ALPACA ASSOCIATION NEW ZEALAND

REGULATIONS

B12

BREED STANDARDS

Synopsis

There is and will always be a desire amongst alpaca owners to breed towards their “ideal” alpaca.

How that is defined may be subjective, especially in some areas, such as fibre grown by the alpaca. This Breed Standard describes the “ideal” alpaca, to encompass a variety of fibre based end uses.

In the area of form and conformation, the ideal fibre producing alpaca can be described as one that has a long and healthy reproductive life, with a frame to carry the fleece for which the animal is prized.

The key attributes to form and conformation are the effect of form on the desired function of the alpaca, and the heritability of positive features displayed.

This Standard attempts to avoid aesthetics that are not driven by function or heritability. It distinguishes the alpaca from its nearer and at times interbred camelid relations.

This Breed Standard represents the best of current world-wide industry knowledge (2009). Over time, it may change, as new knowledge is gained, and/or to meet the changing long term demands on the alpaca in New Zealand.

The Breed Standard is in four parts and outlines:

1. Conformation - With a table of both desirable and negative traits for each aspect, and supplemented by diagrams for clarity.
2. Huacaya Fleece
3. Suri Fleece

   These separate fleece standards recognise the different attributes that are prized of huacaya and suri fleece, and the different processing and end uses of these fleeces.

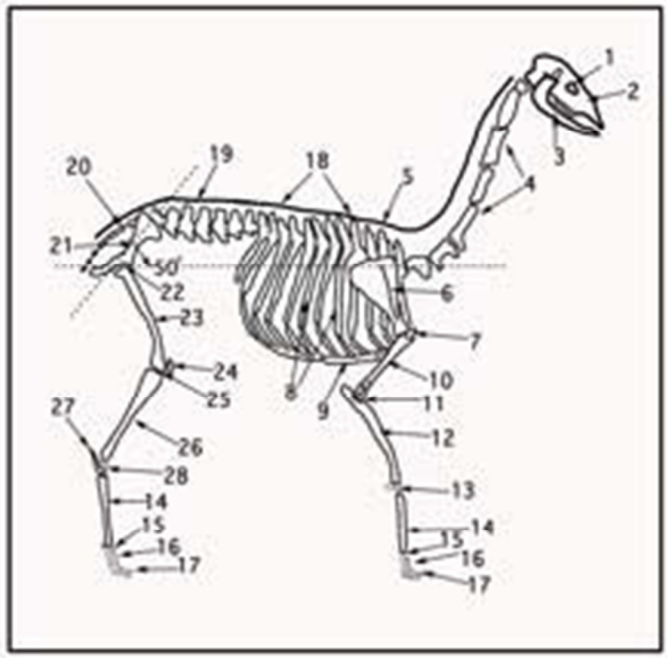
4. Disqualifying Faults - which relate to conformation, and form and function. These faults disqualify an alpaca from being on the Registry.

Alpaca Conformation

Overview

The ideal alpaca has an upright, robust appearance with four strong legs, yet is compact, well balanced and free moving. It is a graceful, well proportioned alpaca, with the neck being approximately two-thirds of the length of the back, and the legs matching the length of the neck. The back (top-line) should be relatively straight and level. This alpaca has adequate body length and depth. The size of the bone should be in proportion to the alpaca.

1=eye (orbit)
2=upper jaw (maxilla)
3=lower jaw (mandible)
4=neck (cervical vertebrae)
5=withers
6=shoulder blade (scapula)
7=shoulder joint
8=ribs
9=breast bone (sternum)
10=upper arm (humerus)
11=elbow
12=forearm (radius)
13=knee
14=cannon bone (metacarpus)
15=fetlock joint
16=fetlock
17=pastern/foot
18=back (thoracic vertebrae)
19=loin (lumbar Vertebrae)
20=tail
21=pelvis
22=hip joint
23=thigh bone (femur)
24=patella
25=stifle
26=leg bone (tibia)
27=point of hock
28=hock



Heritabilities

Balance - Body Structure of an adult alpaca is thought to be moderately heritable (0.38 to 0.45)

Face - Face cover is thought to have a moderate heritability (0.35) in sheep

Jaw- Jaw has a relatively low herilibility (0.23)

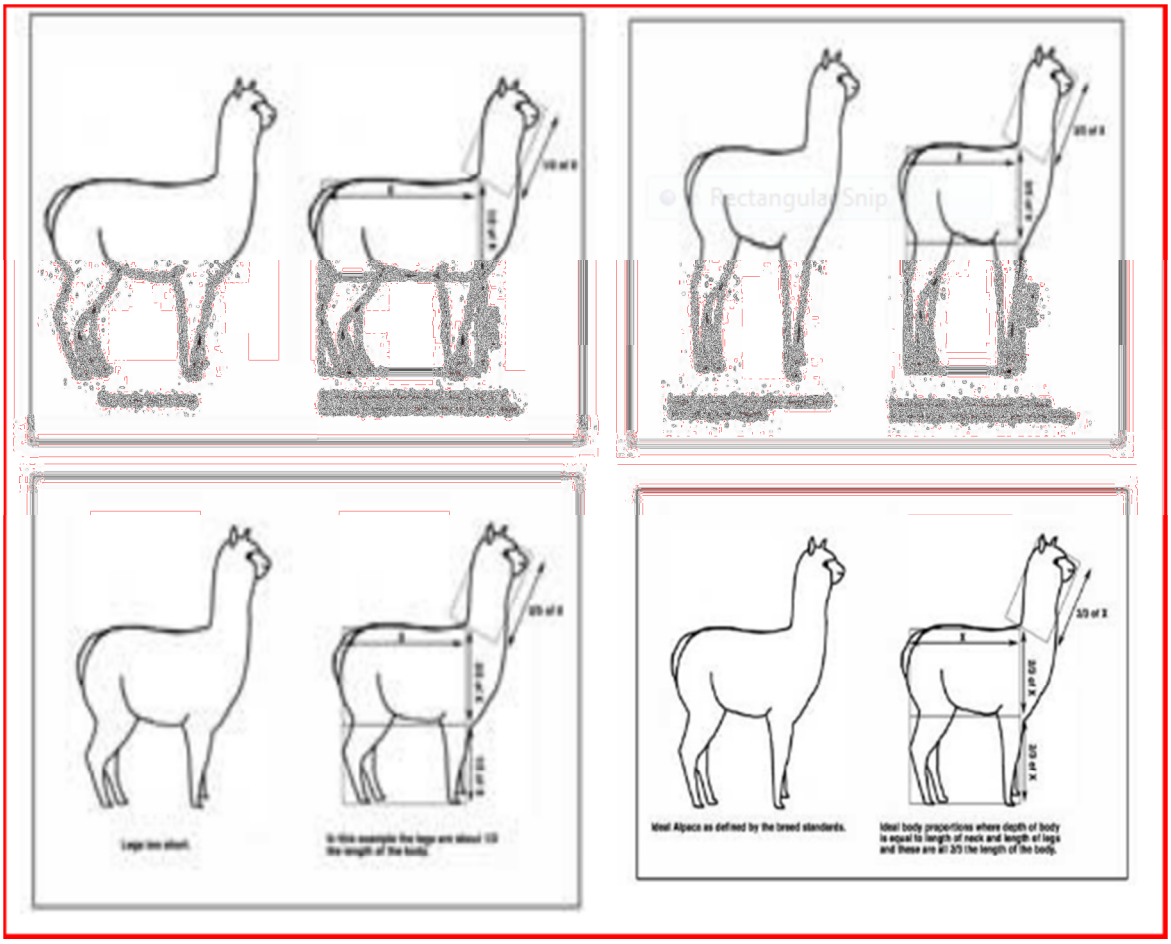
Body - Body and bone structure thought to be highly heritable (0.4) for adult alpaca - less so (0.23) for alpaca not fully grown.

Legs & Movement - Heritibility of most leg faults considered to be low (0.17 to 0.22) so minor faults can be bred out with judicious mating

Fibre: Character & Style Notes - These indicators carry a reasonable (50%) correlation. It should be noted that these indicators are not reliable in fleece of poor fibre alignment and staple.

Balance

In a well balanced alpaca the boxes for the neck and legs are the same length and are two-thirds of the length of the box for the body.



Head

The head should have a symmetrical shape and a strong appearance. The muzzle has an oblong shape and should not be overly long.

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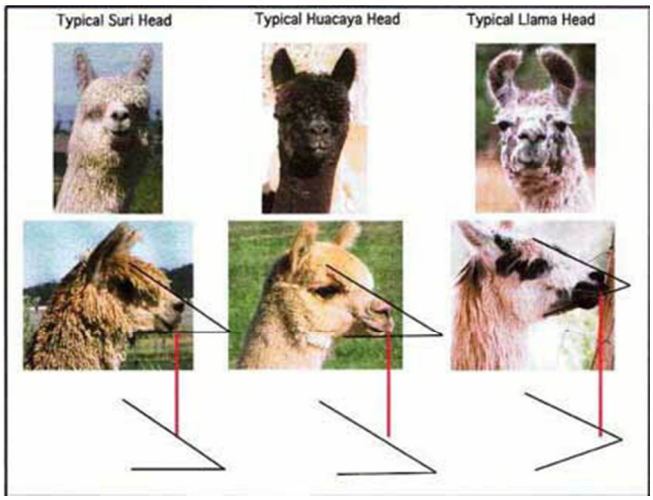
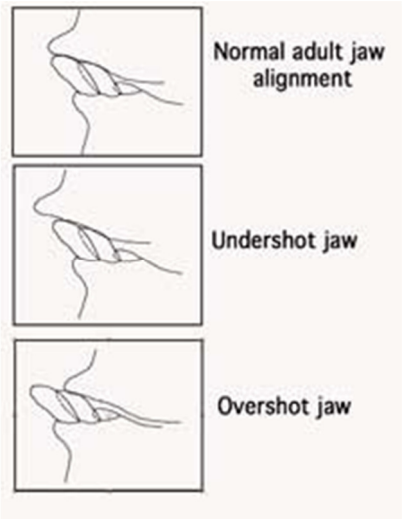
As an indication the average jaw length for adult alpaca measured from the curve at the back of the lower jaw to the back end of the lip is approximately 140 mm.

Lines extended from upper and lower jaw in the alpaca join further away from the mouth than similar lines in the llama.



Jaws



A good depth of jaw is important as this allows for plenty of room in the mouth for the rear teeth and gives a powerful grinding ability while chewing the cud.

As an indication the adult jaw depth from the base of the jaw bone to just under the eye is approximately 100mm.

The jaws must be aligned and the teeth at the rear of the mouth must be opposed to each other for efficient mastication. The front teeth on the lower jaw must bite against the front edge of the dental pad and point slightly forwards from the lower jaw.

The dental pad should not protrude more than 5mm beyond the lower incisors when the jaws are closed (inferior brachygnathism or undershot). At the extreme, the teeth must not protrude more than 3mm beyond the outer edge of the dental pad (superior brachygnathism or overshot).

Any misalignment of the jaw is a fault, both when viewed from the front (wry face view) and when viewed from the side (teeth against top pad view). Jaw has a relatively low heritability (0.23).

Eyes

The eyes are oval in shape, protrude slightly from the orbit, and should be bright and free from tearing. The eyes should be brown, grey or black but two blue eyes in a white fleeced animal are considered a fault. The eyes should be widely spaced and evenly positioned on either side of the muzzle to allow for good vision to the rear, the side and the front.

Wool blindness where fleece grows too close to or over the eyes causes poor vision and therefore the face should be clean in the adult huacaya alpaca. Suri face locks are acceptable.

The muzzle has two well-defined, soft nostrils that allow for good air intake. The upper lip is just below the nostrils and is divided and is highly mobile allowing for selective grazing of short pasture.

Ears

The two pointed ears on the alpaca are symmetrically positioned either side of the top of the head and are covered in short soft hair.

The average ear from base of ear opening to ear tip is approx 140mm - can be 20mm longer in Suri

Ears must not be banana shaped which is a llama-like feature. The ears must both point forwards when in an alert stance and should be symmetrical.

Ears should never be fused at the tip nor should there be cartilaginous bobbles along their length. In alpacas fused ears appear highly heritable although may skip a generation in its expression.

Desirable Traits	Negative Traits
Pointed symmetrical ears	Abnormally short, stubby, bent or fused ears (D)

Desirable Traits	Negative Traits
Even face from the front	**Unevenness in facial symmetry or wry face greater than 10 degrees (D)**
Teeth meeting the upper pad	**Undershot or Overshot (D*)**
Black, brown or grey eyes	Two blue eyes in a white fleeced animal
Open face with ability to see well	Wool blindness in an animal over 2 years old
Oblong jaw with good depth	Narrow or overly long muzzle with llama-like characteristics
	Llama like ears

D = disqualifying trait

* = disqualifying trait if protrusion is more than that mentioned in the Breed Standard

Neck

The neck is long and slender and should measure approximately 2/3rds of the length of the body. It should be very flexible allowing the animal to turn and face towards the rear (see balance pictures above).

The neck continues from the line of the backbone and should not begin with a dip below the line of the backbone (U Neck). At the point where it joins the withers it should blend with the shoulders and withers.

Desirable Traits	Negative Traits
Neck in proportion to body and leg length	Overly short or overly long neck that is out of proportion with the body
Neck continues from line of backbone	A U bend in the neck.

Forequarters

The chest should be broad and there should be a clear gap in the front of the chest where the legs begin. The chest should be deep. Both these features allow for a good lung capacity.

The fore-ribs should be well sprung giving a barrel shaped appearance to the chest.

The withers should not protrude above the backline.

The shoulders should be well muscled and should allow the animal to walk with a fluid motion.

Desirable Traits	Negative Traits
Broad and deep chest	Narrow chest
Well muscled shoulders	Prominent wither

Body

The body as a whole should be deep through the girth allowing for good abdominal capacity which is especially important in pregnant females.

The back is strong, well muscled and well sprung and may be flat or slightly convex.

The loins are broad strong and flat with the rear of the abdomen being deep, narrowing at the waist.

Desirable Traits	Negative Traits
Good depth and capacity	Over arched or roach back (kyphosis)
Flat and well muscled back	Topline dip or sway back (lordosis)
Broad strong loins	Curved back (scoliosis)

Hindquarters

The rump is curved, falling away from the top-line slightly before the start of the tail.

There should be good space between each of the pin bones as this indicates a broad pelvis. This is especially important in breeding females who will birth easier if they have broader pelvic bones.

The thighs are strong and well muscled. This is especially important in breeding males who rely upon the power of their rear legs during mating.

The tail is a continuation of the vertebral column and may start on the convex part of the rump. The tail should cover the genitalia and should be straight or should be capable of being manually straightened if necessary. Kinked tails in alpaca appear to be moderately heritable.

However not all tail deviations are true “kinked tails” especially if the tail can be manually straightened or the tail has deviations only in the end phalanx or has a “bobble” on the end of the tail. At times a physical break of the tail can cause a deviation; such breaks will usually have indications of calcification.

Serious tail deviations should be determined by vet examination and x-ray.

Desirable Traits	Negative Traits
Straight tail	**A missing tail, an abnormally short tail, and a bent or kinked tail that cannot be manually straightened (D)**
Broad pelvis	Narrow pelvis
Strong and well muscled thighs	Steeply sloping rump
	Weak muscles in the hindquarters

D = disqualifying trait

Legs and Movement

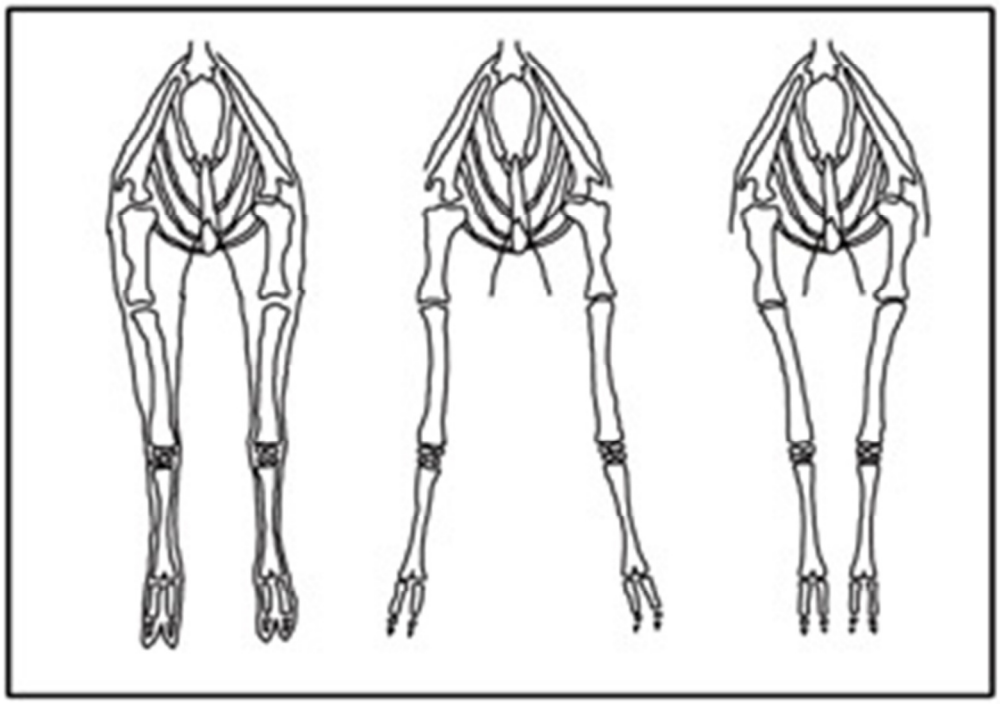
The feet and legs of an alpaca are critical to its ability to function properly. They support the weight and balance of the alpaca and they can be the root cause of faults seen in the upper part of the body and the back.

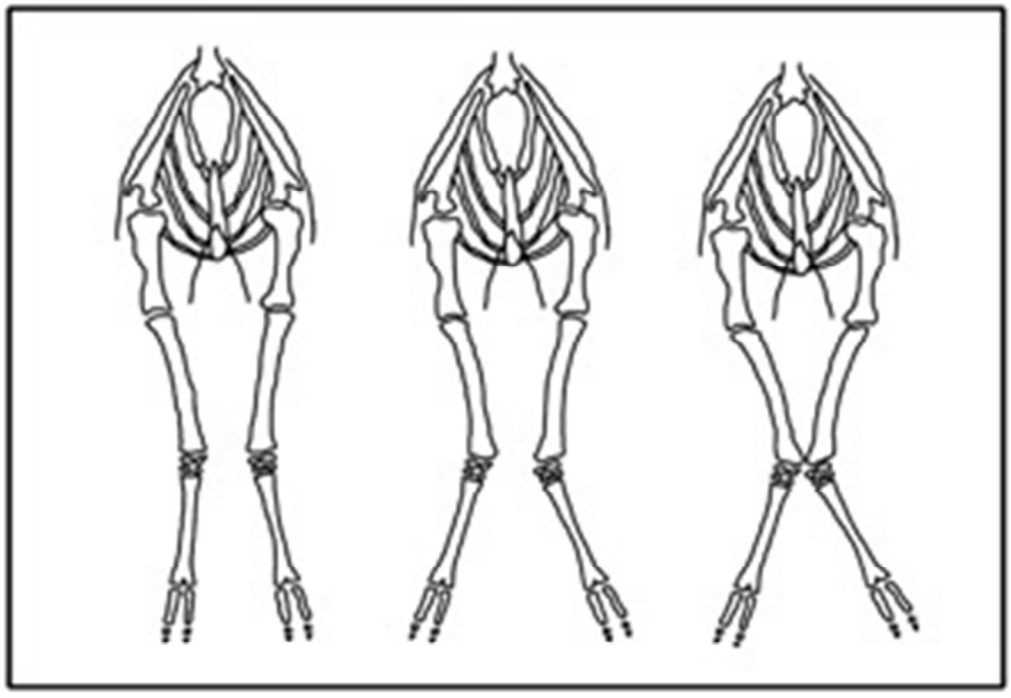
The seriousness of leg faults depends upon the degree of the fault (extremes are worse than minor expressions), the function of the alpaca (e.g. base narrow front is a more important fault in a male, camped out is a more important fault in a female), and the function that is affected by the fault.

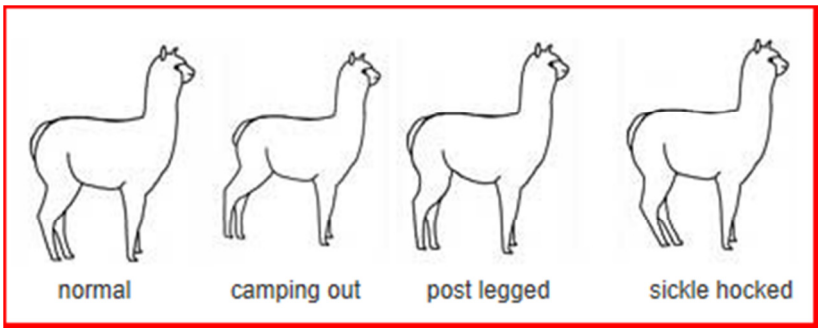
Not all faults are genetic and some (particularly minor knock knees) can be management induced.

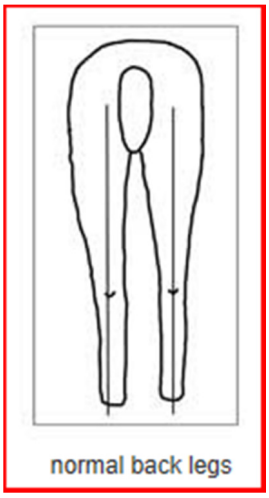
The fore legs are strong and almost straight when viewed from the front. The hind legs are straight and parallel when viewed from the rear.

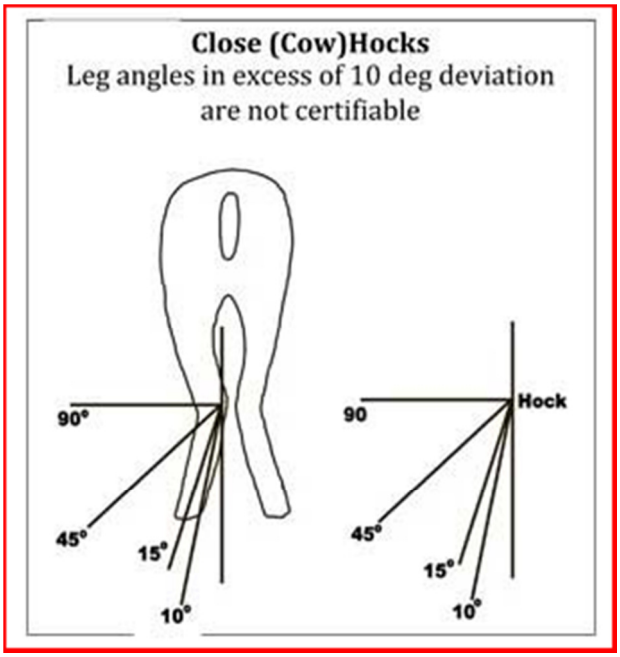
The following diagrams display correct leg conformation – front and back and viewed from side and rear. They also display common faults.





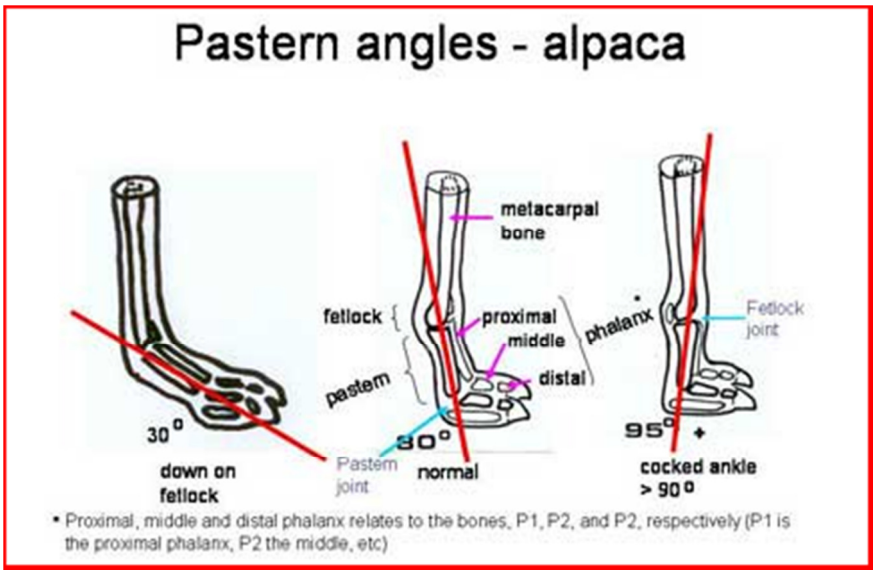




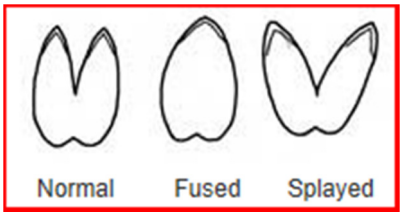


The legs should display good substance of bone providing the alpaca with good support for the bodyweight carried.

The feet are neat and well formed and the fetlock is firm and upright. The sole of the feet is covered with a callused membrane. The feet carry 2 separate forward pointing toes each carrying a long, strong, straight, toenail.



Fused toes, and additional toes are disqualifying faults.



The alpaca exhibits an even stride length with two distinct tracks that are followed though without deviation, and with the hind feet following the front ones.

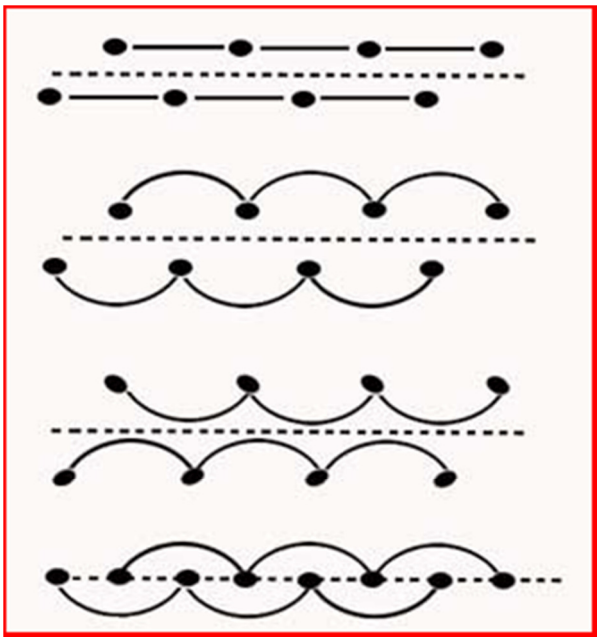
The following diagrams display the correct tracking of an alpaca, and the more common faults.

1st diagram: Normal

2nd diagram: Winging Out

3rd diagram: Winging In (dishing)

4th diagram: Rope Walking



Desirable Traits	Negative Traits
Strong straight legs	**More than two toes on any foot or fusion of two toes on any foot (D)**
	Cocked ankle
Toes pointing forward	Toes pointing out (splayed toes or feet)
	Toes pointing in (pigeon toed or feet)
Straight tracking and feet placement	Winging-out walk
	Winging-in walk
	Rope walking
	Weak Fetlock
	Uneven stride length
	Permanent lameness
	Base narrow or base wide (front and back)
	Bow legged (front or back)
	Obvious knock knees (carpal valgus) (front)
	Close (cow) hocked (back)
	Sickle hocks (back)
	Buck Knees (front)
	Post legged (front or back)
	Camped out (front or back)
	Camped in (front or back)
	Luxating patella
	Upward fixation of patella

D = disqualifying trait

Udder

The udder should show good capacity with 4 working teats, and preferably an absence of blind, inverted or fused teats. Supernumerary or blind teats should not interfere with the operation of other (working) teats.

Desirable Traits	Negative Traits
4 (working) teats	Less than 4 teats
Udder with good capacity (females)	Teats that interfere with the functioning of the other teats
	Inverted or fused teats

These faults apply to both females and males except where indicated.

Reproductive

A male should have a well attached scrotum containing two even sized testes of firm consistency that are of (or greater than) the normal size for age.

Testicles – Size Indicators

- As an indicator, minimum size for age would be:
- At 6 months – signs of 2 testicles present in scrotum
- At 18 months of age – > 25 mm (below this size is disqualifying in certification)
- At 24 months of age – > 30 mm (below this size is disqualifying in certification)

A male with less than 2 testes can be registered, as this is not a disqualifying fault. However having less than two testes is a fault and a disqualifying fault for certification of the male as a stud.

A female should have normal sized and functioning female genitalia

Occasionally alpacas are produced from sires and dams that are "normal" which display – to varying degrees – both male and female sexual organs. This is usually a female genital configuration with an extended and elongated clitoris, which at times can produce a prehensile penis. This is called a hermaphrodite. This can be expressed externally, as described, and also internally.

Desirable Traits	Negative Traits
2 large, even sized, consistent, descended testicles	Fewer than 2 testes in scrotum
	Testes of uneven size
	Testes of an uneven or mushy consistency
	Undescended testes at age 6 months or older
	Fused vulva
	Hermaphrodite (D)

D = disqualifying trait

OTHER UNDESIRABLE MATTERS

Evidence or knowledge of any adverse medical condition known to be genetic should be treated as a fault. Examples would include, but are not restricted to:

- Choanal atresia
- Inguinal hernia
- Significant genetic heart defects
- Fused vulva

SURGERY

Surgery to correct any of these faults does not bring the alpaca within the boundaries of the Breed Standard.

Summary of Registry Disqualifying Faults

1. Abnormally short, stubby, bent or fused ears
2. Unevenness in facial symmetry or wry face greater than 10 degrees
3. Superior or inferior brachygnathism (overshot or undershot) in excess of the allowable limits
4. A missing tail, an abnormally short tail, and a bent or kinked tail that cannot be manually straightened and that shows no evidence of break or calcification.
5. More than two toes on any foot or fusion of two toes on any foot
6. Hermaphrodite

Huacaya Fleece

Overview

As a fibre-producing animal, the huacaya should grow a uniform, fine, dense fleece, with a good covering over the whole body. Whilst recognising that different end users will require different styles of fibre, characteristics such as soft handle, lustre, lack of guard hair, lack of colour contamination, soundness within the staple, along with good fleece weights, are all essential elements in producing high quality huacaya alpaca fibre. Breeders should aim to promote these desirable characteristics in their breeding programmes and seek to reduce the effects of negative traits on their fleece production. Care also needs to be taken in distinguishing between the genetic influence on fleece (the fleece grown by the alpaca) and the environmental influences, and breeders are urged to concentrate on promoting genetic influences for sustained gain.

Fleece Production

The ideal fleece type or style for a huacaya will depend on the characteristics and specifications demanded by the end user markets. In general, the price paid for huacaya fibre is considerably higher towards the fine end of the fibre market. Alpacas producing large quantities of low micron, soft handling fibre will provide premium return for fibre producers. Thus fineness (with its associated soft handle), plus clean fleece weight production, are the two most important factors in growing the ideal huacaya fleece.

Fineness of Micron

The fineness of the micron, and the softness of the handle of the fleece, are important factors in the end use product -although there are many environmental and processing influences between the handle of a fleece on an alpaca, and that of the end garment. The major genetic influences on handle are micron (fine), cv/sd (low), scale height (low) and scale length (long) although only the first two are understood in terms of heritability.

Desirable Traits	Negative Traits
Low micron for age	Strong micron for age
Low cv indicating uniformity of micron	Harsh or coarse handle
Soft handling, silky to the touch	Chalkiness

Desirable Traits	Negative Traits
	Strong primary fibres

Yield and Density

For the alpaca breeder, it is the "yield" - whether measured as clean or greasy fleece - that will play a significant part in influencing fibre return. Yield is, in dollar terms, influenced by fineness and shear weight. Shear weight can be affected by a combination of density, staple length, and area shorn.

Once environmental factors (dirt, vegetable matter, etc) have been removed, it is improved genetic characteristics that really influence the yield.

Density is one of the major influencers on the weight of the shorn fleece and therefore the value of that fleece. Density also prevents dirt and moisture penetrating into the fleece.

Density is the number of follicles growing in a given area of skin. In fine alpaca fleeces there is more opportunity for a greater number of follicles per given area.

It may be difficult to feel the density of a fine fleece. Fine alpaca fleeces may indeed be as dense as coarser ones but they feel softer than coarser ones because of the fineness of individual fibres.

Desirable Traits	Negative Traits
High follicles numbers per sq. mm	Open fleece lacking density
Greater density	Lack of density
Larger body size (for yield of fleece)	Small body size
More uniformity of good fleece across the body	Poor uniformity across fleece
Longer staple length	Short growing fleece

Character and Style (Crimp)

A well defined crimp and well structured staple formation is indicative of heavier fleece weights and reflects uniformity in the characteristics of the fleece. High frequency crimp fleeces (with well aligned fibres) are seen as a visual indicator of fleece fineness and low frequency crimp of similar structure tends to indicate a less fine fleece. It should be noted that these indicators are not reliable in fleece of poor fibre alignment and staple.

Some processors see crimp as a desirable factor in making a lighter yarn with more loft in woollen spun yarns and elasticity and drape in worsted processing.

Fibre "curvature", is a measurement reflecting fibre crimp frequency, fibre crimp amplitude, and micron. It is normally expressed in degrees of curve per mm of fibre length. There is some correlation between crimp frequency and curvature. However alpaca curvature is much lower than in fine wool sheep or cashmere goat and is not currently considered a major feature in processing.

Desirable Traits	Negative Traits
Well defined staple definition	Poor crimp or staple definition
Good amplitude (relative to frequency)	Little or no fibre alignment
Uniformity of crimp along the length of the staple.	Open style fleeces
Extent of uniform crimp over the body of the alpaca	

Uniformity

Uniformity of a number of important fibre traits is seen as the most relevant issue in the processing of huacaya fleece.

Uniformity of micron – to produce high quality products, processors require fleece with minimum of variation in fibre diameter. Uniformity can be expressed three ways.

- Uniformity of micron within the fleece from individual fibre to individual fibre (low standard deviation and/or coefficient of variation).
- Uniformity of micron over the whole fleece area (neck, blanket, legs etc)
- Uniformity of micron along the growing length of the fleece (over time)

Uniformity of colour– fleece should be uniform in colour to meet processors preferred choice. Colour contamination, particularly where primary fibre is a different colour to secondary fibre, is an undesirable trait in alpaca fleeces. Processors will reject fleeces which have dark fibres in light fleeces and light fibre in dark fleeces.

Uniformity of length – another important requirement. Whilst processing length requirements vary, this variation can be met by shearing. In breeding the length of huacaya fleece should be maximised and reflect a good length for age in month's growth

Recommended Fleece length

A fleece length in excess of 120mm (huacaya) and 150mm (suri) in a 12 month period is positive. Age and function affect growth rates. Huacaya fleece should also reflect a uniform length throughout the entire fleece.

Desirable Traits	Negative Traits
Uniformity of length, micron and colour	Short annual fleece growth
A long staple length	Lack of micron uniformity and/or length uniformity across and within the fleece/staple

Lustre

Lustre, as shown by the reflected light from the fibre, is a desirable trait in huacaya fleece and is valued by the end retailer in improving the finished appearance of garments and other products.

Desirable Traits	Negative Traits
High lustre	Little or poor lustre.
	Chalky looking fleece

Lack of Guard Hair (Medullation)

High micron guard hair or medullated straighter fibres throughout the fleece of an huacaya, is seen as particularly undesirable for most processing as it destroys uniformity and take up of any dye.

Huacaya fibre should feel soft against the bare skin and not carry high micron fibres that cause the prickle factor.

Reduction in both the micron and the frequency of guard hair and coarser secondary fibres within the main fleece is a positive goal.

Desirable Traits	Negative Traits
Low frequency of guard hair	Strong micron medullated fibres
Primary fibre of similar micron to secondary fibres	Medium to high levels of guard hair

Colour

Alpaca fleece is produced in a variety of colours from white to black. In between there are shades of fawn, brown and differing types of grey. Alpaca fibre can be any of the above colours, but for most production processes, should be a solid colour throughout the fleece.

Spots in the fleece (if small and in peripheral areas) are not as serious as spread colour contamination, as spots tend to be localised and can be removed in processing preparation.

Desirable Traits	Negative Traits
Uniformity of colour within the fleece	Different coloured fibres through the fleece Spots within the main fleece

Suri Fleece

Overview

The suri alpaca carries a lustrous silky, soft handling fleece that moves freely, yet hugs the body giving the suri the appearance of being cloaked in a swaying curtain of silk tassels. The fleece hangs perpendicular to the body in well-defined independent locks, forming close to the skin and twisting uniformly to the ends. The fleece has a cool handle.

The suri alpaca should grow a uniform, fine and dense fleece, with a good covering over the whole of the body. Whilst recognising that different end users will require different styles of fibre, characteristics such as soft handle, high lustre, lack of guard hair, soundness within the lock, along with good fleece weights, are all essential elements in producing high quality suri.

Care also needs to be taken in distinguishing between the genetic influence on fleece (as grown by the alpaca) and the environmental influence, and breeders are urged to concentrate on promoting genetic influences for sustained gain.

The ideal suri should display the following:

- High lustre
- Fineness and handle
- Long lock length
- Density and independent solid locks
- Uniformity of architecture
- Fleece coverage across the head, body and legs

Fleece Production

The ideal fleece type or style for a suri will depend on the characteristics and specifications demanded by end user markets. In line with most other exotic fibres, the price expectation (paid) for suri fibre is more towards the fine end of the fibre market. However in suri the lustre of the fibre is

more important to processors. Thus lustre is the most important factor in growing the ideal suri fleece, followed by fineness and density.

Lustre

Lustre, as shown by the reflected light from the fibre, is most easily seen close to the skin, is often said to be the most desirable trait in suri fleece. It is highly valued by processors to enhance the finished appearance of garments.

Lustre in the suri fleece inherently stands out more than in the huacaya fleece because of a number of structural differences between the fibres. The suri fleece has longer scales covering each fibre; the edges of the scales are lower, as well as there being differences in the structure of the orthocortex/paracortex of the fibres. These structural differences are responsible for allowing suri fibre to reflect light more effectively than huacaya fleece and therefore allow for the great lustre of a good suri fleece.

Desirable Traits	Negative Traits
High lustre	Little or poor lustre.
Sheen or pearliness	Dry, chalky, dull fleece

Fineness of Micron

The fineness of the micron and the softness of the handle of the fleece are important factors in the end use product - although there are many environmental and processing influences between the handle of a fleece on an alpaca, and that of the end garment.

The major genetic influences on handle are micron (fine), cv (low), and scale height (low) and scale length (long), although only the first two are understood in terms of heritability.

Desirable Traits	Negative Traits
Low micron for age	Strong micron for age
Low cv indicating uniformity of micron	Harsh or coarse handle
Soft handling, silky to the touch	Chalky and dry handling
Cool and slippery to the touch	Strong primary fibres
Primary fibre of similar micron to secondary fibres.	Inconsistent micron across the fleece

Yield and Density

For the alpaca breeder, it is the “yield” - whether measured as clean or greasy fleece - that will play a significant part in influencing fibre return. Yield is, in dollar terms, influenced by fineness and shear weight and lustre. Shear weight can be affected by density, lock length, area shorn and a combination of all these factors.

Once environmental factors (dirt, vegetable matter, etc) have been removed, it is improved genetic characteristic that really influences the yield.

Density is the number of follicles growing in a given area of skin. Density is gauged by the solidity of the locks, as felt between the fingers, by the number of lock layers and by the overall weight of the fleece and length of lock.

Desirable Traits	Negative Traits
High follicles numbers per sq. mm	Lack of density
Larger body size	Small body size
More uniformity of good fleece across the body	Poor uniformity across fleece
Longer lock length	Short growing fleece
Solid feel of locks between the fingers	
Multiple layers of locks draping the body	

Lock Structure

The lock structure may be twisted, curled, pencilled, straight or the wave and twist. Locks should be well-defined, independent, uniform and form close to the skin. Well-defined lock architecture is desirable in reflecting uniformity of characteristics within the fleece.

The locks should be consistent across the body, commencing at the forelock and continuing through to the hocks. When the fleece is opened, the inside locks should be uniformly well defined and hang in well-formed layers.

Desirable Traits	Negative Traits
Well defined lock architecture	Poor or no lock definition
Independence of lock	Open or flat style fleeces
Uniformity of lock along the length of the lock	Lack of uniformity of lock style and size across body
Extent of uniform lock structure over the body	Signs of crimp or crinkle

Lack of Guard Hair (Medullation)

High micron guard hair or medullated straighter fibres throughout the fleece of a suri, is seen as particularly undesirable for most processing as it destroys uniformity and take up of any dye.

Suri fibre should feel soft against the bare skin and not carry broad micron fibres that cause the prickle factor.

High priority for genetic selection should be to reduce both the micron and the frequency of guard hair/medullation/coarser fibres within the main fleece.

Desirable Traits	Negative Traits
Low frequency of guard hair	Strong micron medullated fibres
Primary fibre of similar micron to secondary fibres	Medium to high levels of guard hair

Colour

Alpaca fleece is produced in a variety of colours from white to black. In between there are shades of fawn, brown and differing types of grey.

Alpaca fibre can be any of the above colours, but for most production processes, should be a solid colour throughout the fleece.

Spots in the fleece (if small and in peripheral areas) are not as serious as spread colour contamination, as spots tend to be localised and can be removed in processing preparation.

Desirable Traits	Negative Traits
Uniformity of colour within the fleece	Different colour fibres through the fleece
	Spots within the main fleece

Uniformity

Uniformity of a number of important fibre traits is seen as a relevant issue in the processing of suri.

Uniformity of micron – to produce high quality products, processors require fleece with a minimum variation in fibre diameter. This can be expressed three ways.

- Uniformity of micron within the fleece from individual fibre to individual fibre (low standard deviation and/or coefficient of variation).
- Uniformity of micron over the whole fleece area (neck, blanket, legs etc)
- Uniformity of micron along the growing length of the fleece – along single fibres.

Uniformity of colour – fleece should be uniform in colour to meet the processors preferred choice. Colour contamination, particularly where primary fibre is a different colour to the secondary fibre, is very undesirable in alpaca fleeces. Processors will reject fleeces which have dark fibres in light fleeces and light fibre in dark fleeces.

Uniformity of length –another important requirement. Whilst processing length requirements vary, this variation can be met by shearing, so in breeding, the length of suri fleece should be maximised and reflect the length for age in month's growth.

Suri fleece should also reflect a uniform length throughout the entire fleece.

Fleece Length

Lock length influences fibre processing, as the longer the lock length, the greater the fibre production. Suri may be shorn up to twice a year.

Desirable Traits	Negative Traits
Uniformity of length, micron and colour	Short annual fleece growth
A long lock length	Uneven lock length
	Lack of micron uniformity and/or length uniformity within and across the fleece.

Disqualifying Faults

- Abnormally short, stubby, bent or fused ears
- Unevenness in facial symmetry or wry face greater than 10 degrees
- Superior or inferior brachygnathism (overshot or undershot) in excess of the allowable limits
- A missing tail, an abnormally short tail, and a bent or kinked tail that cannot be manually straightened and that shows no evidence of break or calcification.
- More than two toes on any foot or fusion of two toes on any foot
- Hermaphrodite

Background on Faults:

Kinked tails are common in dog breeds and are related to multiple coccygeal hemivertebrae. These are serious skeletal faults and can have reproductive consequences.

Translation from congenital osteodystrophy in cats indicates that fused ears in varying degrees are symptomatic of spinal and reproductive problems.