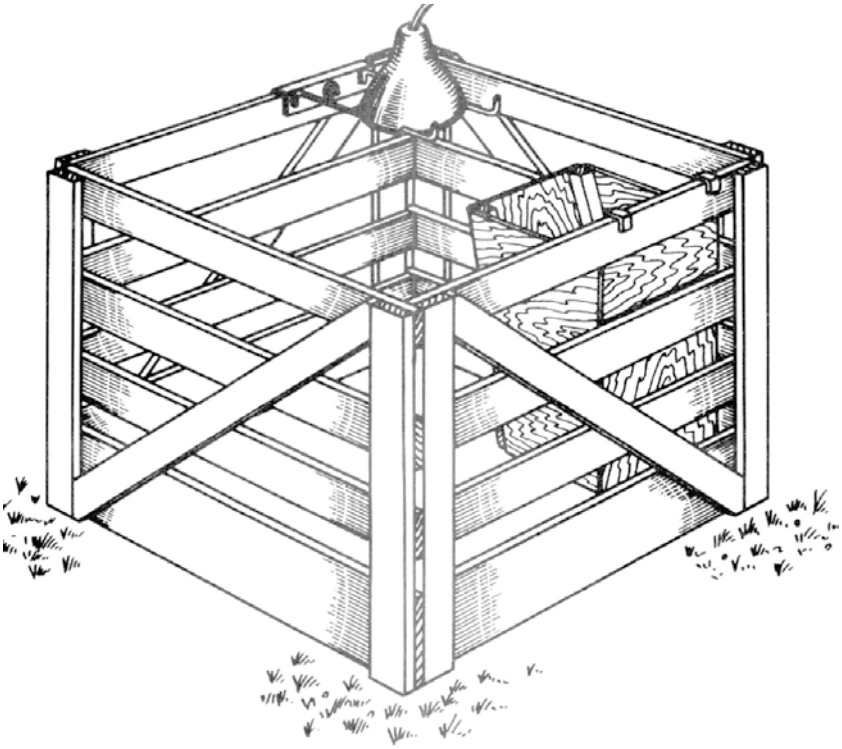
Pole Frame Sheep Shed suitable for sheep feedlots. This shed is 28 ft from open front to back wall, and it can be built to any length multiple of 14 ft (42, 56, 70, 84 ft etc.). Each 14-ft length gives 392 sq. ft. of floor space, enough bedding resting area for about 25 pregnant ewes or 65 feeder lambs. Vertical clearance is 8 to 12 ft for operating a tractor and front-end manure loader.

Housing must be provided to protect sheep from rain, snow and severe winds. When designing housing for sheep consider:

a) Site drainage – buildings should be placed on sites with good drainage so that water does not accumulate
b) Easy to clean – manure should be cleaned from shelter floors regularly
c) Easy access to water and power
d) Sufficient space – sheep cannot stand close quarters
e) Wide doorways – narrow doorways can result in injury when too many sheep try to get in or out at the same time
f) Good ventilation – poor ventilation contributes to health problems
g) Protection from wind – open fronted buildings should face away from the prevailing winds. In some areas windbreaks to 3m height are preferred on the windward sides of the lots.
h) Dry – even if the shelter is not totally enclosed the roof should be water tight and slope away from the corral area. Alternatively eave troughs should be provided to run water away from the pens.

A shed or pen with one open side is adequate for mature sheep and lambs. However, an enclosed space for newborn lambs is preferred to reduce the chance of chilling the lamb.

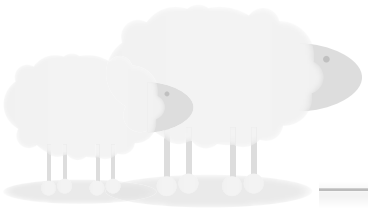
Lambing Pens



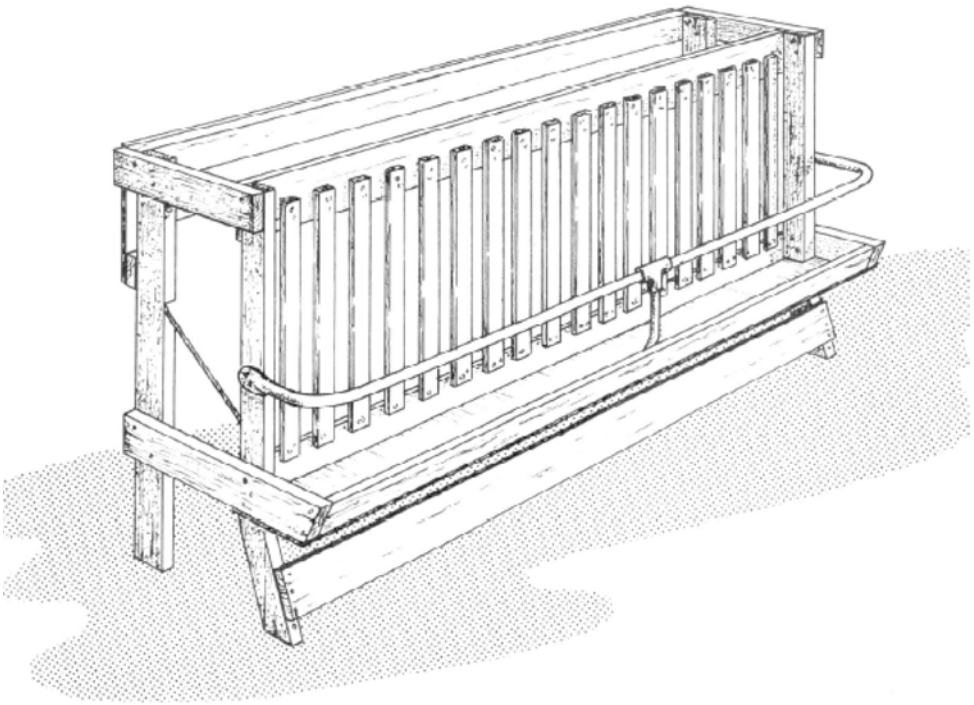
Portable lambing pen made from 1 by 4 inch lumber. Each panel consists of two sections joined by strap hinges. Two hasps are fastened to each panel, the clasps to one end and the staple to the other. Two panels joined together by these hasps form a pen.

It is worthwhile to have portable fence panels and gates on hand so that you can convert your barn into lambing cubicles and/or pens during the lambing season.

Prior to lambing individual, well-bedded lambing pens should be prepared so the new born lamb and ewe may be kept away from the rest of the flock for a day or two. These pens should be approximately 1.2m X 1.2m. One lambing pen for every four or five ewes should be sufficient providing the ewes are not all expected to lamb on the same date.



Feeding Areas

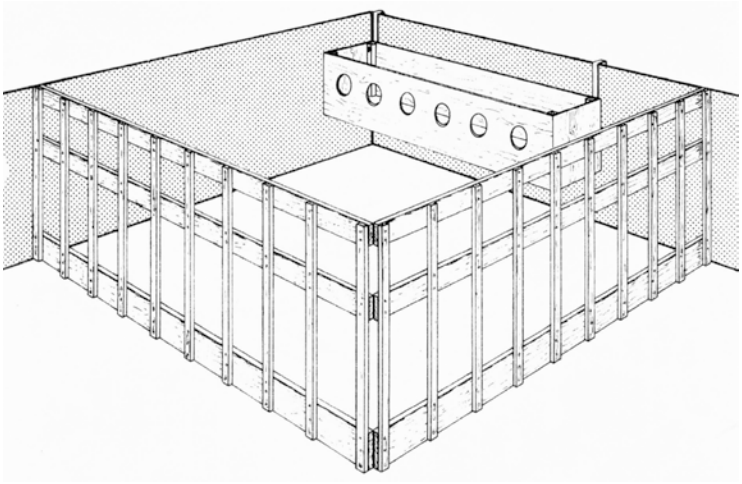


This hay and grain feeder is assembled in 8 ft sections. The main feature of this feeder is the extended portion of the feeder floor; it is intended to catch loose particles of hay and provide an area to feed grain to the flock. Each 8 ft section has a capacity to feed 6 to 8 ewes at one time, or up to 16 ewes if self-fed continuously.

Feeding and watering areas should be clean and dry. Feeding racks should be constructed so that animals can not climb in them, reducing the probability that feed will be contaminated with fecal matter.

Fresh water should always be available.

Creep Areas



Lamb creep feeder consisting of two 8 ft. sections hinged together so that a pen is formed when the sections are attached to two adjacent partitions in the sheep barn. The panels are constructed of 1 inch boards and are easy to lift and store and yet have adequate strength to allow separation of the lambs and ewes.

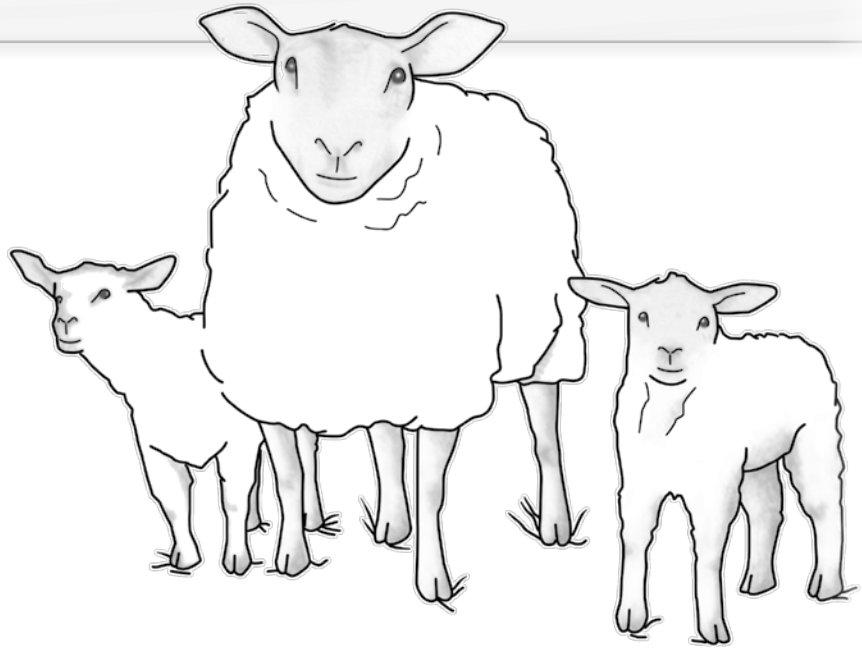
Intake of creep feed is influenced by the design of the creep area as well as the feed provided. The creep should be easily accessible and close to the ewe flock. It should be out of the traffic flow but near a high traffic area so that lambs will naturally find their way into it. The creep area should be kept clean, dry, well bedded and well lit so the lambs will be attracted to it. The creep area should be large enough that the majority of the lambs may be in it at any one time. Creep gates should provide spaces between 8 to 12 inches to allow lambs in but keep ewes out. Creep gates with rollers allow larger lambs through a smaller space. As lambs grow, creep gates may need to be adjusted to allow lamb access yet continue to prevent ewe access.

Footnote
Facility diagrams and plans from BC Ministry of Agriculture and Lands: Resource Management Branch and the Canada Plan Service. The facility diagrams in this section are provided only as guidelines showing dimensions and materials to assist in planning and management. Structural details may not meet current design codes. Local snow rain and wind loads as well as soil conditions should be checked with the appropriate municipal or regional building departments to satisfy permit requirements. Professional engineering design and inspections may be necessary. The BC Ministry of Agriculture and Lands accepts no responsibility or liability for the use of these plans.

Environmental Checklist

Consult the following checklist to ensure that your sheep operation is environmentally sound.

- ☐ Manure is properly stored and covered to prevent leaching and runoff.
- ☐ Manure pile is located far from waters sources (wells, creeks) to prevent contamination.
- ☐ Paddocks and other high density enclosures are located far from water sources (wells, creeks) to prevent contamination.
- ☐ Animals do not have direct access to riparian areas to prevent bank erosion and water contamination.
- ☐ Management practices in place to prevent overgrazing which could lead to soil compaction or erosion.
- ☐ Chemical and fuels are properly stored to prevent spills.
- ☐ Agricultural wastes (straw, wood) are being composted.
- ☐ Dead stock are disposed of in an approved and timely manner (varies by cause of death but may include incineration or burial).
- ☐ Medical wastes are disposed of properly



Husbandry and Health

Husbandry

The term Animal Husbandry refers to the management and care of animals. In addition to proper nutrition and health care there are several practices that are important in the care and management of sheep. These practices will be outlined in the following sections:

- Age Determination
- Hoof Trimming
- Shearing
- Identification
- Docking and Castration

Age Determination

The best way to determine the age of a sheep is to keep accurate lambing records and ensure these records are transferred the sheep is bought or sold. If an accurate date of birth is not available the age of a sheep can be estimated by examining its teeth. Sheep have 32 teeth in total: 24 molars (top and bottom), and 8 permanent incisors (bottom only). Sheep will erupt their permanent incisors at various stages of maturation. Examining these incisors can help you to determine their approximate age.

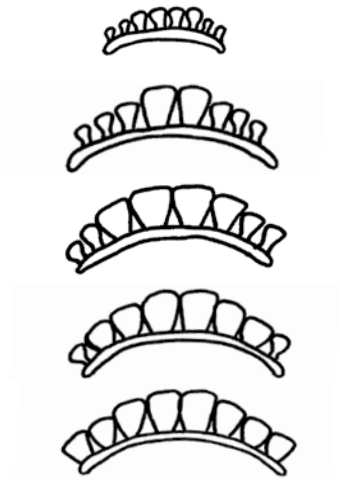
Birth – 12 months
- 8 temporary incisors

12 – 19 months
- 2 permanent incisors, 6 temporary incisors

18 – 24 months
- 4 permanent incisors, 4 temporary incisors

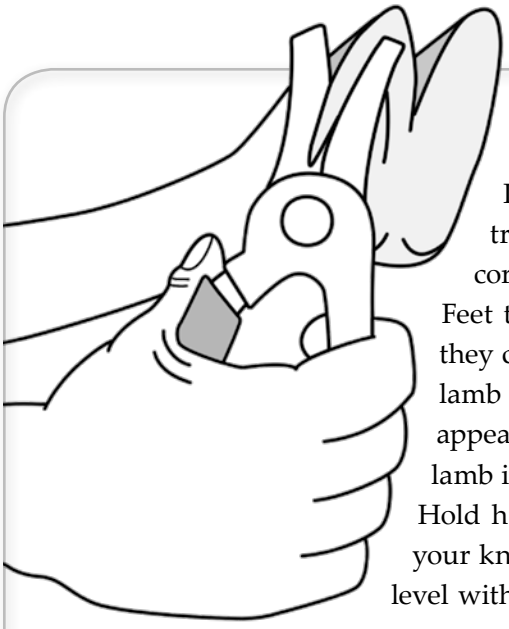
23 – 36 months
- 6 permanent incisors, 2 temporary incisors

28 – 48 months
- 8 permanent incisors



48 months +
Progressive deterioration of teeth

When estimating age bear in mind that some breeds will mature faster than others. Breeds that mature quickly will erupt permanent incisors sooner than those that mature slowly.



Hoof Trimming

It is important that you keep the feet of your lambs trimmed. Properly trimmed hoofs enable a lamb to walk correctly. Trim the feet every four weeks or as needed. Feet that are not trimmed may become so ill shaped that they cannot be trimmed back to normal. In such a case, the lamb will not be able to stand or walk correctly. It may also appear to have crooked legs. In trimming the feet, set the lamb in an upright position and tilt him slightly backwards. Hold him in position while you are trimming by pressing your knees firmly against his sides. Trim each hoof until it is level with the pad of the foot.

Shearing

Most breeds of sheep need to be sheared annually; the exceptions are the hair type breeds that don't need to be sheared at all, and some of the long wool breeds that may need to be sheared twice a year. Since sheep wool grows continuously, sheep can become very uncomfortable and stressed if they are not sheared regularly. Many people hire professional or experienced shearers to shear their flocks with electric shears. It is common for sheep to be sheared in the spring, in preparation for the warm summer weather. It would be advantageous for Senior 4-H members to learn how to shear their own sheep, they may even be able to make a small business out of shearing.

Some things to consider when before having your sheep sheared include:

- Sheep must be dry to be sheared.
- Sheep should not be sheared when they have a full stomach, keep them off feed and pasture for several hours before shearing.

Freshly shorn sheep will need protection from the elements as they have no insulation. Provide them with a warm place to sleep and extra feed to maintain their body temperature.

Did you know?

★ *A professional shearer can shear a sheep in less than 2 minutes and will remove the fleece in one piece.*

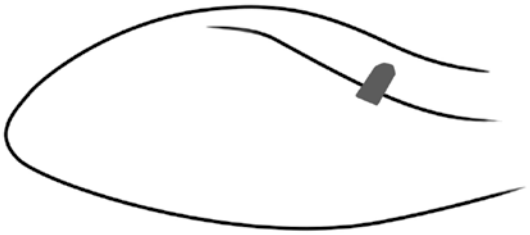
★ *The world record for shearing sheep is 839 lambs in 9 hours by Rodney Sutton of New Zealand (2000) and 720 ewes in 9 hours by Darin Forde of New Zealand (1997).*

★ *The most sheep shorn in an 8 hour period manually using hand blades is 50 by Janos Marton of Hungary (2003)*

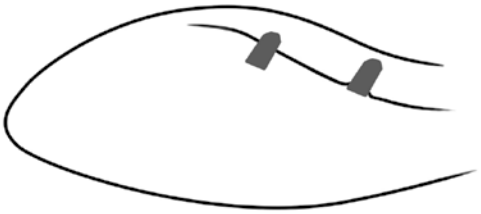
Identification

Identification is a very important tool in the management of sheep. Every successful business operation must have accurate records, and in the sheep industry this starts with proper identification of the sheep. There are several methods used to identify sheep:

Ear Tags



Correct placement of ear tag



Incorrect placement of ear tag

All sheep in Canada must be identified with approved Canadian Sheep Identification Program (CSIP) ear tags. CSIP ear tags must be purchased from an approved distributor. When purchasing tags, you will be asked to provide your name, telephone number and address. Contact the Canadian Sheep Federation for a listing of approved distributors.

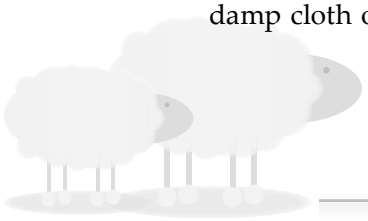
Some producers may choose to place an additional metal or plastic ear tag on their animals for management or record keeping purposes. In some parts of the world electronic tags are gaining popularity for livestock tracking.

Ear tags are applied with ear-tagers. Caution should be given when applying the tags, especially those types of tags that fold over the edge of the ear. Be sure to place the tag far enough in that it will not easily catch on things and fall off, but far enough out to allow for ear growth (especially in very young animals).

Tattooing

Tatooing is a very common form of identification for sheep. Be sure to tattoo your project animals early so that their tattoo has time to heal. Animals tattooed immediately before they are exhibited may have unreadable tattoos. They may also be irritated by the tattoo, which will cause them to rub their head on things spreading ink on their faces and possibly on to other animals as well.

a) **Preparation of Animal:** The inside surface of the ears should be wiped free of dirt, grease and wax before tattooing. This is accomplished easily by means of a damp cloth or an alcohol wipe.



b) **Tattooing Procedure:**
   - Insert the required symbols in the jaws of the pliers and lock in position.
   - Check the symbols are in the correct order and are not upside down by making an imprint on a piece of paper.
   - Secure the animal so that unnecessary movement is avoided. It is advisable to have an assistant.
   - Brush the tattoo pigment on the needles and on the area to be marked, using an old toothbrush.
   - Make the imprint with a quick, firm movement. Withdraw the pliers and brush the area again to work the pigment into the tattoo.
   - Before tattooing another animal, the symbols already used should be disinfected by immersion in rubbing alcohol.
   - Do not disturb the tattooed area until healing is complete. This may be from 5 to 21 days, depending upon the age and breed of the animal.

c) **Care of Tattoo Equipment:** After tattooing has been completed, remove excess pigment from the symbols by scrubbing them in warm, soapy water with a stiff-bristle brush, shake dry, inverse in rubbing alcohol and replace in container. Broken or bent needles can be replaced from the manufacturer's stock.

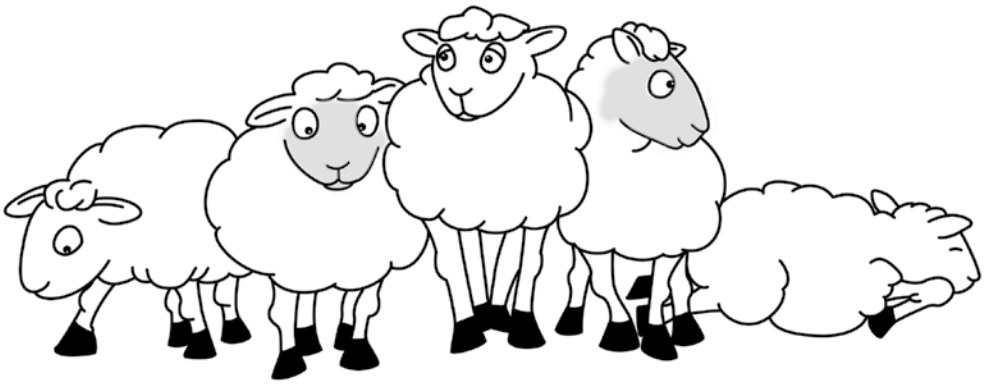
Registration of Purebred Sheep

In Canada the Canadian Sheep Breeders Association is responsible for the rules concerning registration of purebred sheep. The actual work of registration, record keeping, and processing Canadian Sheep Breeders Association memberships is contracted out to the Canadian Livestock Records Corporation. To enquire about purebred sheep registration contact the Canadian Livestock Records Corporation.

Docking and Castration

Docking and castration are important procedures that must be carried out when the lambs are very young. Please see the Breeding and Lambing chapter for a detailed discussion of docking and castration.

Health and Disease



Healthy lambs and sheep should be the goal of every 4-H lamb member. A basic health program plays an essential role in maintaining healthy animals. Prevention is often times much easier and much more economical than treatment. The following points should be considered to help prevent disease in your flock:

1. Before purchasing animals, check and make sure they show no signs of illness or parasites.
2. Quarantine newly purchased animals for at least fourteen days before introducing them into the flock.
3. Provide an adequate supply of clean, fresh water. Plan watering sites to avoid muddy areas, overcrowding of livestock, and long distances from the grazing area. Make sure the water supply does not freeze during winter.
4. Locate sheep on well-drained areas.
5. Provide feeding facilities that are large enough to accommodate the flock, are easily cleaned and are designed to prevent fecal contamination. Do not make a regular practice of feeding on snow.
6. Use vaccines, antibiotics and deficiency compound injections when necessary. Use sterilized needles and syringes, and disinfect the skin with alcohol or iodine before inserting the needle.
7. Drench for internal parasites before they enter winter shelters. Avoid drenching during late pregnancy.
8. Dip, spray or dust for external parasites at shearing time.
9. Determine and record the cause of death of animals and take steps to prevent a recurrence.
10. Keep facilities clean and dry at all times and disinfect pens and equipment at regular intervals.
11. Learn the normal behaviour pattern of the flock so that individual abnormal behaviour can be detected quickly.
12. Establish a working relationship with local veterinarian. Consult with your veterinarian when considering treatment options.

Another thing that can help you monitor the health of your flock is to understand the normal temperature, heart rate and respiratory ranges for sheep.

NORMAL RANGES FOR SHEEP	
Rectal Temperature	101.3 – 103.3 °F (38.6-39.6 °C)
Heart Rate	70 – 80 beats per minute
Resting Respiration Rate	16 – 34 breaths per minute

Source; Merck Veterinary Manual www.merckvetmanual.com/mvm/index.jsp

Sheep are susceptible to a variety of diseases and disorders. Flock health should rate high in the priorities of producers if losses are to be avoided and kept to a minimum. Mainly the breeding efficiency, lambing percentage and the ability of the producer to control health problems in the flock will determine the difference between profit and loss. Some diseases can be fatal and in most cases cause setbacks and individual loss. Proper diagnosis and immediate treatment is important.

Reportable Diseases

Under the federal Animal Diseases and Protection Act, the following sheep diseases must be reported to the District Veterinarian for Agriculture and Agri-Food Canada. For further information and a completed list of reportable livestock diseases in Canada contact the Canada Food Inspection Agency.

Scrapie

Scrapie is a fatal disease that affects the central nervous system of sheep and goats. It is what is known as a transmissible spongiform encephalopathy (TSE). Other TSEs include bovine spongiform encephalopathy (BSE) in cattle, chronic wasting disease in deer and elk, and Creutzfelt-Jakob disease in humans. The exact cause of scrapie is unknown, but many scientists currently believe that it is associated with the presence of an abnormal protein called a prion. Diagnosis is based on clinical signs, supported by microscopic examination of the brain. There is no known treatment for scrapie. The animal must be destroyed.

Bluetongue

Bluetongue is a viral disease of domestic and wild ruminants that is transmitted by insects, particularly gnats. The range of animals that can be infected with bluetongue virus (BTV) includes most ruminants, but the severity of disease varies among different species. Sheep are one of the most severely affected species, with symptoms that may include fever, erosive lesions in the mouth and gastrointestinal tract, lameness, abortion, severe weight loss, and pneumonia.

Foot and Mouth Disease

Foot and Mouth Disease is a severe, highly communicable viral disease of cloven-hoofed ruminants. The disease is characterized by fever and blister-like sores on the tongue and lips, in the mouth, on the teats and between the hooves. Many affected animals recover, but the disease leaves them weakened and debilitated.

Parasites

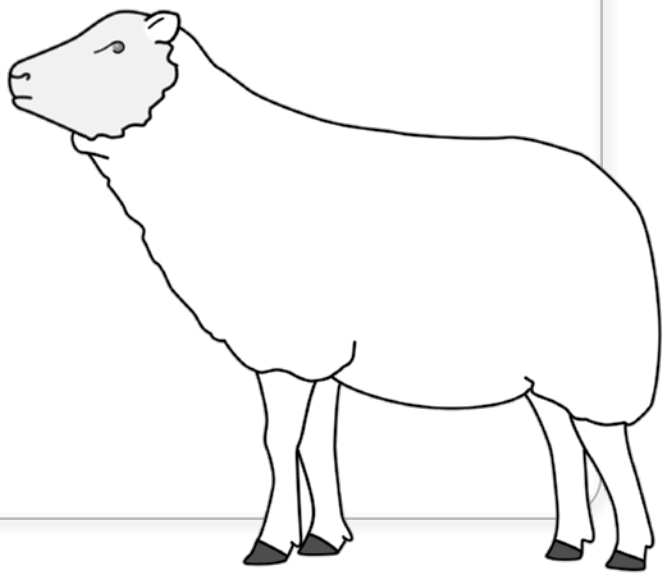
One area that deserves considerable attention to prevent economic losses is parasite control. Parasite infestations will put the animal under stress and make it more susceptible to secondary infections. There are internal and external parasites. Sheep with internal parasites will have poor feed efficiency, tend to be nervous and generally not do as well as sheep without parasites. External parasites on sheep cause discomfort, interrupt feeding habits and cause the animal to be less productive than sheep treated for external parasites.

Signs of Parasitism

The most important sign of parasitism is anemia, which produces weakness. Other indications are low milk production, poor wool growth, depressed appetite and general unthriftiness. Severe anemia can be detected by examining the gums in the mouth, the lining inside the eyelids and the mucous membrane of the vulva and anus. The anemia will vary from pale pink to chalky white. Bottlejaw, a mumps-like swelling of the lower jaw, often. occurs in worm infection. Diarrhea may also be present in infected sheep usually the result of damage to the mucous membrane in the stomach and intestinal wall.

Prevention

Prevention is just as important as medication in controlling internal parasites. Sanitation around buildings and yards is important. Avoid feeding on the ground if possible. Pasture rotation to break the life cycle of parasites is necessary. Lambs are more susceptible to parasites than older sheep resulting in slow growth rates. Treatment along with pasture rotation will break the cycle.



COMMON INTERNAL PARASITES			
PARASITE	**DESCRIPTION**	**TRANSMISSION**	**EFFECTS**
Stomach Worms	Adult 2.5 cm long Red and white in colour	Microscopic eggs pass in the manure. A tiny worm or larva hatches from the egg and is ingested by the sheep while eating grass. The larva develop to adult worms in 2-4 weeks, producing thousands of eggs which are passed onto the pasture.	The adult worms feed on blood in the stomach wall causing the anemia.
Intestinal Worms	10 different types Adult 2.5 cm long Slender, thread-like	Eggs from the female pass to the ground in the manure. Unlike the roundworm the eggs can survive on the ground over the winter. Infection occurs when the sheep eat the grass contaminated by the larva.	The stomach wall becomes inflamed and nutrients normally absorbed through the gut wall will pass out in the manure. Scouring and dehydration may occur.
Tapeworms	Flat, white Adult about 1m long	Microscopic "bugs" eat the tape worm eggs in the grass. The sheep then ingests this "bug".	Heavy infestations of tapeworms will cause scouring and weakness.
Lung Worms	Various sizes dependant on life stage	The larva are ingested by the sheep in pasture, travel through the intestinal wall and eventually reach the lungs to develop into adult worms.	A heavy infestation of lung worms will cause the lining of the breathing passages to produce a thick, sticky mucus, large areas of the lung ceases to function, breathing becomes difficult, coughing will occur and death may result.

COMMON INTERNAL PARASITES			
PARASITE	**DESCRIPTION**	**TRANSMISSION**	**EFFECTS**
Liver Flukes	• Various depending on life stage • In the sheep's liver they will be found in thin walled capsules	Livestock become infected by ingesting fluke larva on aquatic plants or by drinking water from ponds and sloughs. Once ingested, the larva migrate to the liver. Aquatic snails are intermediate host for this parasite.	Sheep are very susceptible to the common liver fluke and may experience high mortality when infected. Symptoms may include a gradual loss of condition.
Coccidiosis	• Microscopic one-celled protozoan parasite	The eggs are swallowed by sheep which releases a parasite which enters a single intestinal cell, multiplies, killing the cell and releases thousands more parasites.	Causes thickening of the gut wall and severe scouring sometimes with blood loss in the manure. Animals may weaken and die in two or three days.
Nose Bots	• White – yellow maggots • Adults 2.5cm long	The adult sheep bot fly deposits tiny white maggots into the nose of the animal. The maggots penetrate into the sinuses and become inactive. Fully developed maggots will drop from the nostrils into the soil and begin the cycle again.	The nose bots cause considerable discomfort and annoyance to the animal. The animals are disturbed from their feeding habits and loss of productivity may occur.

Treatment and Diagnosis of Internal Parasites

Modern worming drugs are highly effective in killing adult worms in livestock. However, none are 100% effective and none are effective in removing immature worms. There are a number of drugs on the market for worm control and each product controls one type of parasite better than others do. Be sure to check which types of parasites your wormer will affect, not all wormers will control all types of parasites. The various wormers should be used in rotation. The best management program for worm infestation is routine diagnosis along with routine treatment. Diagnosis can be made by submitting manure samples to your local

Veterinary Services Lab three or four times a year. After worms are diagnosed then treatment should occur based on the advice of your local veterinarian. A combination of routine treatment and submission of manure samples might be most practical. Dose the sheep shortly after lambing (early lambing – February) in the spring, 24 to 48 hours before turning out to grass. During the summer and fall test manure samples two or three times. Special attention should be given to lambs on pasture.

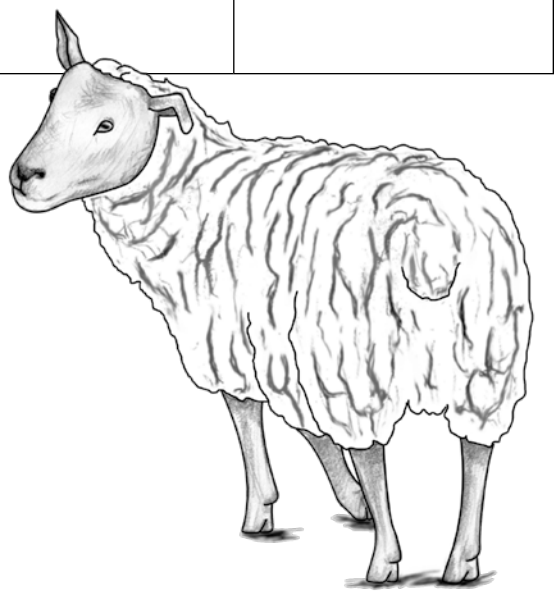
Unlike other internal parasites there is no highly effective treatment of coccidiosis. Sulfa drugs and antibiotics are used with some success but they do not always result in a cure. The key to prevention is a dry, clean environment.

Common External Parasites

PARASITE	DESCRIPTION	TRANSMISSION	EFFECTS
Keds	• Reddish-brown • Pea-sized • Found deep in the wool around the neck and over the chest	Keds are transmitted by direct contact from animal to animal. They can only survive 2 to 4 days away from the sheep.	Keds move actively, piercing the skin and feeding on blood. A large number may cause severe irritation and anemia, which will result in scratching.
Lice	• Biting Lice • Creamy white or reddish-brown • "Pinhead" size • Found in wool on the back, sides and under side of the neck • Sucking Lice • reddish-brown • Found mainly on the legs and feet	Lice spend their entire lives on the animal and are capable of only brief survival elsewhere. Lice are transmitted by direct contact from animal to animal.	Biting lice feed on skin debris causing irritation to the animal and causing constant rubbing with subsequent damage to the wool. Sucking lice may cause sheep to be weak and anemic.

Treatment of External Parasites

There are a number of dusts and sprays available to control lice and keds in sheep. These can usually be applied any time during the year but care should be taken when using a spray that the animal does not become chilled.

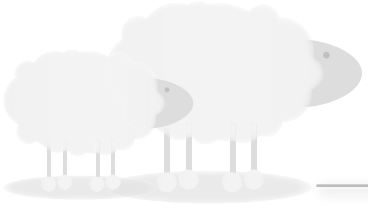


Common Sheep Diseases

There are many disease that affect sheep. Some disease cause death and others simply affect the productivity of the flock or of the individual animal. In either case recognizing that there is a problem, making a correct diagnosis, and treating the sheep quickly and in the most effective manner will reduce damage and losses related to poor health. Correct diagnosis may be difficult so it is important to consult someone with experience such as your veterinarian.

The following table provides a brief overview of some of the more common health problems of sheep. Livestock diseases can be very complex. If you recognize symptoms in your livestock and suspect they are ill it would be wise to do further research on the suspected condition.

GENERAL			
	CAUSE	**SYMPTOMS**	**TREATMENT**
Blackleg	Bacterial – enters a wound resulting from shearing, castrating, docking, or bruising from fighting or parturition.	Swelling around the wound, purplish discolouration, stiffness and lameness. The animals may have a high temperature and die within 24 to 48 hours.	Immediate treatment with penicillin or other antibiotics. A vaccine is available to help animals build up resistance.
Common Pneumonia	Bacterial or Viral – overcrowding, dirty conditions and poor ventilation are major factors in the spread of pneumonia.	Coughing, laboured breathing.	Antibiotics
Copper Toxicity	Excess copper	Destruction of the red blood cells and death	Copper should not be added to mineral mixes or feeds for sheep.
Foot Rot	Bacterial – moist soil conditions contribute greatly to the cause and spread of foot rot	Separation of a large portion of the hoof from the soft tissues of the foot. Lameness, loss of condition.	Trim back hooves to the quick. Soak feet in antibiotic solutions or copper sulphate foot bath. Turn treated animals out in an uncontaminated area.



Listeriosis	Bacterial	Listlessness, backing-off feed, circling in one direction. The animal will go down about the third day, go into a coma, and die within a week.	Treatment with antibiotics has been unsatisfactory. There are no vaccines available to control this disease.
Ovine Progressive Pneumonia (OPP)	Viral	Weight loss, labored breathing, paralysis, swollen joints, lameness, hard, unproductive udders.	There is no effective treatment or vaccine for OPP. Since it can be passed from sheep to sheep by contact and through colostrum, culling of infected sheep is recommended.
Pinkeye	Bacterial	Inflammation of the eye, accompanied by swelling and discharge.	Antibiotics.
Polyarthritis	Bacterial – enters the body through the umbilicus or through docking or castrating wounds.	Arthritis involving one or more leg joints, may or may not produce pus around the joint.	Antibiotics may be moderately successful.
Sore Mouth	Viral	Ulcers develop on the lip and tongue of the lamb and on the udder of the ewe.	Effective vaccines are available.
Tetanus or Lockjaw	Bacterial – bacteria enter through a wound.	Muscular spasms, convulsions and difficulty in walking and eating.	Sheep can be inoculated for tetanus.
Urinary Calculi	Calculi (stones), usually comprised of phosphate salts, lodge in the urinary tract and prevent urination. Calculi are caused by concentrate diets which are excessive in phosphorus and magnesium and/or have an imbalance of calcium and phosphorus.	Only effects male animals. Affected animals will experience Restlessness, anxiety, abdominal pain, urine dribbling, distention and rupture of the urethra. Affected animals may have a humped-up appearance and swelling of the belly.	Tranquilizers and antispasmodics may help to dislodge some calculi. Surgical intervention may be necessary to save valuable animals. Consult your veterinarian.

PREGNANT AND NURSING EWES			
	CAUSE	**SYMPTOMS**	**TREATMENT**
Mastitis	Bacterial – bacteria enter the udder and grow and survive on the leftover milk.	Swelling and inflammation of the udder. The ewe may stop eating and may collapse within two days. If untreated the ewe will usually die.	Treatment with antibiotics or sulpha drugs will not likely restore function of the udder but should save the ewe. This ewe should be marked for culling.
Pregnancy Toxemia (Ketosis)	Over-conditioning of ewes. It is also associated with faulty diet, stress and lack of exercise.	Going off feed, lethargy, drooping heads, lagging behind the rest of the flock, walking aimlessly, teeth grinding and twitching. Eventually, affected ewes will lie down and be unable to rise. If left untreated, coma and death result.	Treatment with propylene glycol is most often unsuccessful. Adequate exercise and well-balanced rations are the two most important preventive measures.
Prolapse (Uterine)	May be due to a parturition accident.	The womb is turned inside out and pushed through the birth canal by the abdominal straining of the ewe.	The uterus should be cleaned, replaced, and sutured in place. Affected animals should be removed from the flock. Consult your veterinarian.
Prolapse (Vaginal)	May be inherited, due to bulky feed, natural estrogens in the feed or those produced by molds, short tail dock, or injury.	Vaginal tissue is pushed through the birth canal.	The exposed vagina cleaned, replaced, and held in position by a bearing retainer or sutures. Affected animals should be removed from the flock. Consult your veterinarian.

Vibriosis	Bacterial	The ewe will abort in the last six weeks of pregnancy.	Sheep may be inoculated for this disease. To control the disease the aborted ewe should be isolated and the aborted fetus and afterbirth should be burned or buried.

LAMBS			
	CAUSE	**SYMPTOMS**	**TREATMENT**
Enterotoxemia	Bacterial – the bacterium is a normal inhabitant of the intestinal tract. Under certain conditions excessive bacterial growth is triggered causing lethal amounts of toxin to be produced, resulting in death of the animal.	Diarrhea, lack of co-ordination, convulsions and coma. The disease primarily effects lambs and progresses very quickly. Affected animals may be found dead without symptoms.	Antitoxins or antibiotics, such as penicillin, may help. There is an effective vaccine to control the disease.
Entropion	Inherited	Eyelids are turned under resulting in irritation of the eye.	Removal of a small section of the skin below the bottom eyelid or drawing down the eyelid with thread. Consult your veterinarian.
Feedlot rectal prolapse	High grain rations, high feed intake, overweight, coughing, or a short dock.	Rectal prolapse, usually in market lambs.	No particularly effective cure. Consult your veterinarian.
White Muscle Disease	Imbalance of vitamin E and selenium	Lambs may-be born dead or die within two to four days of birth. Older lambs will have difficulty in walking, nursing and breathing.	Treatments with selenium and vitamin E orally or injected will usually correct the problem.

Administration of Medications

Keep in mind that it takes a lot of time and experience to be able to recognize and correctly diagnose diseases. Do not hesitate to seek the help of an expert such as an experienced Shepard or your veterinarian if you suspect your sheep are ill. It is especially important to consult your veterinarian when purchasing and administering medications. The wrong type or dosage of medication can do a lot of harm so always be sure to double check.

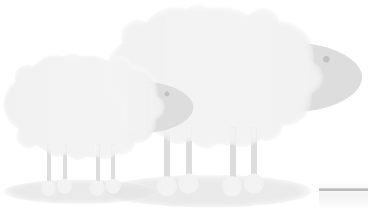
In general medication is administered to sheep in 3 ways:

Orally

Drenching or deworming is often done orally. Single and multi-dose drench guns are available for administering oral medications to sheep. You can restrain the animal by straddling it or standing beside it and placing your hand under its jaw. The syringe should be inserted into the corner of the animal's mouth and rested on its tongue. The plunger should be slowly pushed so that the medicine goes over the tongue. Once the animal has swallowed the syringe can be released. Care should be taken not to underdose animals. Determine an accurate weight and administer the corresponding amount of medication. Underdosing leads to drug resistance.

Pour-On/Dust

Some products, particularly those used against external parasites are available in a pour-on or dust form. Liquid pour-on products should be administered on the skin between the shoulders of the animal. Dust products should be sprinkled over the whole body.



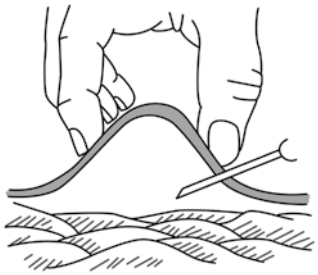
Injection

There are three types of injections:

1. **Intramuscular (IM) – in the muscle**
   a) IM injections should be given in the heavy neck muscle near the back of the head. The needle should be inserted into the muscle with a quick thrust. Care should taken to make sure the needle is inserted in the muscle, not just under the skin. You should pull back on the plunger to make sure the needle has not been inserted into a blood vessel, as evidenced by blood appearing in the syringe. The medication should be slowly injected into the muscle. A 1 inch needle is recommended for IM injections.

2. **Intravenous (IV) – in the vein**
   a) Sometimes IV injections are necessary to get medicine directly into the blood stream for a quick response. These are given in the jugular vein. Most producers rely on veterinarians for this type of injections.

3. **Subcutaneous – (SQ, Sub-Q) – under the skin**
   a) SQ injections should be given behind the point of the shoulder, in the neck region, or on the side of the animal. A SQ injection is given by making a "tent' with the skin and injecting the solution under the fold of the skin, parallel with the muscle. The medicine should be slowly injected. A ¾ or 1 inch needle should be used.



For thin solutions, such as vaccines, an 18 or 20 gauge needle should be used. For thick solutions, such as penicillin, a 16 or 18 gauge needle may be used. Use the smallest gauge needle possible when giving injections. A clean needle should be used (each time) when drawing medications or vaccines from a bottle. No more than 5 cc should be injected at any one site.

Each time you administer any form of medication you should keep a record of it. Withdrawal times should be strictly adhered to. Also make sure that you apply all suggested safety precautions such as wearing a mask and/or gloves when administering medication.

Breeding and Lambing

Breeding Methods

Sheep producers normally follow one of the following two breeding methods. Either they are a purebred breeder or a commercial grade breeder.

Purebred Breeder

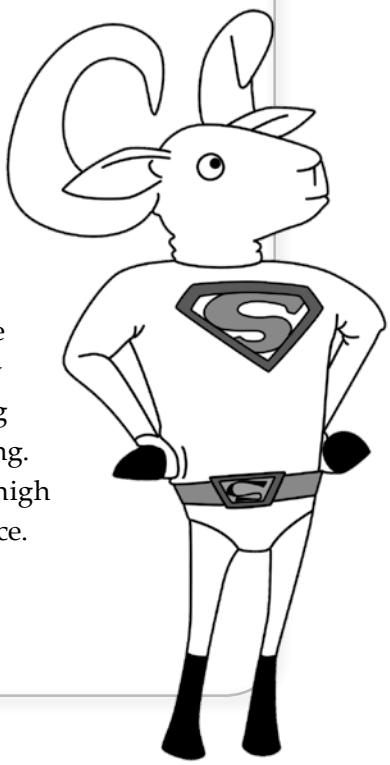
There are several main systems of mating purebred sheep. They are:

- **Outbreeding:** This is the mating of animals of the same breed which are not related. Most purebreds are mated under this broad system.
- **Closebreeding:** The mating of related purebred animals. Closebreeding may result in the appearance of undesirable characteristics. Breeders should have a knowledge of genetics and breeding principles.

Commercial or Grade Breeder

Commercial or grade breeders can improve the quality of their flocks using the following methods:

- **Grading Up:** Breeders of grade flocks can improve the quality of their ewe flock by using good purebred rams of the same breed as their ewes on each succeeding generation of ewes.
- **Crossbreeding:** Crossbreeding is the mating of animals of two or more distinct breeds. It is thus attempted to combine the most desirable characteristics of the two or more breeds. The resulting hybrid vigor expresses itself in twinning, early maturity and hardiness. If crossbreeding is not planned and carried on systematically its effectiveness may be lost.



Rams

The ram is the most important member of the flock, yet often the most neglected. You should never wait until the last minute to purchase rams. You should purchase rams at least several months before the breeding season. Rams need time to get acclimated to their new surroundings. If you only have a couple ewes, rather than purchasing a ram, you may choose to send your ewe to another farm for breeding. Wherever breeding is to take place, it is very important to select a high quality ram with good conformation and a strong record of performance.

Breeding

Most sheep are seasonal breeders and are ideally mated in the fall. Ewes reach puberty between 6 and 12 months, depending on breed and size, but it is not common to breed ewe lambs. Most breeders will start breeding ewes as yearlings. Ewes come into estrus (heat) every 13-20 days. A ewe in heat will seek out the ram. She will sniff and chase after him. The ram responds to the ewe in heat by sniffing, extending the leg, and curling his lip. If the female is receptive, she will stand for mating.

A ram in good health should be capable of breeding up to 100 ewes. Use of multiple rams may actually decrease mating as the rams will spend their time trying to establish dominance rather than breeding the ewes.

Reproductive characteristics of Ewes

Age at Puberty	6-12 months
Length of Estrus (Heat) Cycle	13-20 days (average 17 days)
Duration Of Estrus (Heat)	18-48 hours
Timing of Ovulation (best breeding time)	Approximately 20 hours after the onset of estrus
Gestation	144-151 days

Breeding Ewe Management

Selection

While the breed you choose is important, selecting good individual ewes to start your flock, is more important. The qualities desired in a ewe flock are:

1. *Good mothering instinct:* a ewe will look after her lambs.
2. *Good milking qualities:* a good milking ewe gives its lambs a good start which shows up in the first month or two of the lamb's life.
3. *Temperament:* the ewe flock should be reasonably easy to handle and respond to good treatment.
4. *Long life:* ewes that will continue to breed and raise lambs year after year reduce the replacements needed.
5. *Early maturity:* lambs that mature early and reach market weight and finish at an early age are more profitable.
6. *Efficiency in the use of feed:* animals that have the ability to make good use of feed make gains cheaper.

The above qualities are best evaluated through production records based on weight of lamb weaned per ewe.

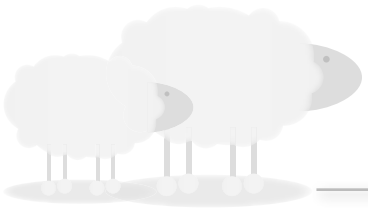
Record of Performance

When raising your own sheep it would be valuable to keep a record of performance for each of your ewes. This record should reflect the reproductive history of each ewe. By reviewing your records of performance you will be able to identify which ewes in the flock are the most productive. When purchasing new breeding ewes for your flock, ask to view a record of performance for each prospective purchase. Reviewing these records will help you make prudent decisions when selling or purchasing stock.

SAMPLE INDIVIDUAL EWE RECORD OF PERFORMANCE		
Ewe Identification: 24	**CSIP #** 310000000	**Breed:** Dorset
Birth Date: 3/3/02	**Sire:** Apollo	**Dam:** 92
Type of Birth: Twin/Twin	**Birth weight:** 8.75 lbs.	**Weaning weight:** 50 lbs.
Comments:		

Date Lambed	Sire	Sex of lamb	Birth weight	Type of Birth		Lamb ID	Date Weaned	Weaning weight	Comments
				Born as	Raised as				
3/12/03	Reggie	R	8.5	2	2	355	5/15	64	.
3/12/03	Reggie	E	7.5	2	2	354	5/15	50	.
3/15/04	Scottie	E	9.9	3	3	461	5/28	68	Kept for breeding
3/15/04	Scottie	E	7.7	3	3	462	5/28	52	.
3/15/04	Scottie	E	7.0	3	3	463	5/28	60	.
3/13/05	Scottie	E	11.0	2	2	526	6/2	78	Kept for breeding
3/13/05	Scottie	R	12.0	2	2	527	6/2	86	.

Source www.sheep101.info/201/recordkeeping.html



Periods in the Life of a Breeding Ewe

Throughout the year breeding ewes go through a variety of stages. These stages require various amounts of care and a changing diet. Probably the first thing you must realize is that the gestation period for a ewe is usually 144 to 151 days. The only way you will know when the various stages are occurring is to keep a record of when the ewe was bred or at least when the breeding season begins (i.e. ram turned in with ewes).

STAGE	DESCRIPTION	LENGTH	FEED REQUIREMENTS
Maintenance	Dry period between weaning and breeding	80–130 days	Low
Flushing	3 weeks before, during and 3 weeks after breeding	90 days	High
BREEDING			
Early Gestation	First 15 weeks after breeding	105 days	Moderate
Late Gestation	Last 6 weeks before lambing	42 days	High
LAMBING			
Lactation	Nursing lambs	50–100 days	Very high
WEANING			

Maintenance

This is a stage between when a lamb is weaned and the ewe is re-bred. Ewes in this stage of production can be fed on average quality pasture or two kg of poor to average quality hay. If the ewe loses some weight, it will not cause any harm. On the other hand, the ewe should not get too fat. She should be fed so that she is carrying medium flesh on her back. The maintenance period is ideal for general husbandry procedures such as hoof trimming, shearing, and vaccination.

Flushing

At breeding time a ewe should be in good condition and gaining weight. You should start flushing the ewe about three weeks before breeding, by feeding .5 kg of grain per day, good-quality legume hay, pasture, corn silage or a succulent crop, and continue this for three weeks after the ewe is bred. This extra energy makes the ewe gain weight, ovulate more eggs and allows for a large lamb crop. Flushing is of questionable value if the ewes are in good condition.

Breeding

Breeding should occur within several days once the ram is put in with the ewes providing the ewes are in heat. Keep track of which ewes have been bred on which dates by fitting the ram with a breeding harness. The breeding harness leaves a crayon mark on the ewe if she has been serviced by the ram. Change the colour of the crayon every few weeks to determine if the ewes have been serviced in subsequent heats. Keep track of all possible servicing dates so that you can estimate lambing dates and be prepared.

Early Gestation

After breeding and up to six weeks before lambing the body weight of the ewe should be maintained. She should not become too fat or too thin. This can be achieved with average quality pasture or 1.5-2 kg of hay for her daily ration.

Late Gestation

Two-thirds of the growth of the unborn lamb(s) occur during the last 6 weeks of gestation. The feed requirements for the ewe increase greatly at this time, particularly the need for more energy. This extra energy can be supplied by grain and quality hay.

Example rations:

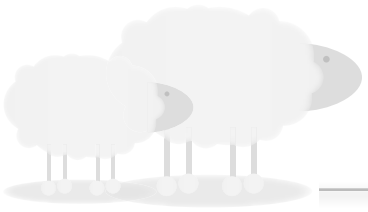
- 2 kg good hay + .5 kg grain
- 1.5 kg average hay + .75 kg grain

Exercise is important in this period to:

- prevent ewes from becoming over fat
- produce strong vigorous lambs
- minimize trouble at lambing time.

A fat out-of-shape ewe has a greater chance of getting pregnancy diseases (pregnancy toxemia) and might have much more trouble at lambing time. Sometimes it is difficult to provide daily exercise but feeding hay some distance from sheds will help.

During late gestation crutching should be done if necessary. Crutching is the process of trimming off all excess wool and dirty locks on the rear quarters and udder of the ewe. The removal of this wool before lambing helps the lamb nurse more easily.

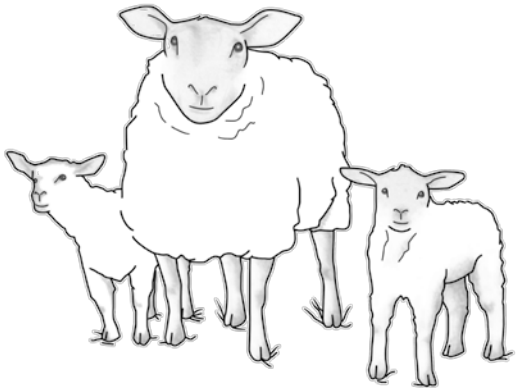


Lambing

Lambing time is the most critical period in flock management because a large number of lamb deaths occur during the first fifteen days after birth. To increase the number of lambs marketed careful attention must be given the ewe and lamb at lambing time. Neglecting to do this is the number one reason for losses at lambing.

There are a number of things to keep in mind:

- be prepared
- be aware of the main causes of lamb deaths
- learn to recognize indications that lambing is near
- know when assistance is necessary
- know what to do at birth



Be Prepared

Individual, well-bedded lambing pens should be prepared in advance so the new born lamb and ewe may be kept away from the rest of the flock for a day or two. These pens should be approximately 1.2m X 1.2m. One lambing pen for every four or five ewes should be sufficient.

Lambing pens have several advantages:

- the ewe and lamb are kept alone and quiet.
- the ewe and lamb can be kept under close observation.
- the rest of the flock cannot trample newborn lambs.
- lambs are kept from wandering away from the ewe.
- help young and nervous ewes to mother these lambs more readily.

The use of lambing pens for ewes lambing on pasture should be kept for problem cases. A source of heat should be available in extremely cold weather to prevent the lamb from getting chilled.

A lambing kit should be prepared for the barn with all the equipment necessary for lambing and care of the lamb in its first few weeks.

- a bottle of tincture of iodine (to dip the navel of the lamb).
- vaseline (to spread on hands in case assistance is required), or light mineral oil.
- disinfectant soap (to wash hands before assisting in birth).
- clean towels (to dry hands).
- ear tags (to tag new born lamb for future identification).
- docking and castrating equipment.
- calendar and notebook (for recording of lamb's birth date, sex and mother).

Be Aware of the Main Causes of Lamb Deaths

The three main causes of lamb deaths are:

1. chills
2. unsanitary quarters
3. starvation

When lambing pens are designed, keep them warm, free from draughts, clean and well bedded. Try to have the lambs born inside during cold weather. To reduce the losses caused by starvation, make sure the lamb receives milk shortly after birth. Immature sheep that are lambing for the first time and some breeds and strains of sheep are poor mothers and may leave their lambs.

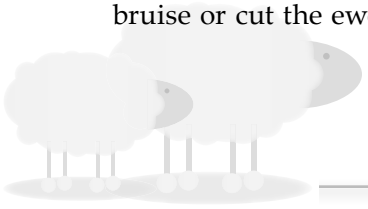
Indications that Lambing is Near

a) *udder development:* a few weeks before a ewe is ready to lamb, her udder starts to develop. By lambing time it is large and firm, the skin is light and it turns a darker shade of pink a day or two before the lamb comes.
b) *heavy appearance:* a day or so before the lamb comes the ewe will drop, causing a notable change in her general shape. The underline will be carried lower, she will appear narrower and deeper. On each side just in front of the hips, behind the ribs, and below the back line, the ewe will appear sunken. These are good indications lambing is near.
c) r*efusal to eat:* the day the ewe is to lamb, she may refuse to eat. She may, however, eat as usual but turn away from the feed rack in the middle of a meal, walk over to the corner and go into labour.
d) *nervousness:* before lambing, the ewe may paw the bedding and make soft, low bleats.

Some ewes may show all these signs while others none at all. There is no sure sign that a ewe is going to lamb until she goes into labour and sometimes this can even be a false alarm. During the lambing season, many hours should be spent checking the ewes in the process of lambing.

Know When Assistance is Necessary

If lambing is proceeding normally, do not do anything to assist. Do not disturb the ewe but keep an eye on her. In a normal presentation, the front feet protrude first, the nose and head following lying flat on the front legs. If the lamb should be large or in any other position or if the lamb does not appear after the ewe has been straining for two or three hours, some assistance should be given. If assistance is necessary, make sure your hands are clean and lubricate them with vaseline or light mineral oil. Take care not to bruise or cut the ewe. Short fingernails reduce the chance of scratches and infection.



At Birth

a) Immediately after birth, clean the mucus from the nose and mouth of the lamb. If the lamb seems weak, rub it along the backbone and back of the neck vigorously with the fingertips to stimulate breathing. Do not rub it on the chest as this may push the ribs down on the heart and stop it, especially with lambs that are over size. Putting them in warm water (as warm as human elbow can bear) for a few minutes can revive chilled lambs. Rub briskly and dry off with a cloth and place them either in a warm blanket or under a heat lamp in a lambing pen. Make sure the heat lamp is not too close to the lamb's back. Give the lamb some warm milk as soon as possible and return to the ewe, otherwise the mother may disown it.

b) Check the udder to be sure that it has milk. In doing this, you will squeeze out the little wax plug that seals the opening in the end of the teat. By doing this before the lamb gets there, it will be easier for the lamb to get its first milk.

c) Disinfect the lamb's navel with a tincture of iodine solution to prevent any infection. If this is not done the lamb may get an infection through the cord.

d) Make sure the lamb gets a suckle soon after birth. Weak and wobbly lambs may require assistance. The lamb's ability to absorb antibodies from the colostrum drops rapidly after birth. These antibodies are very important for protection against scours and other diseases. For orphaned lambs or those lambs born to ewes with no milk, it is a good practice to have some fresh colostrum from ewes that have just lambed or colostrum that has been frozen in plastic ice cube containers. This is the right amount of colostrum when thawed. Udders of heavily milking ewes should be inspected a few days after lambing for congestion due to the inability of the lamb to take all the milk. Some hand milking will relieve this congestion.

Lactation

The ewe's milk production peaks four to eight weeks after lambing. During this period the requirements for protein and energy are much higher. The ewe now has the capacity to eat more feed because the stomach cavity does not carry a lamb now. Ewes feeding twin lambs produce more milk than a ewe raising a single lamb so the requirement for extra protein for her are more as well.

Example rations:

- 2.25 kg good (second cut alfalfa) Hay + .5 kg grain (corn or barley)
- 2.25 kg average (mixed) hay + .75 kg grain

After Birth, observe the udder for congestion and mastitis. Provide good quality hay or pasture along with free access to mineral, salt and fresh water. Provide creep feed to lambs at seven to ten days of age. The creep should be 15 to 18% crude protein. Feed just enough grain to be consumed in one day.

Weaning

Weaning age depends upon many factors. Lambs may be weaned successfully as early as 3 to 4 weeks of age and as late as 5 to 6 months of age. Early in life, the lamb cannot digest anything but milk. However, by 3 weeks of age, the developed rumen makes the lamb more efficient than the ewe. As a general rule of thumb most lambs can be successfully weaned at 60 days of age or 45 pounds, whichever comes first.

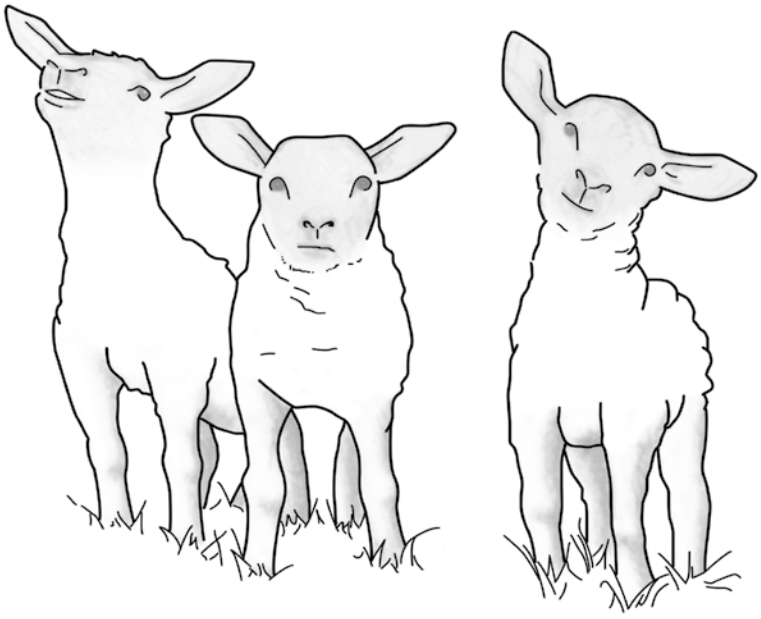
Lamb Management

Orphaned Lambs

If you have orphaned lambs, first you should make an effort to place these lambs with another ewe which has lambed about the same time. During the first few days a ewe identifies her lamb by smell. There are some things you can try to make the foster mother accept her new lamb:

a) smear some of the ewe's milk over the body of the lamb.
b) rubbing the lamb on the nose of the ewe may produce satisfactory results or rub vaseline on the ewe's nose.
c) place a dog near the ewe to arouse her maternal instinct.

The ewe will probably have to be held while the lamb nurses. Even after all your efforts, the ewe may not take the lamb and you will be left with an orphan lamb.



Feeding the Orphan Lamb

All lambs need to receive colostrum soon after birth. Colostrum is the source of antibodies for newborn lambs and serves as a source of nutrients, especially energy, which is important in preventing hypothermia. Pay close attention to the amount of colostrum newborn lambs receive. Research indicates a newborn lamb should receive 3 ounces of colostrum per pound of body weight. Give this during the first 18 hours of life to build up sufficient antibody levels and nutrients.

Periodically freezing high quality colostrum is a good management practice. This ensures that colostrum is available the next time a newborn lamb needs it. Be careful when thawing; do not use high heat. High heat destroys the antibodies, which is the reason for feeding colostrum to newborn lambs.

After the orphan lamb has received some colostum you may begin feeding it milk replacer. Choose a milk replacer specifically designed for lambs (30 to 32 per cent fat, 22 to 24 per cent protein, and 22 to 25 per cent lactose). Do not use milk replacers made for calves and pigs on lambs as they do not contain enough protein and fat. Fresh cow's milk is not ideal for orphan lambs for the same reason. If lamb milk replacer or fresh sheep milk is not available fresh goat's milk would be a good choice for raising orphan lambs.

Naturally lambs will suckle up to 40 times in a 24 hour period. It is more beneficial to feed orphan lambs in multiple small feedings rather than in a few large feedings.

AGE OF LAMB	NUMBER OF DAILY FEEDINGS	AMOUNT OF EACH	DAILY AMOUNT
1 – 6 days	6 – 8	30 – 55 mL	300 – 425 mL
1 – 2 weeks	4 – 6	85 – 170 mL	425 – 850 mL
2 – 4 weeks	4	170 – 225 mL	850 mL – 1.1 L
4 – 6 weeks	3	280 – 450 mL	1.4 L – 1.7 L
6 – 8 weeks	3	450 – 900 mL	1.7 L – 2.2 L

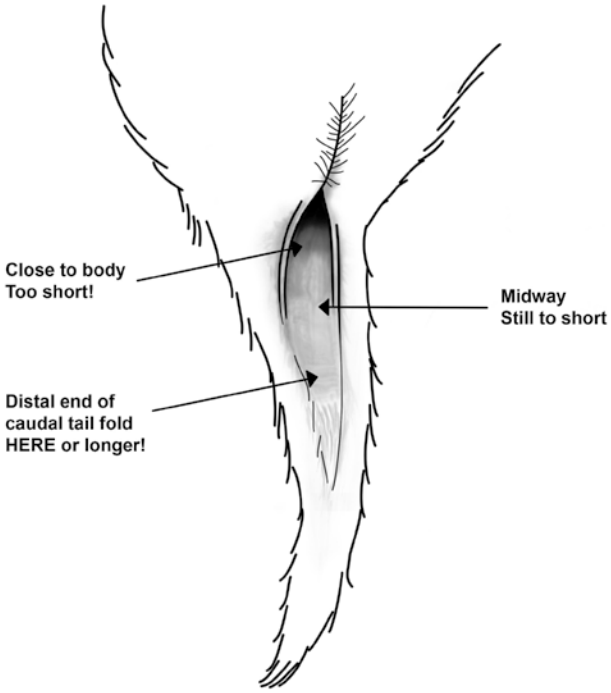
Never allow the lamb to consume more than enough to bring its flanks out even with its hips. Overstuffed lambs die quickly from colic. A bottle with a medium-sized nipple can be used but make sure it is thoroughly cleaned. If there is more than one orphaned lamb a self-feeder or milk-bar can be set up by attaching multiple nipples to a bucket full of milk. At two weeks of age, the lambs should receive some dry feed if they are not on pasture.

Docking

Tails should be docked before the lamb is seven days old. The docked tail should cover the anus of the ram lamb or the vulva of the ewe lamb. It is important not to dock the tails too short as this can contribute to prolapses. Docking prevents manure from accumulating on the tail and hindquarters of sheep and lambs. Docking also facilitates shearing. Not many shearers would want to shear sheep with long tails.

Steps to take in Docking Procedure

a) Hold lamb with the head up and its back toward the holder.
b) Hold left front and left rear legs in the left hand.
c) Hold right front and right rear legs in the right hand. In this position, the underside of the lamb is facing upward.
d) Locate the distal end of the caudal tail fold. Make sure the tail will be long enough to cover the vulva of the ewe and the anus of the ram.
e) Push the skin slightly towards the body. (This surplus skin will help healing later on.)
f) Disinfect the area to be cut with iodine or similar disinfectant to aid healing and help prevent infection.
g) Remove the tail using the method of docking you have chosen.



Methods of Docking

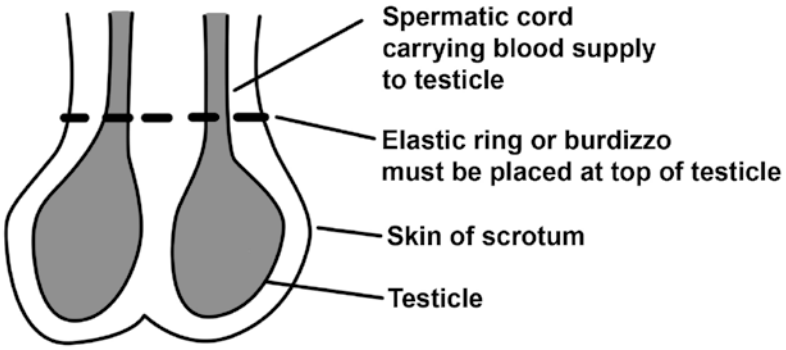
Burdizzo: these castrating pincers may also be used in docking. The tail is crushed at the second joint. Hold the pincers closed for a few seconds then cut the tail with a knife immediately inside the jaws of the pincers. Again the tail and equipment should be disinfected before and after docking to help minimize infection. The crushing process of the burdizzo reduces the amount of bleeding but does not eliminate it completely.

Elastic Bands: an instrument called an "Elastrator" is used to stretch an elastic band over the tail at the point where docking is desired. This band cuts off the blood circulation below the band and the tail withers and finally drops off in 2 to 3 weeks. During warm weather flies may be attracted to the decaying tail which may cause maggot infestation making this system less attractive. It is recommended that the elastic be placed on the tail of lambs when they are 1 to 4 days old because it is quite painful to older lambs.

Electric Docker: the iron is made of steel and sharpened at one end. The iron is heated to black heat and the sharpened end is pressed on the tail at the point of severance. The electric tail docker cuts and cauterizes the tail at the same time. The heat cauterization minimizes tail infections. The lambs should be placed in a clean field or pen after docking to help prevent infection.

Surgical: Tails can also be ducked surgically using a knife. This technique should only be performed by a veterinarian.

Castration



All male 4-H animals should be castrated as soon as the testicles are fully descended into the scrotum and must be castrated by the time they reach 6 weeks of age. Animals castrated by the short scrotum method or cryptorchid lambs are not acceptable 4-H project animals. Wethers (castrated males) are generally easier to handle, and can be housed or pastured with ewe lambs making them ideal for 4-H projects. Wethers experience no growth setbacks at castration time and, under the correct feeding and management practices, produce an ideal carcass.

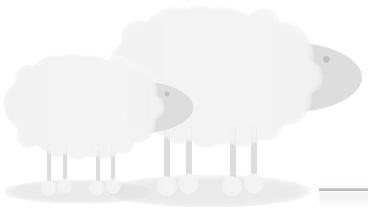
Methods of Castration

Surgical: The lamb is held the same as for docking. The scrotum is disinfected and the lower third of it is cut off with a sharp knife that should also have been disinfected. The membrane encasing each testicle is slit and the testicle is drawn out and removed. This method should be performed by a veterinarian.

Burdizzo: Castration with burdizzo pincers is a bloodless method leaving no wound. When properly done this method is as effective as the knife method. Hold the lamb as for docking. Make sure the testicles are well down in the scrotum. The lambs should be as calm as possible so do not castrate immediately after docking. Locate the cord at the right side of the scrotum and place the pincers well above the testicles, close them and leave locked for a few seconds. Remove the pincers and repeat the process on the left side. Each cord must be crushed separately. To avoid cutting off the blood supply to the scrotum, be sure that the central cord is not squeezed. Be sure to use the lamb burdizzo, not the cattle burdizzo. Lambs should be checked in a week or two to make sure no misses were made.

Elastic Bands: Make sure the testicles are well down in the scrotum. With the elastrator, stretch the elastic band over the testicles. The testicles and the lower part of the scrotum will drop off in 2 to 3 weeks. This method should only be used on very young lambs (7 days or less) as it can be very painful for older lambs.

Animals castrated by the short scrotum method or cryptorchid lambs are not acceptable 4-H project animals.



Showing Sheep

Exhibiting your sheep project at Achievement Day or at fairs and exhibitions may be the highlight of your 4-H year. Before you take your sheep in the show ring they should be trained and groomed, and you should be prepared with a complete knowledge of proper showmanship techniques.

Training

A well-trained lamb will be pleasure to handle and will be much easier to show-off than one who is untrained and be prone to struggling. In most cases lambs will be easy to train as long as they are handled properly and regularly throughout the project.

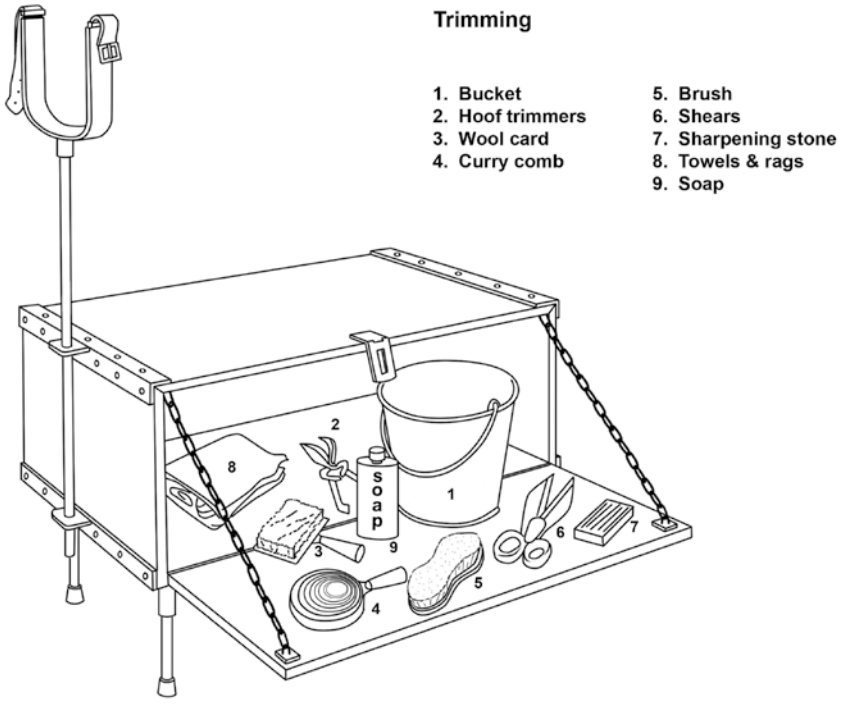
Training should begin 2-3 months before you first show the lamb. It is important to take your time when training so that neither you nor the animal becomes frustrated. Before you can train your lamb to walk and stand in the show ring you will need to work with it until it becomes comfortable with you. If you do this in slow, gradually progressive steps you will experience greater success. As the lamb becomes comfortable with one step, move on to the next.

1. Start by visiting the lamb. Sit in the pen and watch it eat and move about.
2. Try to gently touch or pet the lamb while it eats.
3. Pat the lamb and begin handling it as you would in a judging class.
4. Move the lamb as you would when in the show ring. Grasp it under the chin with one hand and pat it on the dock with the other. If the lamb won't move forward try gently squeezing the dock. Practice walking and turning different directions as you would in a show.
5. Put a halter on the lamb. Don't force the lamb to walk at first, just let it stand still and become accustomed to the halter, Gradually encourage the lamb to move forward by pulling the lead rope and patting it on the dock. Although halters are not used in the show ring, halter breaking will be valuable especially when transporting lambs or managing adult sheep.

6. Practice setting the lamb up. Have it stand still and try to move its legs so that they are set squarely under the body. Lift the head. Practice this until the lamb is able to hold the position for a number of minutes. Brace the lamb by standing in front of it and gently lowering its head and applying pressure to its chest. This should cause the lamb to tighten its muscles and will also discourage it from bolting off when the judge handles it. Have someone handle the lambs back and hindquarters while you practice bracing.

Make sure you leave enough time to progress through all of these steps before you enter the show ring. You will be most successful if you train your lamb regularly for short periods of time (15-20) minutes. The lamb will become restless and stubborn if you attempt to train it for longer periods of time. If you are irregular with your training the lamb will not show much progress as it will not be able to establish a routine or remember the previous training session.

Grooming



General appearance is the first thing a judge will notice in the show ring. This first impression is important because it will influence the judge's overall opinion of the lamb. A thorough grooming job may be the difference between a top placing and a second or third place placing. Grooming will vary depending on what unit the sheep is enrolled in and whether or not it is being used for showmanship.

Grooming Equipment

You will need the following to groom your sheep project:

- Soap and water
- Rags (to clean armpits, ears, eyes, nose, and hooves
- Curry comb
- Towels or blower
- Trimming stand
- Wool card
- Hoof trimmers
- Shears
- Sharpening stone
- Blanket

General Grooming

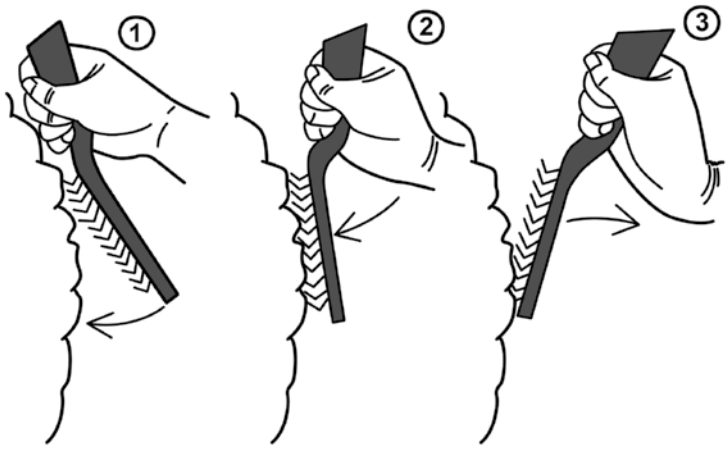
Animals other than those to be used for showmanship or full fleece classes may be showed slick shorn. 4-H members should be encouraged to learn to electrically shear their own animals however it is acceptable for 4-H animals to be electrically shorn by another individual. When preparing animals for show complete the following:

- Have the animal slick shorn using electric shears.
- Wash the animal using a mild soap. If possible use warm water or wash on a warm day so that the animal does not become chilled. Give extra attention to cleaning the armpits as lanolin and dirt commonly build up in this area.
- Rinse the animal completely. Do not use a high pressure nozzle. Ensure that no soap residue remains on the animal by holding the nozzle close to the skin and moving it with a circular motion. Squeeze all the water out of the fleece using your hands or a curry comb.
- Dry the animal completely using towels or a livestock blower. Ensure that the animal is totally dry before you release it to prevent chilling.
- Use a wool card to lightly lift and straighten the wool fibres.
- Use hand shears to trim out electric shear ridges and any other long patches of fleece.
- Trim the hooves down to the level of the foot pad using a pair of hoof trimmers. Clean hooves with a damp cloth.
- Clean out ears, eyes and nose using a soft damp cloth.
- Once the grooming is complete, cover the sheep with a blanket and keep it in a clean dry area.

Grooming Showmanship Animals

Animals to be shown in showmanship classes have a more rigorous grooming routine as they are to be shown with a minimum of 2cm fleece. This requires that the animals be hand-trimmed. Hand trimming allows you to shape the fleece in a way that maximizes the animals strengths and minimizes it weaknesses.

The grooming procedure will be much the same as is described in general grooming except that you will start by washing the fleece. If the fleece is very long you may want to trim off the end of the fleece before you wash it. Some people may choose to electrically shear their showmanship animal several months before the show. If you do this be sure to allow time for a sufficient fleece to grow back (time will vary between breeds). It is preferable to have excess fleece when you start hand trimming so that you can trim it in a way that disguises weaknesses and highlights strengths in your animal. If you don't have any fleece to work with this will not be possible.
Once the fleece is mostly dry you can card it. The more thoroughly you card the fleece the easier it will be for you to trim evenly.



Once the fleece has been thoroughly carded you may begin trimming:

1. Make sure your shears are sharp and clean. If your blades are dull use a sharpening stone before you begin.
2. Start by trimming the top line. Place the shears flat to the surface of the wool, then tilt slightly so the bottom blade is resting lightly on the surface. Move the upper blade up and down quickly using your index finger while slowly gliding the bottom blade along the surface. Try your best to keep the shears level, if you have difficulty, carefully hold the tips with the thumb and index finger from your opposite hand.
3. After you have trimmed a straight top line trim the sides, rumps, legs, chest and face. If there are trim lines in the fleece, card it again and try trimming in a different direction.

Try to trim the wool to the same length all over the body. You may wish to keep the wool intentionally longer in some areas to contribute to a well-balanced appearance. For example, if your lamb has a weak hindquarter you may want to keep the wool slightly longer in this area to contribute to an appearance of fullness.

Grooming Hair Breeds

Some breeds including the St. Croix and the Dorper do not have a wool coat and do not require shearing. These breeds will shed their hair coat in warm weather. These breeds will require washing and brushing to prepare for show. Also be sure to trim hooves and clean ears, eyes, and nose.

Grooming Full Fleece Projects

Longwool breeds such as the Romney are often exhibited as full fleece projects. These projects will have more emphasis placed on their wool during evaluation than on their general conformation. Full fleece projects should be exhibited with a full coat that has been cleaned of debris but not washed or trimmed.

Showmanship

Showmanship is important because it allows you to show off your sheep to the judge. Showmanship should be employed in all classes regardless of whether they are breed and marketing classes or those specially designated as showmanship classes. When exhibiting sheep the animal should always be under the perfect control of the exhibitor.

General Tips for Showmanship:

- Always try to keep the sheep between the judge and yourself. You may need to switch sides or turn the sheep to make this possible.
- Only move around the front of the sheep, do not walk around or step over the back.
- Whenever you stop, pose the sheep correctly.
- Always keep your eye on the judge.
- When stopped, stay crouched. Avoid kneeling, stand only when necessary.

With this as a starting point, control under different situations should be as follows:

1. *Entering the show ring.* Leave enough space between your sheep and the next sheep. If your sheep has a lot of space around it, it will stand out to the judge.
2. *Walking in a circle around the show ring.*
    a) If the judge is in the center of the ring walk slowly around the ring, maintaining your distance from the other exhibitors. The sheep should move at a fairly slow and even pace with its back level and head in normal position.
    b) If the judge is at the side of the ring, walk around the circle, but as you approach the judge turn the sheep's head in towards your stomach and switch hands. This will give the judge a 360° view of your animal and will move you to the other side of the animal so that when you walk in front of the judge your back is not facing them. Once you have passed in front of the judge, switch back to the other side of the animal and continue around the circle.

3. *Pose the sheep* whenever you stop. Pose the sheep by moving its legs squarely under its body. Move the legs by grasping and lifting them one at a time or by gently applying pressure with an open palm to the side of the leg. The feet should be moderately spread, but tucked under enough so the back does not sag. Sheep should be on the level or the front feet on slightly rising ground (not with forefeet in a hole). You should be crouched beside the sheep; your knees should not be touching the ground. Do not place your hands at any place on the sheep other than the face, dock, and legs. Lift the head to a natural level so that the sheep appears alert but not uncomfortable. Rear_view *Sheep being posed* with the judge at its rear and viewing from a distance. You should be facing your sheep with a hand grasping each cheek. You should be standing, not crouching.
4. *Judge approaches rear of sheep to handle it.* The same grasp (at the cheeks) should be maintained. Bend your knees and pull slightly downward on the sheep's head.
5. *Judge views sheep from its right side.* You should now stand at sheep's left side (near its head but not against it) and slip your left hand under the sheep's jaw (well out toward the muzzle). The right hand should not touch the sheep. Sheep's head should be at normal level—not too high or too low.
6. *Judge moves to the front of sheep, for view of head.* Same position, standing at the left of the sheep's shoulder (as in 6 above) should be maintained. Do not move too far to the rear and stretch at arm's length to hold the sheep's head.
7. *Judge now moves from head-on view to left side of sheep.* You are correct in moving between the judge and your sheep to the opposite (right) side around the sheep's front end. (Never stretch around rear end or step over the sheep's back. In either case you can lose control of your animal).

8. *Judge asks you, the exhibitor, to bring the sheep to the front.* You should be on the opposite side of sheep from judge. If you are on the sheep's left side, your left hand should be under the sheep's chin (well out toward muzzle, not choking him off in the throat) and your right hand, with fingers closed, on the sheep's dock. Walk the sheep towards the judge. Stop the sheep a few feet in front of the judge and pose it correctly.

9. Judge requires sheep to be *returned to line-up* after walkout. You should turn the sheep so that its head remains close by your belt. Simply change hands under the chin and reverse the sheep. You remain at its head so that for the return trip you will end up on the opposite side of the sheep from the judge. Do not turn the sheep's head away from your body this will provide an opportunity for the sheep to bolt away. Upon return to the line-up, walk through the space in line you originally occupied, turn the sheep and go back the line facing the right direction. Immediately place sheep in position.

10. *Judge requires sheep to be turned over* and set on rump for inspection of belly and hooves. Two procedures are permissible, result in good control, and are not awkward.
    a) From a position close against the left side, twist the sheep's head to the right and back onto its neck while catching the right rear flank in the right hand. Twist and lift strongly at the same time to set the sheep on its rump.
    b) From a position close against the left side, grasp the right front foreleg with your right hand and place your right leg behind the sheep's rear legs. Lift up the front of the sheep and gently pull it back causing it to "trip" over your right leg. Be very careful that the sheep's legs are clear before you lower it onto its rump.

12. Judge requires sheep to be returned to standing from on rump. Tip the sheep sharply forward with a loose hold on chin. A too slow and casual tipping may cause the sheep to simply lie down, in which case turning loose the head, holding and pinching the dock is correct procedure to cause it to rise.

13. Dusting off shavings and straw after sheep has risen should be done only as soon as judge has indicated he is moving onto next sheep. Get the sheep posed first, then dust it off.
14. In the line, or at any time the sheep is being viewed by the judge, calmness and control are far more important than showy gesturing and arms-length posing which allow the possibility of losing the sheep. Keep the sheep "showing" at all times without excitement or over-action.
15. If the sheep should bolt away, the worst possible showmanship would be to run after it and tackle it in football fashion. Follow the sheep as quietly as possible to a corner and haze it in such a manner as to catch it quickly. The best catch is under the chin or in the rear flank. As soon as caught (under the chin), lift its head up, then it cannot bolt so easily.

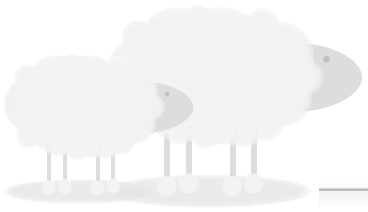
Personal Appearance

There is no prescribed uniform for 4-H sheep exhibitors but a club shirt, pants and closed toe shoes are recommended. They should be clean and neat, as should the exhibitor. Extremes in appearance, such as large flashy jewellery should be avoided as they will distract the judges attention away from the sheep.

Evaluation

The judge should recognize these attributes in his top showman:

- quiet, "unshowy," calm handling
- complete control at all times
- an excellent smooth, clean fleece preparation
- evidence of having "broken" sheep to smooth, quiet action
- the sheep always posed
- exhibitors attention always on the judge



General Showmanship Score Card

Fitting • Condition • Cleanliness • Clipping and grooming • Condition of hooves	**30**
Training and Showmanship • Evidence of previous training • Handling of the project • Posing of the project • Project response to exhibitor's movements • Indication of good knowledge of animal's faults and habits	**50**
Ring Manner and Appearance • Clothes neat, clean and suitable to occasion • Full attention given to the job at hand • Is on time, alert and aware of the judge, responds to judges requests • Courteous and polite to other exhibitors and judge • Knowledge of project pedigree, care and management program	**20**
TOTAL	**100**

Marketing

The selection, breeding, feeding and management programs that have been discussed in this manual are designed to put a high quality lamb and wool product on the market. If growers do not produce the kind of lamb consumers will buy, the consumers will look to other meat products to fill their demand for red meat.

Most breeds of lambs in western Canada are properly finished at 110 – 115 lb. However, very large-framed lambs may not have enough fat cover at that weight, and small-framed lambs may be finished at lighter weights. Although some fat is desirable, be careful not to over finish your market lamb as this may decrease its value. An average dressing percentage is 50%. Dressing percentage refers to the percentage of carcass which is usable. That is, the percentage left after the animal has been processed. Lambs will vary from 48% to 55% but 50% is standard.

Dressing percentage is determined as follows:

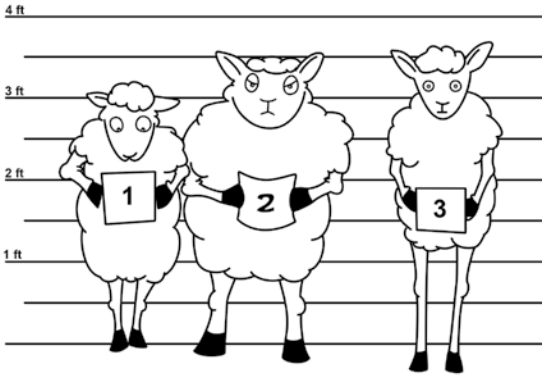
$$\frac{\text{Carcass weight}}{\text{Live Weight}} \times 100 = \text{dressing percentage}$$

A 100 lb lamb sent to market with a dressing percentage of 50% will yield a 50lb carcass.

In Canada, sheep and lambs are marketed in various ways. Regardless of your marketing method, go to the market when your lambs are sold and learn all you can about lamb marketing. Follow lambs through the slaughtering process and examine your lamb carcasses hanging in the meat coolers. Official meat graders will evaluate your lamb carcasses and explain the differences in carcass quality. Arrangements need to be made in advance for this.

Canadian Sheep Identification Program

The Canadian Sheep Identification Program (CSIP) was instituted in January 2004. The goal of animal identification is to prevent and control the spread of disease and to provide safe food to consumers. The Canadian Sheep Identification Program will dramatically increase the ability to respond to any disease outbreaks and will increase consumer confidence in sheep and lamb products.



Under the Canadian Sheep Identification Program sheep producers must:

- Ensure that an approved CSIP ear tag is applied to all sheep and lambs before they leave the farm. This includes animals leaving the premises temporarily. (for example: exhibitions, veterinarian clinics, community pastures)
- Keep record of, all sheep or lambs entering the flock for breeding purposes, and all sheep 18 months or older leaving the farm, other than those sold directly to an inspected abattoir.
- Apply a Canadian approved national identification tag to imported sheep within 7 days of arrival.
- All animals purchased must bear an approved CSIP ear tag. If a tag is subsequently lost, you must immediately apply a new approved CSIP ear tag and record the identification number with as much information about the origin of the animal as is known.
- Approved CSIP ear tags must not be removed from any live animal or tampered with for any reason and must not be re-used. If an animal dies on your property, the tag should be removed, saved and recorded with the cause of death if known.

CSIP ear tags must be purchased from an approved distributor. When purchasing tags, you will be asked to provide your name, telephone number and address. Contact the Canadian Sheep Federation for a listing of approved distributors.

Meat Inspection

In September 2004, the Province of British Columbia enacted a new Meat Inspection Regulation under the Food Safety Act. Under the new regulations all BC abattoirs that produce meat for human consumption will have to be either provincially or federally licensed. Only meat from livestock slaughtered in a licensed abattoir can be sold for food. All animals slaughtered in licensed abattoirs will be inspected both before and after slaughter.

Quality Grading

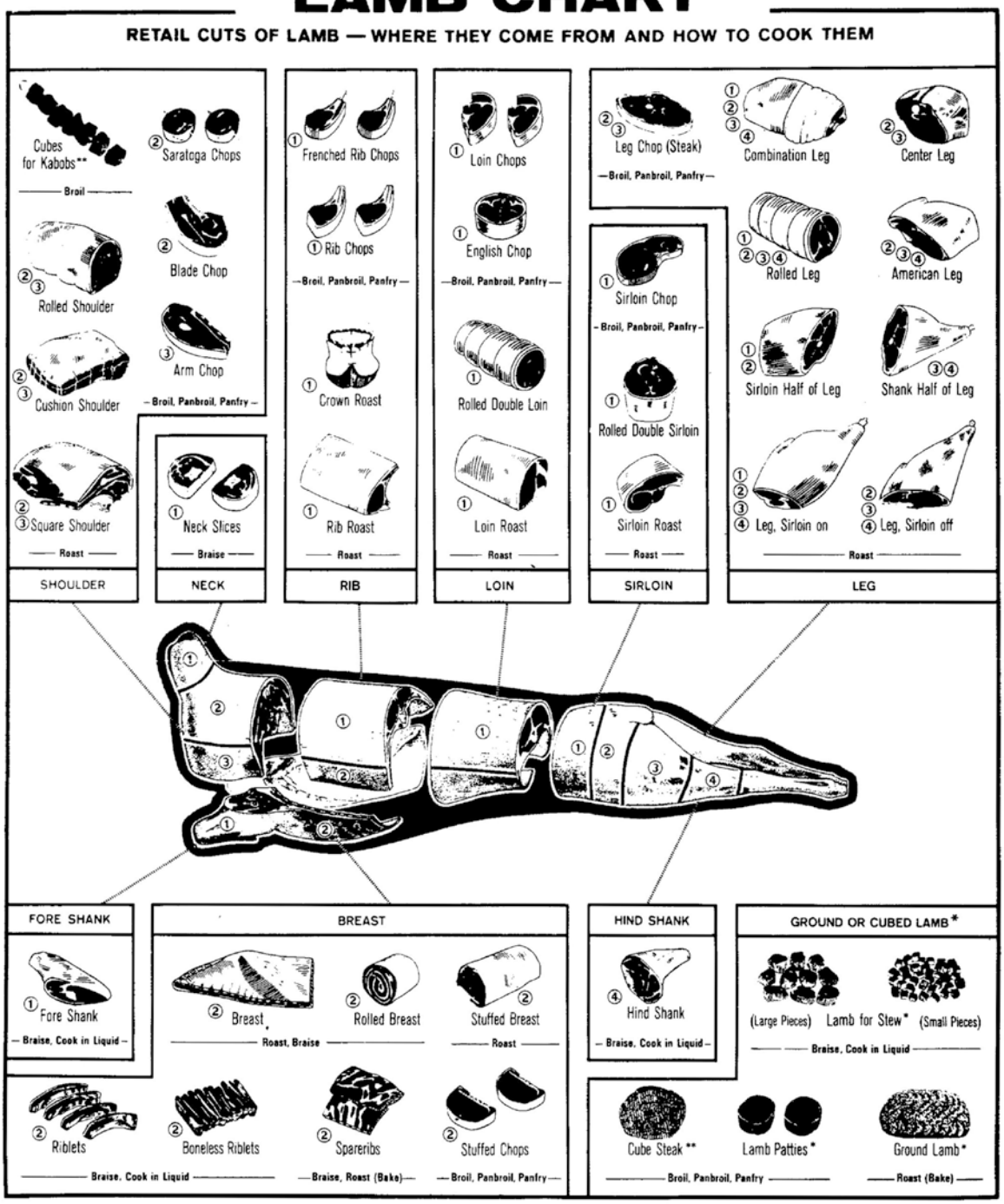
Lamb and mutton carcasses are quality graded at slaughter. Canada AAA, C1 and C2 are lamb grades; Canada D1 and D4 are mutton grades.

To attain a lamb grade the animal must have: fewer than two permanent incisors, ribs that are narrow, slightly rounded and reddish in colour, and two break joints* (or in the case of one break joint and one spool joint, the break joint has four intact and well-defined ridges with at least a slightly red and slightly damp surface).

To attain a mutton grade the animal must have: two or more permanent incisors, ribs that are wide, flat and white, and two spool joints* (or in the case of one break joint and one spool joint, the break joint has a dry and mainly white surface).

* A break joint is simply a spool joint that has not completely developed. The break or spool joint is found in the fore limb.

LAMB CHART


RETAIL CUTS OF LAMB — WHERE THEY COME FROM AND HOW TO COOK THEM
Cubes for Kabobs**
Broil
Saratoga Chops
Blade Chop
Rolled Shoulder
Arm Chop
Cushion Shoulder
Broil, Panbroil, Panfry
Square Shoulder
Roast
SHOULDER
Neck Slices
Braise
NECK
Frenched Rib Chops
Rib Chops
Broil, Panbroil, Panfry
Crown Roast
Rib Roast
Roast
RIB
Loin Chops
English Chop
Broil, Panbroil, Panfry
Rolled Double Loin
Loin Roast
Roast
LOIN
Leg Chop (Steak)
Broil, Panbroil, Panfry
Sirloin Chop
Broil, Panbroil, Panfry
Rolled Double Sirloin
Sirloin Roast
Roast
SIRLOIN
Combination Leg
Center Leg
Rolled Leg
American Leg
Sirloin Half of Leg
Shank Half of Leg
Leg, Sirloin on
Leg, Sirloin off
Roast
LEG
FORE SHANK
Fore Shank
Braise, Cook in Liquid
BREAST
Breast
Rolled Breast
Stuffed Breast
Roast, Braise
Roast
Riblets
Boneless Riblets
Spareribs
Stuffed Chops
Braise, Cook in Liquid
Braise, Roast (Bake)
Broil, Panbroil, Panfry
HIND SHANK
Hind Shank
Braise, Cook in Liquid
GROUND OR CUBED LAMB*
(Large Pieces)
Lamb for Stew*
(Small Pieces)
Braise, Cook in Liquid
Cube Steak**
Lamb Patties*
Ground Lamb*
Broil, Panbroil, Panfry
Roast (Bake)

Purebred Sales

Individuals who raise purebred lambs have the option of selling lambs as breeding stock. Selling lambs as purebred breeding stock can be profitable but generally requires extra time to be spent on selection and breeding, showing, keeping records and marketing in specialized sales. Success as a purebred breeder often depends on developing specialized knowledge of the breed and building a reputation over many years. Purebred sheep may be sold directly off the farm to individual buyers, in organized breed sales.
It is also possible to crossbred sheep for breeding purposes in commercial flocks. These crossbreds are not generally sold through purebred sales, but they may be marketed by direct sale to buyers or through other commercial markets.

Wool

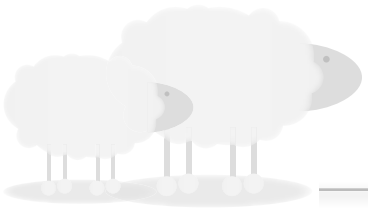
Canadian wool is marketed in various ways. A common way to market wool in Canada is to sell it through a wool co-operative such as the Canadian Co-operative Wool Growers. The Co-operative was established in 1918 by the sheep industry. The Co-operative grades and markets approximately 3 million pounds of raw wool each year. Wool is received directly from the producer or by way of regional wool depots. It is then graded according to type classification, quality and method of preparation. Wool of similar types and quality are hydraulically packed in bales weighing 600lbs or more. These bales are sold wherever the best price is available. Regardless of the size of the wool clip, the time of year received or distance from the market, each member is paid the same price for the same grade of wool. The Canadian Wool Growers Co-Operative is non-profitable; it collects, grades, measures and markets the wool and after deducting the cost of operations returns the entire difference to the growers.

Another way to market wool that may be profitable for small scale producers is direct sales to hand spinners or weavers. Depending on the length and quality of the fleece some producers may find this to be a lucrative market for some of their wool.

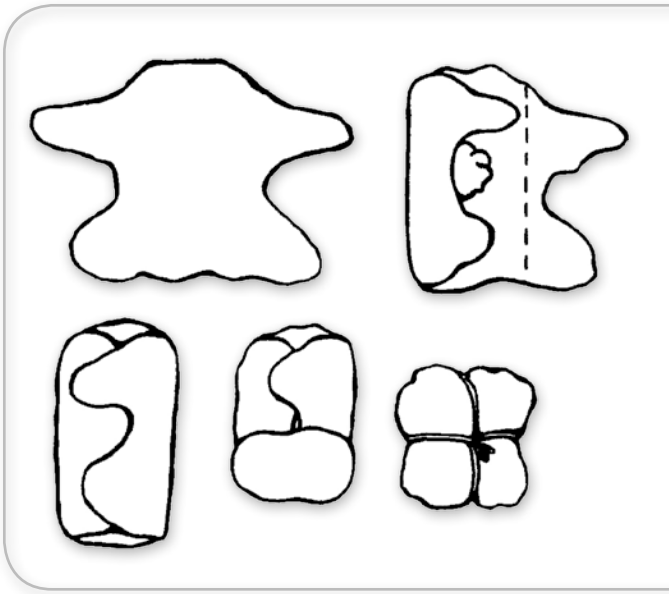
Wool grades are based upon the diameter or thickness of the wool fibre. There are various systems for grading wool; two very common ones are the blood system and the numerical count system. Under the blood system there are six grades: fine, ½ blood, 3/8 blood, ¼ blood, low ¼ blood and braid. Originally these grades were based on the amount of fine wool blood (usually merino or rambouillet) in the ancestry of the sheep producing the wool. Now the blood grading system is based solely on diameter of the fibre. More commonly used by manufacturers is the numerical count system. This system has 14 grades signified by numbers ranging from 36-80. The number represents the number of "hanks" of spun thread (each hank is approximately 512m long) that can be spun from each pound of wool. For example, a wool with a count number of 60 would yield 60 x 512m (30,720m) of single ply yarn. Higher quality wools under this system have higher numbers because the higher the spinning count, the finer the wool fibers and the longer the yarn.

There are two more factors that also contribute to the overall quality of a fleece; clean yield and staple length. Clean yield is based on the amount of natural oil in the fleece as well at the amount of organic matter (burrs, dirt, manure...etc.). A fleece that is heavily soiled and is full of organic matter will have a lesser value over one that is clean and free of debris. Staple length is the length of the individual wool fibres. Fine wools tend to be short with staple length increasing progressively up to the very coarse wools. It is the relationship between staple length and fibre diameter that determines how various wools are used.

NUMERICAL COUNT	BLOOD GRADE	TEXTURE	STAPLE
80′s	Fine	Fine Wools	Short
70′s			
64′s			
62′s	½ blood	Medium Wools	
60′s			
58′s	3/8 blood		
56′s			
54′s	¼ blood		Long
50′s			
48′s	Low ¼ blood	Coarse Wools	
46′s			
44′s			
40′s	Braid	Very Coarse Wools	
36′s			



Shearing and Preparing Fleece for Market



Because shearing requires skill and practice, novices should learn the technique from experienced shearers. A properly shorn fleece will be in one piece, with a minimum of "second cuts" (which can be avoided by keeping the shearing combs close to the hide). The fleece should be free of dung and other matter. To help prevent such soiling, pen the sheep in small groups on clean, preferably slatted floors prior to shearing and carry out the operation on a clean floor. Once a sheep is shorn, place the fleece skin side down on a table or clean floor, taking care not to pull or open the fleece. Remove dung locks, urine-stained wool and foreign matter. Gently fold 15–20 cm of fleece from one side toward the center. Similarly fold the opposite side twice so that it lies on top of the first fold. Fold the head and neck wool toward the center, then roll the fleece from breech to shoulder. Tie the roll crosswise and lengthwise and place it in a wool-shipping bag for delivery to the wool depot.

Milk

Milk is a minor commodity in Canada but it can be marketed as a specialty dairy product. Sheep milk is often used to produce yogurt and cheeses such as Roquefort, Feta or Ricotta.

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Pasture Management
www.agf.gov.bc.ca/resmgmt/publist/600Series/649000-10.pdf#search=%22sheep%20pasture%20management%22

Housing your Flock cecommerce.uwex.edu/pdfs/A2830.PDF

Sheep Plans? www.cps.gov.on.ca/english/sh4000/index.html

Sheep 201 www.sheep101.info/201/

Sheep Predator Control
www.gov.mb.ca/agriculture/livestock/sheep/bsa01s31.html

How to give Injections www.danekeclublambs.com/Injections.html

SheepandGoat.com www.sheepandgoat.com

Artificial Rearing if Lambs oregonstate.edu/dept/animal-sciences/artirear.htm

Lamb Nutrition and Feeding
www.uwex.edu/ces/animalscience/sheep/ETN_01/march/MarketLambs.doc

Selection and Management of 4-H Market Lambs
ag.ansc.purdue.edu/sheep/articles/select.html

Sheep Grazing Management
www.ext.vt.edu/pubs/sheep/410-366/410-366.html#L5

The Merck Veterinary Manual www.merckvetmanual.com/mvm/index.jsp

Glossary

A

ANTIBIOTIC: Substance that prevents or controls bacterial infection.

B

BALANCED RATION: A ration which supplies the necessary nutrients-protein, carbohydrates, fat, minerals, vitamins, and water in proportion to properly nourish an animal.

BLOCKING: The squaring or shaping of a sheep's body by trimming wool until it has a symmetrical and pleasing shape in appearance.

BLOCKING STAND: A raised plat platform with pipe or wood stanchion for holding the sheep while blocking.

BREED: A race or special case of domestic sheep that reproduce distinctive characteristics.

BRITCH: The area around the hind legs of a sheep

BROKEN MOUTH: A term used to apply to sheep that have one or more missing teeth.

BUCK: A male sheep, a ram.

BURDIZZO: Pincer-type instrument used in docking and castration.

C

CARBOHYDRATES: Includes both the fibre and thenitrogen-free extract in feeds. They comprise about 3/4 of all dry matter in plants. Acts as chief feed in

body to maintain the temperature and energy.

CARD: A hook with wire teeth for lifting wool fibres for trimming.

CASTRATE: Removal of the testicles of a male animal.

CLOSEBREEDING: A form of inbreeding to the extent of mating closely related animals, e.g., dam to son.

COLOSTRUM: First milk produced by a fresh ewe (period of 2–3 days).

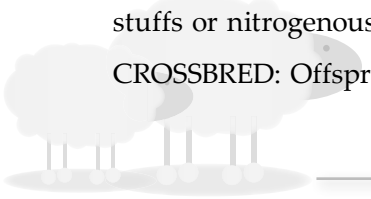
CONCENTRATES: Whole grains, milled feeds and manufactured supplements that are generally low in fibre and high in energy.

CREEP FEEDER: A supplemental feeder designed such that free access to it is available to lambs but not mature sheep.

CROOK: A spring type hook on a long handle that is used to catch sheep by a hind leg.

CRUDE PROTEIN: Commonly used to designate all the nitrogenous substances in feeding stuffs or nitrogenous compounds.

CROSSBRED: Offspring produced by the mating of two different breeds.



D

DAM: The mother of an offspring.

DIGESTIBLE CRUDE PROTEIN: Portion of the total protein in a feed that can be digested by the animal (D.C.P.).

DIGESTIBLE NUTRIENT: This means that portion of each nutrient that may be digested and taken into the body.

DOCK: The remaining stump of a tail after docking.

DOCKING: Removal of a tail.

DRESSING PERCENTAGE: A percentage of carcass weight compared to live weight. Lambs normally dress from 48% to 52%.

E

ESTRUS CYCLE: The reoccurring 13-20 day reproductive cycle of a ewe from the time she is ready to be bred until she will be bred again if conception does not occur.

F

FERTILE: The stage of development of the female animal at which conception will occur.

FLEECE: Wool shorn from the body of a sheep.

FLEECE TWINE: A paper twine or string for tying wool.

FLUSH: To provide lush pasture for use two or three weeks before breeding. Grain or hay can also be used to bring ewes into good condition.

G

GESTATION: The period of time between breeding and lambing. This period is usually 144-151 days for sheep.

GRADE: An animal not eligible for registration although its parents may be "purebred".

GUMMER: An old sheep that has lost most of its teeth.

H

HEREDITY: The transfer of characteristics from one generation to another.

I

INBREEDING: The mating of closely related animals and includes closebreeding and linebreeding.

L

LACTATION: The period of time from which a ewe freshens until she is dried off prior to lambing again.

LANOLIN: Natural oils in the fleece.

LINEBREEDING: A form of inbreeding but to only a minor degree, e.g., cousin to cousin mating.

M

MASTITIS: A bacterial udder infection. Milk may be lumpy or stringy. Ewes with mastitis should be culled.

MATURE SHEEP: One that is over two years old.

N

NICK: Term used to describe a mating which produces offspring that are superior to either parent.

NUTRIENT: It is applied to any food constituent or group of food constituents of the same chemical composition that aid in the support of animal life.

O

OPEN EWE: Ewe not yet bred.

OUTCROSS: Mating of purebred animals that are not related within a breed.

OVERSHOT JAW: Bottom teeth do not come out to the edge of the top jaw. Eating is made more difficult. This is an inherited characteristic. Such sheep should be culled.

P

PALATABILITY: The degree to which an animal will eat a feed depending if it is pleasant to the taste, smell and feel.

PARASITE: Internal or external organism that lives in and on the host animal at whose expense it obtains food and shelter.

PEDIGREE: A record of the male and female ancestors showing name, date of birth, and production figures.

PROTEIN SUPPLEMENT: Feeds high in protein, mixed with grains to provide a balanced ration; e.g., soybean meal, fishmeal.

PROVEN SIRE: A ram that has proven his ability to transmit his good qualities by consistently producing animals that are superior to their dams..

PROGENY: Offspring of an individual animal.

PUREBRED: An animal produced by consistent generations of breeding within a recognized breed of sheep.

R

RATION: Amount of feed fed to an animal over a 24 hour period.

R.O.P.: Record of Performance. Federal government sponsored sheep testing program for in flock comparison of rate of gain, etc.

REGISTRATION PAPER: Official record issued by Canadian Livestock Records as to the identity and pedigree of a purebred animal.

ROUGHAGE: Feeds low in total nutrients and usually high in fibre content; e.g., hay, straw, silage.

RUMEN: First stomach of the ruminant (cud-chewing) animal.

S

SCOURS: Disease of young lambs in digestive system due mainly to overfeeding and infectious organisms.

SIRE: The father of the offspring.

SELF-FEEDER: A feeding trough that is built so that the quantity of hay or grain can be placed in it and the sheep can eat whenever they wish.

T

TAGGING: Removal of wool from around the britch before lambing and around the ewes to prevent wool blindness.

TAGS: Pieces of wool shorn off when tagging.

TATTOO: Ear identification markings to identify animals for registration.

T.D.N.: (Total Digestible Nutrients). Measure of approximated heat or energy value of the feed, consisting of the total of the digestible energy producing nutrients – protein, carbohydrates, and fat.

U

UNDERSHOT JAW: The lower teeth extend out beyond the edge of the upper jaw. This condition makes eating very difficult. It is an inherited characteristic and sheep

affected-in this manner should be culled.

W

WETHER: A male sheep that has been castrated.

WOOL BLINDNESS: Wool growing around the eyes making it difficult for a sheep to see.

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