Guide to Breeding Stock Selection

Criteria for analysing conformation in the selection of breeding stock

Produced as part of the training material for a course on genetics and conformation

CEPOQ
Centre d'expertise en production ovine du Québec

Société des éleveurs de moutons de race pure du Québec

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In partnership with the Société des éleveurs de moutons de race pure du Québec

General Conformation of Sheep

Please note that this is not a classification system!

This book is intended only to guide producers on major faults to avoid when buying or selecting breeding stock. This book allows the user to avoid introducing or keeping sheep whose conformation is potentially detrimental for productive and profitable farming.

How does the conformation book work?

The desired conformation traits are briefly described and illustrated, as are defects to avoid. For each trait evaluated, an animal without defects can be marked "**VERY DESIRABLE**" or "**DESIRABLE**". However, once an animal encounters the words "**DO NOT SELECT**" to one of the traits evaluated, this sheep should not be kept or selected for breeding. Thus, the words "**DO NOT SELECT**" only applies to major defects that will affect the longevity and, by extension, the profitability of this animal within your farm. In addition, you can find the result "**NOT DESIRABLE**". This result indicates that the animal has a defect, but this defect is not severe enough to interfere with its productivity. Depending on the severity of this defect, it must be noted that the longevity or even the productivity of the animal could potentially be reduced. It is preferable not to select animals that have "**NOT DESIRABLE**" mentioned for several traits.

At the end of the book, two tables can be found to compare and analyze more than one sheep at a time. These pages allow you to compile the results obtained for each animal and thus help to make your final choice!

GOOD LUCK WITH YOUR SELECTION!

Table of Contents

Canadian Sheep Breeders' Association

What is the CSBA?

The CSBA is non-profit organization that is responsible for maintaining the integrity of the national registered sheep flock under the guidelines of Canada's Animal Pedigree Act. The CSBA is governed by a provincially elected board of directors and represents over 950 members and over 40 breeds of sheep. The CSBA has been in existence since 1905.

The Benefit of Registered Sheep

Canadian registered purebred animals come with registration papers, which are proof that the animal is purebred and guarantees the animal's parentage. One in 500 animals applying for registration must pass DNA parentage testing. Registered sheep are permanently identified with ear tattoos or matching tags that are recorded on their registration papers.

One of the main benefits of using purebred sheep is genetic predictability. The uniform genetic make-up of a breed provides for a consistent outcome. Purebred sheep producers are committed to maintaining and improving the economically important traits of their breed. The goal of purebred sheep production is to provide superior genetics to the commercial sheep industry and to other purebred producers.

Purebred sheep ensure a set type of characteristics typical for that breed, including:

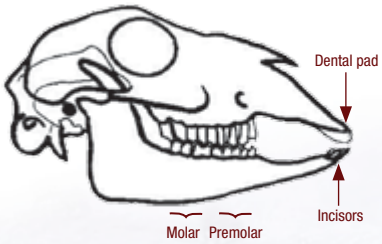
- **growth rate**
- **fertility and lambing percentage**
- **mothering ability**
- **feed efficiency**
- **kilograms of lamb weaned/ewe**
- **carcass quality**
- **flocking instinct**
- **wool character**

Purebred sheep are commonly used in crossbreeding programs to incorporate genetic characteristics typical for that breed into the offspring. Using a maternal sire breed to produce replacement females can greatly increase lambing percentage, mothering ability, milk production and out of season breeding. The use of a terminal sire breed will increase growth rate, carcass quality and feed efficiency.

Evaluation of the Mouth and Teeth

Sheep have a particular dental anatomy, typical of that observed in ruminants.

They have molars, but no upper incisors. The upper jaw is composed of what is called the “dental pad” or “browsing pad” (looks like a fold of skin covering the bone of the upper jaw).



To eat, sheep take the grass and feed between the dental pad and the incisors present on the lower jaw.

Thus, the mouth and teeth must be well formed in order to allow the animal to eat properly. This is really important, especially if this sheep is raised on pasture where it has to feed itself by cutting the grass between the dental pad and the lower incisors.

An animal with a good mouth should have a dental pad properly aligned to the row of teeth present on the lower jaw (under the lip).

It is easy to evaluate the dentition of a sheep. Open the lips of the animal to observe the alignment between the two jaws, as shown on the image to the left.

For a quick evaluation, you can pass your thumb under the lips of the animal in order to palpate the lower incisors and the dental pad (check alignment between the two jaws).

Wash your hands between each animal in order to prevent transmission of any diseases.

Evaluation of the Mouth and Teeth

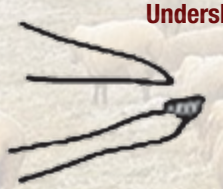
IMPORTANT !!!

Since defects in teeth are likely to be transmitted from one generation to another, any animals showing a mouth defect, as presented below, should not be selected for reproduction. This should also be applied to terminal rams used in commercial farms (to produce market lambs). Sheep with mouth defects are generally more difficult to keep in good body condition (poor food intake and rumination).

For older animals, it is sometimes normal to encounter sheep with incisors slightly overlapping the dental pad (teeth grow with age and sometimes the lower jaw moves forward slightly). However, this condition should not be observed in young sheep. Thus, if the animals are less than a year and still have their milk teeth, you should carefully assess mouth conformation. You must carefully check that the lower incisors are not overlapping the dental pad (even slightly). The teeth must be perfectly aligned, otherwise, at the onset of the first permanent teeth, problems may arise (prognathous).

PROGNATHOUS MOUTH

Undershot



DO NOT SELECT ☐

DESIRABLE MOUTH

DESIRABLE

PARROT MOUTH

Overshot

DO NOT SELECT ☐

Shoulder Evaluation

EXTREMELY STRONG

Good conformation, large, solid. Scapulas are well connected. Reflects an extremely deep hearth girth.

VERY DESIRABLE

CORRECT

Good conformation, not angular. Scapulas are well connected. Reflects a good heart girth capacity.

DESIRABLE

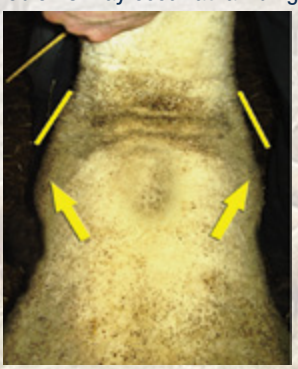
POOR / NARROW

Not desirable. Too narrow. Scapulas are well connected but narrow. Reflects a poor body capacity.

DO NOT SELECT ☐

OPEN AND PROMINENT

Too broad and open to the elbows. Scapulas are poorly connected. If transmitted to the offspring, problems may occur at lambing.



NOT DESIRABLE ☐

OPEN, BROKEN SCAPULA

Large enough, but the scapulas are not well connected. Generally, these animals show weakness behind the shoulder.

NOT DESIRABLE ☐

POOR / NARROW

The shoulder may be wide or narrow. We can see a hollow behind the shoulder. This defect affects the strength of the back of the animal.

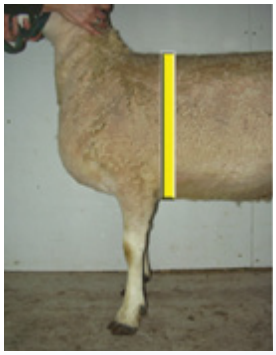
NOT DESIRABLE ☐

Body Capacity Evaluation

Heart Girth Capacity - Evaluation from the Side

EXTREMELY STRONG

Extremely deep chest. Front and rear ribs are long and deep. Deep and desirable barrel.



VERY DESIRABLE

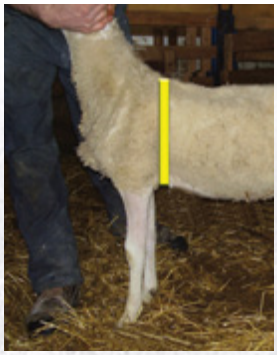
CORRECT

Good depth of chest. Rear ribs are long, but front ribs are more narrow and short. Correct barrel.

DESIRABLE

POOR / NARROW

This sheep has a very poor heart girth (too narrow). Front and rear ribs are short and narrow. Thin and narrow barrel.

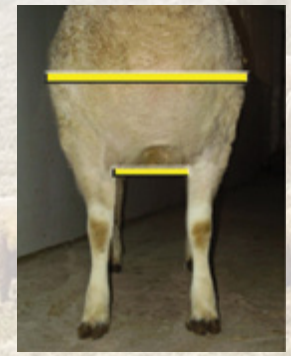


DO NOT SELECT ☐

Heart Girth Capacity - Evaluation from the Front

EXTREMELY STRONG

Wide and deep front end. Broad and solid shoulders. Excellent spacing between forelegs.



VERY DESIRABLE

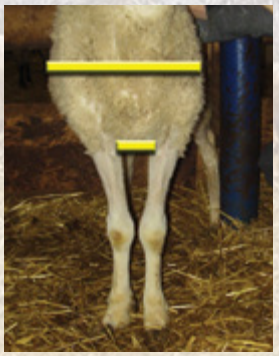
CORRECT

Wide front end. Good shoulders with good conformation. Good spacing between forelegs.

DESIRABLE

POOR / NARROW

Narrow front end. Fine shoulders. Forelegs close together. Lack of capacity.



DO NOT SELECT ☐

Pastern Evaluation

The pasterns … suspension for the four feet

Pastern quality plays a key role in the longevity of an animal, especially for very heavy and high producing sheep. The pastern supports the animal and, with the hoof, represents the point of contact with the ground. Therefore, pastern and hoof quality are essential for both the forelimbs and the hindlimbs.

Pasterns should be **strong**, **short**, **wide** and relatively straight, When the animal is standing naturally (without restraint) the pastern should form a **45 degree angle with the ground**. In order to have this proper angle, the heel should be high and wide to ensure good support on the ground.

This image shows a pastern of excellent quality.

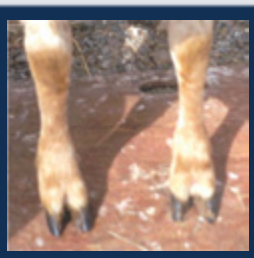
The hooves must be of good quality. They must be solid and properly formed. Thus, you should reject animals that have crossed hooves or sheep that have hooves with erratic and abnormal growth. It is important to note that poor hoof trimming could exacerbate a pre-existing conformational problem.

For heavy animals and sheep that have a rapid growth rate, a long, narrow pastern with a shallow heel will tend to sag with age, lack of exercise and weight gain. Once collapsed, the pastern will cause discomfort to the animal. This process is irreversible. Thus, if you are selecting a young animal (under the age of one year), you must pay very close attention to this characteristic and select sheep that have strong pasterns.

Long and narrow pastern. The heel is low. Risk of sagging with age and for heavy animals.

CAUTION! If you are selecting males for breeding, the rear pastern must be of excellent quality. Males with sagging of collapsed rear pasterns should not be kept for breeding. With age, rams may become too heavy for the tendons of their pasterns. This can be a problem, especially during mating. A defect in conformation should not affect the reproductive performance of your flock!

If you are selecting a sheep with really bad pasterns (like the picture at right), you can even observe this defect from the front of the animal. In this case, you can see that the hooves are open and do not support the feet properly. Then, you can confirm this problem by looking at the pastern from the side… generally it is collapsed!



Pastern Evaluation

EXTREMELY STRONG

Wide and high heels. Strong hooves. Large pastern, short and strong. Proper foot angle.

CORRECT

The heel should be higher. The angle of the pastern is acceptable, but the pastern is a little too long and too thin.

POOR / NARROW

Pastern of very poor quality. This pastern is completely collapsed. For hind legs = very problematic.

Forelimb pastern evaluation

DESIRABLE | **NOT DESIRABLE** | **DO NOT SELECT** ☐

Hindlimb pastern evaluation

DESIRABLE | **NOT DESIRABLE** | **DO NOT SELECT** ☐

Other defects that may affect pastern quality

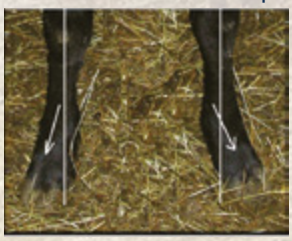
TWISTED

This defect may seriously affect longevity and productivity.

DO NOT SELECT ☐

SPLAYFOOTED

This defect especially affects the forelegs (less severe). This defect can be transmitted to the offspring.



NOT DESIRABLE ☐

EXAMPLE OF A BAD HOOF TRIMMING

On this image, we can see that the hooves are very long and this pastern is completely collapsed.

Even after a good hoof trimming, the pastern of this animal is still collapsed. It is unknown if this weakness was caused by negligence or as the result of a real pastern defect.

Evaluation of the Forelimbs

WELL PLACED

An imaginary line can be drawn from the tip of the shoulder and through the middle of the knee and hoof.

VERY DESIRABLE

NARROW AT THE KNEES

This defect is encountered frequently in some breeds. Make sure the chest is a good width.

NOT DESIRABLE ☐

OPEN AND SPLAYFOOTED

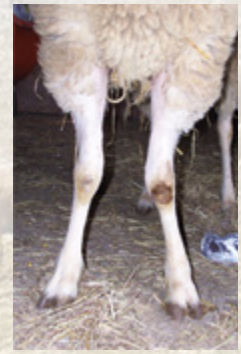
Front legs show weakness in the knees. This defect can affect longevity.

NOT DESIRABLE
CULL IF LAMENESS ☐

Other defects that may affect the forelimbs

TWISTED LEGS

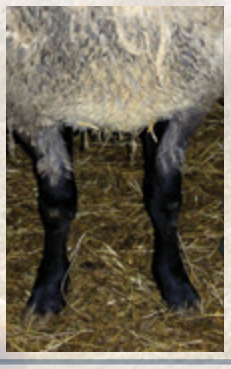
This major defect may affect longevity and can be transmitted to offspring. Obvious lack of capacity.



DO NOT SELECT ☐

SPLAYFOOTED LEGS

Defect to avoid, especially if you want to raise lambs (for breeding) from an animal that has this defect.



NOT DESIRABLE ☐

MAJOR DEFECT OBSERVED IN FORELIMBS

The image on the right demonstrates good positioning of the front legs. The hooves are properly aligned.

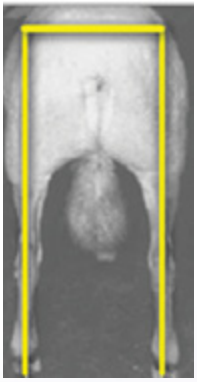
Above, an animal narrow at the knees. Hooves are pointing outward.

Above, an animal open at the knees. Hooves are turned inward.

Evaluation of the Hindlimbs

WELL PLACED

An imaginary line can be drawn from the tip of the shoulder and through the middle of the knee and hoof.



VERY DESIRABLE

NARROW AT THE HOCKS

This defect is encountered frequently in some breeds. Make sure the chest is a good width.

DESIRABLE

OPEN AND SPLAYFOOTED

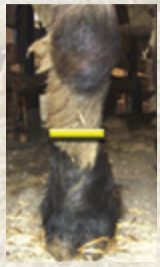
Front legs show weakness in the knees. This defect can affect longevity.

DO NOT SELECT ☐

Bone quality evaluation

In sheep, we are looking for strong skeletal structure. Thus, good legs must be composed of thick, broad and strong bones. Obviously, the size of the bones may vary depending on the breed. For maternal and prolific breeds, such as Romanov and Finnsheep, we tolerate finer bone, although it remains important to select animals whose bone structure is bigger. For terminal breeds, this characteristic is very important and sheep that present thin bones and fragile frame should be avoided. Terminal breeds should have a skeletal structure worthy of their stature and their impressive musculature. The same thing should be applied in most maternal non prolific breeds, such as Dorset, Polypay, Cheviot ...

EXTREMELY STRONG



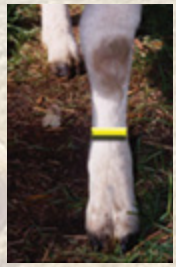
Terminal - Maternal Breeds

VERY DESIRABLE

Maternal and Prolific Breeds

DESIRABLE BUT RARE

CORRECT



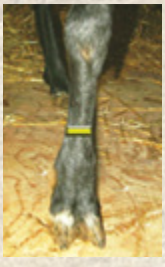
Terminal - Maternal Breeds

DESIRABLE

Maternal and Prolific Breeds

VERY DESIRABLE

THIN / FINE



Terminal - Maternal Breeds

DO NOT SELECT ☐

Maternal and Prolific Breeds

ACCEPTABLE
Thick bones are more desirable

Evaluation of the Feet and Legs

Evaluation of the gait (flat and hard surface)

Once you have examined each part of the animal in detail, you must observe the entire body and see if each part fits well! An animal in good health and with good feet and legs should move well. Walking should not seem difficult. The animal's gait must be **smooth**, **fluid** and **normal**. In order to properly assess the quality of the feet and legs and to evaluate the animal's gait, you should observe the sheep moving on flat, hard and dry ground.
Remember that a pastern may look strong in the straw... but only average on the concrete!

It is impossible to assess the feet and legs in the straw.

Good and strong pasterns on a flat and hard surface. Straw or residues must be removed to do a proper evaluation. A wood or concrete floor is preferred.

On hard ground, the poor pasterns of these animals are now revealed, especially for the animal on the right.

A serious defect to avoid: "spring leg"

In recent years, a new problem affecting the feet and legs appeared in some breeds and / or bloodlines. This issue has not yet been clearly identified in the literature, so most sheep breeders have called this serious problem "***spring leg***". Since neither farmers or scientists know the reasons for the development of this phenomenon, or its potential to be transmitted to the offspring, the best solution is to **cull any sheep affected by this defect**.

Clinically, sheep affected by this defect show a jerky and spasmodic hyperflexion of their hind legs when they walk slowly (one or both legs). Thus, animals affected by this defect raise their hind legs in a jerky and uneven manner when they walk. When the animal raises one of its hind legs, the hock appears pulled up as if it was stretched by a rubber band. The hind legs seem stiff and a natural extension of the leg seems difficult and painful. Sometimes a hindlimb appears to bind and the animal may even shake it, as to release it to continue moving. The evolution of the condition is not well known. In its more severe or advanced states, animals may have **serious difficulty in moving around**. Males seriously affected by this defect may even refuse to breed females. Thus, with age and increased body weight, rams affected by this defect show more difficulty with movement. Their **longevity**, as well as their **reproductive performance**, can be greatly compromised.

THE NEXT PAGE PROPERLY ILLUSTRATES THIS DEFECT.

Evaluation of the Feet and Legs

A serious defect to avoid: "spring leg"

DESCRIPTION OF THE DEFECT: Comparison between a normal and an affected animal

Below, the ram "exaggerates" the movement of its right hindlimb when he walks. The upward movement of the right hindlimb is very high (photos 1-5). The right hock rises much above the left hock and sometimes the leg moves toward the side when the animal walks (not shown on these images).

The pictures on the right and on the left show the defect. The ram on the left of the picture is affected by "spring leg" and the ram at the right of the picture is normal. The upward movement of the hindlimbs of the ram on the left is exaggerated compared to its counterpart on the right. The "normal" ram only raises its feet a few inches to move forward.

The affected ram raises his left pastern almost as high as the opposite hock, as if he has to avoid an obstacle on the ground.

The picture on the left shows the same problem, but from another point of view. In this picture, the affected ram is on the right side. The gait of the affected sheep seems jerky and the movement of its right hindlimb is far too exaggerated, compared to the ram at the left.

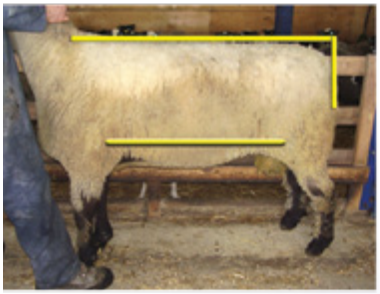
NORMAL GAIT NON JERKY	AFFECTED "SPRING LEG" NON FLUID GAIT
DESIRABLE	DO NOT SELECT ☐

Evaluation of the Length of the Animal

Regardless of the breed, it is essential to select longer animals. This conformation characteristic is too often overlooked and can play a significant role in the length of the carcasses produced for market. Obviously, evaluation of the length of an animal must only be made between animals of the same breed, age and sex.

EXTREMELY LONG

This ram is very long. We can observe its length from the bottom of the neck to the end of the rump. The barrel is also really long.



VERY DESIRABLE

CORRECT

This sheep has an average length. We can observe a long and solid back. The barrel is shorter than the animal on the picture to the left.

DESIRABLE

TOO SHORT (for the breed)

Even if this ram has a solid back, it is too short compared to the two sheep of the same breed (pictures to the left). Its back and barrel are really short for the breed.

NOT DESIRABLE ☐

Evaluation of the Back (strength of back)

STRAIGHT AND SOLID

This animal shows an outstanding back line. Observe the strength of the back, strength of the rump and the good body capacity.

VERY DESIRABLE

HOLLOW AND BROKEN

There is a great depression (hollow) behind the shoulder. Usually, the animals that have his defect also have an arched back.

NOT DESIRABLE ☐

ARCHED BACK

This animal has a prominent hump and a drooping rump. The longevity and reproductive performance of this ram can be greatly impacted.

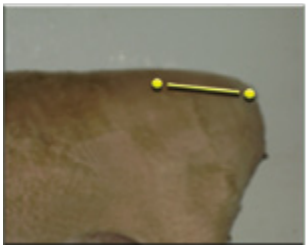
DO NOT SELECT ☐

Evaluation of the Rump

The rump is a conformation trait that should become more important in selection.
A good rump should be broad, long and mostly straight. To facilitate lambing it's important to avoid selection of sheep with a narrow rump. In sheep, the "drooping rump" is a common defect observed in many breeds. Sheep that show this defect appear shorter. The rump angle should be very slight.

EXTREMELY STRONG

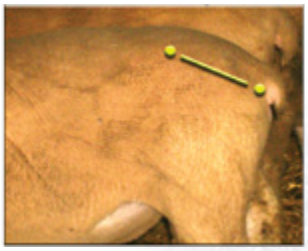
The angle between the point of the hip and the ischium is very slight. Mostly straight.



VERY DESIRABLE

CORRECT

The angle between the hip and ischium is more pronounced, but remains acceptable.



ACCEPTABLE

DROOPING / FAIR

This is a drooping rump. There is a sharp angle between the hip and ischium. Undesirable rump.

NOT DESIRABLE ☐

Evaluation of the Male Reproductive System

In rams, it is essential to palpate the scrotum to verify that there is no abnormalities. It is essential to check for presence of two testicles. The testicles must be of similar size and of good consistency. You should not feel excessive heat or the presence of edema in the scrotum. You must also verify the presence of an epididymis (small bumps at the base of each testicle). The epididymis should be firm, but not as hard as a rock. If you have any doubt, ask your veterinarian. Rams suffering from cryptorchidism (only one testicle or none) should never be kept for breeding. **DON'T FORGET RAMS ARE RESPONSIBLE FOR 50% OF THE FERTILITY OF YOUR FLOCK!**

Starting at the top of the scrotum, you should palpate each testicle to assess their consistency. You need to assess the firmness of the epididymis at the base of each testis. The epididymis must be present because they are essential structures for male fertility.

SCROTUM SIZE?
For breeding, the **minimum scrotal circumference** should be **30 cm**. Use a measuring tape designed for this purpose. Push the testicles into the bottom of the scrotum and measure the widest point.

NO PROBLEMS

DESIRABLE

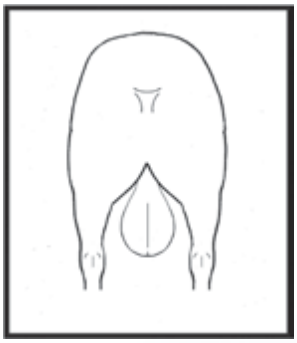
ABNORMALITIES DETECTED

DO NOT SELECT ☐

Evaluation of the Male Reproductive System

BALANCED / UNIFORM

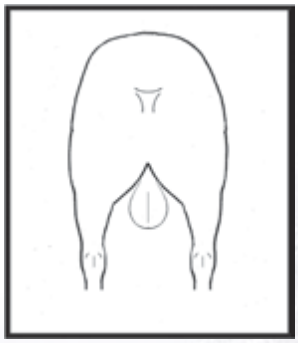
Optimum. Good development. Testicles are uniform and balanced.



VERY DESIRABLE

BALANCED

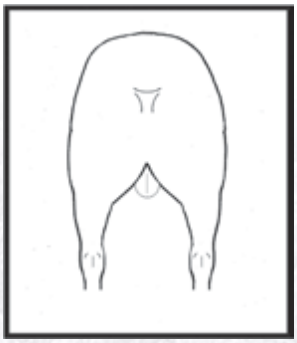
Intermediate size. Testicles are balanced.



ACCEPTABLE

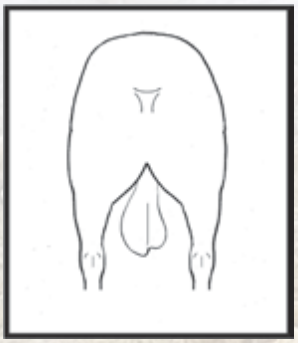
BALANCED / TOO SMALL

Obvious lack of development. Testicles are balanced, but too small.



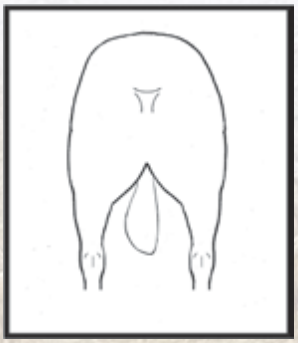
NOT DESIRABLE ☐

UNEQUAL TESTICLES



NOT DESIRABLE ☐

SINGLE TESTICLE



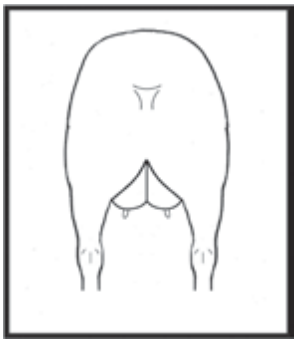
DO NOT SELECT ☐

NO TESTICLES

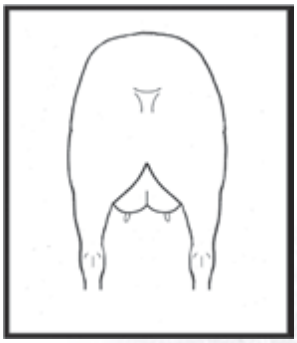
DO NOT SELECT ☐

Evaluation of the Udder

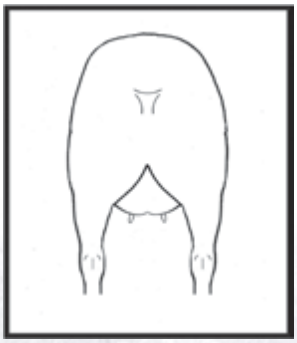
Median Suspensory Ligament



Optimum: High, well defined.

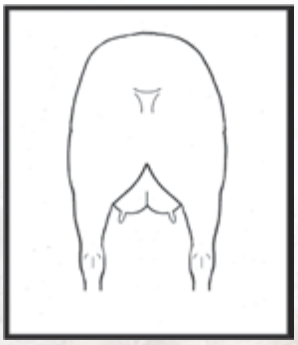


Moderate definition.

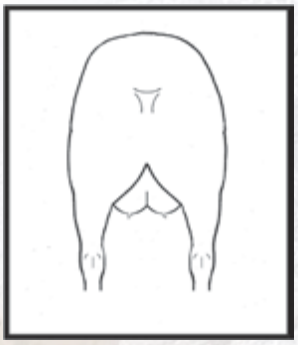


Low, poorly defined.

Teat Size and Shape



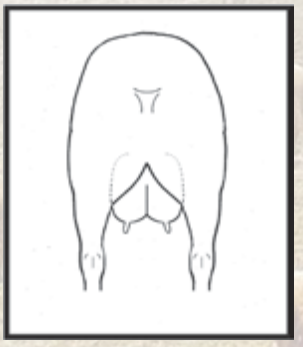
Optimum.



Too small.

Too large.

Udder Attachment



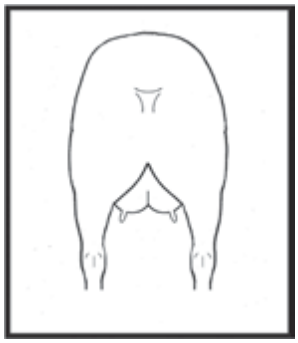
Optimum: Very strong attachment, wide and well-blended with the abdomen.

Intermediate attachment: top is well attached but not very wide.

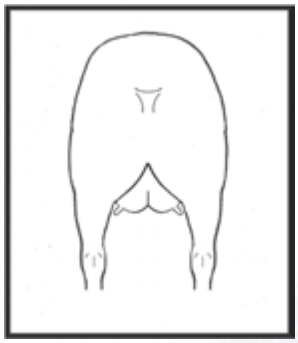
Poor attachment: low and narrow.

Evaluation of the Udder

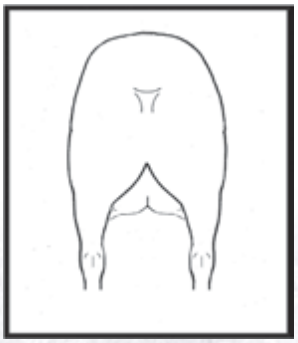
Teat Position



Optimum: good placement and definition.

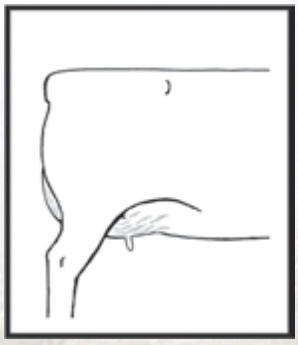


Intermediate.

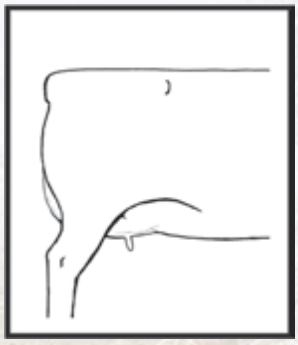


Poorly defined and too close to the legs.

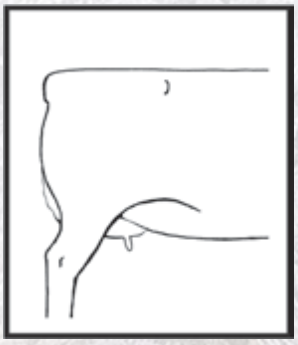
Udder Texture



Optimum: Soft, even-textured.



Intermediate.



Do not select if the udder is Fleshy or hard, or has scar tissue or bumps.

Evaluation of Muscle Development
(terminal breeds)

Muscle development is very important for terminal breeds. Although muscle development should not be entirely overlooked in maternal breeds, it is a lower priority than for the terminal breeds. In maternal breeds, you must emphasize your selection on the skeletal structure quality, body capacity and, of course, breeding performance!

For terminal breeds, you must look for excellent muscle development that is consistent throughout the entire body of the animal. Sheep from terminal breeds must show **wide**, **long**, **deep** and **properly developed muscles**.

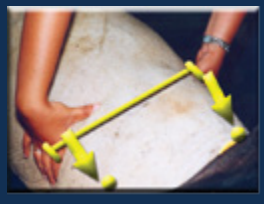
Terminal sheep breeds enrolled in GenOvis (Canadian genetic evaluation program), can be scanned to evaluate their back fat and loin eye thickness. These measurements allow the calculation of a genetic selection index called the ***"Terminal selection index" (Tx)***. The terminal index has been designed to select fast growing animals that have more muscle and less fat. Sheep selected with this index have the potential to transmit their carcass quality to their offspring = more muscle and less fat.

For terminal breeds, you must assess the muscle development at three different points : **shoulder**, **loin** and **hind legs**.

It is relatively easy to assess the muscle development of a sheep. However, since wool fools the eye, it is essential to feel each part of the animal in order to assess muscle development.

The images presented on the right show how to evaluate the muscle development for each of the main body parts (shoulder, loin, hind leg). It is very difficult to properly demonstrate how to evaluate muscle development with images, It is essential to touch the animals!

SHOULDER DEVELOPMENT



Starting from the back of the shoulder (heart girth), palpate the muscles by directing your hands forward and down to the tip of the shoulder and to the bottom of the neck.

Although the market value of this part of the animal is worth less than the loin and hind legs, you must select sheep with proper shoulder development.

LOIN DEVELOPMENT

The loin should be as long as possible. The loin should be broad, thick and voluminous. To assess the quality of the loin on an animal, simply measure the length between the hip bone and the last rib. Once the loin is located, it is simple to evaluate the width and thickness, as shown in these pictures.

HIND LEG DEVELOPMENT

The legs should be muscular, well developed and well "filled." They must be deep, broad and go down as low as possible on the limb of the animal (deep muscles). Similar to the loin, this part of the animal has excellent market value.

Evaluation of Muscle Development
(terminal breeds)

It is relatively difficult to demonstrate differences in musculature using only pictures. That is why we do not offer images of very muscular and poorly muscled animals. Without proper palpation, the length of the wool can betray the evaluation. Simple images can show how to compare two animals, but cannot clearly identify the differences between them.

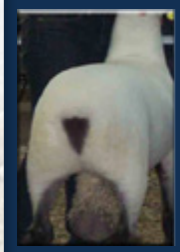
If you want to compare the muscle development of two sheep, it is important to place them side by side. For example, you can compare the length of the loin, the thickness, and the development the legs. Assessment of muscular development is much easier, especially for the hind limbs, in freshly shorn sheep. However, to evaluate the loin and the shoulders, you must feel the muscle with your hand, a simple visual observation is not sufficient.

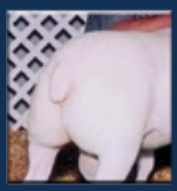
The pictures on the right show freshly shorn sheep of the **same breed** and **same age**. You can see a clear difference between the muscular development of the hind legs.

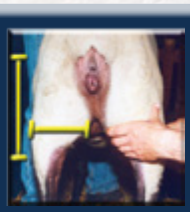
SAME BREED and SAME AGE !

Length, height and muscle development can vary widely according to the breed and age. It is important to compare sheep from the same age, same breed and ideally, similar body condition scores.

THREE DIFFERENT BREEDS…
Three different types of muscle!
Impossible to compare!







GOOD TO AVERAGE MUSCULAR DEVELOPMENT

DESIRABLE

OBVIOUS LACK OF MUSCULAR DEVELOPMENT

SHOULDER	ACCEPTABLE ☐
LOIN	NOT DESIRABLE ☐
HIND LEGS	NOT DESIRABLE ☐

Development according to breed and age

"Development" is a broad term that refers to the size, weight, muscle development, height and stature of an animal. Development must always be evaluated within a breed (or cross) on animals of same age. Within some breeds, development may also vary according to the bloodline (breed type). On the next page, a table shows an average range of mature weights of different breeds. An animal well below the target weight for its breed should not be kept for breeding.

Same breed,
same age,
same sex…
But really different development!

Development According to Breed and Age

Average mature weight for maternal breeds

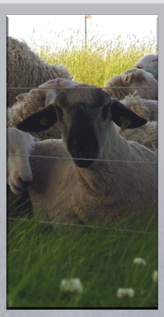
	MALE	FEMALE
Dorset Polled	115 to 150 kg	80 to 115 kg
Polypay	90 to 125 kg	100 to 115 kg
Katahdin	80 to 110 kg	55 to 70 kg
North Country Cheviot	100 to 125 kg	55 to 80 kg
Icelandic	90 to 100 kg	60 to 65 kg
Border Leicester	90 to 125 kg	70 to 90 kg
Border Cheviot	70 to 85 kg	55 to 70 kg
DLS	85 to 105 kg	60 to 70 kg

Average mature weight for maternal and prolific breeds

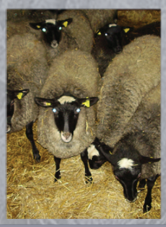
	MALE	FEMALE
Rideau Arcott	80 to100 kg	75 to 95 kg
Outaouais Arcott	80 to 100 kg	75 to 90 kg
Romanov	70 to 80 kg	50 to 70 kg
Finnsheep	68 to 90 kg	55 to 86 kg

Average mature weight for terminal breeds

	MALE	FEMALE
Suffolk	115 to 150 kg	100 to 115 kg
Hampshire	115 to 150 kg	80 to 115 kg
Canadian Arcott	120 to 150 kg	85 to 115 kg
Île de France	100 to 150 kg	85 to 95 kg
Texel	100 to 140 kg	75 to 90 kg
Charollais	100 to 150 kg	80 to 100 kg
Berrichon du Cher	90 to 110 kg	80 to 90 kg
Rouge de l'Ouest	95 to 120 kg	70 to 90 kg
Dorper	90 to 100 kg	70 to 80 kg



Generally, at eight months of age, an animal should weight, at least, 2/3 of the mature weight of its breed.



PROPER DEVELOPMENT FOR THE BREED

VERY DESIRABLE

SERIOUS LACK OF DEVELOPMENT

DO NOT SELECT ☐

Source : Canadian Sheep Breeders' Association. More information : www.sheepbreeders.ca/

Evaluation of a Well-Balanced Animal

(terminal breeds)

Even if an animal gets a good evaluation for most of the traits described in this book, this sheep must also be "well-balanced". This term means that each part of the animal must "fit together" appropriately. For example, we do not want an animal that has poor, thin shoulder and very strong musculature in the hindlimbs. We are looking for "balance". When you are looking for a well-balanced animal, its general appearance is improved. From a sheep business perspective, a well-balanced ram that transmits his quality to his offspring, may produce homogeneous and uniform lambs for slaughter. This conformation trait will not harm the performance and the longevity of animal on your farm. However, this is a quality sought by those who wish to produce the best breeding stock.

HOW TO EVALUATE IF A SHEEP IS WELL-BALANCED!

The picture below shows two young rams of the same age and of the same breed. Neither of these ram lambs seems to have major conformational defects. Nevertheless, we can see that the animal on the left seems more well-balanced in all of its parts. Indeed, its front end is as developed as its hindquarters. This ram lamb also shows a greater body capacity than the lamb on the right. To understand the concept of a "well-balanced animal", we can imagine three circles: one on the front end, one on the middle of the animal (barrel) and the last on the hindquarters. For a well-balanced sheep, these three circles should be as similar as possible, as shown below in the picture. Although the lamb on the right is a little less well-balanced than the animal on the left, it is still a good ram lamb and should be kept in your selection.

Since this conformation trait has minimal negative impact on the longevity and productivity of an animal in a sheep business, this lack of "balance" is generally not a cause to cull an animal.

Generally, most animals are fairly well-balanced.

WELL-BALANCED	NOT WELL-BALANCED
DESIRABLE	NOT DESIRABLE ☐

Complete Evaluation Grid for Analysis

ANIMAL IDENTIFICATION : _____

EVALUATED TRAITS	COMMENTS
Mouth and teeth	
Shoulder quality	
Heart girth capacity	
Chest capacity	
Feet and legs	
Fore and hind pasterns	
Forelimb quality	
Hindlimb quality	
Bone quality	
Normal gait of the sheep	
Length of the animal	
Quality and strength of back	
Rump quality	
Reproductive system	
Muscle development for terminal breeds	
Development according to breed and age	
Well-balanced animal	
FINAL DECISION (KEEP OR CULL)	

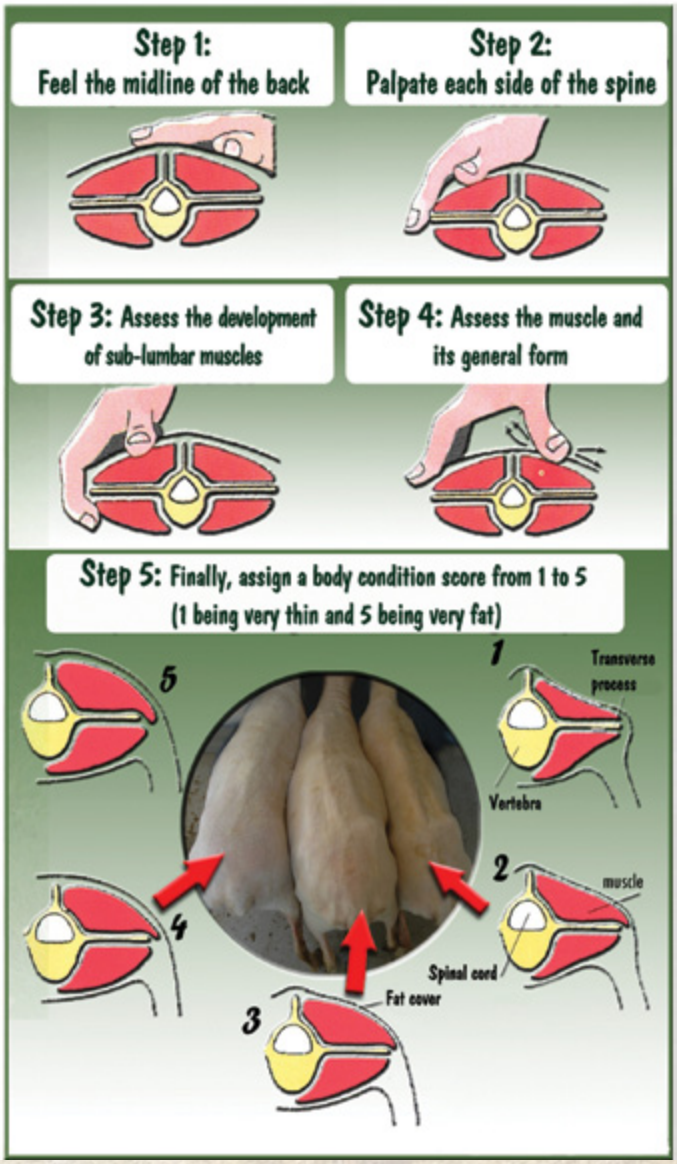
Complete Evaluation Grid for Analysis

ANIMAL IDENTIFICATION : _____

EVALUATED TRAITS	COMMENTS
Mouth and teeth	
Shoulder quality	
Heart girth capacity	
Chest capacity	
Feet and legs	
Fore and hind pasterns	
Forelimb quality	
Hindlimb quality	
Bone quality	
Normal gait of the sheep	
Length of the animal	
Quality and strength of back	
Rump quality	
Reproductive system	
Muscle development for terminal breeds	
Development according to breed and age	
Well-balanced animal	
FINAL DECISION (KEEP OR CULL)	

Appendix 1
Evaluation of the Body Condition Score

In order to conduct an adequate evaluation of conformation, an animal should have a proper body condition score (at least 3.0). With a body condition score less than 3.0, animals are too thin to be properly evaluate. Low body condition may cause bias in the evaluation, especially in regard to the musculature. Indeed, the muscle loss will be equivalent to the loss of body fat.

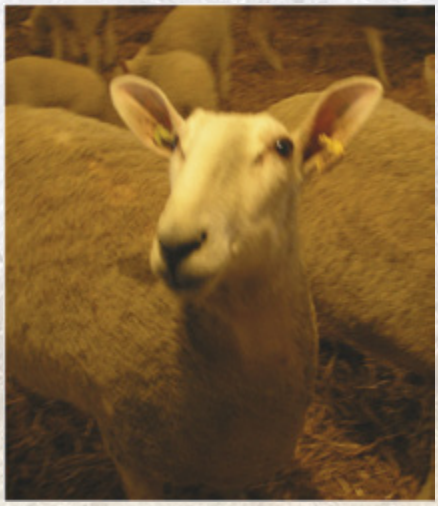


In general, it is not recommended to purchase animals that show a body condition score less than 3.0

It is difficult to determine the real cause of this loss of body condition (malnutrition, intensive management, diseases, ...).

The images on the left show how to make an assessment of body condition score.

You can carry out the evaluation of body condition score in 5 steps.



Images : J. Brugère-Picoux

Appendix 2
Age Assessment by Teeth

The eruption of the teeth, particularly the incisors, can be is used to evaluate the age of the animal. The ewe lamb and the ram lamb have a dentition composed of small incisors. These teeth are short, narrow and white. The incisors of lambs are temporary and are replaced by permanent incisors when sheep get older. The timing when the permanent incisors erupt is a benchmark to assess the age of an animal. The breed may influence when the permanent incisors will erupt, but usually you can follow these rules to estimate the age:

- 2 permanent incisors = 1 year
- 4 permanent incisors = 2 years
- 6 permanent incisors = 3 years
- 8 permanent incisors = 4 years

When the sheep are around four years old, all the temporary incisors have been replaced by the permanent incisors. Beyond five years, the teeth wear down and become shorter with greater space between them. Thus, for sheep older than 4 or 5 years, it becomes difficult or impossible to determine their real age. The following image show the evolution of the incisor eruption according to the age of the sheep.

16 Months

24 Months

36 Months

48 Months

IMPORTANT NOTES FOR FEMALES

As for males, females must first be selected according to the goals you have in your sheep business. What we're looking for first and foremost, is a hardy productive female, with good mothering abilities, good milk production and longevity. It is especially important that a ewe has a body conformation that allows it to produce to its full genetic potential. Therefore, females selected for breeding should have a large body capacity and proper development for their breed.

When you select your breeding females, pay attention to the udder. It must be of excellent quality if you want to produce good lambs and reduce lamb mortality!

Caution : when selecting ewe lambs, be sure they are not a hermaphrodite. It is a rare condition, but it can occur!

Hermaphrodite ewe lamb

Appendix 3
An Introduction to GenOvis

Good conformation is essential for optimal animal productivity; however, it is also important to evaluate the genetic potential of each animal. **Combining good conformation with high performing genetics will maximize farm productivity and profit.**

GenOvis is a genetic improvement program that is designed to:

- Assist sheep breeders (purebred and commercial) by offering on-farm genetic sheep testing
- Efficiently evaluate the genetic value of sires based on important economic factors
- Select breeding stock that will improve the farm's performance
- Compare the genetic value of animals based on several performance criteria, which can be used to compare flocks
- Maintain a large database of results for different breeds across Canada
- Track breed development/evolution

Costs and Service:

- Annual fee
- Data entry fee/lamb (free if entered online by producer)
- Certificate of participation
- Production report on lambs, ewes and rams
- Animal performance production certificate (upon request)
- Annual provincial report of performance/breed
- Flock evaluation report
- Phone consultation
- Newsletter (optional)
- Personal internet access to consult your genetic evaluation data

Data required for flock evaluation:

1. Permanent animal identification (tag/tattoos) and unique GenOvis flock letters

2. Lambing data:

• Sire • Dam • Parent breed • Foster	• Identification of lamb • Lamb's birth date • Sex of lamb • Number of lambs born • Number of lambs reared

3. Weight data:
   - Weight of lambs at birth (optional)
   - Weight at 50 (28-72) days
   - Weight at 100 (70-120) days

GenOvis is a highly efficient and affordable genetic evaluation program.
For more information, please visit the GenOvis website (www.genovis.ca), email (genovis@cepoq.com), or phone (418) 856-1200 ext. 226.

Appendix 3
An Introduction to GenOvis

How to use GenOvis? How does it work?
All information on animals (pedigree, sire, dam, daughters and sons, sisters …, birth weight, number of lambs born and raised, weight at 50 and 100 days, etc.) are integrated into the GenOvis genetic evaluation program and are used to produce **EPDs** and **INDEXES**. These EPDs and Indexes are genetic selection tools that allow breeders to choose animals on their potential to transmit their quality to their offspring.

What's an EPD?

An EPD (Estimated Progeny Difference) is an estimation of the genetic value that an animal will pass on to its progeny. An EPD uses all performance information on the relatives of the animal, as well as the animal's own performance. Animals with the best EPDs for a trait have the highest probability of producing exceptional progeny for that trait. The GenOvis program estimates EPDs for 15 important economic traits. The unit of an EPD relates to the trait evaluated. For example, if we are looking at EPD number born, then the unit of that EPD is the "number of lambs born". So, if we are looking to increase the number of lambs born, then we select a positive value for that trait. If we are looking at EPD 50 days, then we want to increase the weight at 50 days and the unit is kg of weight. We are looking for positive values for almost all EPDs, except for fat cover, lambing interval and age at first lambing, where we should select for negative values.

EPD? … How does it work?

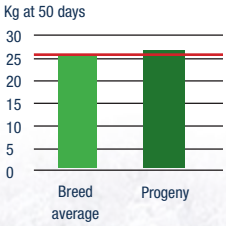
EPD 50 days = 1.20 kg

x

EPD 50 days = 0.20 kg

(1.20 + 0.20)

Performance estimated for the lambs of this mating = +1.40 Kg



Breed average for reference population: Suffolk breed (2010)

The lambs born from this breeding have the genetic ability to weigh, at 50 days, on average 1.40 kg more than the average 50 day weight of their breed.

What's an Index?

Genetic selection indexes are used to select for several traits at once. Each index is formulated to provide an average rate of progress that has been set for each trait. As great as it would be to increase a trait such as number born up to 5 lambs per lambing, what would be the point if only 1 of those lambs survives? By balancing traits into indexes, it is possible to select for several important traits at the same time with only one number: the genetic selection index. Six genetic selection indexes are now available and each of them has its own purpose and combines different EPDs.

Quick and easy: which animal is best, based on an EPD or Index?
Percentiles help with selection. Percentiles are produced for all EPDs and Genetic Indexes. The percentile is a number that reflects the position, so the ranking, of an animal within its breed. It allows a comparison of an animal's performance to those of all animals of the same breed that have been evaluated in GenOvis. For example, an animal with an 80th percentile for one trait indicates that 80% of animals within that breed are inferior to it for that trait, while 20% are superior. The 50th percentile represents the average of a trait within a breed. We consider that an animal is "improver" when its EPDs and Indexes are above the 50th percentile, so above the average of the breed. "Top animals" in a breed are in the 90th percentile and more.

Appendix 3
An Introduction to GenOvis

6 Selection Indexes to Help Breeders with Genetic Selection

Which Index do I look at when I select or buy an animal?

I Want To…

PRODUCE MARKET LAMBS

GAIN INDEX

Helps improve lamb survival and growth rate from birth to slaughter.

Example of use:
Your lambs are all marketed on live weight (stockyard).

I would like to increase carcass quality at the same time.

Animal evaluated with ultrasound*

CARCASS INDEX

Helps improve lamb survival, growth rate and carcass quality from birth to slaughter.

Example of use:
You are paid on your lamb's carcass quality. You want to improve ***carcass quality***.

INCREASE MATERNAL ABILITIES AND PROLIFICACY OF MY FEMALES

MATERNAL HIGHER PROLIFICACY INDEX

Helps improve prolificacy and maternal qualities of daughters.

Example of use:
For non-prolific breeds (Dorset, North Country, Polypay, …). To increase prolificacy of the offspring (cross breed, F1 or purebred).

I would like to increase carcass quality at the same time.

Animal evaluated with ultrasound*

MATERNAL ULTRASOUND HIGHER PROLIFICACY

Helps improve prolificacy, maternal qualities and carcass quality of daughters.

Example of use:
Same as for Maternal Higher Prolificacy Indexm but this index improves ***carcass quality*** and prolificacy at the same time.

INCREASE MATERNAL ABILITIES, WITHOUT INCREASING PROLIFICACY

(My ewes are prolific enough!)

MATERNAL INDEX

Helps improve maternal qualities and weaning weight.

Example of use:
For highly profific breeds (Romanov, Rideau Arcott, …) when better growth and weaning weights are needed. When producing F1 with prolific ewes.

I would like to increase carcass quality at the same time.

Animal evaluated with ultrasound*

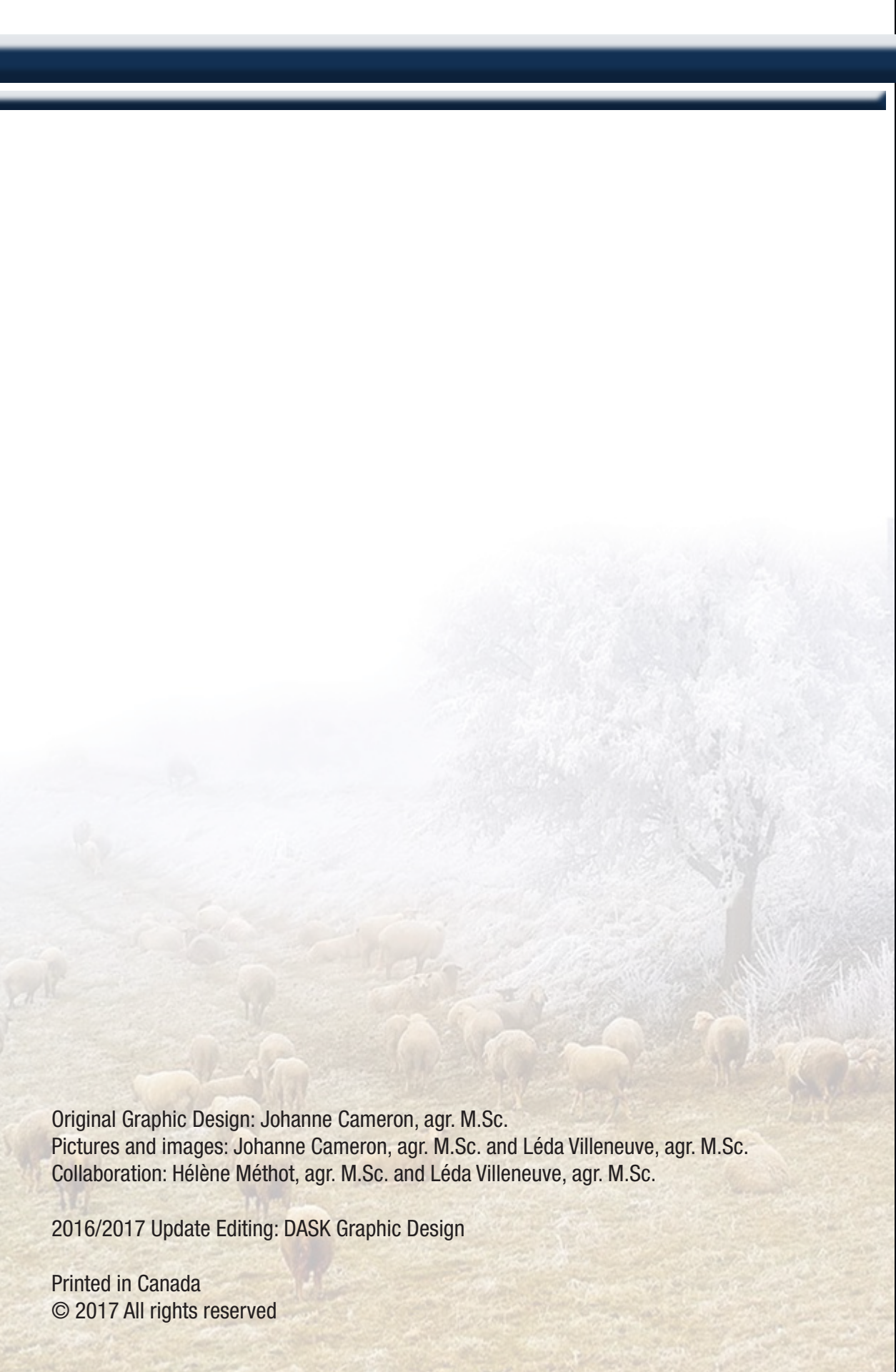
MATERNAL ULTRASOUND INDEX

Helps improve maternal qualities, weaning weight and carcass quality.

Example of use:
Same as for Maternal Index, but this index also improves carcass quality, maternal qualities and weaning weight, all at the same time.

NOTES

NOTES



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